Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Bar Awlia Nagar Govt. Primary School
Educational Institution ID: 99412060301
Village: Bar Awlia Nagar; Union: Kakara; Upazila: Chakaria
District: Cox's Bazar

Funded by:

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Design and Supervision Consultancy:

Development Design Consultants Ltd.

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Kakara union of Chakaria Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Bar Awlia Nagar, Dakhin Pahar, Middle Pahar, Moulavighona and Alaminpara. Typical rural settings of the area offer farmer to be in the prime professional engagement, while the day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 374 households, containing 1895

members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Bar Awlia Nagar GPS
Educational Institute ID	99412060301
District	Cox's Bazar
Upazila	Chakaria
Union	Kakara
Owner of land	GPS
Catchment household	374
Catchment Population	1,895 (Male: 908, Female: 987)
Profession	Farmer 80%, Day labor 13%, Service holder 2% and others 5%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Bar Awlia Nagar, Dakhin Pahar, Middle Pahar, Moulavighona and Alaminpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	About 8 ft. wide RCC & HBB road named Bar Awlia Nagar road on west side connected with Arakan road (Cox's Bazar-Chattogram highway).
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Bar Awlia Nagar GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes

Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North side of Chakaria Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 8ft wide RCC & HBB road on the west side which is connected to the Cox's Bazar-Chattogram highway (Arakan road). On the north side, there are some socio-environmental features located such as, Bar Awlia Nagar central mosque & Forkania madrasah at 5m, Nalbila check post mosque at 400m, Alaminpara mosque at 800m and Nalbila beel at 900m of the proposed sub-project location. A hafezkhana named Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard at 500m is located on south side. On the east side Bar Awlia Nagar Moulavighona Madrasah at 750m, Moulavighona mosque & Hafezkhana at 910m and Purbo Nalbila beel at 950m, are located from the sub-project component. Some important socio-environmental features such as Vora khal at 15m, Chakaria Govt. College at 400m, Chakaria University College at 800m, Jahirpara jame mosque at 800m, Amzadia jame mosque at 850m, Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage at 850 are located on west side from the sub-project site. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Chakaria
Union	Kakara
GPS position	21.781639 N and 92.084444 E
Distance from Upazila HQ	7 km
Nearby major road	Cox's Bazar- Chattogram highway (Arakan Road)
Nearby river/canal	Vora khal is located at 15m distance on west side of the sub-project component.
North side	Bashkhali & Lohagara Upazila of Chattagram district and Lama Upazila of Bandarban district
South side	Ramu and Cox's Bazar Sadar Upazila

East side	Lama & Naikhyongchori Upazila of Bandarban district
West side	Moheshkhali and Pekua Upazila

[Sources of data: Field survey, 2021]

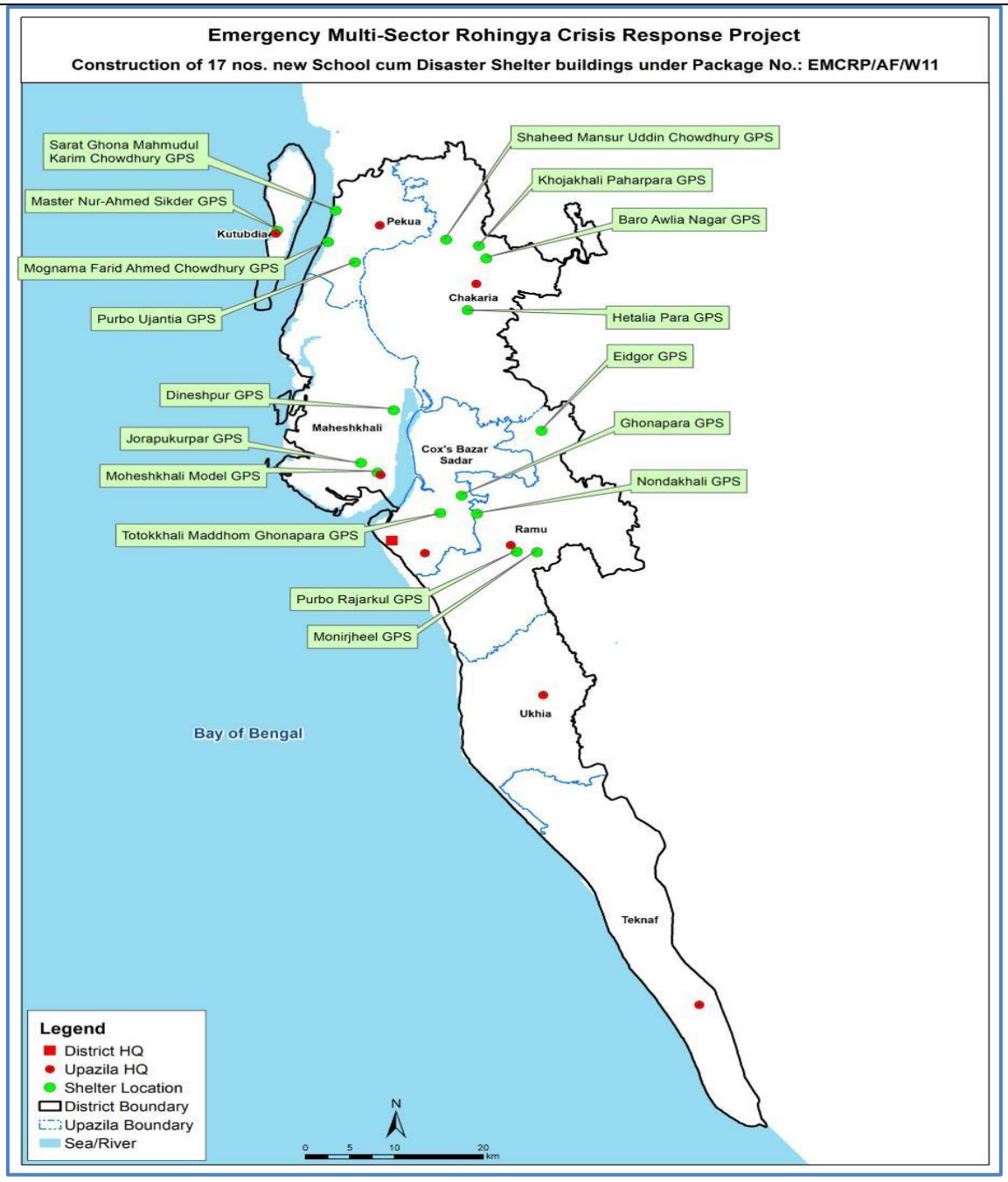


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

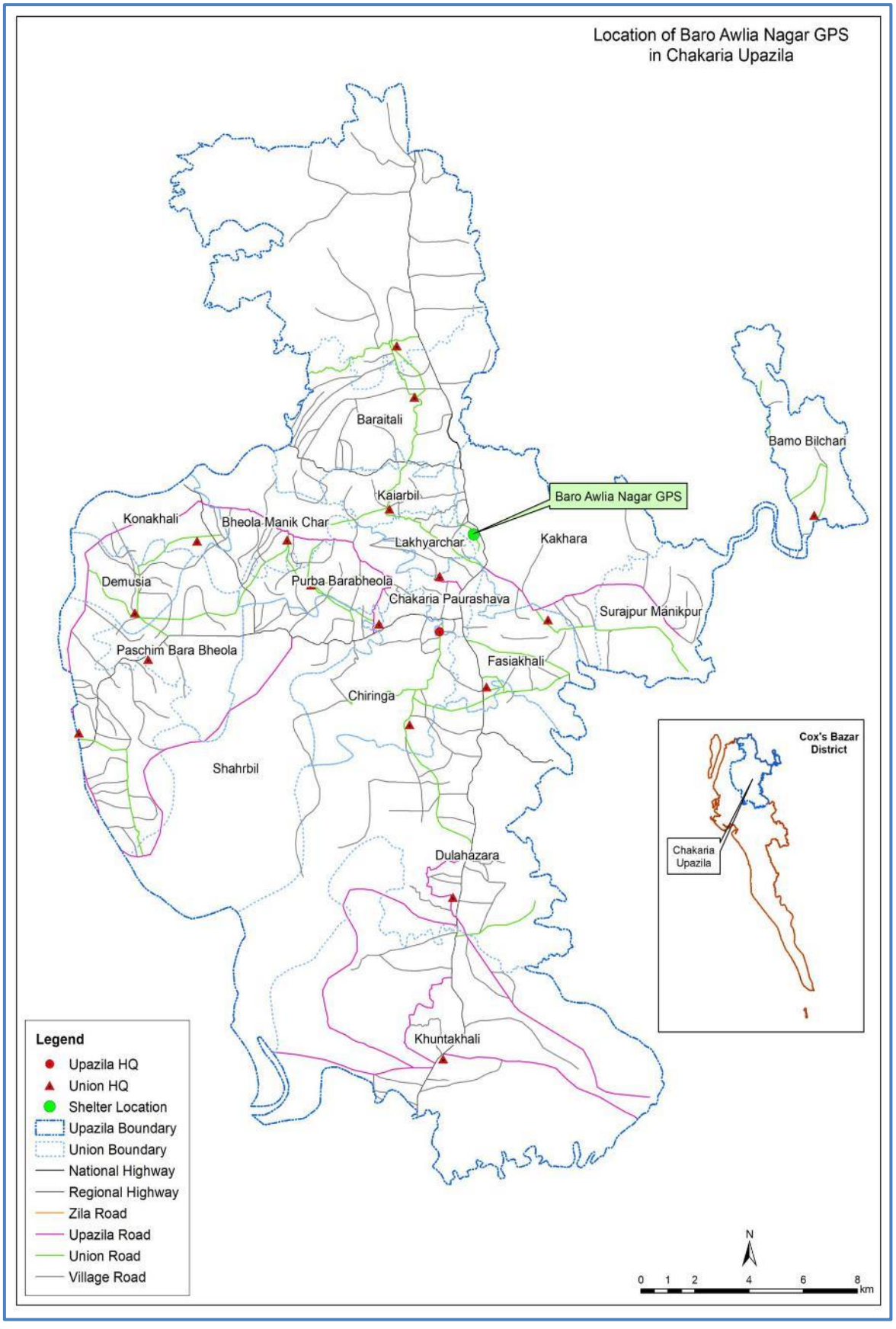


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Bar Awlia Nagar central mosque & Forkania madrasah (5m), Nalbila check post mosque (400m), Alaminpara mosque (800m), Nalbila beel (900m)
South side	Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard (500m)
East side	Bar Awlia Nagar Moulavighona Madrasah (750m), Moulavighona mosque & Hafezkhana (910m), Purbo Nalbila beel (950m)
West side	Vora khal (15m), Chakaria Govt. College (400m), Chakaria University College (800m), Jahirpara jame mosque (800m), Amzadia jame mosque (850m), Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage (850), Chakaria Forest office (1km), Food godown (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site (part of tin shed building and wash block shown on the picture will be demolished and replaced by the proposed building)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 29 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 42 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Bar Awlia Nagar GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 29 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. There are found some socio-environmental features such as, Bar Awlia Nagar central mosque & Forkania madrasah at 5m, Nalbila check post mosque at 400m, Alaminpara mosque at 800m and Nalbila beel at 900m on the north side of the proposed sub-project location. A hafezkhana named Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard at 500m is located on south side. About 8ft. wide Bar Awlia Nagar village linking road passing on the west side of the sub-project and it's connected with Cox' Bazar-Chottogram highway on south side. On the east side Bar Awlia Nagar Moulavighona Madrasah at 750m, Moulavighona mosque & Hafezkhana at 910m and Purbo Nalbila beel at 950m are found from the sub-project component. Some important socio-environmental features such as Vora khal at 15m, Chakaria Govt. College at 400m, Jahirpara jame mosque at 800m, Amzadia jame mosque at 850m, Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage at 850, Chakaria Forest office (1km) and Food godown (1km) are located on west side from the sub-project location. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil

can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain high land where some vegetation is found on the east side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down in the periphery of the school. Some important socio-environmental features, such as Nalbila check post mosque at 400m, Alaminpara mosque at 800m and Nalbila beel at 900m on the north side of the proposed sub-project location. A hafezkhana

named Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard at 500m is located on south side. On the east side Bar Awlia Nagar Moulavighona Madrasah at 750m, Moulavighona mosque & Hafezkhana at 910m and Purbo Nalbila beel at 950m are found from the sub-project component. Some important socio-environmental features such as, Chakaria Govt. College at 400m are located on west side. Within the close proximity (20m distance) from the construction site, such as Bar Awlia Nagar central mosque & Forkania madrasah at 5m on north side, about 8ft. wide Bar Awlia Nagar village linking road adjacent to the sub-project boundary and a khal named Vora khal at 15m on west side as well as human settlements around the proposed sub-project location might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs

of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF

and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Chakaria will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed

guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 09 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost

estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Bar Awlia Nagar GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Chakaria **Union**: Kakara

Name of Community/Local Area: Bar Awlia Nagar

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a tin shed school building, a two-story building under construction, a shaheed Minar, one deep Tubewell and, a toilet (2 units). Partial part of an existing tin shed old structure and wash block will be demolished during pre-construction period and the new school cum disaster shelter will be constructed there. About 8 ft. wide RCC and HBB village connecting road on west side and Cox's Bazar-Chattogram highway located within 500m distance on the south side of the sub-project component. Bar Awlia Nagar central mosque & Forkania madrasah at 5m, Nalbila check post mosque at 400m, Alaminpara mosque at 800m and Nalbila beel at 900m on north side of the proposed sub-project location. A hafezkhana named Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard at 500m is located on south side. On the east side Bar Awlia Nagar Moulavighona Madrasah at 750m, Moulavighona mosque & Hafezkhana at 910m and Purbo Nalbila beel at 950m are located from the sub-project component. Some important socio-environmental features such as Vora khal at 15m, Chakaria Govt. College at 400m, Jahirpara jame mosque at 800m, Amzadia jame mosque at 850m, Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage at 850 are located on west side from the sub-project site. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the

initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone cum disaster shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolishing old structures and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. About 8ft. wide RCC & HBB road named Bar Awlia Nagar road is passing near the sub-project area. There are some community properties, environmental, religious and socio-cultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Bar Awlia Nagar central mosque & Forkania madrasah (5m), Nalbila check post mosque (400m), Alaminpara mosque (800m), Nalbila beel (900m); on south side Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard (500m); on east side Bar Awlia Nagar Moulavighona Madrasah (750m), Moulavighona mosque & Hafezkhana (910m), Purbo Nalbila beel (950m) and on west side Vora khal (15m), Chakaria Govt. College (400m), Chakaria University College (800m), Jahirpara jame mosque (800m), Amzadia jame mosque (850m), Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage (850), Chakaria Forest office (1km), Food godown (1km) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions: A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.
Sub-project Location: The sub-project area is situated in Kakara Union under Chakaria Upazila of Cox's Bazar district. The sub-project area is located at 21.781639 N and 92.084444 E. Catchment villages of this sub-project area are Bar Awlia Nagar, Dakhin Pahar, Middle Pahar, Moulavighona and Alaminpara. The distance from the Upazila headquarter is about 7 km. About 8 ft. wide RCC & HBB road passes by the sub-project site, which is connected with Cox's Bazar-Chattogram highway. Total available land area of this sub-project is 40 decimals. The school code is.99412060301 **Land ownership** The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.
Expected construction period: 24 (Twenty four months)
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted: Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is partial part of an old tin shed structure and a wash block on north-eastern side which will be replaced by the proposed new multipurpose school building within the same boundary. At north side Bar Awlia Nagar central mosque & Forkania madrasah (5m), Nalbila check post mosque (400m), Alaminpara mosque (800m), Nalbila beel (900m); at south side Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard (500m); at east side Bar Awlia Nagar Moulavighona Madrasah

(750m), Moulavighona mosque & Hafezkhana (910m), Purbo Nalbila beel (950m) and at west side Vora khal (15m), Chakaria Govt. College (400m), Chakaria University College (800m), Jahirpara jame mosque (800m), Amzadia jame mosque (850m), Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage (850), Chakaria Forest office (1km), Food godown (1km) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

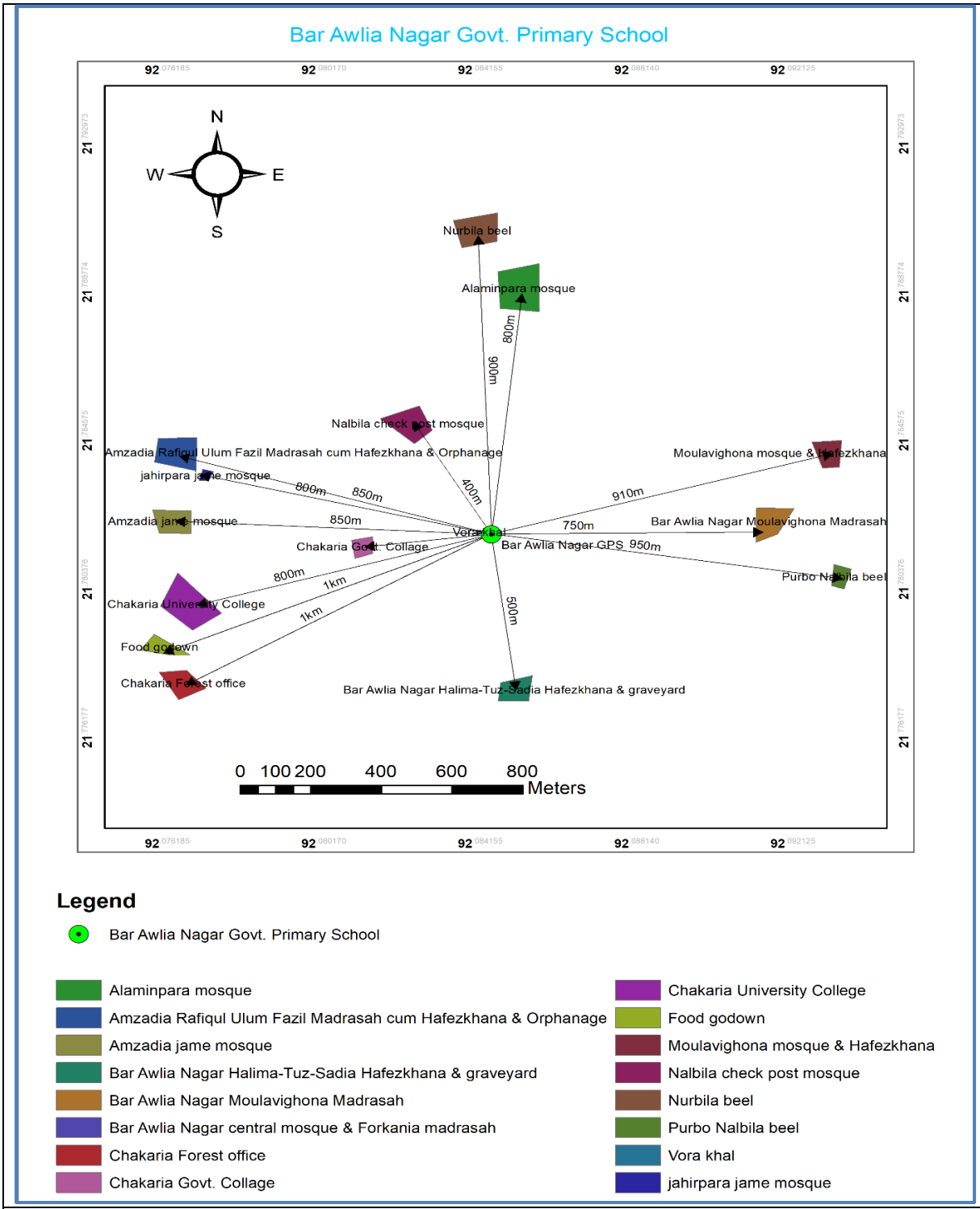
Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side Bar Awlia Nagar central mosque & Forkania madrasah (5m), Nalbila check post mosque (400m), Alaminpara mosque (800m), Nalbila beel (900m); at south side Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard (500m); at east side Bar Awlia Nagar Moulavighona Madrasah (750m), Moulavighona mosque & Hafezkhana (910m), Purbo Nalbila beel (950m) and at west side Vora khal (15m), Chakaria Govt. College (400m), Chakaria University College (800m), Jahirpara jame mosque (800m), Amzadia jame mosque (850m), Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage (850), Chakaria Forest office (1km), Food godown (1km) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Legend

- Bar Awlia Nagar Govt. Primary School
- Alaminpara mosque
- Amzadia Rafiqul Ulum Fazil Madrasah cum Hafezkhana & Orphanage
- Amzadia jame mosque
- Bar Awlia Nagar Halima-Tuz-Sadia Hafezkhana & graveyard
- Bar Awlia Nagar Moulavighona Madrasah
- Bar Awlia Nagar central mosque & Forkania madrasah
- Chakaria Forest office
- Chakaria Govt. Collage
- Chakaria University College
- Food godown
- Moulavighona mosque & Hafezkhana
- Nalbila check post mosque
- Nurbila beel
- Purbo Nalbila beel
- Vora khal
- jahirpara jame mosque

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, high school, college, temple, garrage and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of

elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 800 feet. Teachers and students are consuming water from this tube-well. In the sub-project area, deep groundwater is salty but arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 650-850ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.21 to 6.9 mg/l, Cl^--6.0 to 225mg/l, Salinity- 0.11 to 0.63mg/l and As-Nil (DPHE Test

Report, 2021)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): About 8ft. wide RCC & HBB road is passing by the west side of the sub-project. It is connected with Cox's Bazar-Chattogram highway. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 800 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the south side of the school boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 8ft. wide RCC & HBB Bar Awlia Nagar village connecting road is the main way for

transportation of raw materials. It is located on west side of adjacent to the sub-project and connected to Cox's Bazar – Chattogram highway.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, west side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 12 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito

breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though a khal named vora khal at 15m on west side is found which are outside of the construction area, these will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent RCC & HBB road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) Vora khal (15m) is near to the subproject area but no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is situated near to a locality. A RCC & HBB road connects the sites with highway.

During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • A mosque is located nearby the school boundary so labor camp needs to be set up in such a location that the mosque is not disturbed in any way.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)		Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Demolishing of existing structure	Under the sub-project intervention the overall score is Medium	• Water spraying at the demolition site • Fencing / Installing barriers should be shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Do not accumulate and burn waste at the site • Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders • It needs to Identify proper location to dispose solid waste from demolition and other activities in consultation with respective bodies • Make mandatory the use of safety gears	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			(helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. • Further guidance on demolition works and wastes management is given in the appendix 2, below the ESMP table, to be followed by the contractor.			
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing equipment and sound	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	mitigation measures.					
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles,	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.			
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials).	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Bar Awlia Nagar GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction	Site Selection &	• Selection of sub-project sites and all implementing	PIU	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	implementing interventions: Human-elephant conflict	interventions must take place outside of the elephant corridor/influence area.		Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction	Labour Base Camp:	• Awareness building session will be undertaken about	Contractor	Social

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	Conflicts with the local residents	prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through consultation.		Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of	• Provision to proper measure of mitigation and monitoring to	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. • Health & Safety risks to workers and local community	minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.		PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter, and	SMC	UNO, Upazila Chairman of Upazila Parishad

Demolition and Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For demolition works:

- All electric, gas, water, sewer, and other energy services or power lines shall be capped/blinded and/or otherwise cut before the commencement of demolition work.
- All asbestos, insulation materials, glass and other hazardous materials and substances shall be removed. Such materials shall not be stored within the structure to be demolished.
- Openings and weak flooring shall be prominently marked or barricaded before the commencement of demolition. Operators of machinery and equipment and workers involved in demolition work shall be informed of such hazardous location.
- Demolition work shall commence from the top of a structure and progress downward.
- Proper entrances of adequate strength to protect workers from falling materials shall be erected for access into the structure.
- The entire demolition site shall be effectively barricaded with appropriate safety signs displayed.

- The lower floor where demolition wastes are collected shall be properly barricaded and guarded to prevent materials from ricocheting and injuring workers or passer-by.
- Excessive debris shall not be allowed to accumulate inside a demolished structure. All demolition waste and debris shall be cleared from the work site on a daily basis.
- Refuse containers shall be provided at worksite for the storage of demolition wastes and debris.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, D&SC, +8801714980171

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000 Tk.*24	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**509,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময়: বেলা ২:১৫ ঘটিকা — তারিখ: 26/১০/২০২১ইং

স্কুলের নাম: বার আউলিয়া নগর দক্ষিণ প্রাথমিক বিদ্যালয়

স্কুল আইডি নম্বর: ৯৯৪১২০১৫০৬০২

মত বিনিময় স্থান: স্কুলের শ্রেণী কক্ষ

গ্রাম: বার আউলিয়া নগর দক্ষিণ পাহাড় — ওয়ার্ড নং: ০২ — ইউনিয়ন: জালিয়া — ডাকঘর: চকোরিয়া ৪৭৪১

উপজেলা: চকোরিয়া — জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/মহিলা	গ্রাম	স্বাক্ষর/টিপসই
০১	মনোয়ারা বেগম	৩৯	নারী	বার আউলিয়া নগর	মনোয়ারা
০২	রোজিনা আক্তার	২৭	"	"	রোজিনা আক্তার
০৩	জেন্নাতুল ফেরদৌস	৩০	"	"	জেন্নাতুল ফেরদৌস
০৪	হোসন আলী	৬২	পুরুষ	"	হোসন আলী
০৫	মোঃ কালো	৬০	"	"	
০৬	মো: নুরুজ্জামান	৮০	"	"	
০৭	মো: জেকরিয়া	৬৩	"	"	জাকারিয়া
০৮	মো: আবু তৈয়দ	৫৫	"	"	আবুতৈয়দ
০৯	মো: বদি আলম	৬৫	"	"	
১০	মো: আব্দুল মতলব	৪৫	"	"	আব্দুল মতলব
১১	মো: মিনহাজ উদ্দিন	২৮	"	"	মিনহাজউদ্দিন
১২	মো: আব্দুল মালেক	৫৬	"	"	আব্দুল মালেক
১৩	মো: রুহুল কাদের	৫৫	"	"	রুহুল কাদের
১৪	মো: আলী আহমদ	৬৫	"	"	
১৫	মো: আব্দুল করিম নবী	৬৫	"	"	আবদুলকরিমনবী
১৬	মো: আবুল কাশেম	৭৫	"	"	আবুল কাশেম

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ২:১৫ মিনিট তারিখ: 26/10/2022 ইং,
স্কুলের নাম: হার আইলিয়া নগর সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ৯৯৪১২০৬০৩০২
মত বিনিময় স্থান: স্কুলের শ্রেণী কক্ষ
গ্রাম: হার আইলিয়া নগর দক্ষিণ পাহাড় ওয়ার্ড নং: ০১ ইউনিয়ন: কাদার ডাকঘর: টেকোরিয়া ৪৭৪১
উপজেলা: টেকোরিয়া জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	রফিক আহমদ	৫৮	পুরুষ	হার আইলিয়া নগর	রফিক বড় আছিমা
১৮	মাস্টার ইকবাল	৫৫	"	"	ইকবাল
১৯	মোহাম্মদ কালু	৭৫	"	"	
২০	লাল মিয়া	৭৬	"	"	লাল মিয়া
২১	সোনা মিয়া	৬৫	"	"	
২২	আবুল হাশেম	৬৪	"	"	আবুল হাশেম
২৩	মোঃ রফিক	৫৫	"	"	মোঃ রফিক
২৪	মোঃ জামাল হোসেন	৪৫	"	"	
২৫	মোঃ আবুল মুরুব্বি	২৯	"	"	
২৬	মোঃ আবুল হাকিম	৪৩	"	"	আবুল কাশেম
২৭	আওলানা নুরুল আমিন	৬৮	"	"	নুরুল আমিন
২৮	কিসা মনি	২৩	নারী	-	কিসা
২৯	রহিমা আক্তার আরিন	৩২	নারী	সহকারি শিঃ	
৩০	আরিফা আক্তার	৪৩	"	"	আরিফা
৩১	ইয়াসিন জালালিন	৪২	পুরুষ	"	
৩২	আবুল আইয়াস	৪০	"	"	আবুল

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ২:১৫ মিনিট তারিখ: ২৮/০৩/২০২২ ইং

স্কুলের নাম: চার আইদিয়া নমঃ সরকারি প্রাথমিক বিদ্যালয়

স্কুল আইডি নম্বর: ৭২৪১২০৬০৩০১

মত বিনিময় স্থান: স্কুলের দক্ষিণ পাশে

গ্রাম: চার আইদিয়া নমঃ দক্ষিণ পাড়া ওয়ার্ড নং: ০১ ইউনিয়ন: কোরোবা ডাকঘর: চকোরিয়া ৪৭৪১

উপজেলা: চকোরিয়া জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
৩৩	মোঃ আবদুল মোনাফ	৬০	পুরুষ	চার আইদিয়া নগর	
৩৪	আবু তালাম	৭৫	"	"	
৩৫	জহির আহমদ	৫৫	"	"	
৩৬	হাবিবুর রহমান	৭০	"	"	
৩৭	জাফর আলম	৬০	"	"	
৩৮	মোঃ নুরুল আলম	৬৫	"	"	
৩৯	মোঃ নাসিরুল আলম	৬৬	"	"	
৪০	মোঃ নুরুল আলম	৭৬	"	"	
৪১	মোঃ তাহাজ্জোহুসন	৬৮	"	"	
৪২	মোঃ সাহিদুল ইসলাম	৪৩	"	প্র/বিদ	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Dineshpur Govt. Primary School
Educational Institution ID: 99412020704
Village: Dineshpur; Union: Shaplapur; Upazila: Moheshkhali
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Shaplapur union of Moheshkhali Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Dineshpur, Kubdiapara, Uttarpara,

Zoompara, Purbopara, Laillarchara, Itkholapara, Kaniar jhiri, Tilapara and Keyabonpara. Typical rural settings of the area offer farmer to be in the prime professional engagement, while the day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,350 households, containing 5,100 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Dineshpur GPS
Educational Institute ID	99412020704
District	Cox's Bazar
Upazila	Moheshkhali
Union	Shaplapur
Owner of land	GPS
Catchment household	1,350
Catchment Population	5,100 (Male: 2,540, Female: 2,560)
Profession	Farmer 60%, Day labor 30%, Fisherman 8% and others 2%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Dineshpur, Kubdiapara, Uttarpara, Zoompara, Purbopara, Laillarchara, Itkholapara, Kaniar jhiri, Tilapara and Keyabonpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	An 8 ft. wide HBB Zoompara village connecting road on north side of the proposed sub-project site which connected with Gorakghata-Shaplapur-Janata Bazar Road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Dineshpur GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1

Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North side of Moheshkhali Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 8 ft. wide HBB Zoompara village connecting road on north side of the proposed sub-project site which connected with Gorakghata-Shaplapur-Janata Bazar Road. There are some socio-environmental features, such as Dineshpur Baitul Aman Mosque at 40m, Dineshpur graveyard at 350m, Dineshpur Uttarkul Puraton Mosque at 500m, Moulavipara mosque & graveyard at 500m, Laillar chora khal at 500m, Taillapara graveyard at 700m and Dineshpur forest bit office at 800m are located on north side of the proposed sub-project site. On the south side Dineshpur Ashrayan at 300m, Kutubdiapara Mosque & graveyard at 500m and Chitar jhiri khal at 750m are located from the sub-project site. Water development board embankment at 350m, Coastal Forest at 360m and Moheshkhali channel at 400m are located on east side. There are important environmental interventions such as 12 no. hill at 200m and Social Forest at 210m on hill located on west side from the sub-project location.

The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Moheshkhali
Union	Shaplapur
GPS position	21.597639 N and 91.981222 E
Distance from Upazila HQ	10 km
Nearby major road	An 8 ft. wide HBB Zoompara village connecting road on north side which is connected with Gorakghata-Shaplapur-Janata Bazar Road.
Nearby river/canal	Laillar chora khal at 500m and Lafar Khal at 1km distance on north side, Chitar jhiri khal at 750m on south side and Moheshkhali channel at 400m on east side of the sub-project component.
North-Eastern side	Pekua Upazila
North-Western side	Kutubdia Channel and Kutubdia Upazila
South side	Bay of Bengal
South-Eastern side	Cox's Bazar Sadar Upazila
East side	Moheshkhali Channel, Chakaria Upazila and Cox's Bazar Sadar Upazila
West side	Bay of Bengal

[Sources of data: Field survey, 2021]

Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

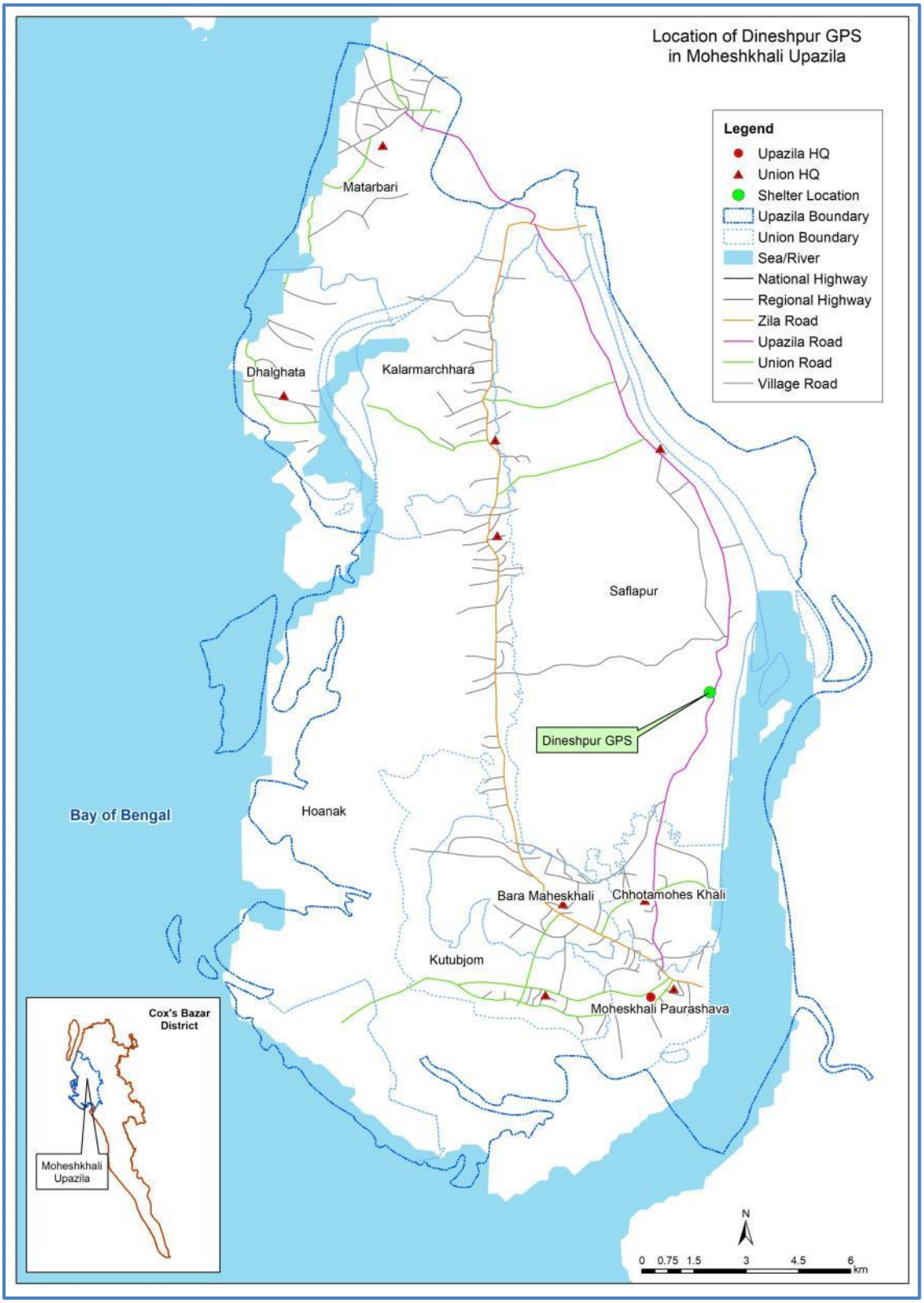


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Dineshpur Baitul Aman Mosque (40m), Dineshpur graveyard (350m), Dineshpur Uttarkul Puraton Mosque (500m), Moulavipara mosque & graveyard (500m), Laillar chora khal (500m), Taillapara graveyard (700m), Dineshpur forest bit office (800m), Kaydabad Bazar (1km), Lafar Khal (1km)
South side	Dineshpur Ashrayan (300m), Kutubdiapara Mosque & graveyard (500m), Chitar jhiri khal (750m)
East side	Water development board embankment (350m), Coastal Forest (360m), Moheshkhali channel (400m)
West side	12 no. hill (200m), Social Forest on hill (210m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site (the proposed building will be constructed behind the existing school building)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 25 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 22 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Dineshpur GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time.

Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.

- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 25 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. A road named Zoompara

village connecting road (8 ft. wide HBB) is located on the north side which is connected to Gorakghata-Shaplapur-Janata Bazar Road. There are some socio-environmental features, such as Dineshpur Baitul Aman Mosque at 40m, Dineshpur graveyard at 350m, Dineshpur Uttarkul Puraton Mosque at 500m, Moulavipara mosque & graveyard at 500m, Laillar chora khal at 500m, Taillapara graveyard at 700m and Dineshpur forest bit office at 800m are located on north side from the proposed sub-project. On the south side Dineshpur Ashrayan at 300m, Kutubdiapara Mosque & graveyard at 500m and Chitar jhiri khal at 750m from the sub-project location. Water development board embankment at 350m, Coastal Forest at 360m and Moheshkhali channel at 400m are located on east side of the sub-project. On the west site some environmental features are located such as, 12 no. hill at 200m and Social Forest at 210m on hill from the sub-project site. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and o outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. No trees will be cut down due to the construction activities of this Subproject. All the socio-economic and environmental features and establishments locating within close proximity such as Dineshpur Baitul Aman Mosque at 40m, Dineshpur graveyard at 350m, Dineshpur Uttarkul Puraton Mosque at 500m, Moulavipara mosque & graveyard at 500m, Taillapara graveyard at 700m and Dineshpur forest bit office at 800m are located on north side from the proposed sub-project. On the south side Dineshpur Ashrayan at 300m and Kutubdiapara Mosque & graveyard at 500m from the sub-project location. Water development board embankment at 350m and Coastal Forest at 360m are located on east side of the sub-project. Some surface water sources such as Laillar chora khal at 500m and Lafar Khal at 1km on north side, Chitar jhiri khal at 750m on south side and Moheshkhali channel at 400m distance on east side are located from the sub-project might not get affected during construction activities due to fair distances from the construction location. About 15 ft. wide BC road named Gorakghata-Shaplapur-Janata Bazar Road passing by the sub-project component on east side. On the west site some environmental features are located such as, 12 no. hill at 200m and Social Forest at 210m on hill from the sub-project site. A mosque named Dineshpur Baitul Aman Mosque at 40m on north side and human settlements as well as existing vegetations around the proposed construction site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual

management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.

b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of

operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Moheshkhali will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness

campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Dineshpur GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 814,062,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox's Bazar **Sub-District**: Moheshkhali **Union**: Shaplapur
Name of Community/Local Area: Dineshpur
Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, there are two-story buildings, one deep Tubewell and two wash blocks are found. The new school cum disaster shelter will be constructed on vacant places in the identified location of the sub-project component. A road named Zoompara village connecting road (8 ft. wide HBB) is located on the north side which is connected to Gorakghata-Shaplapur-Janata Bazar Road. Dineshpur Baitul Aman Mosque at 40m, Dineshpur graveyard at 350m, Dineshpur Uttarkul Puraton Mosque at 500m, Moulavipara mosque & graveyard at 500m, Laillar chora khal at 500m, Taillapara graveyard at 700m and Dineshpur forest bit office at 800m are located on north side of the proposed sub-project site. On the south side Dineshpur Ashrayan at 300m, Kutubdiapara Mosque & graveyard at 500m and Chitar jhiri khal at 750m are located from the sub-project site. Water development board embankment (350m), Coastal Forest (360m) and Moheshkhali channel (400m) are located on east side. There are important environmental interventions such as 12 no. hill at 200m and Social Forest are located at 210m west on top of the hill of the sub-project location. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments
People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public

consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new school cum disaster shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. An 8 ft. wide HBB Zoompara village connecting road is passing near by the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On the north side Dineshpur Baitul Aman Mosque (40m), Dineshpur graveyard (350m), Dineshpur Uttarkul Puraton Mosque (500m), Moulavipara mosque & graveyard (500m), Laillar chora khal (500m), Taillapara graveyard (700m), Dineshpur forest bit office (800m), Kaydabad Bazar (1km), Lafar Khal (1km); on south side Dineshpur Ashrayan (300m), Kutubdiapara Mosque & graveyard (500m), Chitar jhiri khal (750m); on east side Water development board embankment (350m), Coastal Forest (360m), Moheshkhali channel (400m) and on west side 12 no. hill (200m), Social Forest on hill (210m) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions: A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.
Sub-project Location: The sub-project area is situated in Shaplapur Union under Moheshkhali Upazila of Cox's Bazar district. The sub-project area is located at 21.597639 N and 91.981222 E. Catchment villages of this sub-project area are Dineshpur, Kubdiapara, Uttarpara, Zoompara, Purbopara, Laillarchara, Itkholapara, Kaniar jhiri, Tilapara and Keyabonpara. The distance from the Upazila headquarter is about 10 km. A 15 ft. wide BC road named Gorakghata-Shaplapur-Janata Bazar Road is passing by the sub-project site. Total available land area of this sub-project is 40 decimals. The school code is .99412020704 **Land ownership** The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.
Expected construction period: 24 (Twenty four months)
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted: Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. At north side Dineshpur Baitul Aman Mosque (40m), Dineshpur graveyard (350m), Dineshpur

Uttarkul Puraton Mosque (500m), Moulavipara mosque & graveyard (500m), Laillar chora khal (500m), Taillapara graveyard (700m), Dineshpur forest bit office (800m), Kaydabad Bazar (1km), Lafar Khal (1km); at south side Dineshpur Ashrayan (300m), Kutubdiapara Mosque & graveyard (500m), Chitar jhiri khal (750m); at east side Water development board embankment (350m), Coastal Forest (360m), Moheshkhali channel (400m) and at west side 12 no. hill (200m), Social Forest on hill (210m) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

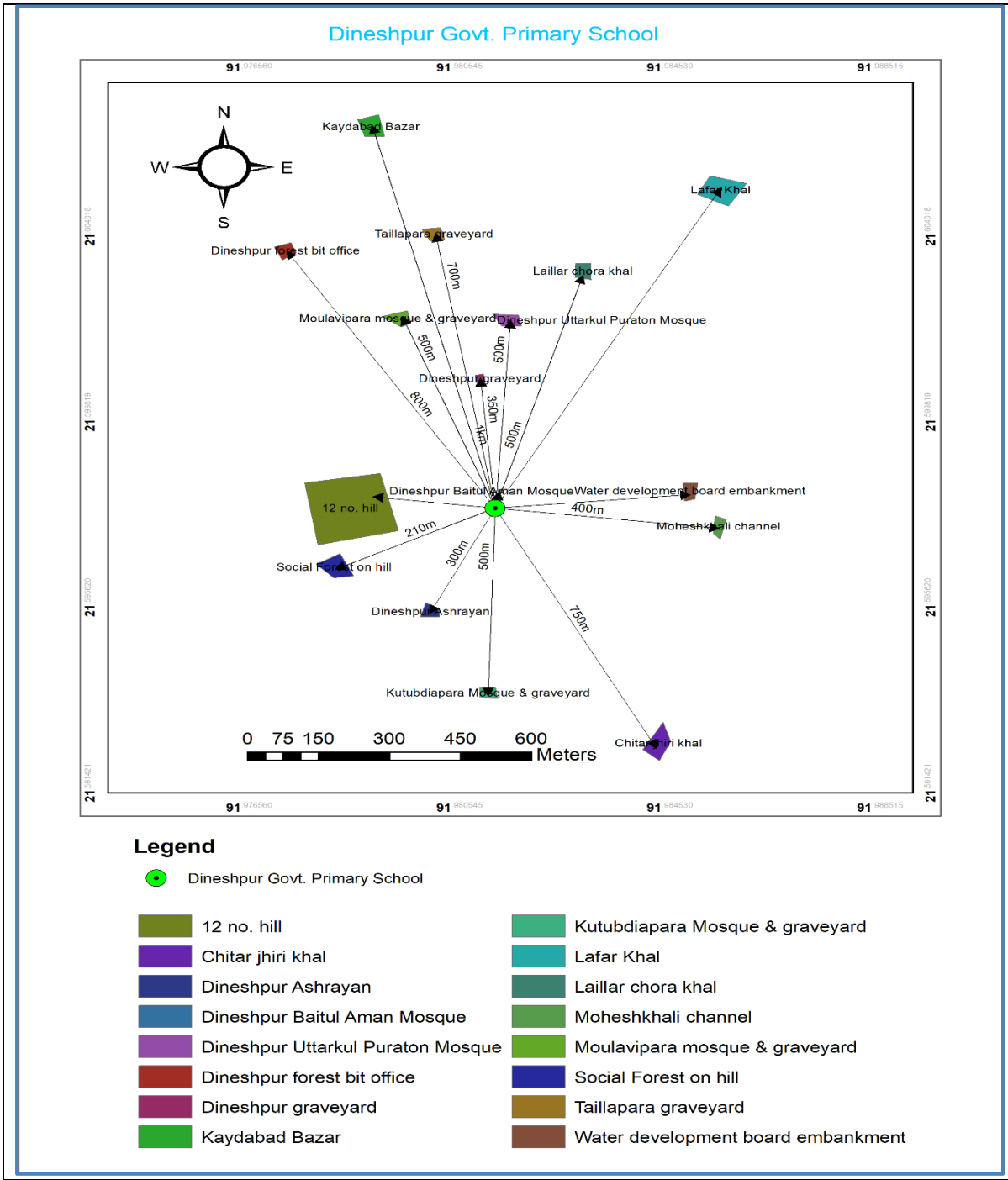
Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side Dineshpur Baitul Aman Mosque (40m), Dineshpur graveyard (350m), Dineshpur Uttarkul Puraton Mosque (500m), Moulavipara mosque & graveyard (500m), Laillar chora khal (500m), Taillapara graveyard (700m), Dineshpur forest bit office (800m), Kaydabad Bazar (1km), Lafar Khal (1km); at south side Dineshpur Ashrayan (300m), Kutubdiapara Mosque & graveyard (500m), Chitar jhiri khal (750m); at east side Water development board embankment (350m), Coastal Forest (360m), Moheshkhali channel (400m) and at west side 12 no. hill (200m), Social Forest on hill (210m) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, temple, madrasah, high school, UP office and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February

2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The aquifer depth is about 600 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 450-700ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.08 to 4.6 mg/l, Cl^--8.0 to 475mg/l, Salinity- 0.07 to 1.28mg/l and As-Nil (DPHE Test

Report, 2021)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): About 15ft. wide BC road named Gorakghata-Shaplapur-Janata Bazar Road is passing by the east side of the proposed sub-project. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 600 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the north side of the school boundary could be used for setting up a temporary labor camp.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 15ft. wide BC Gorakghata-Shaplapur-Janata Bazar Road is the main way for transportation of raw materials. It is located on east side of adjacent proposed sub-project site.
Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, north side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or

around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though three khals named Laillar chora khal at 500m, Lafar Khal at 1km distance on north side, Chitar jhiri khal at 750m on south side and a river named Moheshkhali channel at 400m distance on east side are found which are clearly outside of the construction area, these will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BC road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system:

(High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located near to a locality. A BC road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and

supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • A mosque is located nearby the school boundary so labor camp needs to be set up in such a location that the mosque is not disturbed in any way.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Constructio n works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)		proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.		of materials.	
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Constructio n works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for	Contractor, Environmental Specialists of	Number of complaints from	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
		overall score is low.	a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.	PIU and D&SC	stakeholders, Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject).	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.		• Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.		equipment and pollution control devices, Maintain records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		Number of walkways signage, and metal sheets placed at project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• The contractor must arrange the cancellation of all temporary services.			
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Dineshpur GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.		
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. expired/damaged batteries of solar system is to be disposed off properly (or sold to an authorized collectors/buyers, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.

- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১১.৬০ মিনিট তারিখ: ২৫/১০/২০২১ ইং

স্কুলের নাম: দিনেশপুর সরকারি প্রাথমিক বিদ্যালয়

স্কুল আইডি নম্বর: ২১৪১২০২০৭০৪

মত বিনিময় স্থান: স্কুলের শ্রেণী কক্ষ

গ্রাম: দিনেশপুর ওয়ার্ড নং: ০৯ ইউনিয়ন: সাপমারপুর ডাকঘর: সাপমারপুর ৪৭০০

উপজেলা: রামুবাজার জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	আবদুল মালেক মৌলভী	৬২	পুরুষ	দিনেশপুর	
০২.	নূর মোহাম্মদ	৫০	"	"	
০৩	মো: নূর ইসলাম	৩৮	"	"	
০৪.	ফয়জার মোহাম্মদ	৪৫	"	"	
০৫.	মোকাদ্দেছ সদস্য	৩৬	"	"	
০৬.	সকুনুল আইন	৩৮	"	"	
০৭.	জাহেদ আহমদ	৬৬	"	"	
০৮	মো: আবছারুল	৩০	"	"	
০৯.	নাজিম উল ইসলাম	৩৮	"	"	
১০	নূর মোহাম্মদ	৬৫	"	"	
১১	মুফলি আবদিল	৪৬	"	"	
১২	আনু মিয়া চৌধুরী	৭০	"	বাংলাবাজার	
১৩.	আমীর হামজা	৩৬	"	"	
১৪	মো: ফোরকান আলম	৪১	"	দিনেশপুর	
১৫	মমতা বেগম	৩৫	মহিলা	"	
১৬	জসনাতুল ফেরদৌস	৩৫	"	"	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১১.৩০ ঘটিকা তারিখ: ২৫/১০/২০২২ ইং

স্থলের নাম: দিলেশ্বর- মহাজারি- প্রাথমিক বিদ্যালয়

মত বিনিময় স্থান: স্কুলের শ্রেণী কক্ষ

গ্রাম: দিলেশ্বর ওয়ার্ড নং: ০৯ ইউনিয়ন: সাপলাপুর ডাকঘর: সাপলাপুর- ৪৭০০

উপজেলা: সুবলদণ্ডী জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	মো: জাহাঙ্গীর	২৯	পুরুষ	দিলেশ্বর	
১৮	কোলায়েত উল্লাহ	৮০	ঐ	দিলেশ্বর	
১৯	জাহাঙ্গীর	৫০	ঐ	দিলেশ্বর	
২০	বক্তিয়	৩২	ঐ	দিলেশ্বর	
২১	জসিম উদ্দিন	৪০	ঐ	দিলেশ্বর	
২২	প্রবীর দাশ	৫১	ঐ	চেয়ারম্যান	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Eidgor Govt. Primary School
Educational Institution ID: 91412040301
Village: Purbo Rajghat; Union: Eidgor; Upazila: Ramu
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Eidgor union of Ramu Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding village of Purbo Rajghat, Laingapara, Shorifpara, Charpara, Ghuinnapara, Khandakarpara, Badarmokam, Pochimpara, Tutarbill, Maizpara, Renurkul, Pashyaghona, Konarpara and Kodaliakata. Typical rural settings of the area offer farmer to be the

prime professional engagement, while the Day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,608 households, containing 5,590 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	**Eidgor GPS**
Educational Institute ID	91412040301
District	Cox's Bazar
Upazila	Ramu
Union	Eidgor
Owner of land	GPS
Catchment household	1,608
Catchment Population	5,590 (Male: 2,683, Female: 2,907)
Profession	Farmer 77%, Day labor 20%, and others 3%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Purbo Rajghat, Laingapara, Shorifpara, Charpara, Ghuinnapara, Khandakarpara, Badarmokam, Pochimpara, Tutarbill, Maizpara, Renurkul, Pashyaghona, Konarpara and Kodaliakata
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	An 18ft wide BC road named Samrat Shah Suja road on the west side which is connected to the Eidgaon-Baisari road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Eidgor GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1

Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North side of Ramu Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 18ft wide BC road named Samrat Shah Suja road on the west side which is connected to the Eidgaon-Baisari road. Eidgor Bazar central mosque & graveyard are situated within 170m; Eidgor post office is located within 180m distance on the north side of the proposed location. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ramu
Union	Eidgor
GPS position	21.570583 N and 21.570583 E
Distance from Upazila HQ	25 km
Nearby major road	An 18ft wide BC road named Samrat Shah Suja road on the west side which is connected to the Eidgaon-Baisari road.
Nearby river/canal	Eidgah khal is located at 500m distance on north side and Renur chorra khal is at 1km on south side of the sub-project.
North side	Chakaria and Cox's Bazar Sadar Upazila

South side	Ukhiya and Naikhyongchhari Upazila
East side	Naikhyongchhari Upazila
West side	Cox's Bazar Sadar and the Bay of Bengal

[Sources of data: Field survey, 2021]

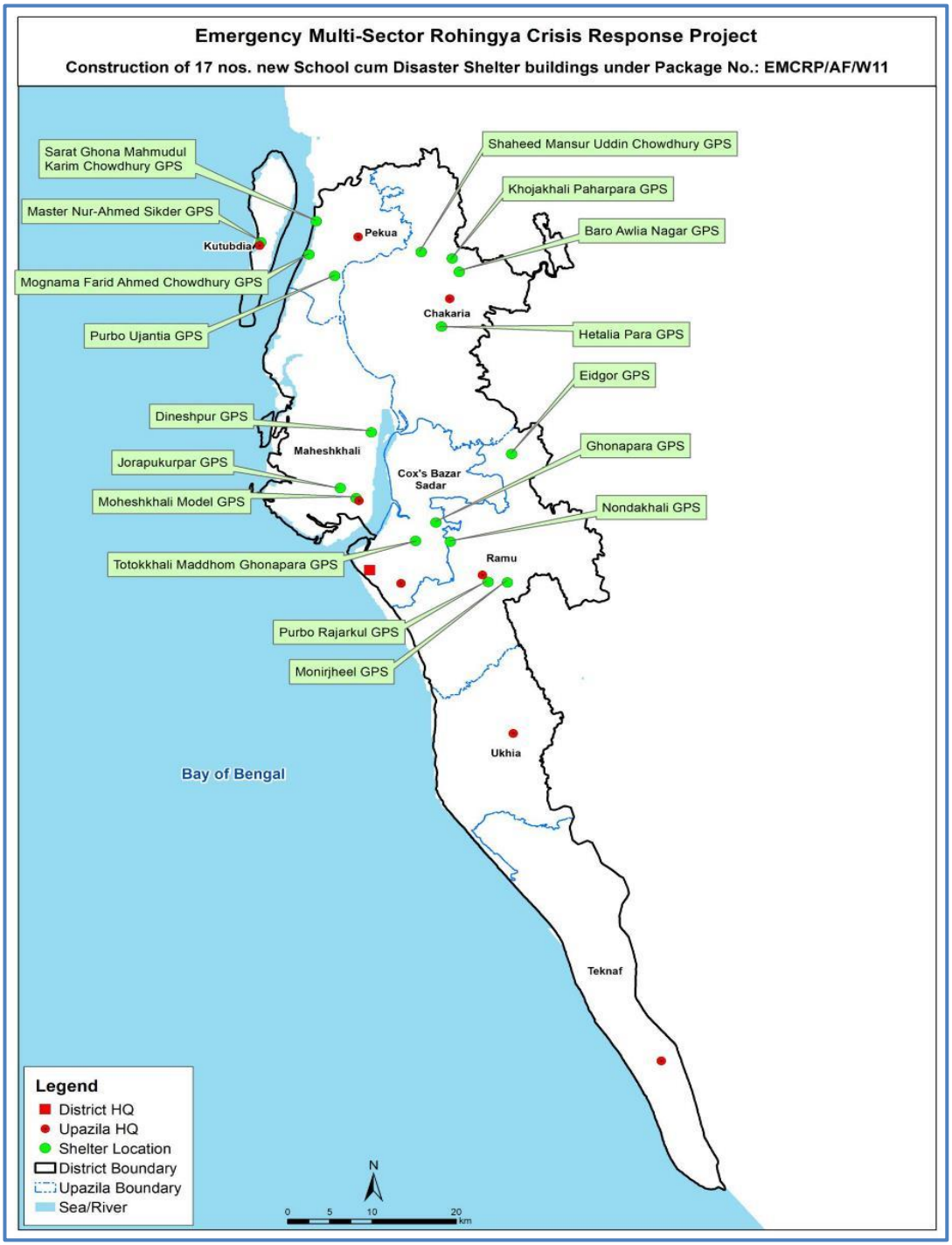


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

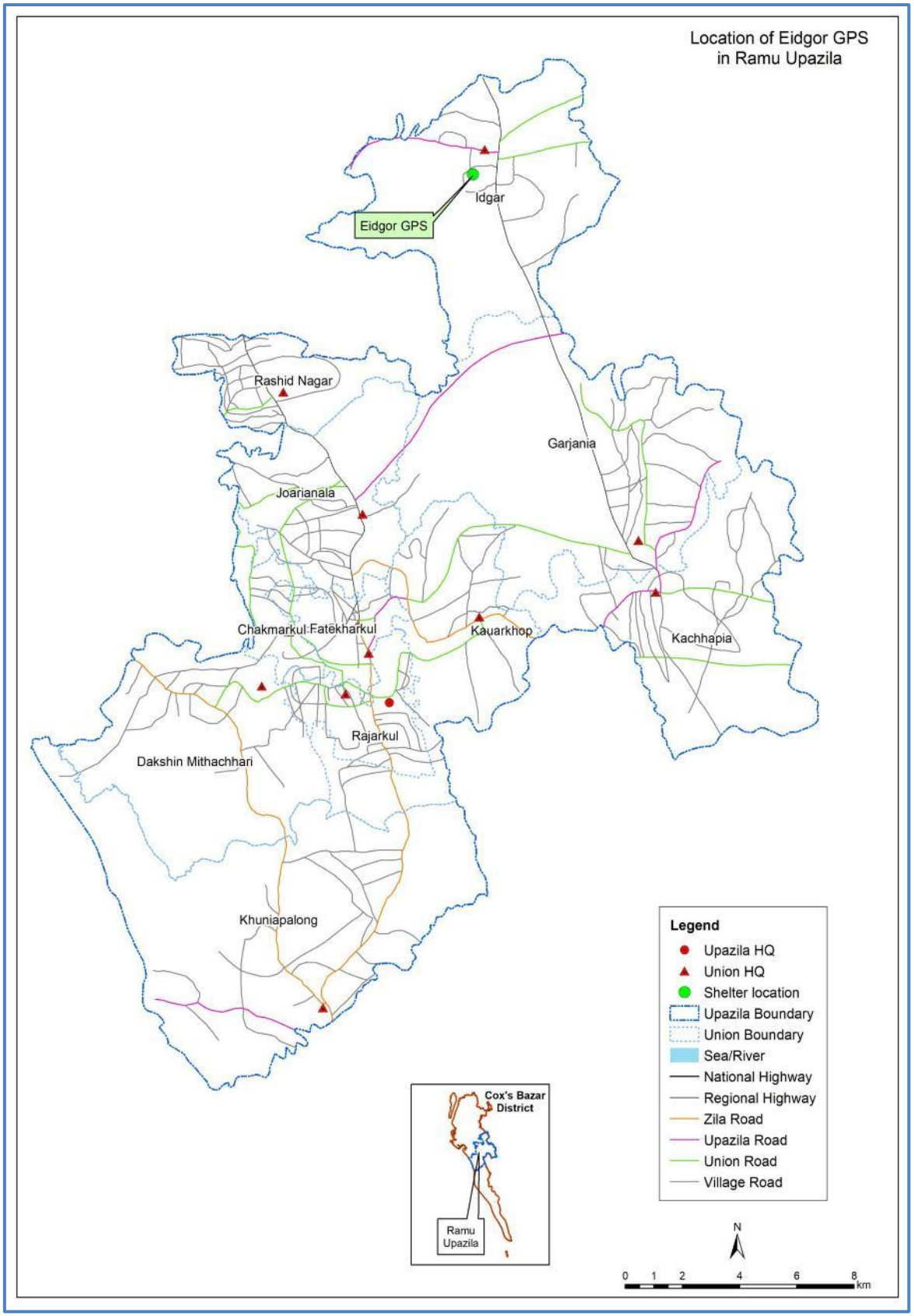


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Eidgor Bazar central mosque & graveyard (170m), Eidgor post office (180m), Eidgaon khal (500m), Charpara Tarimul Madrasah (800m), Charpara mosque (810m), Purbo Rajghat central Kali Mondir (700m), Eidgor Forest Range office (1km), Charpara Crematorium (1km)
South side	Hafizia Darul Ulum Madrasah & Orphanage (400m), Eidgor AMB High School (420m), Eidgor Polli Bidyut Sub-Station (430m), Renur Chorra khal (1km)
East side	Pond (10m), Leingapara Baitus Shorof mosque (600m), Jabbariya Nurani Academy (700m), Tailla pond (705m)
West side	Purbo Rajghat Darul Islam Ebtadeyee Madrasah (600m), Napitermora graveyard (620m), Eidgor UP office (700m), Union Agricultural office (710m), Bodormokam mosque (740m), Pond (740m), Jamia Ferdausia Dakhil Madrasah (820m), Union FWC Health complex (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 26 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 30 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Eidgor GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.

- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 26 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1.

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. There are found some socio-environmental establishment on north side, such as Eidgor Bazar central mosque & graveyard at 170m, Eidgor post office at 180m, Eidgaon khal at 500m, Charpara Tarimul Madrasah at 800m, Charpara mosque at 810m, Purbo Rajghat central Kali Mondir at 700m, Eidgor Forest Range office at

1km and Charpara Crematorium at 1km distance from the proposed site boundary. A madrasah named Hafizia Darul Ulum Madrasah & Orphanage is located at 400m, a high school named Eidgor AMB High School is at 420m and Eidgor Polli Bidyut Sub-Station is at 430m on south side of the sub-project. A pond is situated at 10m on east side which stand behind the existing school building. Leingapara Baitus Shorof mosque is located at 600m, Jabbariya Nurani Academy at 700m and Tailla pond at 705m on east side of the sub-project. There is another important foundation located on west side, like as Purbo Rajghat Darul Islam Ebtadeyee Madrasah at 600m, Napitermora graveyard at 620m, Eidgor UP office at 700m, Union Agricultural office at 710m, Bodormokam mosque at 740m, a Pond at 740m, Jamia Ferdausia Dakhil Madrasah at 820m and Union FWC Health complex at 1km from sub-project. An 18ft wide BC road named Samrat Shah Suja road on the west side which is connected to the Eidgaon-Baisari road. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to

climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down but need to be trimmed some branches of big trees outside from the school boundary. Some important socio-environmental features, such as the Eidgor Bazar central mosque & graveyard is found at 170m, Eidgor post office at 180m and Eidgaon khal at 500m on north side, Hafizia Darul Ulum Madrasah & Orphanage at 400m, a high school named Eidgor AMB High School at 420m and Eidgor Polli Bidyut Sub-Station at 430m on south side are located. A fish farming pond is found at 10m on east side which stand behind the existing school building might get affected during construction period. An 18 ft. wide BC road named Samrat Shah Suja road is passing on west side adjacent to the school boundary, two clusters of settlement at 45m on south and 80m on west side are found from the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and

relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.

d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident

Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ramu will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Eidgor GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Ramu **Union**: Eidgor

Name of Community/Local Area: Purbo Rajghat

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, there are a two-story building, 2 number of one-story buildings, one building is under construction, one Tubewell and 2 toilets. The new school cum disaster shelter building will be constructed on vacant space at west side of school boundary. About 18 ft. wide BC road named Samrat Shah Suja road is passing on the west side adjacent to the sub-project. A mosque cum graveyard named Eidgor Bazar central mosque & graveyard at 170m, Eidgor post office at 180m, Eidgaon khal at 500m from the proposed site boundary. A madrasah named Hafizia Darul Ulum Madrasah & Orphanage is located at 400m, a high school named Eidgor AMB High School is at 420m and Eidgor Polli Bidyut Sub-Station is at 430m on south side of the sub-project. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to

involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. About 18ft. wide BC road named Samrat Shah Suja road is passing near the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Eidgor Bazar central mosque & graveyard (170m), Eidgor post office (180m), Eidgaon khal (500m), Charpara Tarimul Madrasah (800m), Charpara mosque (810m), Purbo Rajghat central Kali Mondir (700m), Eidgor Forest Range office (1km), Charpara Crematorium (1km); on south side Hafizia Darul Ulum Madrasah & Orphanage (400m), Eidgor AMB High School (420m), Eidgor Polli Bidyut Sub-Station (430m), Renur Chorra khal (1km); on east side a Pond (10m), Leingapara Baitus Shorof mosque (600m), Jabbariya Nurani Academy (700m), Tailla pond (705m) and on west side Purbo Rajghat Darul Islam Ebtadeyee Madrasah (600m), Napitermora graveyard (620m), Eidgor UP office (700m), Union Agricultural office (710m), Bodormokam mosque (740m), Pond (740m), Jamia Ferdausia Dakhil Madrasah (820m), Union FWC Health complex (1km) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between.

Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people. Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:
The sub-project area is situated in Eidgor Union under Ramu Upazila of Cox's Bazar district. The sub-project area is located at 21.570583 N and 21.570583 E. Catchment village of this sub-project area are Purbo Rajghat, Laingapara, Shorifpara, Charpara, Ghuinnapara, Khandakarpara, Badarmokam, Pochimpara, Tutarbill, Maizpara, Renurkul, Pashyaghona, Konarpara and Kodaliakata. The distance from the Upazila headquarter is about 25 km. An 18 ft. wide BC road passing by the sub-project site, which is connected with Eidgaon-Baisari road. Total available land area of this sub-project is 100 decimals. The school code is.91412040301

Land ownership
The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:
Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side Eidgor Bazar central mosque & graveyard (170m), Eidgor post office (180m), Eidgaon khal (500m), Charpara Tarimul Madrasah (800m), Charpara mosque (810m), Purbo Rajghat central Kali Mondir (700m), Eidgor Forest Range office (1km), Charpara Crematorium (1km); at south side Hafizia Darul Ulum Madrasah & Orphanage (400m), Eidgor AMB High School (420m), Eidgor Polli Bidyut Sub-Station (430m), Renur Chorra khal (1km); at east side a Pond (10m), Leingapara Baitus Shorof mosque (600m), Jabbariya Nurani Academy (700m), Tailla pond (705m) and at west side Purbo Rajghat Darul Islam Ebtadeyee Madrasah (600m), Napitermora graveyard (620m), Eidgor UP office (700m), Union Agricultural office (710m), Bodormokam mosque (740m), Pond (740m), Jamia Ferdausia Dakhil Madrasah (820m), Union FWC Health complex (1km) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities

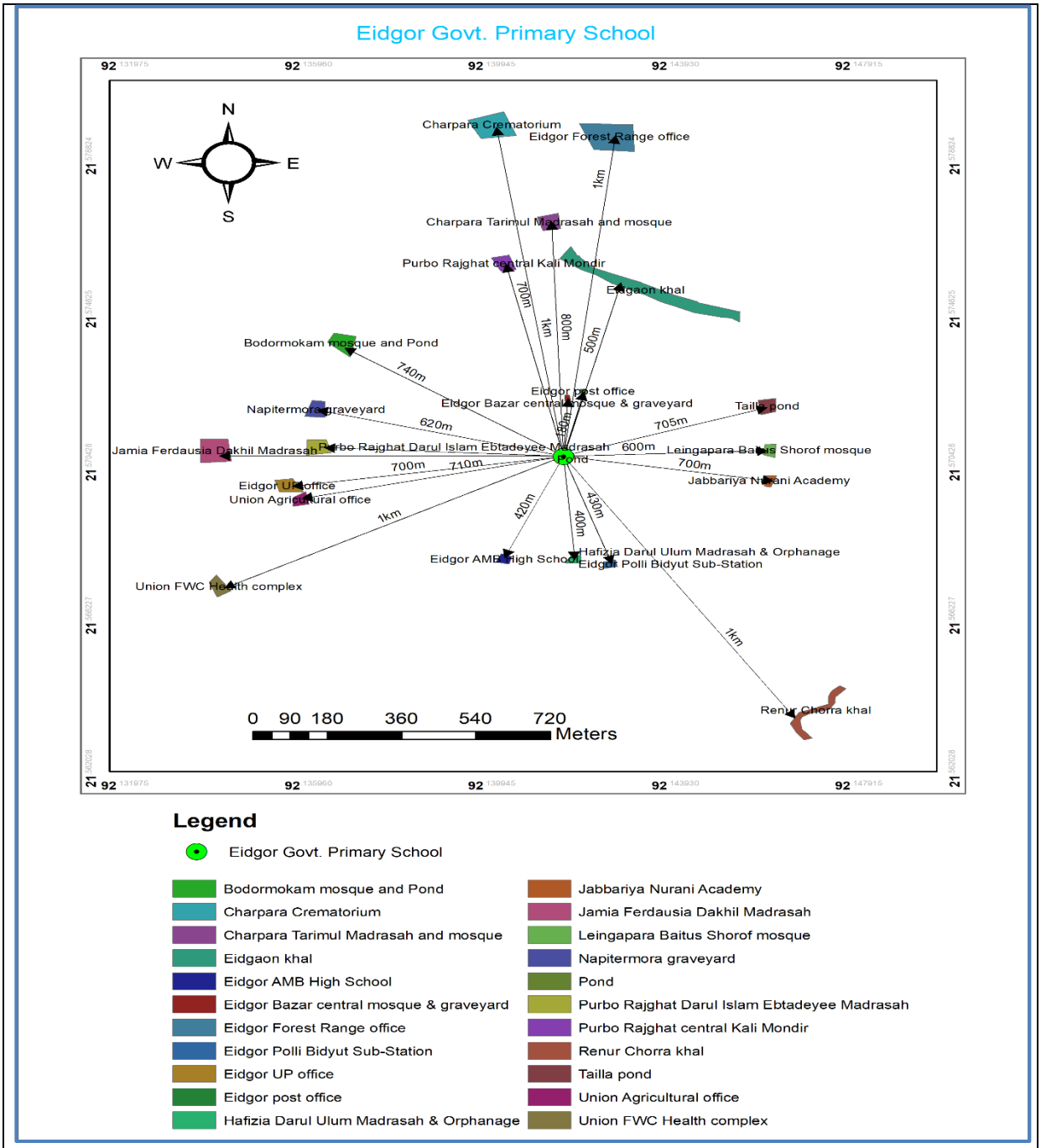
due to having sufficient distance from the proposed site.
Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
Some important socioeconomic, cultural, religious and sensitive features located within 1km from the sub project site, such as at north side Eidgor Bazar central mosque & graveyard (170m), Eidgor post office (180m), Eidgaon khal (500m), Charpara Tarimul Madrasah (800m), Charpara mosque (810m), Purbo Rajghat central Kali Mondir (700m), Eidgor Forest Range office (1km), Charpara Crematorium (1km); at south side Hafizia Darul Ulum Madrasah & Orphanage (400m), Eidgor AMB High School (420m), Eidgor Polli Bidyut Sub-Station (430m), Renur Chorra khal (1km); at east side a Pond (10m), Leingapara Baitus Shorof mosque (600m), Jabbariya Nurani Academy (700m), Tailla pond (705m) and at west side Purbo Rajghat Darul Islam Ebtadeyee Madrasah (600m), Napitermora graveyard (620m), Eidgor UP office (700m), Union Agricultural office (710m), Bodormokam mosque (740m), Pond (740m), Jamia Ferdausia Dakhil Madrasah (820m), Union FWC Health complex (1km) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February

2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One tube-well is found within the school boundary. The depth is about 70 feet. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 450-700ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An 18ft. wide BC road is passing by the west side of the sub-project. It is connected with Eidgaon-Baisari road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One tube-well is found within the school boundary and aquifer depth is about 70 feet. But the Tubewell doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: Private land owned by Jafor Alom at Maizepara village which is adjacent to the school boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 18ft. wide BC road named Samrat Shah Suja road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to Eidgaon-Baisari road.

Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, south side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 12 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or

around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though one khal named Eidgaon khal is located at 500m north side which is clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BC road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A pond is located at 10m east of the subproject but no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A BC road connects the sites with the main road

named Eidgaon-Baisari road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	students, children, animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	small area and reversible by mitigation measures.				records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies.	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes

****If yes, please specify what assessments/plans would be required.* Mention some recommendation on E&S assessment …. ESMP

If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Eidgor GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction	Labour Base Camp: Conflicts with the local	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual	Contractor	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	residents	harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction	Demobilization of	• Provision to proper measure of mitigation and monitoring to	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.		Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.

- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Ms. Sadia Azad, Disaster and Climate Change Specialist, PIU.

Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, PIU, +8801913442006

Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24 months*(1/9 one	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well should be installed at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১১:০০ ঘটিকা তারিখ: 26/10/2022

স্থানের নাম: ইদগড় সরকারি প্রাথমিক বিদ্যালয়

স্থান আইডি নম্বর: ৯১৪১২০৪০৬০৭

মত বিনিময় স্থান: বিদ্যালয়ের শ্রেণী কক্ষ

গ্রাম: পূর্ব রাজুয়াটা ওয়ার্ড নং: ০৪ ইউনিয়ন: ইদগড় ডাকঘর: ইদগড় 8902

উপজেলা: রামু জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	মোঃ রমজান আলী	৫০	পুরুষ	রাজুয়াটা	
২	ফাহের আলম জুয়েল	৩৫	পুরুষ	মাইক্যাপাড়া	
৩	(বীরমুক্তিযোদ্ধা) সিরাজুল হক	৭৫	পুরুষ	সাইক্যাপাড়া	
৪	বিহন দে	৪০	পুরুষ	পূর্বরাজুয়াটা	
৫	নুরুল আছিম	৪১	পুরুষ	পাদিস্যাখোলা	
৬	দিলোয়ারা বেগম	৪৪	মহিলা	মাইক্যাপাড়া	
৭	এস এম শহীদুল ইসলাম	৩৫	পুরুষ	থানকলা পাড়া	
৮	সাহিদা আক্তার	৪৩	মহিলা	পাদিস্যাখোলা	
৯	মেহেবুবা বুলবুল	৩২	মহিলা	উইংগ্যাচি	
১০	আলমগীর হোছাইন	৪৩	পুরুষ	পূর্বরাজুয়াটা	
১১	নুরুল আমিন	৪২	পুরুষ	উইংগ্যাচি	
১২	নুরুল আমিন	৩৯	পুরুষ	পূর্বরাজুয়াটা	
১৩	আবু বক্কর ছিদ্দিক	৪২	পুরুষ	পূর্বরাজুয়াটা	
১৪	মিজানুর আহমদ	৩৮	পুরুষ	মাইক্যাপাড়া	
১৫	নুরুল ইসলাম	৪২	পুরুষ	পূর্বরাজুয়াটা	
১৬	আবুল কালাম	৪৮	পুরুষ	পূর্বরাজুয়াটা	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
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Focus Group Discussion

সময়: বেলা ১১:০০ ঘটিকা — তারিখ: ২৫/১০/২০২১ ইং
স্থলের নাম: ইদগাড় বেতকাটি প্রাথমিক বিদ্যালয়
স্থল আইডি নম্বর: ৯১৪১২০৪০৩০১
মত বিনিময় স্থল: বিদ্যালয়ের শ্রেণী কক্ষ
গ্রাম: পূর্ব রাইখোলা — ওয়ার্ড নং: ০৪ — ইউনিয়ন: ইদগাড় — ডাকঘর: ইদগাড়-৪৭০২
উপজেলা: রামু — জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
২৭	খাইরুল আবেদ	৩৬	পুরুষ	টুইটাবিল	
২৮	আব্দুল হামিদ	৪৫	পুরুষ	ঘোনকাটা পাড়া	
২৯	মেহেরা বেগম	৩৮	মহিলা	ঘোনকাটা পাড়া	
৩০	খালেদুল ইসলাম	৪৫	পুরুষ	মাঝিপাড়া	
৩১	রফিদা বেগম	৪৪	মহিলা	চরপাড়া	
৩২	নুরুল আবছার	৩১	পুরুষ	পুইন্যাপাড়া	
৩৩	দিদারুল ইসলাম	৩৫	পুরুষ	মাঝিপাড়া	
৩৪	বদিউল আলম	৪৬	পুরুষ	মাঝিপাড়া	
৩৫	রফিদা আহমদ	৪৫	পুরুষ	বেলুনকুল	
৩৬	সামছুল আলম	৪৩	পুরুষ	পুরু পাড়া	
৩৭	তাহেরুল নাহার	২৮	মহিলা	মাইক্য পাড়া	
৩৮	রমজান আলী-০১	৩৮	পুরুষ	ফ্রেনারপাড়া	
৩৯	রমজান আলী-০২	৫৮	পুরুষ	পুইন্যপাড়া	
৪০	ফরিদ উদ্দিন	৪৭	পুরুষ	পূর্ব রাইখোলা	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Ghonapara Govt. Primary School
Educational Institution ID: 99412030102
Village: Ghonapara; Union: Bharuakhali; Upazila: Cox's Bazar Sadar
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Bharuakhali union of Cox's Bazar Sadar Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Ghonapara and Natunpara. Typical rural settings of the area offer farmer to be the prime professional engagement, while the

service holder stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 700 households, containing 4,300 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Ghonapara GPS
Educational Institute ID	99412030102
District	Cox's Bazar
Upazila	Cox's Bazar Sadar
Union	Bharuakhali
Owner of land	GPS
Catchment household	700
Catchment Population	4,300 (Male: 2,144, Female: 2,156)
Profession	Farmer 85%, Service holder 5%, Businessmen 1%, Day labor 3% and others 6%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Ghonapara and Natunpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	8 ft. wide HBB road named Ghonapara road on east side connected with 15ft. wide BC coating Bharuakhali – Rashidnagar DC road
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Ghonapara GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3

Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North-Eastern side of Cox's Bazar Sadar Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 8ft wide HBB road named Ghonapara road on the east side which is connected to the Bharuakhali-Rashidnagar DC Road. Ghanapara Central jame mosque and graveyard with a pond are situated within 10m influences on the north side of the proposed location. The location details of the Sub-project have been summarized in Table 1.4.1.

The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate persons during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Cox's Bazar Sadar
Union	Bharuakhali
GPS position	21.492525 N and 92.053636 E
Distance from Upazila HQ	40 km
Nearby major road	An 8 ft. wide HBB road named Ghonapara road on east side connected with 15ft. wide BC coating Bharuakhali – Rashidnagar DC road.
Nearby river/canal	Bakkhali River is located at 1km west side of the sub-project.
North side	Chakaria Upazila

South side	Ramu Upazila and The Bay of Bengal
East side	Ramu Upazila
West side	Maheshkhali channel, Maheshkhali Upazila and The Bay of Bengal

[Sources of data: Field survey, 2021]

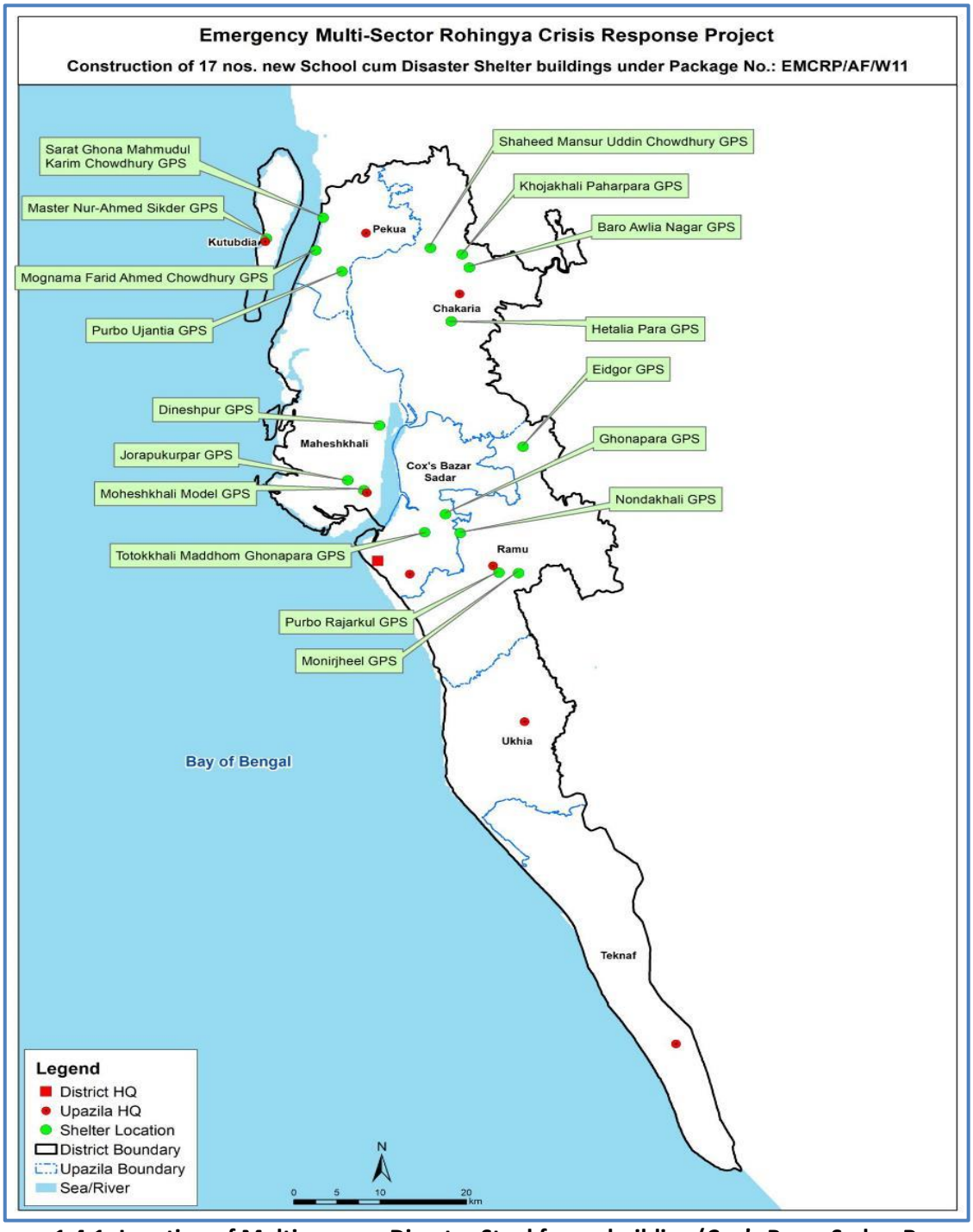


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

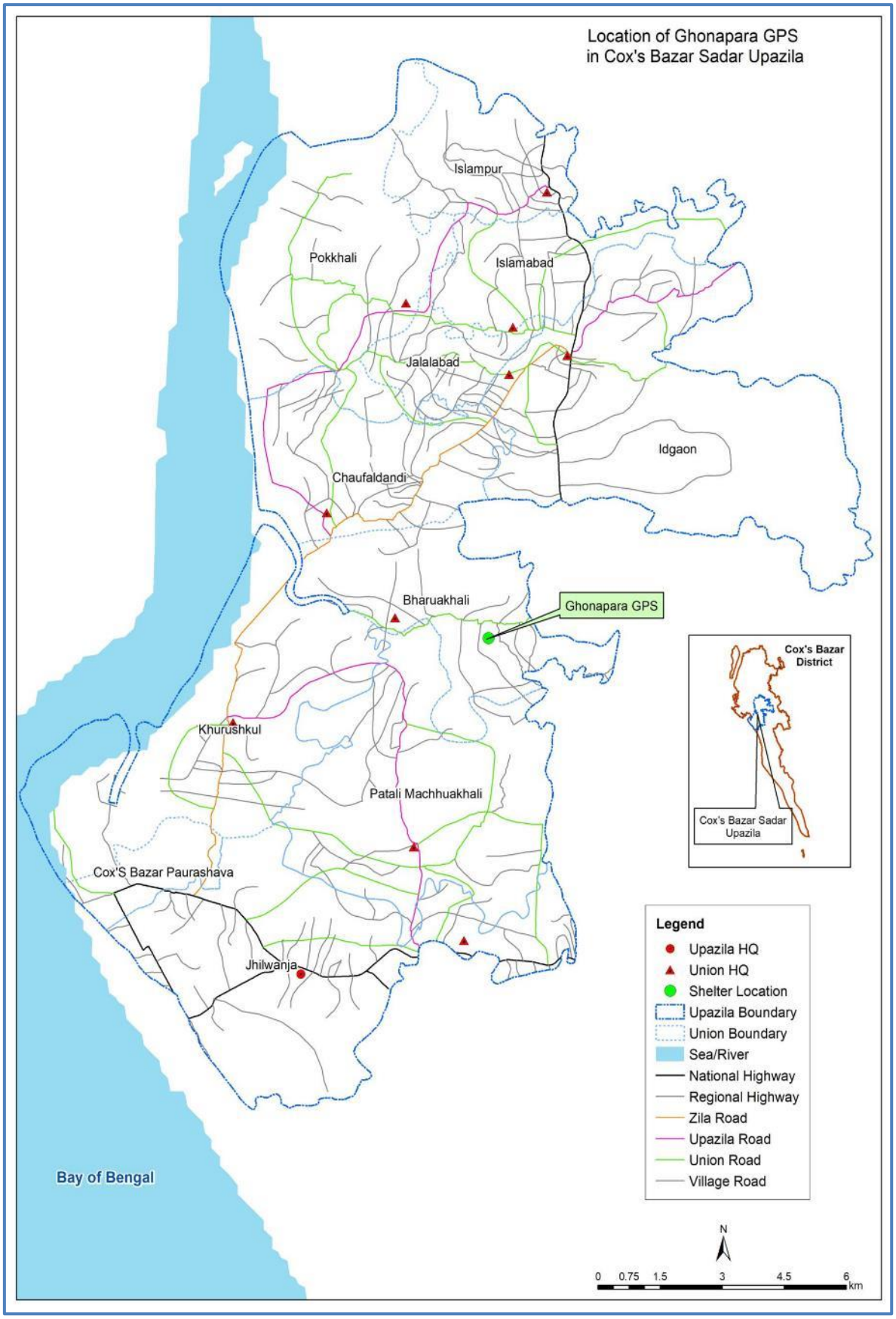


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Ghonapara Central Mosque & graveyard (10m), Pond (12m), Dip shikha Jame Mosque at north west (800m), Kalu Rowshon Dakhil Madrasah (1km)
South side	South Ghonapara Baitul Izzat Mosque (1km)
East side	Supplayear hill (200m)
West side	Dulal Master school (200m), Bakkhali river (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 24 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 24 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Ghonapara GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 24 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new school cum disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Within the close proximity to the sub-project site, Ghonapara central mosque and graveyard with a pond are found at 10m on north side, a local hill named Supplayear hill is found at 200m on east side, Kalu Rowshon Dakhil Madrasah is located at 1km on north side from the proposed site boundary. An 8ft wide HBB road named Ghonapara road is connected to the sub-project. South Ghonapara Baitul Izzat jame mosque is located at 1km on south side, and Bakkhali River is located at 1km west side of the sub-project. Some agricultural lands are found on south and east side of the sub-project. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small-scale during the construction period. Top soil in agricultural land will be avoided without any failure in earthwork and that productive part of the soil will be conserved and replaced, if underneath soil is taken from any agricultural land. No significant disturbance to all these establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil

can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this plan is to formulate measures which will mitigate adverse impacts on various environmental components and protect environmental

resources where possible and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the east side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down in the periphery of the school. Some important socio-environmental features, such as the Ghonapara central mosque and graveyard with a pond are found at 10m on the north side from the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs

of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures

are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Cox's Bazar Sadar will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed

guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Ghonapara GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Cox's Bazar Sadar **Union**: Bharuakhali

Name of Community/Local Area: Ghonapara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.: Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within the school boundary. In the school boundary, there is one-story building, a tin shed house and one deep Tubewell and a toilet are found. Ghonapara central mosque and graveyard with a pond is located at 10m distance of the sub-project. An 8ft. ft wide HBB road named Ghonapara road passing on east side from the proposed location which connected with about 1km away BC road named Bharuakhali-Rashidnagar road at north side of the sub-project. A local hill named Supplayear hill is found at 200m on east side and Bakkhali river is located at 1km on west side of the sub-project. Otherwise, no Important environmental features are found within the sub-project.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to

involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. An 8 ft. wide HBB road named Ghonapara road on the east side connected with 15ft. wide BC coating Bharuakhali – Rashidnagar DC road There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Ghonapara Central Mosque & graveyard (10m), Pond (10m), Kalu Rowshon Dakhil Madrasah (1km); on south side South Ghonapara Baitul Izzat Mosque (1km); on east side Supplayear hill (200m) and on west side Bakkhali river (1km) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to

be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Bharuakhali Union under Cox's Bazar Upazila of Cox's Bazar district. The sub-project area is located at 21.492525 N and 92.053636 E. Catchment villages of this sub-project area are Ghonapara and Natunpara. The distance from the Upazila headquarter is about 40 km. An 8 ft. wide HBB road is passing near by the sub-project site, which is connected with Bharuakhali-Rashidnagar road. Total available land area of this sub-project is 115 decimals. The school code is 99412030102

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side, Ghonapara Central Mosque & graveyard (10m), Pond (10m), Kalu Rowshon Dakhil Madrasah (1km); at south side South Ghonapara Baitul Izzat Mosque (1km); at east side Supplayear hill (200m) and at west side Bakkhali river (1km) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

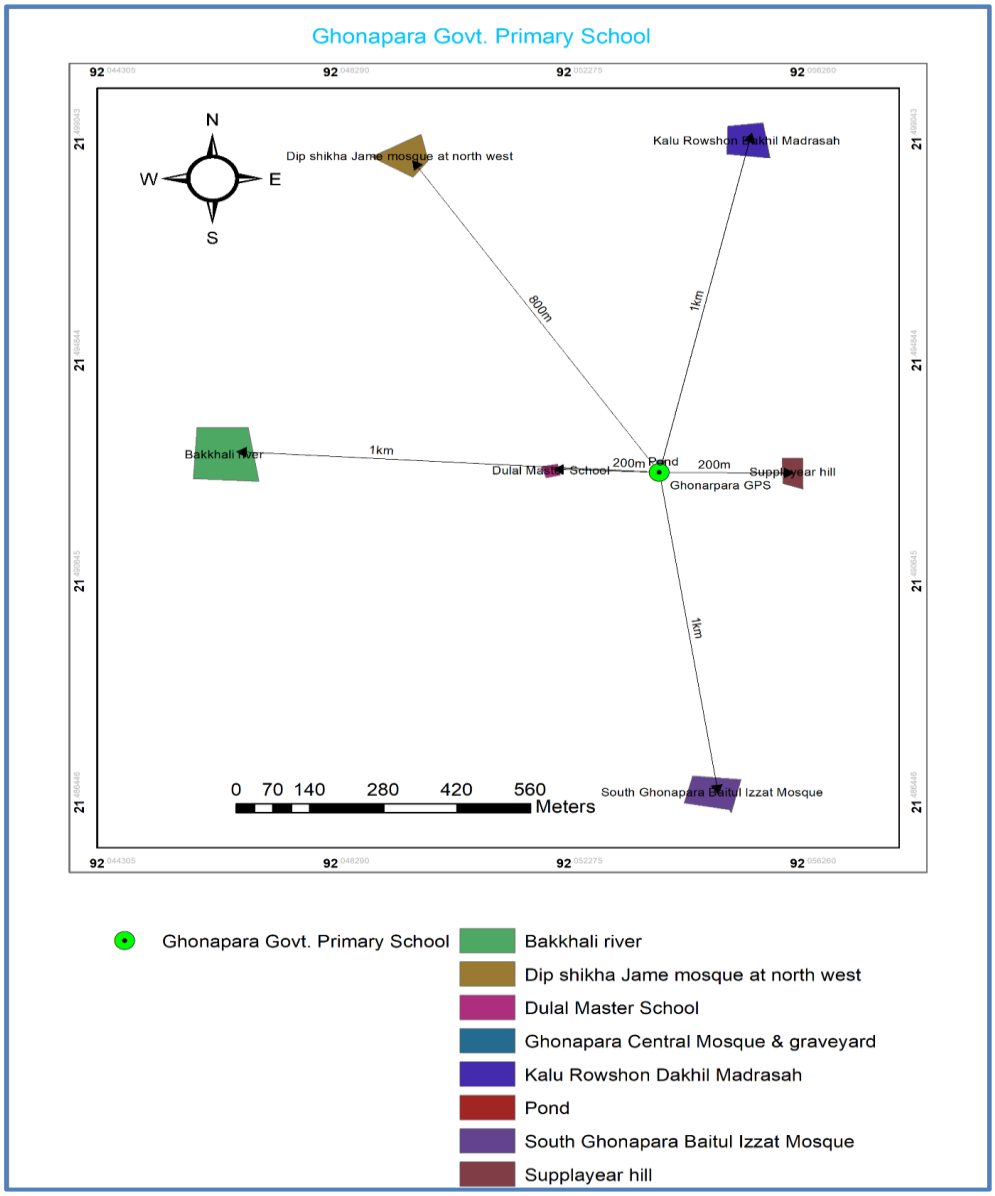
Description of cultural properties (if applicable, including distance from site):

Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious and sensitive features located within 1km from the sub project, at north side Ghonapara Central Mosque & graveyard (10m), Pond (10m), Kalu

Rowshon Dakhil Madrasah (1km); at south side South Ghonapara Baitul Izzat Mosque (1km); at east side Supplayear hill (200m) and at west side Bakkhali river (1km) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed in a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 700 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 650-800ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2021)

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An 8ft. wide HBB road is passing by the east side of the sub-project. It is connected with Bharuakhali-Rashidnagar road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 700 feet. But the tubewell is not working properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the west side within the school boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 8ft. wide HBB road named Ghonapara village connecting road is the main way for transportation of raw materials. It is located on east side of adjacent sub-project and connected to Bharuakhali-Rashidnagar road.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, north side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from

old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though one river named Bakkhali river is located at 1km west side which is clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management

practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road; the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution work is intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any

water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is situated near to a locality. A HBB road is passing near by the subproject and connects with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • A mosque is located nearby the school boundary so labor camp needs to be set up in such a location that the mosque is not disturbed in any way.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)		proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.		of materials.	
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for	Contractor, Environmental Specialists of	Number of complaints from	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
		overall score is low.	a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.	PIU and D&SC	stakeholders, Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject).	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.		• Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.		equipment and pollution control devices, Maintain records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		Number of walkways signage, and metal sheets placed at project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• The contractor must arrange the cancellation of all temporary services.			
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Ghonapara GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for	Contractor	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	stress, and dermatitis.	• Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	impacting surrounding water bodies, flora and fauna			Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			Tk.*24 months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ০১:৩০ দুপুর তারিখ: ২৪/১০/২০২১
স্থানের নাম: তোনাপাড়া সরকারী প্রাথমিক বিদ্যালয়
স্থান আইডি নম্বর: ২১৪১২০৬০১০২
মত বিনিময় স্থান: স্কুলের বারান্দায় প্রাঙ্গনে
গ্রাম: তোনাবপাড়া ওয়ার্ড নং: ০৭ ইউনিয়ন: বেরুয়াখালী ডাকঘর: চেরুয়াখালী - ৪৭০২
উপজেলা: কক্সবাজার সদর জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	জয়নাল উদ্দিন	৫০	পুরুষ	তোনাপাড়া	
২	সৈয়দ মোহাম্মদ শহীদ উল্লাহ	৪০	"	তোনা পাড়া	
৩	আদনান আকবর সেপলাদ	৪০	"	করিম সিকদার পাড়া	
৪	রহিম উল্লাহ	৪০	"	তোনাপাড়া	
৫	হাবিবুর রহমান	৫২	"	"	হাবিবুর রহমান
৬	সিদ্দুল হক	৫০	"	"	
৭	ইমরুল আলম চৌধুরী	২৭	"	"	
৮	আবুতোয়াহাব মাহিউদ্দীন	৪৮	"	"	
৯	মোহাম্মদ ইউনুছ	৫৫	"	"	
১০	মোহাম্মদ তৈয়ব	৬০	"	তোনাপাড়া	তৈয়ব
১১	তাসলিমা ফারজানা রিজভী	৩১	নারী	কাউরী পাড়া	রিজভী
১২	বেগম আনোয়ার ফিরদৌস	৫১	"	তোনাপাড়া	
১৩	আবুছ ছহিদ	৫৫	পুরুষ	"	আবুছছহিদ
১৪	জসিমউদ্দিন	৫২	"	"	
১৫	আবদুছ ছোবহান	৫৮	"	"	আবদুছছোবহান
১৬	সাইফুল ইসলাম	৪৩	"	"	সাইফুলইসলাম

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ০১:০০ দুপুর — তারিখ: ১৪/১০/২০২১
স্কুলের নাম: ঘোনারপাড়া সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ২২৪১২০৩০১০২
মত বিনিময় স্থল: স্কুলের প্রাঙ্গণে
গ্রাম: ঘোনারপাড়া — ওয়ার্ড নং: ০৭ — ইউনিয়ন: বাহারছড়া — ডাকঘর: বাহারছড়া-৪৭০২
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সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	মোহাম্মদ ইদ্রিস	৫৬	পুরুষ	ঘোনারপাড়া	
১৮	কুলিম উল্লাহ	৪৫	"	"	
১৯	মাহমুদুল হোসেন	৬২	"	"	
২০	ফকির উদ্দিন	৬০	"	"	
২১	কামাল আমদ	৬০	"	"	
২২	আবদুল মতিন	৭০	"	"	
২৩	মোস্তফা কামাল	৬২	"	"	
২৪	করিম উদ্দিন	৬২	"	"	

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Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Hetaliapara Govt. Primary School
Educational Institution ID: 99412051581
Village: Hetaliapara; Union: Chiringa; Upazila: Chakaria
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Chiringa union of Chakaria Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Hetaliapara, Mognamapara, Madrasahpara and

Panchsamiti para. Typical rural settings of the area offer farmer to be in the prime professional engagement, while the fishermen stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 800 households, containing 2,500 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Hetaliapara GPS
Educational Institute ID	99412051581
District	Cox's Bazar
Upazila	Chakaria
Union	Chiringa
Owner of land	GPS
Catchment household	800
Catchment Population	2,500 (Male: 1,300, Female: 1,200)
Profession	Farmer 80%, Fisherman 10%, Businessmen 5% and others 5%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Hetaliapara, Mognamapara, Madrasahpara and Panchsamiti para
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	An 8 ft. wide HBB road named Mognama School para road is located on the south side.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Hetaliapara GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3

Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the South side of Chakaria Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 8ft wide HBB road on the south side. There are some socio-environmental interventions, such as a Pond at 100m, Mognamapara mosque cum graveyard at 300m and another pond at 300m and fish project at 500m distances located on the south side of the proposed location. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively.

The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Chakaria
Union	Chiringa
GPS position	21.718611 N and 92.063333 E
Distance from Upazila HQ	7 km
Nearby major road	Mognama School para road
Nearby river/canal	Foshiakhali chorra is located at 500m distance on east side and a khal named Charalia khal is at 500m on west side of the sub-project component.
North side	Bashkhali & Lohagara Upazila of Chattagram district and Lama Upazila of Bandarban district.
South side	Ramu and Cox's Bazar Sadar Upazila

East side	Lama & Naikhyongchori Upazila of Bandarban district
West side	Moheshkhali and Pekua Upazila

[Sources of data: Field survey, 2021]

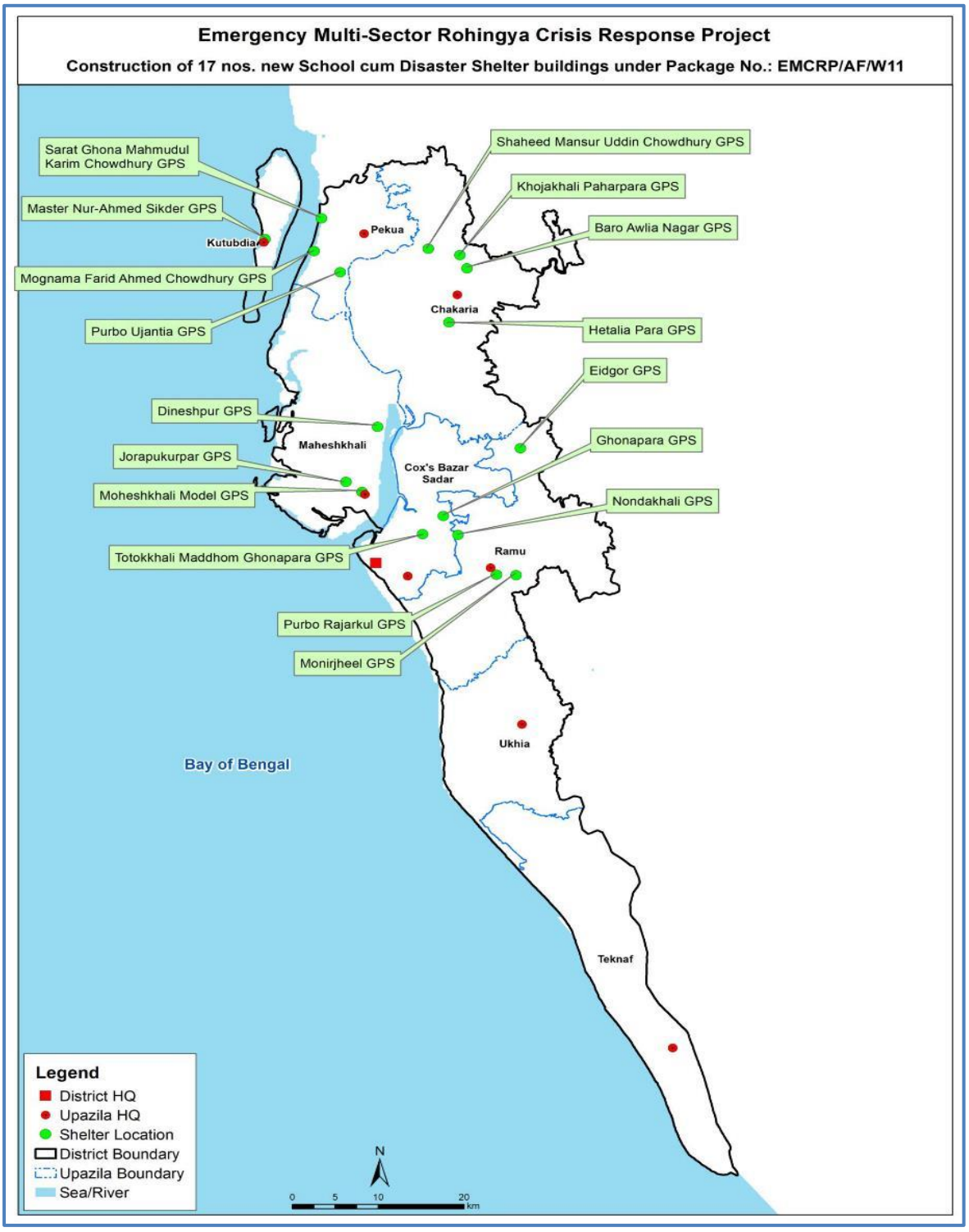


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

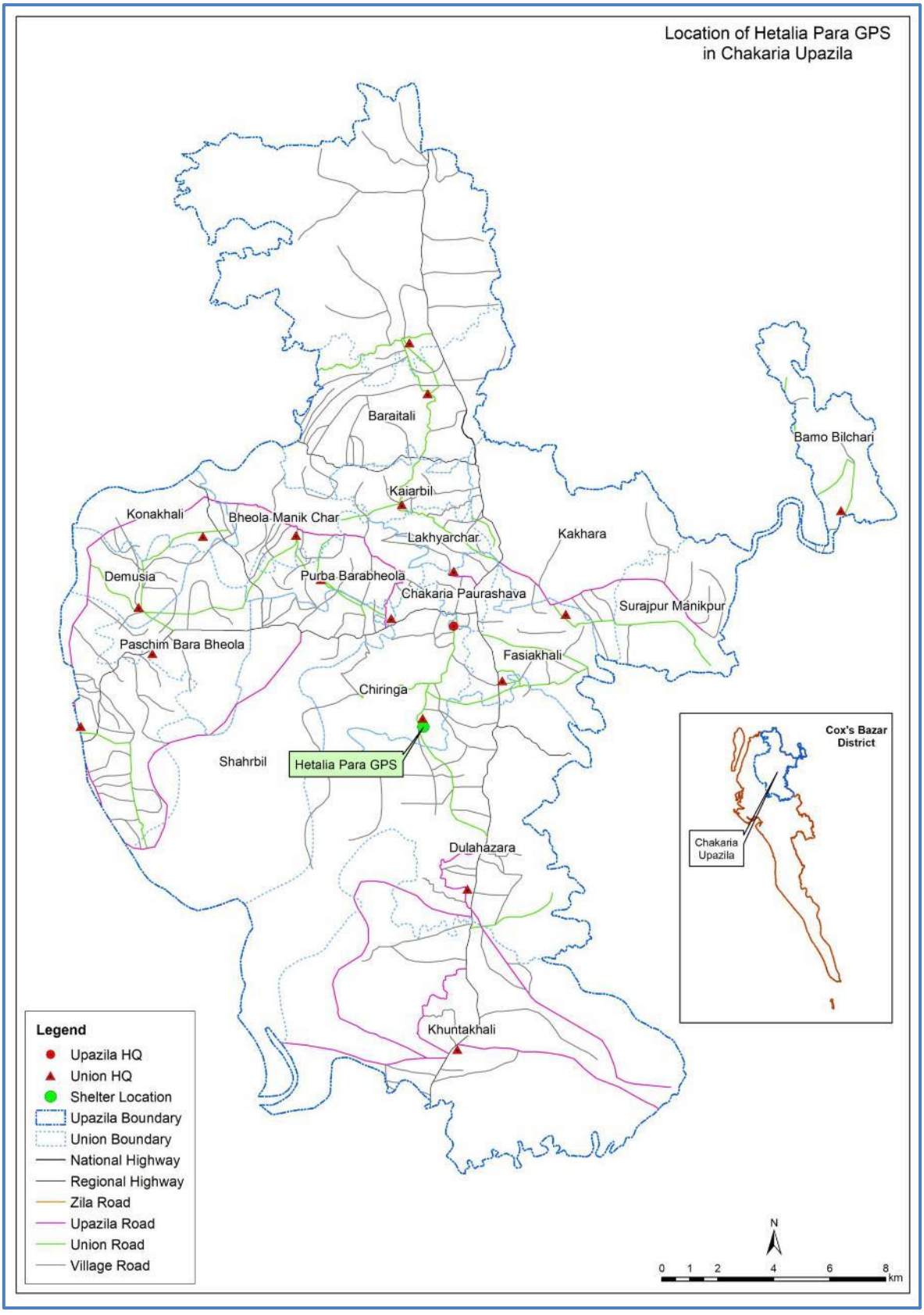


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Pond (10m)
South side	Pond (100m), Mognamapara mosque cum graveyard & pond (300m), Fish project (500m)
East side	Pond (100m), Foshiakhali chorra (500m)
West side	Pond (50m), graveyard (300m), Charalia khal (500m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 28 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 14 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Hetaliapara GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 28 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Within the close proximity (100m), there are some ponds such as a pond at 10m on north side, one at 100m on east side and another one pond at 50m distance on west side found from the proposed site boundary. An 8 ft. wide HBB road named Mognama School para road is located on the south side. A mosque named Mognamapara mosque cum graveyard is located at 300m on south side of the construction site. There are two waterbody such as Foshiakhali chorra at 500m on east side and Charalia khal at 500m distance on west side from the sub-project component. Two clusters of settlements are found on north and west side from the sub-project. A fish project also existing on south side at 500m of the sub-project. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and

harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. Due to the construction activities of this Sub-project, trees (small and medium size)

will not be cut down in the periphery of the school. Some important socio-environmental features, such as Pond at 100m, Mognamapara mosque cum graveyard & pond at 300m and a Fish project at 500m distance are found on south side as well as a graveyard at 300m distance on west side of the sub-project component. A pond on north side at 10m distance and another pond at 50m on west side as well as human settlements and agricultural land adjacent to the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and its parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with

shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF

and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Chakaria will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed

guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and Upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

- The tentative cost has been estimated around **05 Lac & 09 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Hetaliapara GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 814,062,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox's Bazar **Sub-District**: Chakaria **Union**: Chiringa
Name of Community/Local Area: Hetaliapara
Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a one-storied building, a shaheed Minar, one Tubewell and two toilets (1 for male and 1 for female). The new school cum disaster shelter will be constructed on vacant space in the school boundary. An 8ft. wide HBB road named Mognama school para road is passing by the south side of the sub-project component. There are a Pond at 100m, Mognama para mosque cum graveyard at 300m and another pond at 300m as well as a fish project at 500m distances located on the south side of the proposed location. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments
People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A HBB road named Mognama school para road is passing near the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side a Pond (10m); on south side Pond (100m), Mognamapara mosque cum graveyard & pond (300m), Fish project (500m); on east side Pond (100m), Foshiakhali chorra (500m) and on west side Pond (50m), graveyard (300m), Charalia khal (500m) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people. Some human settlements and agricultural lands are found around the sub-project area.

No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and

bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Chiringa Union under Chakaria Upazila of Cox's Bazar district. The sub-project area is located at 21.718611 N and 92.063333 E. Catchment villages of this sub-project area are Hetaliapara, Mognamapara, Madrasahpara and Panchsamiti para. The distance from the Upazila headquarter is about 7 km. An 8 ft. wide HBB road passing by the sub-project site, which is connected with LGED road. Total available land area of this sub-project is 30 decimals. The school code is 99412051581

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side a Pond (10m); at south side Pond (100m), Mognamapara mosque cum graveyard & pond (300m), Fish project (500m); at east side Pond (100m), Foshiakhali chorra (500m) and at west side Pond (50m), graveyard (300m), Charalia khal (500m) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

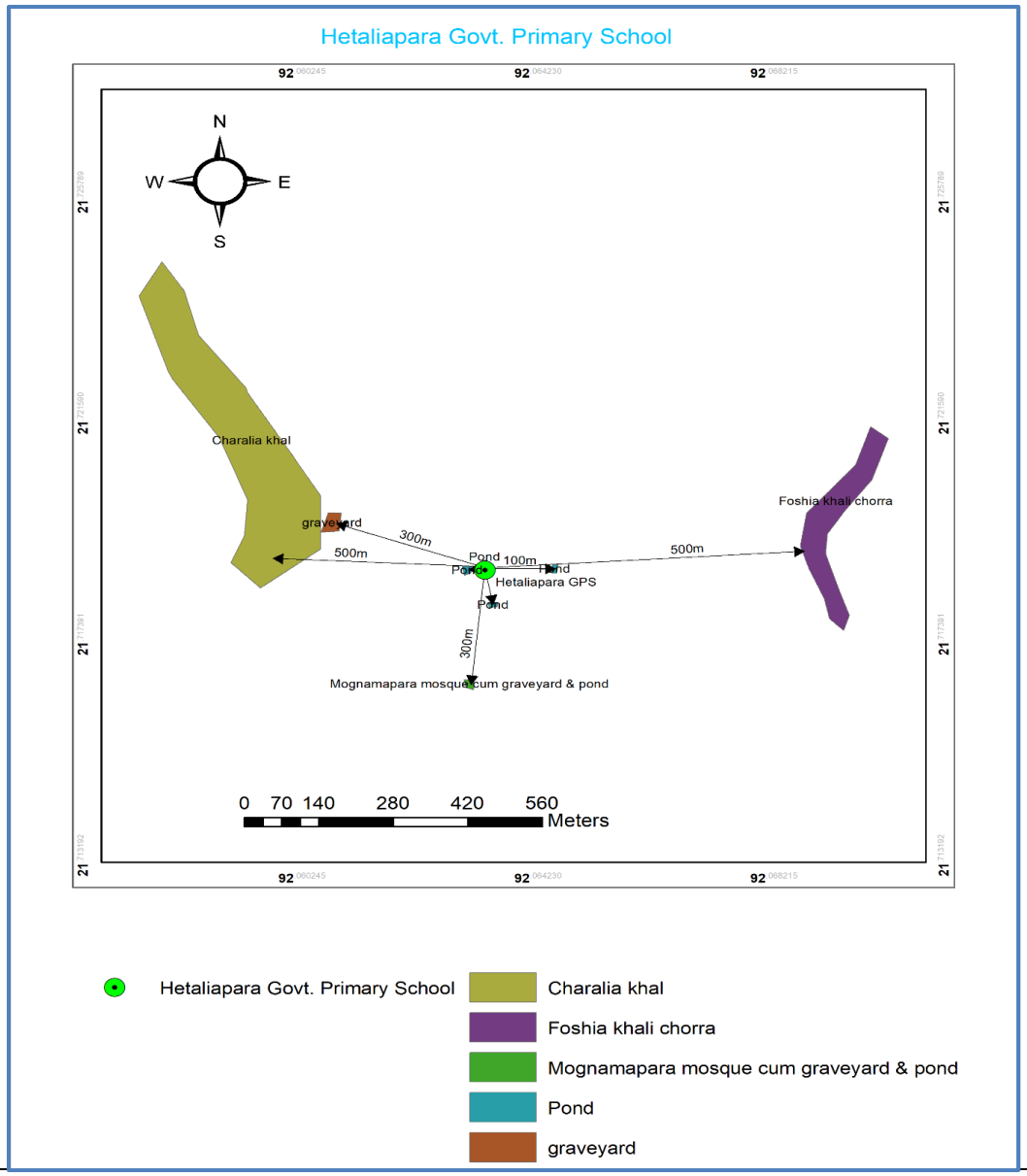
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side a Pond (10m); at south side Pond (100m), Mognamapara mosque cum graveyard & pond (300m), Fish project (500m); at east side Pond (100m), Foshiakhali chorra (500m) and at west side Pond (50m), graveyard (300m), Charalia khal (500m) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 600 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 550-750ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.21 to 6.9 mg/l, Cl^--6.0 to 225mg/l, Salinity- 0.11 to 0.63mg/l and As-Nil (DPHE Test Report, 2021)

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An 8ft. wide HBB road is passing by the south side of the sub-project. It is connected with LGED road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 600 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the east side of the school boundary could be used for setting up a temporary labor camp.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 8ft. wide HBB road named Mognama school para road is the main way for transportation of raw materials. It is located on south side of adjacent sub-project.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, east side within the school boundary

would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.

Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channels are found nearby sub-project site. Though some ponds such as a pond at 10m on north side, one at 100m distance on south side and another pond at 50m distance on west side are found which are clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and

female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area expect some ponds around the sub-project site and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is situated near to a locality. A HBB road is near to the subproject area and connects with main road. The roads are mainly used for pedestrian access and by light vehicles like bicycles, three wheelers etc. therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be

occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • A pond is located nearby the school boundary so labor camp needs to be set up in such a location that the pond is not disturbed in any way.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)		proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.		of materials.	
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Constructio n works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for	Contractor, Environmental Specialists of	Number of complaints from	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
		overall score is low.	a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.	PIU and D&SC	stakeholders, Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject).	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.		• Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.		equipment and pollution control devices, Maintain records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		Number of walkways signage, and metal sheets placed at project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• The contractor must arrange the cancellation of all temporary services.			
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Hetaliapara GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction	Site Selection &	• Selection of sub-project sites and all implementing	PIU	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	implementing interventions: Human-elephant conflict	interventions must take place outside of the elephant corridor/influence area.		Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		management and awareness.		PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	loss, heat stress, and dermatitis.	safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding water bodies, flora and fauna			Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.

- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000 Tk.*24	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**509,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময়: ০২:০০ পর্যন্ত তারিখ: ২৮/১০/২০২১
স্কুলের নাম: হেতালিয়াপাড়া সরকারী প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ১১৪১২০৫১৫৮১
মত বিনিময় স্থান: বিদ্যালয় অফিস কক্ষ
গ্রাম: হেতালিয়াপাড়া ওয়ার্ড নং: ০৪ (৪) ইউনিয়ন: চিতিঙ্গা ডাকঘর: চিতিঙ্গা বাজার
উপজেলা: চকরিয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	জনাব, হাবিবুর রহমান (চেয়ারম্যান)	৫০	পুরুষ	পাহাড়তলী	
০২	জনাব, মুহাম্মদ মুজিবুল হক	৪৮	পুরুষ	চিতিঙ্গা	
০৩	জনাব মোঃ	৫০	ঐ	ঐ	
০৪	আবুতাহের	৪৭	ঐ	চেয়ারম্যান	আবু তাহের
০৫	জুবাইদা খাতুন	৩০	মহিলা	ঐ	জোবাইদা
০৬	আনোয়ার কবির	৪৫	ঐ	ঐ	আনোয়ার কবির
০৭	আক্তার হোসেন	৫০	পুরুষ	ঐ	আক্তার হোসেন
০৮	কমল কান্তি দে	৩৩	পুরুষ	ডেলাইকাটা	কমল কান্তি দে
০৯	মোঃ রেজাউল করিম	৩৪	পুরুষ	পুটিবাজার	
১০	হাজেরাতুল ইক	২৮	মহিলা	বরইতলী	Hajera
১১	জাহাঙ্গীর আলম	৩৪	পুরুষ	চেয়ারম্যান	জাহাঙ্গীর আলম
১২	ওমর ফারুক	২০	ঐ	চেয়ারম্যান	ওমর ফারুক আলিফ
১৩	রফিকুল আলম	৩৩	ঐ	চেয়ারম্যান	রফিকুল আলম
১৪	মোঃ নাসির	৬৫	ঐ	চেয়ারম্যান	নাসির

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Jora Pukurpar Govt. Primary School
Educational Institution ID: 99412029301
Village: Boro Moheshkhali Hindupara; Union: Boro Moheshkhali; Upazila: Moheshkhali
District: Cox's Bazar

Funded by:

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Boro Moheshkhali union of Moheshkhali Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Boro Moheshkhali

Hindupara, Debendrapara, Shipairpara, Boro Kulpara, Nestarpara, Doyapara, Napitpara and Baripara. Typical rural settings of the area offer farmer to be in the prime professional engagement, while the day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,500 households, containing 7,800 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Jora Pukurpar GPS
Educational Institute ID	99412029301
District	Cox's Bazar
Upazila	Moheshkhali
Union	Boro Moheshkhali
Owner of land	GPS
Catchment household	1,500
Catchment Population	7,800 (Male: 3,900, Female: 3,900)
Profession	Farmer 60%, Day labor 20%, Businessmen 4%, Fishermen 4%, Service holder 2% and others 10%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Boro Moheshkhali Hindupara, Debendrapara, Shipairpara, Boro Kulpara, Nestarpara, Doyapara, Napitpara and Baripara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	11 ft. wide HBB road named Modhuartek-Chouchala road on east side.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Jora Pukurpar GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the west side of Moheshkhali Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through about 11 ft. wide HBB road named Modhuartek-Chouchala road on east side. Some socio-cultural foundations, such as Pochim Derangapara mosque at 500m, Purbo Debangapara mosque at 500m and Hindupara Universal Puja Mondir at 520m are found on north side of the sub-project component. On the south site, some socio-environmental features such as Niz Talukpara mosque & madrasah at 200m, Moddhom Jagi Raghona Buddhist temple at 400m and Notun Bazar GPS at 1km are located from the proposed site. Several mosque and madrasah such as Shipaheepara mosque & madrasah at 500m, Hamza-bin-Abdul Motaleeb Madrasah at 500m and Mosque jame Noor at 600m are located on east side of the construction site. Some surface water bodies like ponds are located around the sub-project location on fair distances at 95m on north side, Niz Talukpara pond at 200m on south side, at 500m on east side and at 450m & Moheshkhali Dighi at 1km on west side from the sub-project component. There are some important socio-cultural features like mosque, mondir, high school etc. are located on west side from the sub-project boundary, such as Daspara Bisnu Mondir at 500m,

Monu Mia Shikdarpara mosque at 1km, Boro Moheshkhali Girls High School at 1km and Govt. Bango Bandhu Girls College at 1km. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Moheshkhali
Union	Boro Moheshkhali
GPS position	21.533611 N and 91.944722 E
Distance from Upazila HQ	5 km
Nearby major road	Modhuartek-Chouchala road
Nearby river/canal	Moheshkhali Channel at 1.5km on east side of the sub-project component.
North-Eastern side	Pekua Upazila
North-Western side	Kutubdia Channel and Kutubdia Upazila
South side	Bay of Bengal
South-Eastern side	Cox's Bazar Sadar Upazila
East side	Moheshkhali Channel, Chakaria Upazila and Cox's Bazar Sadar Upazila
West side	Bay of Bengal

[Sources of data: Field survey, 2021]

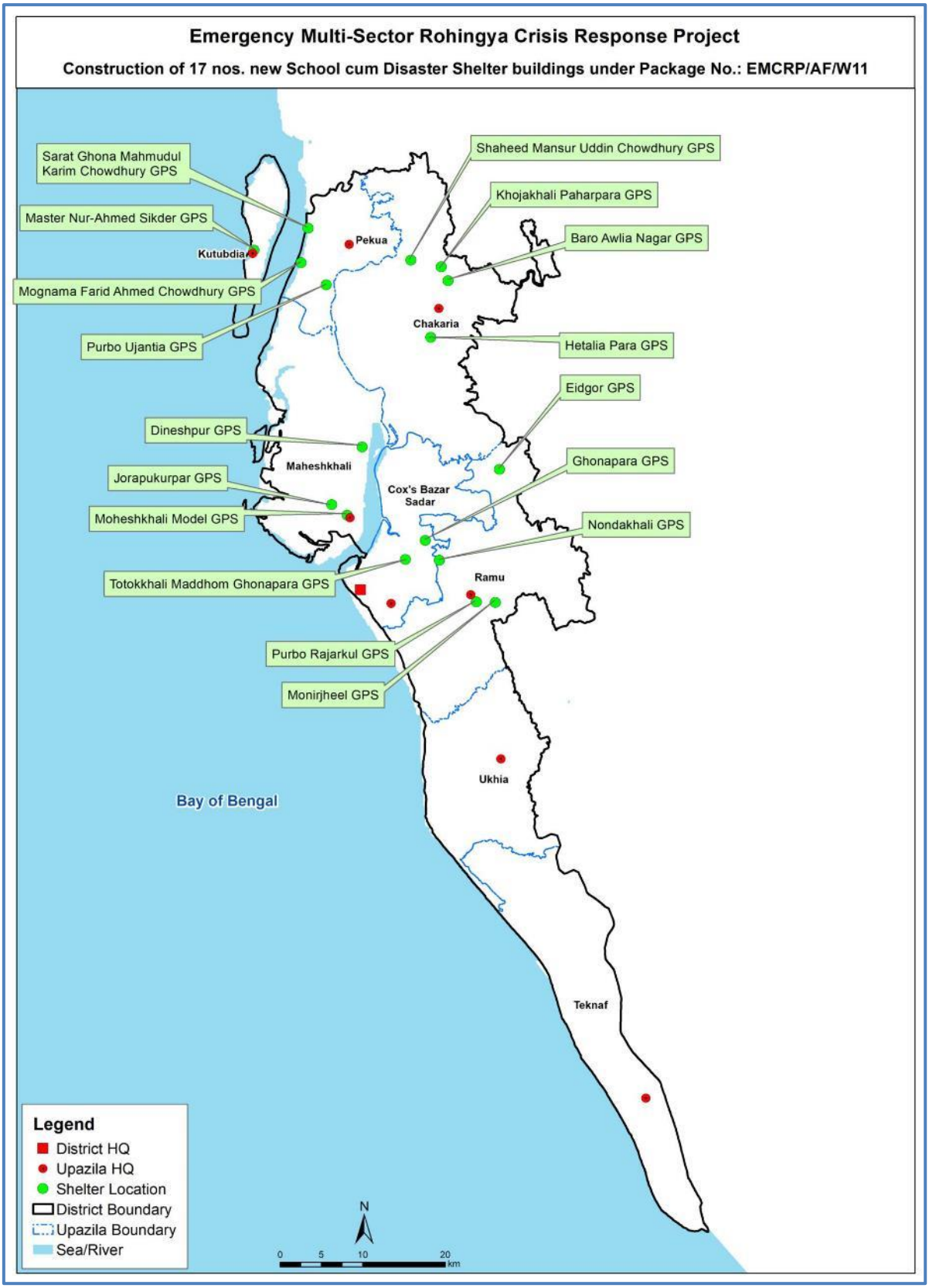


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

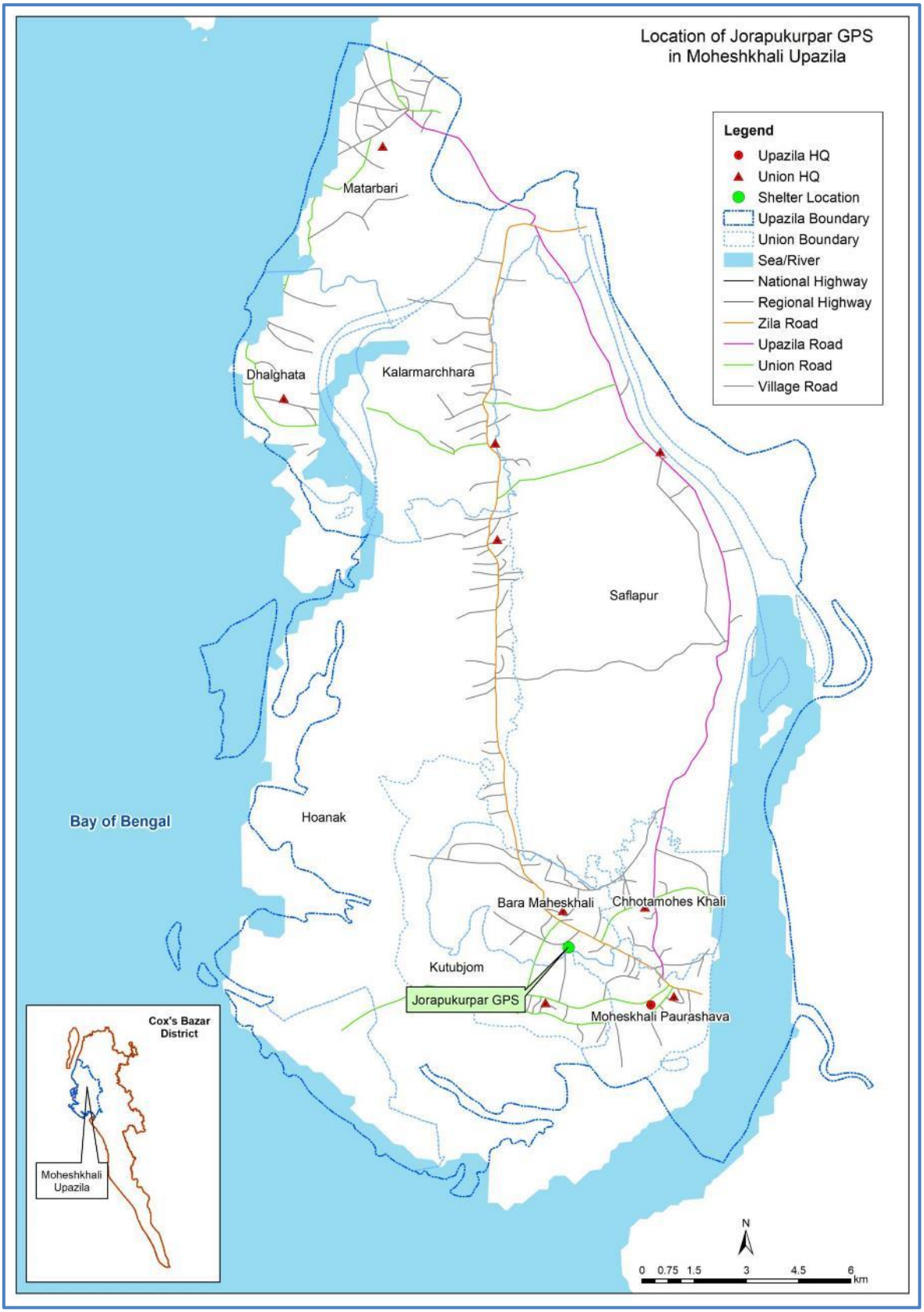


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Pond (95m), Pochim Derangapara mosque (500m), Purbo Debangapara mosque (500m), Hindupara Universal Puja Mondir (520m), Boro Moheshkhali GPS (1km)
South side	Pond (5m), Niz Talukpara mosque & madrasah (200m), Niz Talukpara pond (200m), Moddhom jagi Raghona Buddhist temple (400m), Notun Bazar GPS (1km)
East side	Shipaheepara mosque & madrasah (500m), Pond (500m), Hamza-bin-Abdul Motaleeb Madrasah (500m), Mosque jame Noor (600m)
West side	Pond (450m), Daspara Bisnu Mondir (500m), Monu Mia Shikdarpara mosque (1km), Boro Moheshkhali Girls High School (1km), Govt. Bango Bandhu Girls College (1km), Moheshkhali Dighi (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 25 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 17 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Jora Pukurpar GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 25 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Some socio-cultural foundations, such as Pochim Derangapara mosque at 500m, Purbo Debangapara mosque at 500m and Hindupara Universal Puja Mondir at 520m and Boro Moheshkhali GPS at 1km are found on north side of the sub-project component. On the south site, some socio-environmental features such as Niz Talukpara mosque & madrasah at 200m, Moddhom Jagi Raghona Buddhist temple at 400m and Notun Bazar GPS at 1km are located from the proposed site. Several mosque and madrasah such as Shipaheepara mosque & madrasah at 500m, Hamza-bin-Abdul Motaleeb Madrasah at 500m and Mosque jame Noor at 600m are found on east side of the construction site. About 11 ft. wide HBB road named Modhuartek-Chouchala road on east side. Some surface water bodies like ponds are positioned around the sub-project location on fair distances at 95m on the north side, Niz Talukpara pond at 200m on south side, at 500m on east side and at 450m & Moheshkhali Dighi at 1km on west side are located from the sub-project component. There are some important socio-cultural features like mosque, mondir, high school etc. are situated on west side from the sub-project boundary, such as Daspara Bisnu Mondir at 500m, Monu Mia Shikdarpara mosque at 1km, Boro Moheshkhali Girls High School at 1km and Govt. Bango Bandhu Girls College at 1km. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down on the periphery of the school. Some socio-cultural foundations, such as Pochim Derangapara mosque at 500m, Purbo Debangapara mosque at 500m and Hindupara Universal Puja Mondir at 520m are found on north side of the sub-project component. On the south site Niz Talukpara mosque & madrasah at 200m and Moddhom Jagi Raghona Buddhist temple at 400m are located from the proposed site. Several mosque and madrasah such as Shipaheepara mosque & madrasah at 500m, Hamza-bin-Abdul Motaleeb Madrasah at 500m and Mosque jame Noor at 600m are found on east side of the construction site. About 11 ft. wide HBB road named Modhuartek-Chouchala road is located on east side. Some surface water bodies like ponds are positioned around the sub-project location on fair distances at 95m on north side, Niz Talukpara pond at 200m on south side, at 500m on east side and at 450m on west side from the sub-project component. There are some settlements and agricultural land around the proposed sub-project site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation,

capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Moheshkhali will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing

environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Jora Pukurpar GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Moheshkhali **Union**: Boro Moheshkhali

Name of Community/Local Area: Boro Moheshkhali Hindupara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a one-storied building, one tin shed building, a shaheed Minar, one deep Tubewell and wash block (2 units). The new school cum disaster shelter will be constructed on vacant spaces on east side of the school boundary. About 11 ft. wide HBB road named Modhuartek-Chouchala road is located on the east side. Some socio-cultural foundations, such as Pochim Derangapara mosque at 500m, Purbo Debangapara mosque at 500m and Hindupara Universal Puja Mondir at 520m are found on north side of the sub-project component. On the south site, some socio-environmental features such as Niz Talukpara mosque & madrasah at 200m and Moddhom Jagi Raghona Buddhist temple at 400m are located from the proposed site. Several mosque and madrasah such as Shipaheepara mosque & madrasah at 500m, Hamza-bin-Abdul Motaleeb Madrasah at 500m and Mosque jame Noor at 600m are located on east side of the construction site. Some surface water bodies like ponds are located around the sub-project location on fair distances at 95m on north side, Niz Talukpara pond at 200m on south side, at 500m on east side and at 450m on west side from the sub-project component. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The

public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to demolishing an old building and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. About 11 ft. wide HBB road named Modhuartek-Chouchala road is passing near the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side a Pond (95m), Pochim Derangapara mosque (500m), Purbo Debangapara mosque (500m), Hindupara Universal Puja Mondir (520m), Boro Moheshkhali GPS (1km); on south side Pond (5m), Niz Talukpara mosque & madrasah (200m), Niz Talukpara pond (200m), Moddhom jagi Raghona Buddhist temple (400m), Notun Bazar GPS (1km); on east side Shipaheepara mosque & madrasah (500m), Pond (500m), Hamza-bin-Abdul Motaleeb Madrasah (500m), Mosque jame Noor (600m) and on west side Pond (450m), Daspara Bisnu Mondir (500m), Monu Mia Shikdarpara mosque (1km), Boro Moheshkhali Girls High School (1km), Govt. Bango Bandhu Girls College (1km), Moheshkhali Dighi (1km) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Boro Moheshkhali Union under Teknaf Upazila of Cox's Bazar district. The sub-project area is located at 21.533611 N and 91.944722 E. Catchment villages of this sub-project area are Boro Moheshkhali Hindupara, Debendrapara, Shipairpara, Boro Kulpara, Nestarpara, Doyapara, Napitpara and Baripara. The distance from the Upazila headquarter is about 5 km. About 11 ft. wide HBB road named Modhuartek-Chouchala road is passing by the sub-project site. Total available land area of this sub-project is 33 decimals. The school code is·99412029301

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side a Pond (95m), Pochim Derangapara mosque (500m), Purbo Debangapara mosque (500m), Hindupara Universal Puja Mondir (520m), Boro Moheshkhali GPS (1km); at south side Pond (5m), Niz Talukpara mosque & madrasah (200m), Niz Talukpara pond (200m), Moddhom jagi Raghona Buddhist temple (400m), Notun Bazar GPS (1km); at east side Shipaheepara mosque & madrasah (500m), Pond (500m), Hamza-bin-Abdul Motaleeb Madrasah (500m), Mosque jame Noor (600m) and at west side Pond (450m), Daspara Bisnu Mondir (500m), Monu Mia Shikdarpara mosque (1km), Boro Moheshkhali Girls High School (1km), Govt. Bango Bandhu Girls College (1km), Moheshkhali Dighi (1km) are located of the sub-project area. No disturbance is anticipated due to

construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

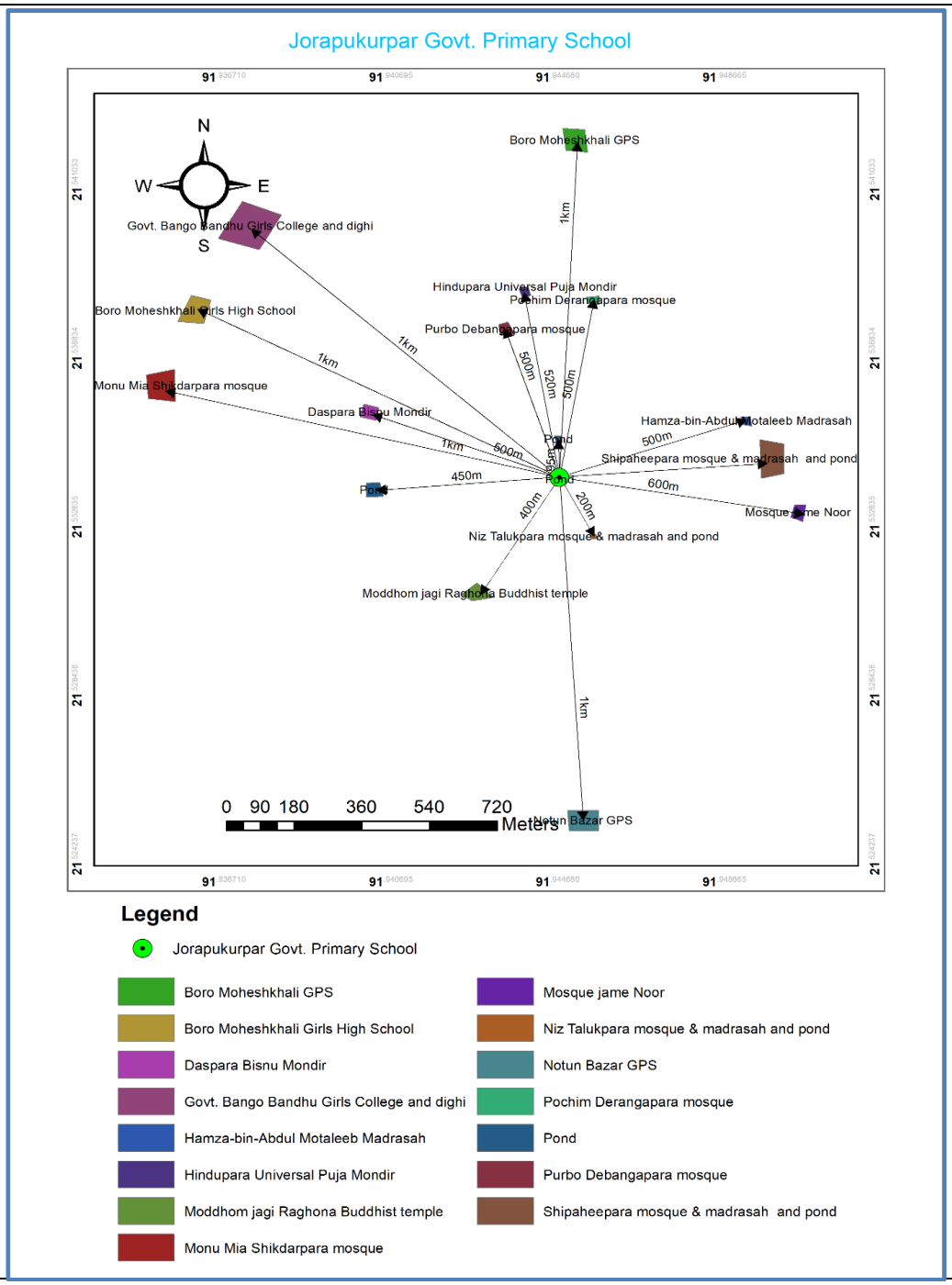
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side a Pond (95m), Pochim Derangapara mosque (500m), Purbo Debangapara mosque (500m), Hindupara Universal Puja Mondir (520m), Boro Moheshkhali GPS (1km); at south side Pond (5m), Niz Talukpara mosque & madrasah (200m), Niz Talukpara pond (200m), Moddhom jagi Raghona Buddhist temple (400m), Notun Bazar GPS (1km); at east side Shipaheepara mosque & madrasah (500m), Pond (500m), Hamza-bin-Abdul Motaleeb Madrasah (500m), Mosque jame Noor (600m) and at west side Pond (450m), Daspara Bisnu Mondir (500m), Monu Mia Shikdarpara mosque (1km), Boro Moheshkhali Girls High School (1km), Govt. Bango Bandhu Girls College (1km), Moheshkhali Dighi (1km) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, mondir, graveyard, crematorium, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February

2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The aquifer depth is about 650 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 450-700ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.08 to 4.6 mg/l, Cl^--8.0 to 475mg/l, Salinity- 0.07 to 1.28mg/l and As-Nil (DPHE Test Report, 2021)

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): About 11 ft. wide HBB road named Modhuartek-Chouchala road is passing by the east side of the sub-project. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 650 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: House of Hazi Abdul Kuddus and Kazi Ruhul Amin at Boro Moheshkhali village which are adjacent to the school boundary could be used for setting up a temporary labor camp Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 11 ft. wide HBB road named Modhuartek-Chouchala road is the main way for transportation of raw materials. It is located on east side of adjacent to the proposed sub-project site.

Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, east side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

Low: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though Some surface water bodies like ponds are positioned around the sub-project location as at 95m on north side, Niz Talukpara pond is located at 200m south side, at 500m on the east side and at 450m & Moheshkhali Dighi is located at 1km west side which are clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or

semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A HBB road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and

supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Constructio n works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet,	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	of crime, Access of students, children, animals, etc.)		• Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate,	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		producing equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices,	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	within a relatively small area and reversible by mitigation measures.				Maintain records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staffs are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		placed at project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Jora Pukurpar GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction	Safety Issues	• Unauthorized entry to the site area is completely prohibited	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.

- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ০৩:৩০ ঘটিকা তারিখ: ২৫/১০/২০২১
স্কুলের নাম: ঝোড়া পুকুর পাড় সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ৪৯২০২৯৩০১
মত বিনিময় স্থান: বিদ্যালয় কক্ষে
গ্রাম: বড় মহেশখালী হিন্দুপাড়া ওয়ার্ড নং: ০৫ ইউনিয়ন: বড় মহেশখালী ডাকঘর: বড় মহেশখালী
উপজেলা: মহেশখালী জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	আলহাজ্ব মোহাম্মদ ফেরদৌস	৫৮	পুরুষ	হিন্দু পাড়া	
২.	মুহাম্মদ ফজলুর রহমান	৪২	"	ক্যান্টনমেন্ট মোবারক-১ রুপার্টিয়াপাড়া	
৩.	হাজী আবুল কাশেম	৭০	"	হিন্দু পাড়া-	
৪.	হাজী নুরুল আমিন	৬২	"	"	
৫.	মো: বেলাল	৬৪	"	"	
৬.	ফোরকান রবিন	৪০	"	"	
৭.	সাকির হোসেন খোকা	২৮	"	বৈরাগ্য পাড়া	
৮.	আব্দুল গফুর	৬২	"	"	
৯	দুলাল শীল	২৬	"	"	
১০	রূপম শীল	৪০	"	হিন্দু পাড়া	
১১	বাদল শীল	৫০	"	"	
১২	জাহানারা বেগম	৪৬	নারী	পশ্চিম সিপাহীর পাড়া	
১৩	নাছিমা আক্তার মমতা	৪৯	নারী	পূর্ব সিপাহীর পাড়া	
১৪	রূপালী প্রকৌ দে	৬৭	"	হিন্দু পাড়া	
১৫	ইসরাতুল জান্নাত	২৮	"	বড়মহেশখালী	
১৬	মো: সাহিদ	৫০	পুরুষ	হিন্দু পাড়া	
১৭	পরিমল কুমার দে	৬১	পু:	"	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Khojakhali Paharpara Govt. Primary School
Educational Institution ID: 99412059302
Village: Khojakhali Paharpara; Union: Kayerbill; Upazila: Chakaria
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Kayerbill union of Chakaria Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding village of Khojakhali Paharpara. Typical rural settings of

the area offer farmer to be in the prime professional engagement, while the day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 250 households, containing 1,200 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Khojakhali Paharpara GPS
Educational Institute ID	99412059302
District	Cox's Bazar
Upazila	Chakaria
Union	Kayerbill
Owner of land	GPS
Catchment household	250
Catchment Population	1,200 (Male: 720, Female: 480)
Profession	Farmer 90%, Day labor 5% and others 5%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Khojakhali Paharpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	An 8.5 ft. wide BFS road named Khojakhali Paharpara road on south side which is connected to the Kayerbill road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Khojakhali Paharpara GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6

Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North-West side of Chakaria Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 8.5ft wide BFS road on the south side which is connected to the Kayerbill road. A khal named Tutukkhali khal is found at 200m on north side of the sub-project component. There are found some socio-environmental interventions on south side, such as Tahmina Yasmin Mohila Madrasah at 500m, Tanu Shikdarpara mosque & graveyard at 500m, Kayerbil station at 510m, a high school named Koyerbil High School & playground at 530m and Matamuhuri River at 700m, on the east side Baitur Rahim mosque at 200m, Koizzar Chorra at 300m as well as on west side some important features are Khajakhali Dargahpara mosque & graveyard at 100m, a Pond at 100m, Kalu shah (R) Mazar Shorif at 110m and Kayerbil Health complex at 500m situated from the sub-project location. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively.

The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Chakaria
Union	Kayerbill
GPS position	21.797115 N and 21.797115 E
Distance from Upazila HQ	9 km
Nearby major road	Kayerbill Road
Nearby river/canal	Tutukkhali khal is located at 200m distance on north side and Matamuhuri River is at 700m on south side of the

	sub-project component.
North side	Bashkhali & Lohagara Upazila of Chattagram district and Lama Upazila of Bandarban district
South side	Ramu and Cox's Bazar Sadar Upazila
East side	Lama & Naikhyongchori Upazila of Bandarban district
West side	Moheshkhali and Pekua Upazila

[Sources of data: Field survey, 2021]

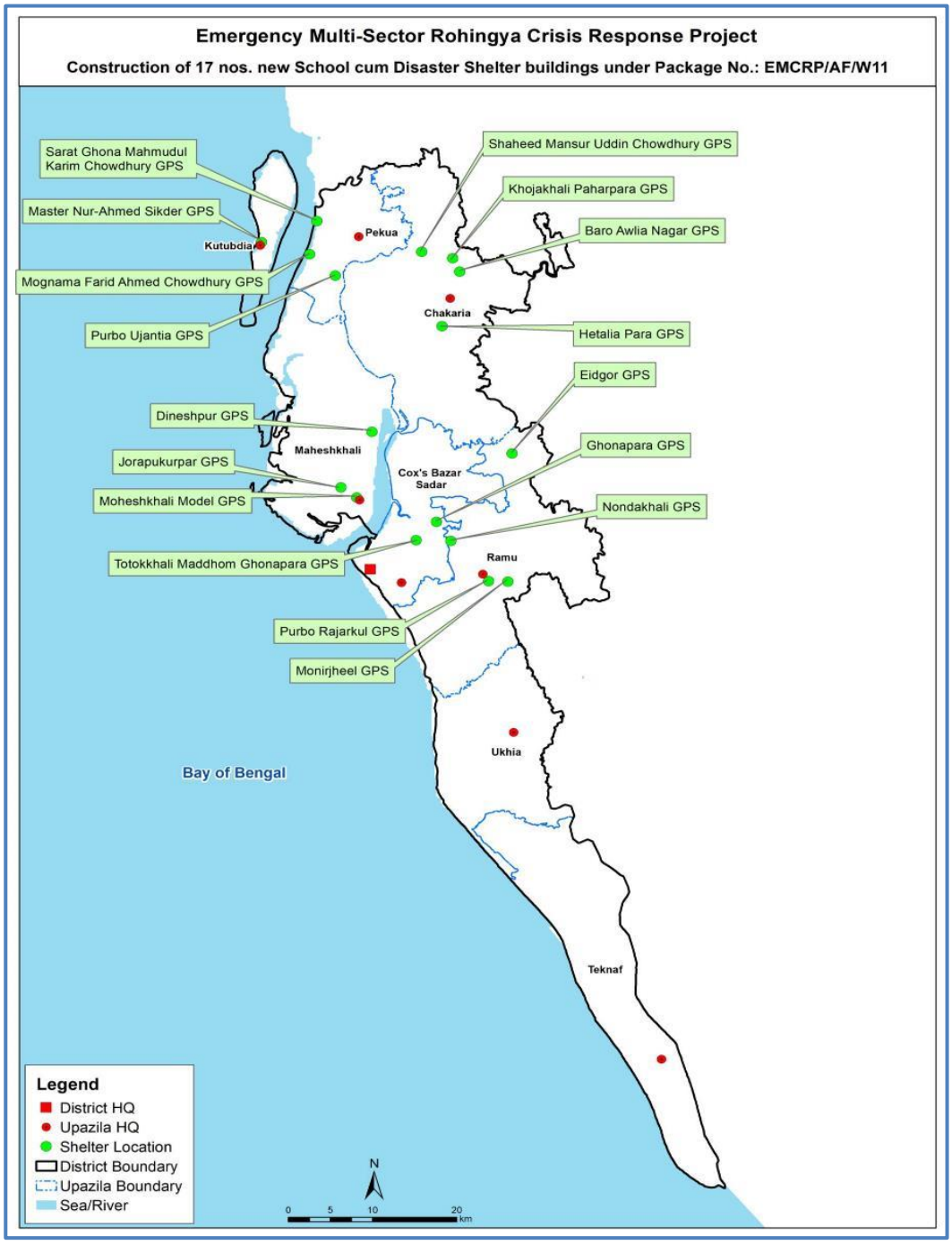


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

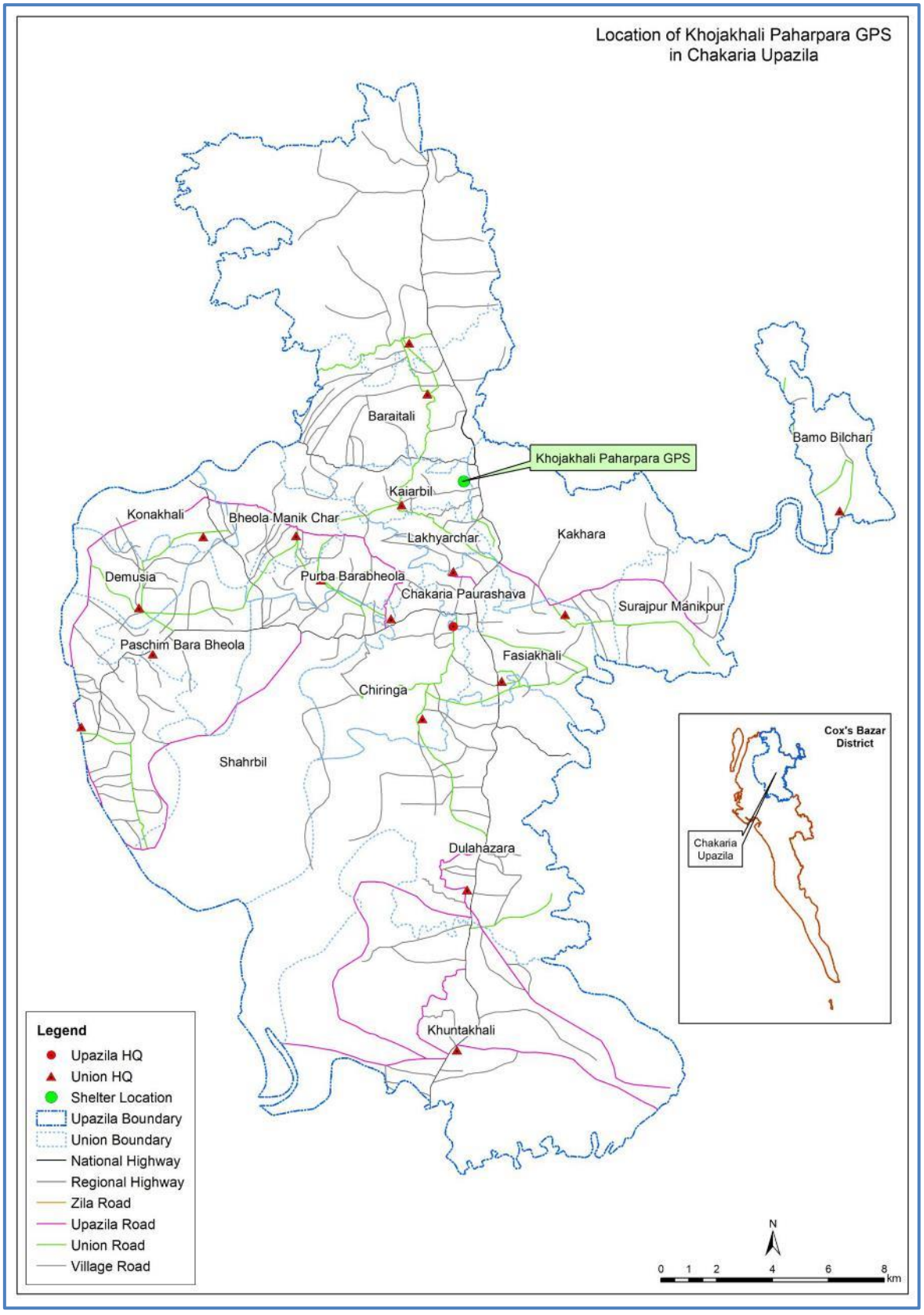


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Tutukkhali khal (200m)
South side	Tahmina Yasmin Mohila Madrasah (500m), Tanu Shikdarpara mosque & graveyard (500m), Kayerbil station (510m), Kayerbil High School & playground (530m), Matamuhuri River (700m)
East side	Baitur Rahim mosque (200m), Koizzar Chorra (300m), Baniar chara hill (1km), Baniarchara forest office (1km), Highway police camp (1km), Wireless tower (1km)
West side	Khajakhali Dargahpara mosque & graveyard (100m), Pond (100m), Kalu shah (R) Mazar Shorif (110m), Kayerbil Health complex (500m), Matamuhuri River (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site (the tin shed school shown on the picture will be demolished and replaced by the proposed building)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 29 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 21 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Khojakhali Paharpara GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time.

Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.

- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 29 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. An 8.5 ft. wide BFS road

named Khojakhali Paharpara road is located on the south side which is connected to the Kayerbill road. A khal named Tutukkhali khal is found at 200m on north side and Matamuhuri River at 700m distance on south side as well as Koizzar Chorra at 300m on east side of the sub-project component. Some important socio-cultural interventions on south side, such as Tahmina Yasmin Mohila Madrasah at 500m, Tanu Shikdarpara mosque & graveyard at 500m, Koyerbil station at 510m, a high school named Koyerbil High School & playground at 530m are located from the sub-project location. A mosque named Baitur Rahim mosque at 200m, Baniarchara hill at 1km, Baniarchara forest office at 1km, Highway police camp at 1km and Wireless tower at 1km are located on the east side of the sub-project site. On west side some important features, such as Khajakhali Dargahpara mosque & graveyard at 100m, a Pond at 100m, Kalu shah (R) Mazar Shorif at 110m and Kayerbil Health complex at 500m distance are situated from the sub-project location. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

There is an old tin shed structure which will be replaced by the proposed new multipurpose school building within the same boundary so there is no additional class room for teaching purposes. As a mitigation measure new temporary school facilities have to be constructed by the contractor within the east side of school boundary. Due to the construction activities of this Sub-project, 8-10nos. of trees (small and medium size) will be cut down and as a mitigation measure, 50 nos. of trees will be replanted in the periphery of the school. Some surface water bodies, such as a khal named Tutukkhali khal at 200m on north side, Matamuhuri River at 700m on south side as well as Koizzar Chorra at 300m on east side and a pond at 100m on west side are located from the sub-project component. Some important socio-cultural features, such as a madrasah named Tahmina Yasmin Mohila Madrasah at 500m, Tanu Shikdarpara mosque & graveyard at 500m, Koyerbil station at 510m and a secondary school named Koyerbil High School & playground at 530m ate located on south side of the sub-project. Another mosque named Baitur Rahim mosque at 200m is found on east side. Nearby major social features, such as Khajakhali Dargahpara mosque & graveyard at 100m, Kalu shah (R) Mazar Shorif at 110m are found on west side from the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management.

Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested

frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to

protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.

c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management,

emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Chakaria will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the

economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 49 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Khojakhali Paharpara GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Chakaria **Union**: Kayerbill

Name of Community/Local Area: Khojakhali Paharpara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a tin shed school, a tin shed office room, a shaheed Minar, one deep Tubewell and a toilet. An existing tin shed school structure will be demolished during pre-construction period and the new one will be constructed there. An 8.5 ft wide BFS village connecting road on south side which connected with the kayerbill road within 1km on the west side of the sub-project. A khal named Tutukkhali khal at 200m is located on north side of the sub-project component. There are found some socio-environmental interventions on south side, such as Tahmina Yasmin Mohila Madrasah at 500m, Tanu Shikdarpara mosque & graveyard at 500m, Kayerbil station at 510m, a high school named Koyerbil High School & playground at 530m and Matamuhuri River at 700m, on the east side Baitur Rahim mosque at 200m, Koizzar Chorra at 300m as well as on west side some important features are Khajakhali Dargahpara mosque & graveyard at 100m, a Pond at 100m, Kalu shah (R) Mazar Shorif at 110m and Kayerbil Health complex at 500m situated from the sub-project location. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The

public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolishing an old building and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A BFS road named Khojakhali Paharpara road is passing adjacent to the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Tutukkhali khal (200m); on south side Tahmina Yasmin Mohila Madrasah (500m), Tanu Shikdarpara mosque & graveyard (500m), Kayerbil station (510m), Kayerbil High School & playground (530m), Matamuhuri River (700m); on east side Baitur Rahim mosque (200m), Koizzar Chorra (300m), Baniarchara hill (1km), Baniar chara forest office (1km), Highway police camp (1km), Wireless tower (1km) and on west side Khajakhali Dargahpara mosque & graveyard (100m), Pond (100m), Kalu shah (R) Mazar Shorif (110m), Kayerbil Health complex (500m), Matamuhuri River (1km) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Kayerbill Union under Chakaria Upazila of Cox's Bazar district. The sub-project area is located at 21.797115 N and 21.797115 E. Catchment village of this sub-project area is Khojakhali Paharpara. The distance from the Upazila headquarter is about 9 km. An 8.5 ft. wide BFS road passes by the sub-project site, which is connected with Kayerbill road. Total available land area of this sub-project is 33 decimals. The school code is.99412059302

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is an old tin shed structure which will be replaced by the proposed new multipurpose school building within the same boundary.

At north side Tutukkhali khal (200m); at south side Tahmina Yasmin Mohila Madrasah (500m), Tanu Shikdarpara mosque & graveyard (500m), Kayerbil station (510m), Kayerbil High School & playground (530m), Matamuhuri River (700m); at east side Baitur Rahim mosque (200m), Koizzar Chorra (300m), Baniarchara hill (1km), Baniar chara forest office (1km), Highway police camp (1km), Wireless tower (1km) and at west side Khajakhali Dargahpara mosque & graveyard (100m), Pond (100m), Kalu shah (R) Mazar Shorif (110m), Kayerbil Health complex (500m), Matamuhuri River

(1km)are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

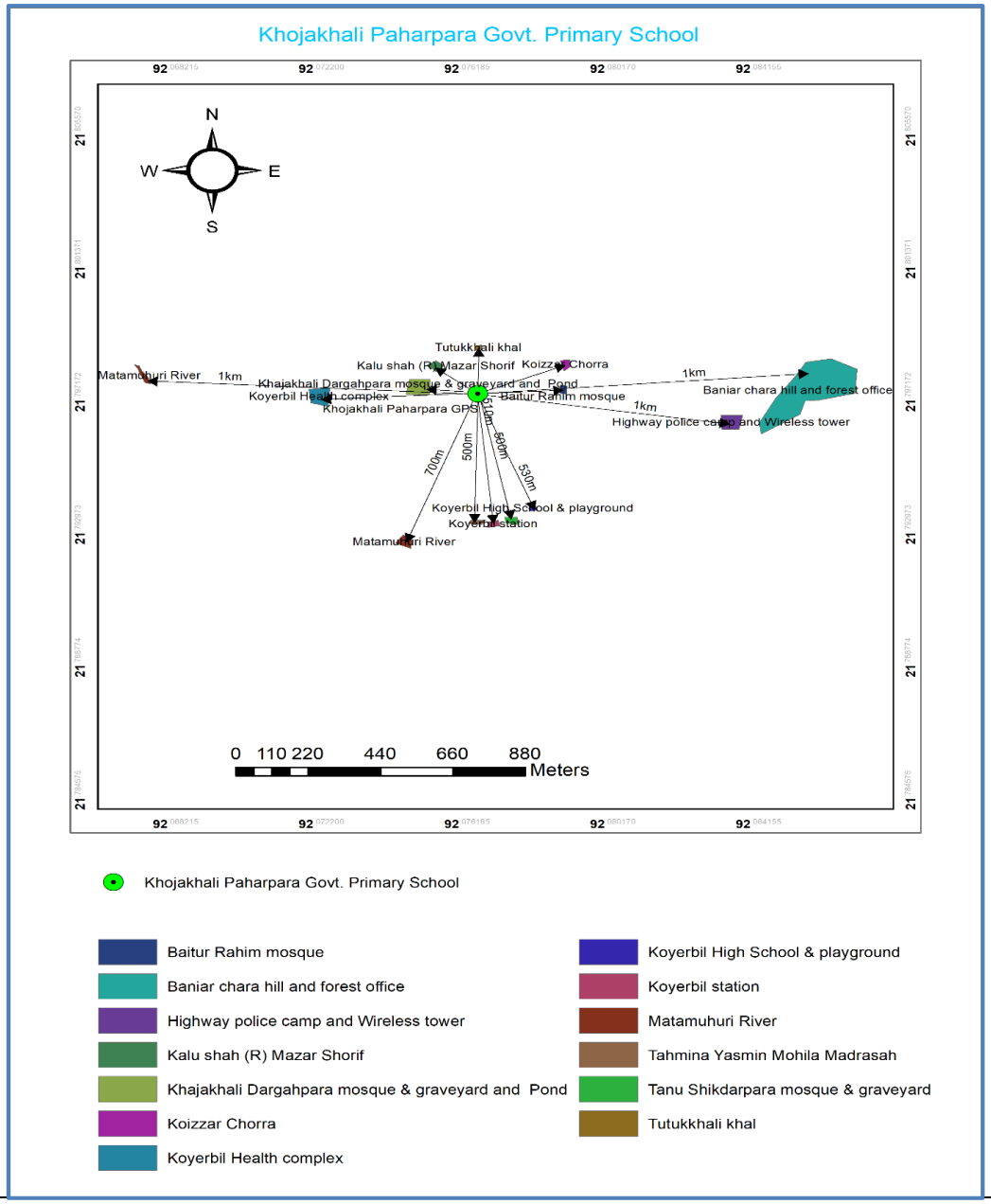
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side Tutukkhali khal (200m) is found; at south side Tahmina Yasmin Mohila Madrasah (500m), Tanu Shikdarpara mosque & graveyard (500m), Kayerbil station (510m), Kayerbil High School & playground (530m), Matamuhuri River (700m) are located; at east side Baitur Rahim mosque (200m), Koizzar Chorra (300m), Baniarchara hill (1km), Baniar chara forest office (1km), Highway police camp (1km), Wireless tower (1km) are located and at the west side Khajakhali Dargahpara mosque & graveyard (100m), Pond (100m), Kalu shah (R) Mazar Shorif (110m), Kayerbil Health complex (500m), Matamuhuri River (1km) are located but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, graveyard, temple, community clinic, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:
Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:
Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:
The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):
N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):
Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 700 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 650-850ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.21 to 6.9 mg/l, Cl^--6.0 to 225mg/l, Salinity- 0.11 to 0.63mg/l and As-Nil (DPHE Test Report, 2021)

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An 8.5ft. wide BFS road is passing by the south side of the sub-project. It is connected with Kayerbill road. It is possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 700 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is not available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: Private land of Firoz Ahmed Chowdhury at Khojakhali Paharpara village which are adjacent to the school boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): A road named Khojakhali Paharpara village connecting road (8.5 ft BFS road) is located on the south side and possible to carry the construction materials.

Location identification for raw material storage:
Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, south-western side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):
Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):
Solid waste: Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 12 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp.

Liquid waste: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):
Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction.

Quantity: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:
Around 289.54 sq. meter soil land is required for the sub-project establishment.
There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, 8-10 no. of trees will be cut down.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though Tutukkhali khal at 200m on north side, Matamuhuri River at 700m distance on the south side, Koizzar Chorra at 300m on east side and a pond at 100m on west side are found which are outside of the construction area, these will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BFS road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.

Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A BFS road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Constructio n works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet,	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	of crime, Access of students, children, animals, etc.)		• Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Demolishing of an existing structure	Under the sub-project intervention the overall score is Medium	• Water spraying at the demolition site • Fencing / Installing barriers should be shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Do not accumulate and burn waste at the site • Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders • It needs to Identify proper location to dispose solid waste from demolition and other activities in consultation with respective bodies • Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work.	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Further guidance on demolition works and wastes management is given in the appendix 2, below the ESMP table, to be followed by the contractor.			
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing equipment	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	reversible by mitigation measures.					
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of	Complaints from communities	Site inspection daily /

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
				D&SC and PIU		weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.* Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Khojakhali Paharpara GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction	Site Selection &	• Selection of sub-project sites and all implementing	PIU	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	implementing interventions: Human-elephant conflict	interventions must take place outside of the elephant corridor/influence area.		Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction	Labour Base Camp: Conflicts with the local	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual	Contractor	Social Development

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	residents	harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		(safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	(including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.		
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.		

Demolition and Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For demolition works:

- All electric, gas, water, sewer, and other energy services or power lines shall be capped/blinded and/or otherwise cut before the commencement of demolition work.
- All asbestos, insulation materials, glass and other hazardous materials and substances shall be removed. Such materials shall not be stored within the structure to be demolished.
- Openings and weak flooring shall be prominently marked or barricaded before the commencement of demolition. Operators of machinery and equipment and workers involved in demolition work shall be informed of such hazardous location.
- Demolition work shall commence from the top of a structure and progress downward.
- Proper entrances of adequate strength to protect workers from falling materials shall be erected for access into the structure.
- The entire demolition site shall be effectively barricaded with appropriate safety signs displayed.
- The lower floor where demolition wastes are collected shall be properly barricaded and guarded to prevent materials from ricocheting and injuring workers or passer-by.

- Excessive debris shall not be allowed to accumulate inside a demolished structure. All demolition waste and debris shall be cleared from the work site on a daily basis.
- Refuse containers shall be provided at worksite for the storage of demolition wastes and debris.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000 Tk.*24	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be	50 nos.	@ Tk. 1000 for each tree.	50,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	made only when trees are fully grown) and as per direction of E.I.C. Total 50 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**549,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১২:০০ ঘটিকা তারিখ: 26/১০/২০২১ ইং
স্কুলের নাম: খোয়াখালী পাহাড়পাড়া সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ১১৪১২০৫১৬০২
মত বিনিময় স্থান: স্কুলের অভ্যন্তর রুম
গ্রাম: খোয়াখালী পাহাড়পাড়া ওয়ার্ড নং: ০৮ ইউনিয়ন: টেকনাফ সিদ্ধ ডাকঘর: টেকনাফ সিদ্ধ ৪৭৪১
উপজেলা: চকোরিয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	সুশান্ত কুমার দে	৫৫	পুরুষ	সাবেক শিক্ষক	
০২	ফজির উদ্দিন	৪৫	পুরুষ	খোয়াখালী পাহা:	
০৩	গোলাম আহমেদ	৬৫	পুরুষ	খোয়াখালী পাহাড়	গোলামআহমেদ
০৪	আবুল কাশার	২৫	পুরুষ	খোয়াখালী পাহা:	
০৫	রিয়াজ উদ্দিন	৪০	পুরুষ	খোয়াখালী পাহা:	মো: রিয়াজ উদ্দিন
০৬	সুফুন্নবী	৩২	পুরুষ	খোয়াখালী পাহা:	নুরুন্নবী
০৭	সালাহ উদ্দিন	৩০	পুরুষ	খোয়াখালী পাহা:	মোঃ সালাহউদ্দিন
০৮	সবী হোছন	৪০	পুরুষ	খোয়াখালী পাহা:	নবিহোছন
০৯	রিজুয়ান	২৫	পুরুষ	খোয়াখালী পাহা:	মোহঃ রিজুয়ান
১০	জিয়া উদ্দিন	২৬	পুরুষ	খোয়াখালী পাহা:	জিয়া উদ্দিন
১১	ওমায়েদ চৌধুরী	৫২	পুরুষ	খোয়াখালী পাহা:	ওমায়েদ
১২	আবু তালেব	৪০	পুরুষ	খোয়াখালী পাহা:	আবুতালেব
১৩	আকবর আহমদ	৫০	পুরুষ	খোয়াখালী পাহা:	আকবরআহমদ
১৪	সুমন	২৪	পুরুষ	খোয়াখালী পাহা:	সুমন
১৫	সুফল কান্তি	৬৫	পুরুষ	খোয়াখালী পাহা:	
১৬	জালাল আহমদ	৪২	〃	〃	মো: জালালউদ্দিন

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১২'৩০ মিনিট তারিখ: 26/10/2022;
স্কুলের নাম: খোকখালী- পাহাড় পাড়া ঘরোয়ারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ২৯৪৯২-০৫২৬০২
মত বিনিময় স্থান: স্কুলের অভিস রুম
গ্রাম: খোকখালী পাহাড়পাড়া ওয়ার্ড নং: ০৮ ইউনিয়ন: রেজুখাল ডাকঘর: রেজুখাল ৪৭৪১
উপজেলা: উখিয়া জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	খাতুনে জান্নাত তাহেরা বেগম	৪২	নারী	দরগাহ পাড়া	তাহেরা বেগম
১৮	রেহেনা আক্তার।	৩৭	নারী	দরগাহ পাড়া	রেহেনা আক্তার
১৯	মো: দুলাল আহমেদ	২১	পুরুষ,	দরগাহ পাড়া	মো: দুলাল,
২০	মো: হুমায়ুন কবির	২০	পুরুষ	দরগাহপাড়া	মো: হুমায়ুন কবির
২১	মো: সাহাবিয়ার	৪৮	পুরুষ	খোকখালী পাহাড় পাড়া	সাহাবিয়ার

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Master Nur-Ahmed Shikdar Govt. Primary School
Educational Institution ID: 91412030511
Village: Araf Shikdar para; Union: Boroghop; Upazila: Kutubdia
District: Cox's Bazar

Funded by:

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Boroghop union of Kutubdia Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Araf Sikdar Para, Hari Sikdar Para, Hanikar Para,

Sinni Kair Para, College Road Para, Syed Para, Matbar Para, Mouluvi Para, Riaj Uddin Para, Purbo Araf Sikder Para and Dhupi Para. Typical rural settings of the area offer farmer to be in the prime professional engagement, while the fishermen stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,540 households, containing 6,600 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Master Nur-Ahmed Shikdar GPS
Educational Institute ID	91412030511
District	Cox's Bazar
Upazila	Kutubdia
Union	Boroghop
Owner of land	GPS
Catchment household	1,540
Catchment Population	6,600 (Male: 3,630, Female: 2,970)
Profession	Farmer 80%, Fishermen 10% Day labor 3%, Service holder 2% and others 5%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Araf Sikdar Para, Hari Sikdar Para, Hanikar Para, Sinni Kair Para, College Road Para, Syed Para, Matbar Para, Mouluvi Para, Riaj Uddin Para, Purbo Araf Sikder Para and Dhupi Para.
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	8 ft. wide BFS road named Kobi Jalal Uddin Road on the west side of the sub-project component which is connected with nearby major road named College Road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Master Nur-Ahmed Shikdar GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North-Eastern side of Kutubdia Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 8 ft. wide BFS road named Kobi Jalal Uddin Road on the west side of the sub-project component which is connected with 12ft. wide BC College Road. Some socio-environmental features such as, Araf shikdarpara mosque & graveyard at 200m, Hazrat Imam Hossain (R) mosque & graveyard at 500m, Araf Shikdarpara pond at 450m and Durga Mondir at 500m are located on the north side of the proposed location. Two mosques named Hari Shikdarpara Mosque at 600m and Miapara mosque at 900m are located on south side from the sub-project. On the east side Durga Mondir at 200m, Pilot kata khal at 200m, Crematorium at 400m, Salt field at 500m and Kutubdia channel at 1km distance from the sub-project location. On the west side some major establishments are found, such as Upazila HQ at 1km distance, Upazila Health complex at 1km and Laisium Institute at 1km distance from the subproject location. The location details of the Sub-project have been summarized in Table 1.4.1.

The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Kutubdia
Union	Boroghop
GPS position	21.818472 N and 91.857472 E
Distance from Upazila HQ	1 km
Nearby major road	College road
Nearby river/canal	Pilot kata khal at 200m and Kutubdia channel at 1km distance on the north side of the sub-project component.
North side	Bay of Bengal
South side	Bay of Bengal
East side	Kutubdia channel & Moheshkhali Upazila, Pekua Upazila and Bashkhali Upazila of Chattogram district
West side	Bay of Bengal

[Sources of data: Field survey, 2021]

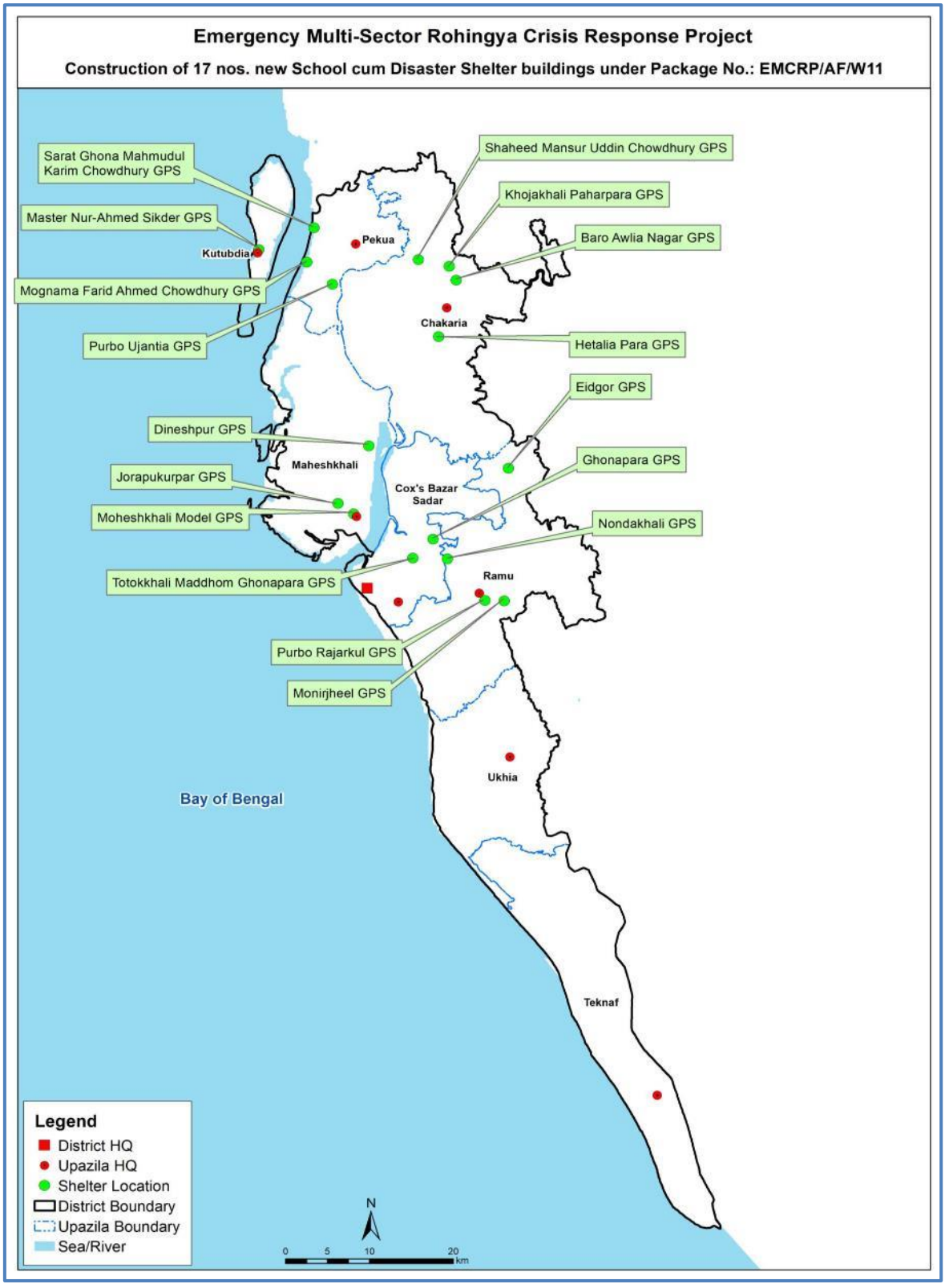


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Araf shikdarpara mosque & graveyard (200m), Hazrat Imam Hossain (R) mosque & graveyard (500m), Araf Shikdarpara pond (450m), Durga Mondir (500m)
South side	Hari Shikdarpara mosque (600m), Miapara mosque (900m), Kutubdia Learning Academy (1km)
East side	Durga Mondir (200m), Pilot kata khal (200m), Crematorium (400m), Salt field (500m), Kutubdia channel (1km)
West side	Upazila HQ, Upazila Health complex (1km), Laisium Institute (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 27 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 53 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Master Nur-Ahmed Shikdar GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 27 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Some socio-environmental features such as, Araf shikdarpara mosque & graveyard at 200m, Hazrat Imam Hossain (R) mosque & graveyard at 500m, Araf Shikdarpara pond at 450m and Durga Mondir at 500m are found on north side of the proposed location. Two mosques named Hari Shikdarpara Mosque at 600m and Miapara mosque at 900m are found on south side from the sub-project. An 8 ft. wide BFS road named Kobi Jalal Uddin Road on west side of the sub-project component which connected with 12ft. wide BC College Road. On the east side Durga Mondir at 200m, Pilot kata khal at 200m, Crematorium at 400m, Salt field at 500m and Kutubdia channel 1km etc. are found from the sub-project location. On the west side some major important establishments are found within 1km distance from the sub-project site, such as Upazila HQ (1km), Upazila Health complex (1km) and Laisium Institute (1km) are found. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small-scale during the construction period. Top soil in agricultural land will be avoided without any failure in earthwork and that productive part of the soil will be conserved and replaced, if underneath soil is taken from any agricultural land. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post

and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land. Due to the construction activities of this Sub-project, 2-3 nos. of coconut trees (small and medium size) will be cut down and as a mitigation measure, 15 nos. of trees will be replanted in the periphery of the school. Some important socio-environmental features such as, Araf shikdarpara mosque & graveyard at 200m, Hazrat Imam Hossain (R) mosque & graveyard at 500m, and Durga Mondir at 500m are found on north side of the proposed location. Two mosques named Hari Shikdarpara Mosque at 600m and Miapara mosque at 900m are found on south side from the sub-project. An 8 ft. wide BFS road named Kobi Jalal Uddin Road on west side of the sub-project component which connected with 12ft. wide BC College Road. Nearby some surface water bodies are existed around the sub-project location, such as Araf Shikdarpara pond at 450m on north side, Pilot kata khal at 200m and Kutubdia channel at 1km distances on east side from the sub-project area. On the east side Durga Mondir at 200m, Crematorium at 400m, Salt field at 500m and etc. are found from the sub-project location. On the west side some major establishments of Upazila are located within 1km distance from the sub-project site, such as Upazila HQ at 1km, Upazila Health complex at 1km and Laisium Institute at 1km distance. Two clusters of human settlements around the school boundary, such as at 45m on east side and at 50m on west from the proposed sub-project site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the

Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measure delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Kutubdia will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-

project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and Upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 14 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Master Nur-Ahmed Shikdar GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Kutubdia **Union**: Boroghop

Name of Community/Local Area: Araf Shikdar para

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a one-story building, a shaheed Minar, one deep Tubewell, Hand wash block and a toilet (2 units). The new school cum disaster shelter will be constructed on the east side of the proposed sub-project boundary. An 8 ft. wide BFS village connecting road on west side which is connected with College Road. Some socio-environmental features such as, Araf shikdarpara mosque & graveyard at 200m, Hazrat Imam Hossain (R) mosque & graveyard at 500m, Araf Shikdarpara pond at 450m and Durga Mondir at 500m are located on north side of the proposed location. Two mosques named Hari Shikdarpara Mosque at 600m and Miapara mosque at 900m are located on south side from the sub-project. On the east side Durga Mondir at 200m, Pilot kata khal at 200m, Crematorium at 400m, Salt field at 500m and Kutubdia channel 1km etc. are located from the sub-project location. On the west side some major establishments of Upazila are located within 1km distance from the sub-project site, such as Upazila HQ at 1km, Upazila Health complex at 1km and Laisium Institute at 1km. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services

and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Araf shikdarpara mosque & graveyard (200m), Hazrat Imam Hossain (R) mosque & graveyard (500m), Araf Shikdarpara pond (450m), Durga Mondir (500m); on south side Hari Shikdarpara Mosque (600m), Miapara mosque (900m), Kutubdia Learning Academy (1km); on east side Durga Mondir (200m), Pilot kata khal (200m), Crematorium (400m), Salt field (500m), Kutubdia channel (1km) and on west side Upazila HQ (1km), Upazila Health complex (1km), Laisium Institute (1km) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the

structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Boroghop Union under Kutubdia Upazila of Cox's Bazar district. The sub-project area is located at 21.818472 N and 91.857472 E. Catchment villages of this sub-project area are Araf Sikdar Para, Hari Sikdar Para, Hanikar Para, Sinni Kair Para, College Road Para, Syed Para, Matbar Para, Mouluvi Para, Riaj Uddin Para, Purbo Araf Sikder Para and Dhupi Para. The distance from the Upazila headquarter is about 1 km. An 8 ft. wide BFS road is passing by the sub-project site. Total available land area of this sub-project is 44 decimals. The school code is .91412030511

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio-cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side Araf shikdarpara mosque & graveyard (200m), Hazrat Imam Hossain (R) mosque & graveyard (500m), Araf Shikdarpara pond (450m), Durga Mondir (500m); at south side Hari Shikdarpara Mosque (600m), Miapara mosque (900m), Kutubdia Learning Academy (1km); at east side Durga Mondir (200m), Pilot kata khal (200m), Crematorium (400m), Salt field (500m), Kutubdia channel (1km) and at west side Upazila HQ (1km), Upazila Health complex (1km), Laisium Institute (1km) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

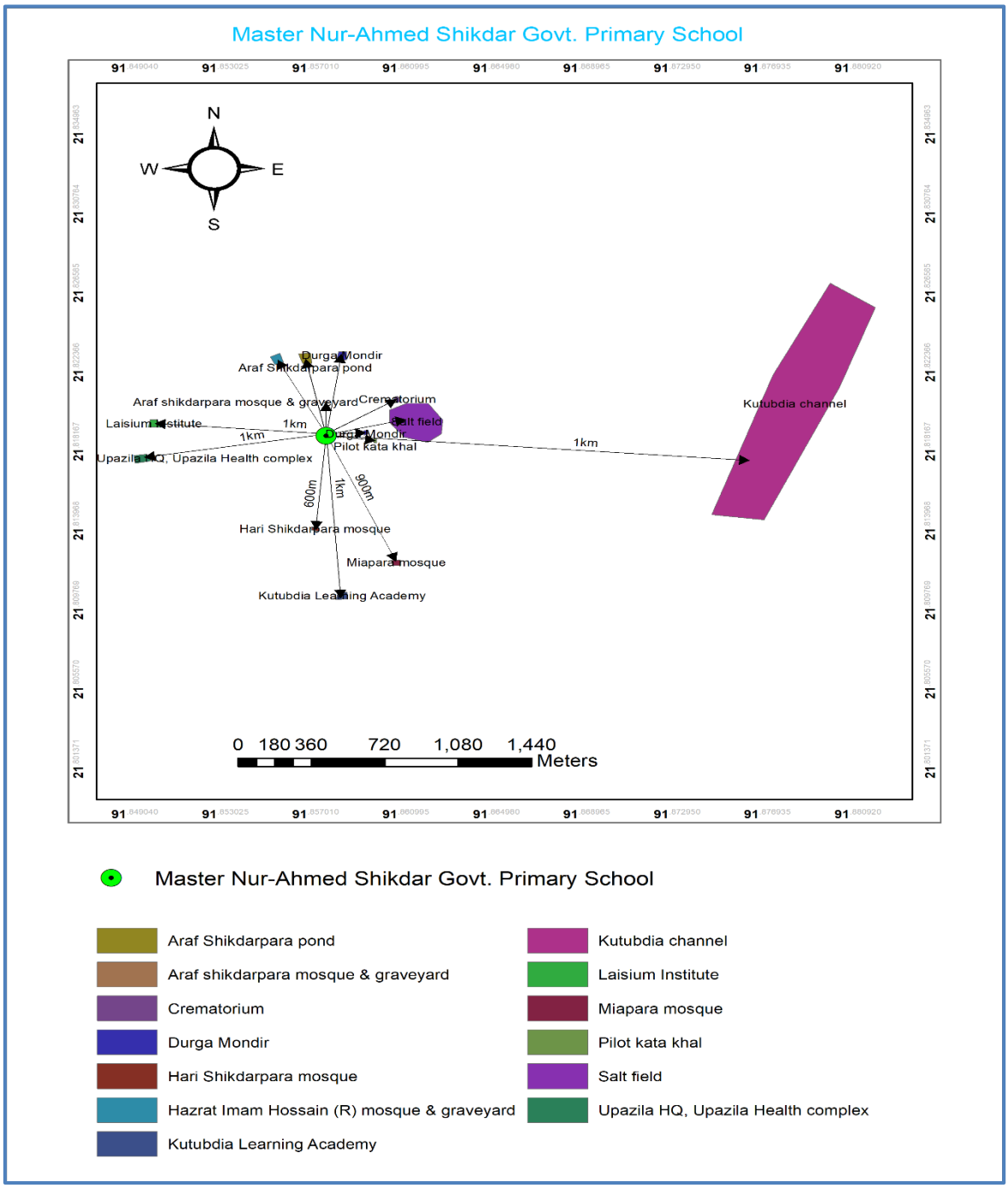
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side, Araf shikdarpara mosque & graveyard (200m), Hazrat Imam Hossain (R) mosque & graveyard (500m), Araf Shikdarpara pond (450m), Durga Mondir (500m); at south side Hari Shikdarpara Mosque (600m), Miapara mosque (900m), Kutubdia Learning Academy (1km); at east side Durga Mondir (200m), Pilot kata khal (200m), Crematorium (400m), Salt field (500m), Kutubdia channel (1km) and at west side Upazila HQ (1km), Upazila Health complex (1km), Laisium Institute (1km) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, graveyard, mandir, high school, college and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of

elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting

(2) Potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:
Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:
The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):
N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):
Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 780 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 650-850ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.11 to 3.6 mg/l, Cl^--10.0 to 130mg/l, Salinity- 0.10 to 0.40mg/l and As-Nil (DPHE Test Report, 2021)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An 8ft. wide BFS road is passing by the west side of the sub-project. It is connected with College Road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 780 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the north side of the school boundary could be used for setting up a temporary labor camp.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 8ft. wide BFS road named Kobi Jalal Uddin Road is the main way for transportation of raw materials. It is located on west side of adjacent to the sub-project.

Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, west side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

Low: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though Pilot kata khal at 200m and Kutubdia channel at 1km distance on east side are found which are outside of the construction area which is clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BFS road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system:

(High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A BFS road connects the sites with main road. During

operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	students, children, animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	small area and reversible by mitigation measures.				records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies.	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Master Nur-Ahmed Shikdar GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction	Site Selection &	• Selection of sub-project sites and all implementing	PIU	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	implementing interventions: Human-elephant conflict	interventions must take place outside of the elephant corridor/influence area.		Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		roads/access roads for limiting dust generation.		
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction	Increase in road accidents	• Maintain safety measures during the movement and	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.		Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss,	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	heat stress, and dermatitis.	test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.

- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000 Tk.*24 months*(1/8 one	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an	15 nos.	@ Tk. 1000 for each tree.	15,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**514,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ১২টা ৩০ মিনিট (12:30) তারিখ: ১৭-১০-২০২২ ইং
স্থলের নাম: আকবর নুর আহমদ সিকদার সড়ক
স্থল আইডি নম্বর: ৯১৪১২০৩১৫১১
মত বিনিময় স্থান: স্কুল প্রাঙ্গণ
গ্রাম: জাদার সিংদাং পাড়া ওয়ার্ড নং: ০৯ ইউনিয়ন: বড়ভাগ ডাকঘর: কুতুবদিয়া ৪৭২০
উপজেলা: কুতুবদিয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	আবুলকাশেম	৬০	পুরুষ	জাদার সিংদাং	আবুলকাশেম
২	জহীরুল আলম	৩৫	"	"	জহীরুল
৩	কামরুল আলম	৩১	"	"	কামরুল আলম
৪	গোলাম ফোরহান	৫০	"	"	গোলাম ফোরহান
৫	বদিউল আলম	৩৮	"	"	বদিউল আলম
৬	জিয়াস উদ্দিন	৪০	"	"	জিয়াস
৭	হোমায়ন কবির	৪১	"	"	হুমায়ন কবির
৮	আবুল কাশেম	৫০	"	"	আবুল কাশেম
৯	তৈয়ব আহমদ	৩৮	"	"	তৈয়ব আহমদ
১০	মো: ফয়েজুল ইসলাম	১৮	"	"	ফয়েজুল ইসলাম
১১	[illegible]	২৮	"	"	[illegible]
১২	আবু নাঈম	২১	"	"	[illegible]
১৩	রিফাত	২৫	"	"	[illegible]
১৪	মনিকানি দাশ	৫০	মহিলা	"	[illegible]
১৫	সুমিলা দাশ	৪০	"	"	সুমিতা
১৬	শুচিস্মিতা চৌধুরী	৩০	"	"	[illegible]

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ১২: ৬০ (দুপুর) তারিখ: ১৫-১০-২০২২ ইং
স্থলের নাম: মাওলানা মুহাম্মদ সিকদার সম্মেলন
স্থল আইডি নম্বর: ৯১৪১২০৩১ ০১১
মত বিনিময় স্থান: সকল প্রাঙ্গন
গ্রাম: ডাক্তার বিলোনিয়া পাড়া ওয়ার্ড নং: ০৯ ইউনিয়ন: ঈদগাঁও ডাকঘর: কুতুবদিয়া ৪৭২০
উপজেলা: কুতুবদিয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	আবুবকুল ইসলাম	২৫	পুরুষ	আবুর বিল্লাপাড়া	
১৮	মুহাম্মদ	৪৫	"	"	
১৯	মোজাহিদুল ইসলাম সাহিন	২৭	৬	"	
২০	মোঃ নাছের মোহাম্মদ	৩৭	"	৬	
২১	রিজানুর রহমান	৪২	৬	২	
২২	জোহর উল্লাহ	৬৮	"	"	
২৩	আবদু সালাম	৫০	"	"	
২৪	মোকাম উদ্দিন	৬০	"	"	
২৫	জোহর আলম	৫২	"	৭	
২৬	সিরাজুল মোস্তাফা	৬৫	"	১	
২৭	মোঃ ইমদাদুল হক	৪২	৭	৮	
২৮	নাজমুল হোসেন	৬৭	"	"	
২৯	কফিল উদ্দিন	৪৫	৬	৬	
৩০	চিরঞ্জিত	৫০	৭	৬	
৩১	সালাহ উদ্দিন	৩৮	৬	৬	
৩২	মোহাম্মদ আলী	৬৫	৬	৬	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১২: ৩০ মিনিট তারিখ: ২৭-১০-২১
স্কুলের নাম: মাস্টার নুর আহমদ সিকদার স.প্রা.বি
স্কুল আইডি নম্বর: ১১৪১২০৬০৫১১
মত বিনিময় স্থান: স্কুল প্রাঙ্গন
গ্রাম: আরব সিকদার ওয়ার্ড নং: ৯ ইউনিয়ন: বড়ডোপ ডাকঘর: কুতুবদিয়া ৪৭২০
উপজেলা: কুতুবদিয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
৩৩	বাবলী দাশ	৩০	নারী	আরব সিকদার	বাবলী
৩৪	জবা রানী দাশ	৩০	"	আরব সিকদার	জবা
৩৫	[illegible]	৪০	"	আরব সিকদার	[illegible]
৩৬	আছমা বেগম	৩৮	"	আরব সিকদার	আছমা
৩৭	সাদিয়া বেগম	৫০	"	আরব সিকদার	সাদিয়া
৩৮	হেলেনা তঞ্চঙ্গা	৩৯	"	আরব সিকদার	হেলেনা তঞ্চঙ্গা
৩৯	রোজিনা বেগম	৩০	"	আরব সিকদার	রোজিনা বেগম
৪০	[illegible]	৪০	"	আরব সিকদার	[illegible]
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৪২	[illegible]	৫০	"	আরব সিকদার	[illegible]
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৪৫	[illegible]	৩৩	"	"	[illegible]
৪৬	[illegible]	২৩	নারী	"	Salma
৪৭	[illegible]	৩০	"	"	[illegible]
৪৮	[illegible]	৩০	নারী	[illegible]	[illegible]
৪৯	[illegible]	৬১	পুরুষ	"	[illegible]

29/20

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময়: বেলা ১২:৩০ মিনিট তারিখ: 29/১০/২০২১ ইং

মত বিনিময় স্থান: স্কুল মাঠ

উপজেলা: উখিয়া জেলা: কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	পদবী	স্বাক্ষর/টিপসই
০১	মোহাম্মদ কফিল উদ্দিন কবীর	উপজেলা A কৌশলী (ভঃ)	
০২	মোহাম্মদ মোস্তেল বাবু	ডাটা এন্ট্রি অপারেটর	
০৩	মিজানুর রহমান	কম্পিউটার/LGED	
০৬	শামিল মাহমুদ	কম্পিউটার/LGED	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh

Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Mognama Farid Uddin Ahmed Chowdhury Govt. Primary School
Educational Institution ID: 422089002
Village: Chander Para; Union: Mognama; Upazila: Pekua
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. The project is being implemented under the financial grant assistance from the World Bank; but part of the enlisted schemes (2 work-packages) under the additional financing of the project is being financed by German Investment and Development Bank (KFW). Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for Resilience shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Mognama union of Pekua Upazila under Cox's Bazar district. The catchment area of

the subproject comprises the surrounding villages of Moriccha diya, Chander Para, Moulovir Diya, Napiter Diya and Mochailla Diya. Typical rural settings of the area offer farmers to be in the prime professional engagement, while the day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 3,500 households, containing 13,000 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Mognama Farid Uddin Ahmed Chowdhury GPS
Educational Institute ID	422089002
District	Cox's Bazar
Upazila	Pekuya
Union	Mognama
Owner of land	GPS
Catchment household	3500
Catchment Population	13,000 (Male: 6,240, Female: 6,760)
Profession	Farmer 85%, Day labor 10% and others 05%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Moriccha diya, Chander Para, Moulovir Diya, Napiter Diya and Mochailla Diya
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Mognama Farid Uddin Ahmed Chowdhury GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floor	3
Number of classroom	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1

Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located in the North-West side of Pekua Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. A khal named Cheptakhali khal is located at 10m north of the subproject. Salt cultivation field is found at 10m north and a paddy field is 10m distance at south side of the subproject location.

The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Pekua, chakaria, Moheskhali and Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Pekua
Union	Mognama
GPS position	21.803750 N and 91.912306 E
Distance from Upazila HQ	7 km
Nearby major road	10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road.
Nearby river/canal	A khal named Cheptakhali khal is located at 10m north of

	the subproject. At west side, The Bay of Bengal is 1km distance from the sub-project component.
North side	Banshkhali and Chakaria upazilas
South side	maheshkhali upazila
East side	Chakaria upazila
West side	Kutubdia Channel

[Sources of data: Field survey, 2021]

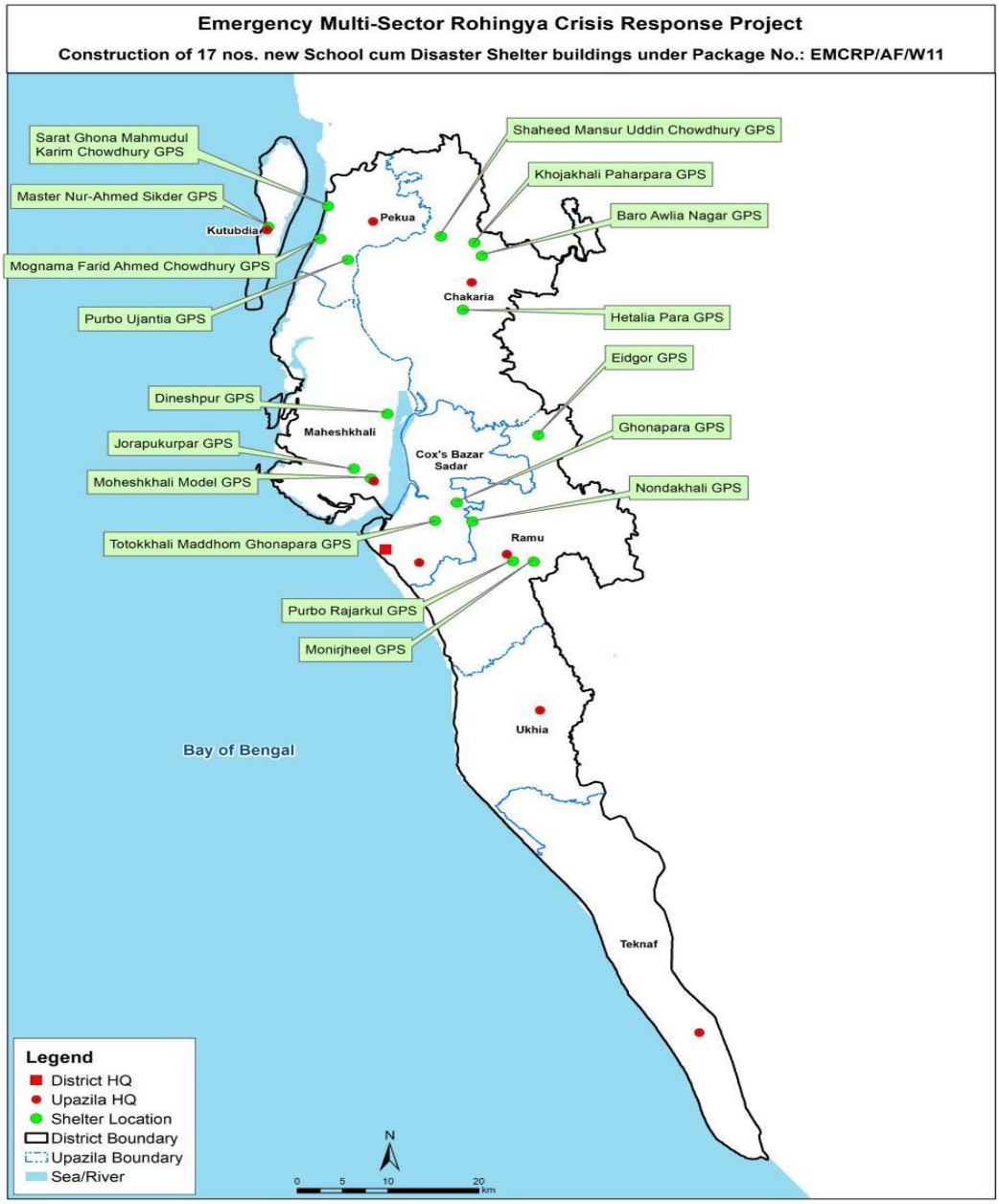


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Pekua, chakaria, Moheskhali and Kutubdia)

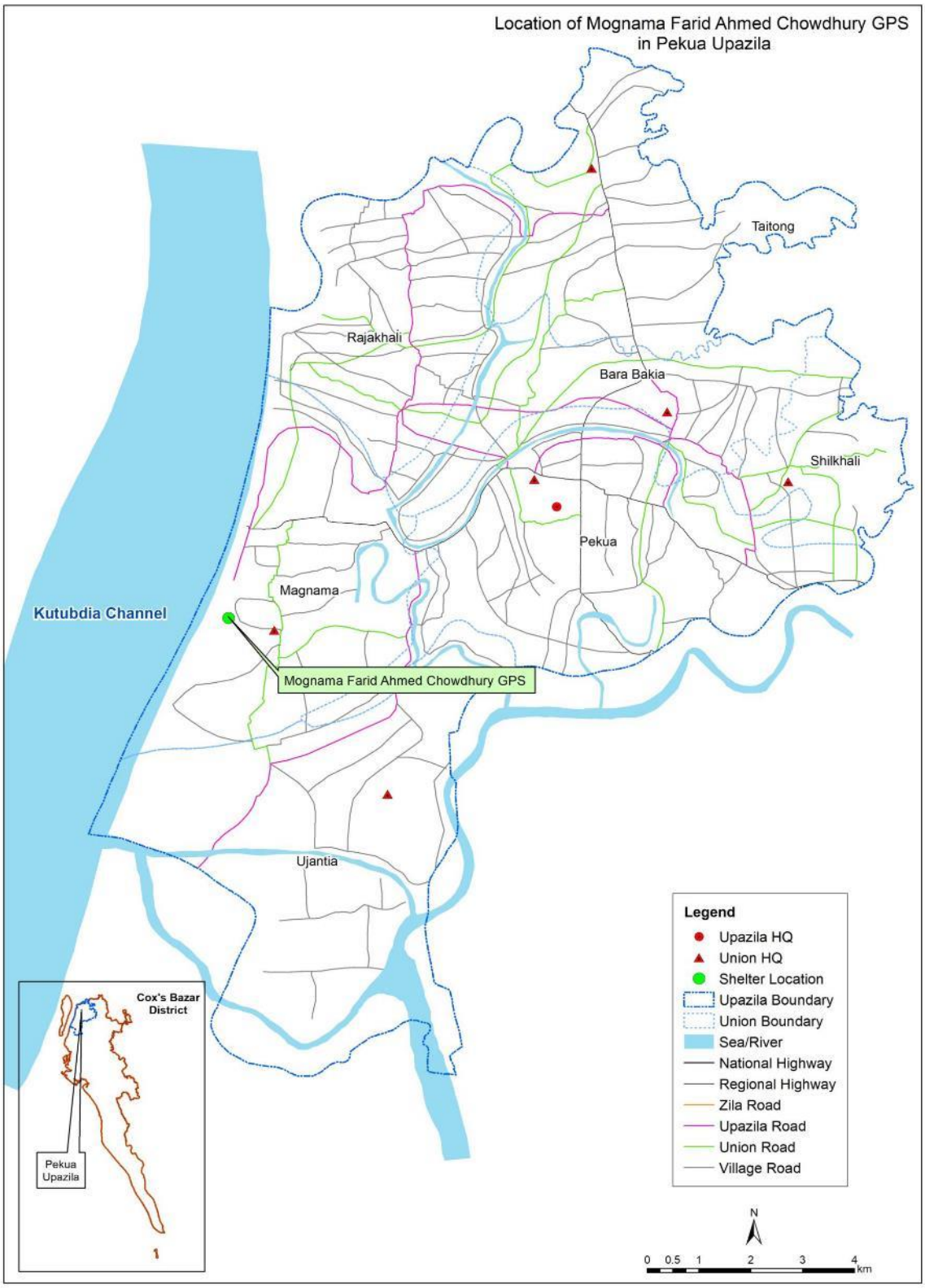


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Cheptakhali khal (10m), Morcheria mosque (150m), Pond (150m), Mognama green park (550m)
South side	Salt cultivation field (10m), Mognama mohila madrasa (650m)
East side	Azizia Mosque cum Madrasah & Graveyard (200m), Pond (200m), Mognama SDF public school (650m), Mognama Jame mosque (550m)
West side	Pond (20m), Embankment (1km), Bay of Bengal (1km), BNS Sheikh Hasina (900m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the Sub-project site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 27 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 17 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the **Mognama Farid Uddin Ahmed Chowdhury GPS** and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So the cyclone shelter would provide new space for additional classroom.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this resilience shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 27 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new school cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Within the close proximity of the proposed construction site, a khal named Cheptakhali khal is located at 10m north of the subproject, Morcheria mosque is found at 150m north, A Pond which is 150m distance at north from the school boundary. At south side, salt cultivation field (10m) is very near to the subproject. Azizia Mosque cum Madrasah & Graveyard is found at 200m east of the subproject; A Pond located at 200m east and another Pond is found at 20m west of the subproject. A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small-scale during the construction period. Top soil in agricultural land will be avoided without any failure in earthwork and that productive part of the soil will be conserved and replaced, if underneath soil is taken from any agricultural land. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil

can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effect generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank[3] has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where no vegetation is found. No trees will be cut down due to the construction activities of this Subproject. All the socio-economic

and environmental features and establishments locating within close proximity (within 100m) such as a khal named Cheptakhali khal is located at 10m north of the subproject, a Pond is found at 20m west side and at south side, salt cultivation field is 10m distance from the subproject might get affected during the construction period with the generated debris, dust and noise, though for the time being. As part of the standard site management practices, Contractor must adhere to the best practice wastes management procedure and regular adoption of dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of

this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Pekua will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 09 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of

market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Mognama Farid Uddin Ahmed Chowdhury GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Pekua **Union**: Mognama

Name of Community/Local Area: Chander Para

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.: Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, one stored school building, a deep tubewell and a wash block is found. A khal named Cheptakhali khal is located at 10m north of the subproject, Morcheria mosque is found at 150m north, A Pond which is 150m distance at north from the school boundary and Mognama green park is found at 550m north of the subproject. At south side, salt cultivation field (10m) is very near to the subproject. Mognama Mohila Madrasa is located at 650m south of the subproject. Azizia Mosque cum Madrasah & Graveyard is found at 200m east of the subproject; A Pond located at 200m east, Mognama SDF public school is located at east which is 650m distance from the subproject and also Mognama Jame mosque is located at 550m east of the subproject. At west side, a Pond is found at 20m distance from the subproject, The Bay of Bengal is within 1km distance from the subproject and BNS Sheikh Hasina is located at 900m west of the subproject. A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new school cum disaster shelters will increase the sense of security of the communities. Shelters were extremely important to them as

they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic, human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. A khal named Cheptakhali khal is located at 10m north of the subproject, Morcheria mosque is found at 150m north, A Pond which is 150m distance at north from the school boundary and Mognama green park is found at 550m north of the subproject. On the south side, salt cultivation field (10m) is very near to the subproject. Mognama Mohila Madrasa is located at 650m south of the subproject. Azizia Mosque cum Madrasah & Graveyard is found at 200m east of the subproject; A Pond located at 200m east, Mognama SDF public school is located at east which is 650m distance from the subproject and also Mognama Jame mosque is located at 550m east of the subproject. On the west side, a Pond is found at 20m distance from the subproject, The Bay of Bengal is within 1km distance from the subproject and BNS Sheikh Hasina is located at 900m west of the subproject. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples; and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Mognama Union under Pekua Upazila of Cox's Bazar district. The sub-project area is located at 21.803750 N and 91.912306 E. The distance from the Upazila headquarter is about 7 km. Nearby major road is upazila connecting road. A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. Total available land area of this sub-project is 47 decimals. The school code is 422089002

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

A khal named Cheptakhali khal is located at 10m north of the subproject, Morcheria mosque is found at 150m north, A Pond which is 150m distance at north from the school boundary and Mognama green park is found at 550m north of the subproject. On the south side, salt cultivation field (10m) is very near to the subproject. Mognama Mohila Madrasa is located at 650m south of the subproject. Azizia Mosque cum Madrasah & Graveyard is found at 200m east of the subproject; A Pond located at 200m east, Mognama SDF public school is located at east which is 650m distance from the subproject and also Mognama Jame mosque is located at 550m east of the subproject. On the west side, a Pond is found at 20m distance from the subproject, The Bay of Bengal is within 1km distance from the subproject and BNS Sheikh Hasina is located at 900m west of the subproject.

No disturbance is anticipated due to construction activities. Some agriculture lands and salt cultivation fields are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site. Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

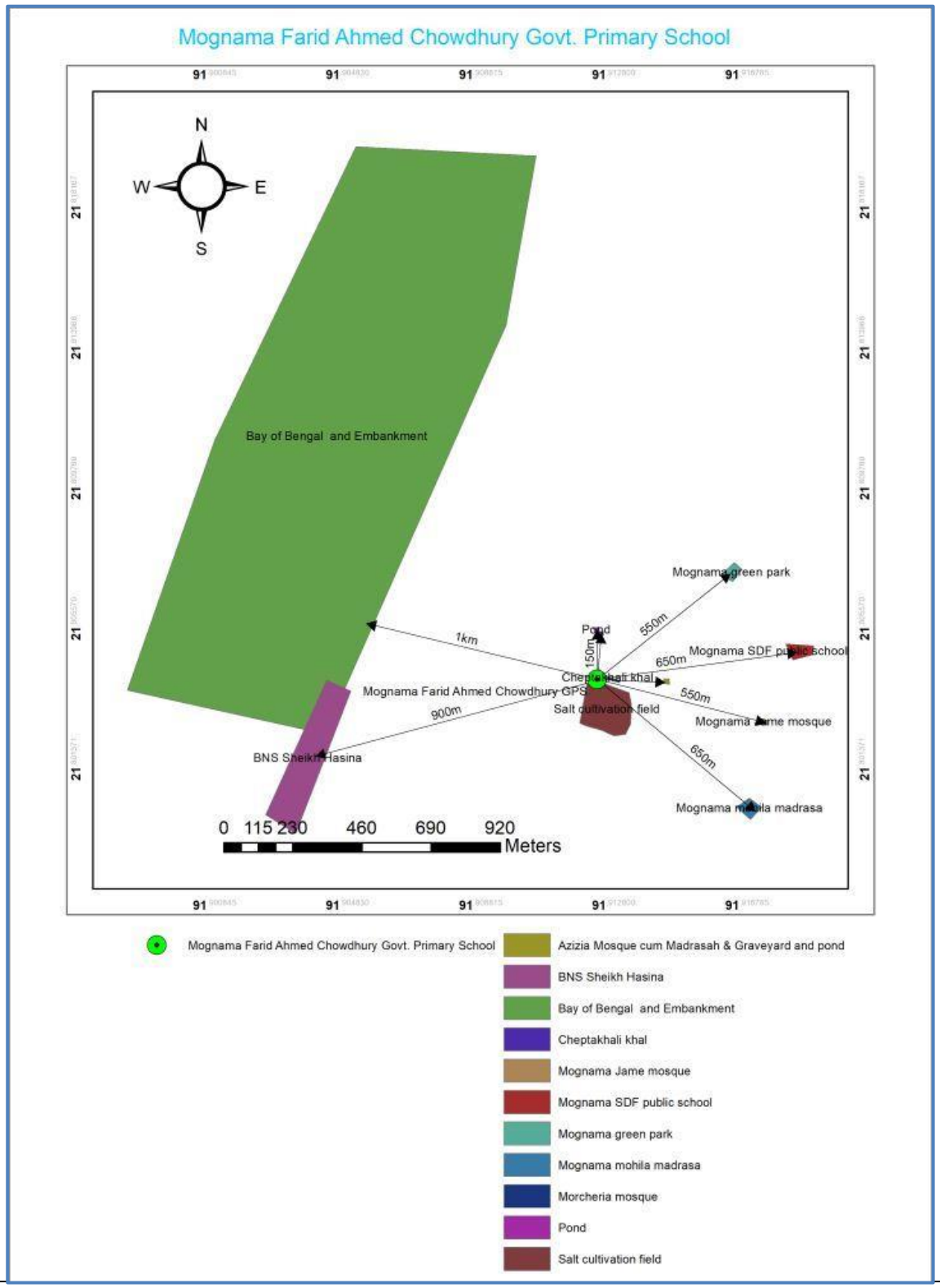
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as a khal named Cheptakhali khal is located at 10m north of the subproject, Morcheria mosque is found at 150m north, A Pond which is 150m distance at north from the school boundary and Mognama green park is found at 550m north of the subproject. On the south side, salt cultivation field (10m) is very near to the subproject. Mognama Mohila Madrasa is located at 650m south of the subproject. Azizia Mosque cum Madrasah & Graveyard is found at 200m east of the subproject; A Pond located at 200m east, Mognama SDF public school is located at east which is 650m distance from the subproject and also Mognama Jame mosque is located at 550m east of the subproject. On the west side, a Pond is found at 20m distance from the subproject, The Bay of Bengal is within 1km distance from the subproject and BNS Sheikh Hasina is located at 900m west of the subproject. but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below.



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, high school, pond, agriculture lands and salt cultivation fields were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and

mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of Organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One shallow tube-well is found within the school boundary. The shallow depth is about 250-300 feet. Teachers and students consume water from this shallow tube-well. They are reportedly suffer from different water borne diseases at times. In the sub-project area, deep groundwater is salty but arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep

groundwater table (drinkable) varies from 700-850ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes. Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.19mg/l, TDS-23.40 to 325 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.6 mg/l and As-Nil (DPHE Test Report, 2021).
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow tube-well is found within the school boundary and aquifer depth is about 250-300 feet. But the tubewell doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: It is possible to construction of labor camp on the south side of the subproject location. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage

area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road is the main way for transportation of raw/construction materials. It is located on north side of the sub-project site.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, south side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 8 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected

by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A khal named Cheptakhali khal is located at 10m north and a Pond is found at 20m south of the subproject, might be affected a little due to construction works and a Pond is located at 150m distance from the school boundary, another Pond is located at 200m east and The Bay of Bengal is within 1km distance which are clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Medium:** The site is located near a khal. So, aquatic ecosystems or habitats of aquatic species in this waterbody might get affected during construction phase. There are some terrestrial flora species around the subproject site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is medium to low for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road; the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health

hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed new School cum Disaster shelter building will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A khal named Cheptakhali khal is located at 10m north of the subproject area but no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project sites, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts:

N/A
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is situated near to a locality. A 10 ft. wide HBB Farid Uddin Ahmed school Road is located at north side which is connected to Upazila connecting road. The roads are mainly used for pedestrian access and by light vehicles like bicycles, three wheelers etc. therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate Resilientmulti-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children,	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet. • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate. • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	mitigation measures.				records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
						basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Mognama Farid Uddin Ahmed Chowdhury GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	elephant conflict			
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction	Safety Issues	• Unauthorized entry to the site area is completely prohibited	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. • Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	water bodies, flora and fauna			
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, PIU, +8801913442006

Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			Tk.*24 months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal at a safe distance etc. all complete as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**509,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময়: ১২:০০ তারিখ: ২৭/১০/২০২১

স্কুলের নাম: মগনামা ফরিদ আহমেদ চৌধুরী সরকারি প্রাথমিক বিদ্যালয়

স্কুল আইডি নম্বর: ৪১২০৮১০০২

মত বিনিময় স্থান: বিদ্যালয়ের অফিস কক্ষে

গ্রাম: চাদের পাহাড় ওয়ার্ড নং: ০৭ ইউনিয়ন: মগনামা ডাকঘর: মগনামা

উপজেলা: পেকুয়া জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	মোবু ছাহিদ	৫১	পুরুষ	মাঝিপাড়া	
২	কামু ওসমান	৭১	,,	মাঝিপাড়া	
৩	এস.এম. মিছবাহ উদ্দীন	৪০	,,	মাঝিপাড়া	
৪	নুরুল্লাহ	৫৪	,,	মাঝিপাড়া	
৫	[illegible]	৫০	,,	মাঝিপাড়া	
৬	মোবুল আলম	৪১	,,	চাঁদের পাহাড়	
৭	[illegible]	৪৩	,,	চাঁদের পাহাড়	
৮	[illegible]	২৮	,,	মাঝিপাড়া	
৯	আমির আলম	৪৪	,,	মাঝিপাড়া	
১০	[illegible]	২৩	,,	মাঝিপাড়া	
১১	মো: কামালুদ্দিন	৪০	,,	নতুন আবাদপাড়া	
১২	মিছবাহ উদ্দীন	২৫	,,	মাঝিপাড়া	
১৩	আক্কাস [illegible]	১৮	,,	মাঝিপাড়া	
১৪	[illegible]	৬৮	,,	মাঝিপাড়া	
১৫	[illegible]	৫২	,,	মাঝিপাড়া	
১৬	মো: মকছুদ	৩৭	,,	মাঝিপাড়া	
১৭	[illegible]	৩২	মহিলা	[illegible]	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Moheshkhali Model Govt. Primary School
Educational Institution ID: 91412020103
Village: Putivila; Union: Moheshkhali Municipality, Ward No. 2; Upazila: Moheshkhali
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Moheshkhali Municipality, Ward No. 2 of Moheshkhali Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Putivila, Palpara,

Mosharaf Ali para, Mobarak Ali para, Thana para, College para and Amir Chand para. Typical rural settings of the area offer fishermen to be in the prime professional engagement, while the farmer stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,300 households, containing 7,000 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Moheshkhali Model GPS
Educational Institute ID	91412020103
District	Cox's Bazar
Upazila	Moheshkhali
Union	Moheshkhali Municipality, Ward no. 2
Owner of land	GPS
Catchment household	1,300
Catchment Population	7,000 (Male: 3,360, Female: 3,340)
Profession	Businessmen 45%, Farmer 40%, Job holder 10% Day labor 3% and others 2%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Putivila, Palpara, Mosharaf Ali para, Mobarak Ali para, Thana para, College para and Amir Chand para.
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	About 12ft. wide school linking HBB road on west side connected with Gorakghata-Shaplapur-Janata Bazar Road on south side.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Moheshkhali Model GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North side of Moheshkhali Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 12ft wide HBB road on the west side which is connected to the LGED road. A high school named Moheskhali model high school at 220m is located on north side of the sub-project component. On the south side, some socio-cultural features such as Upazila Resource Center at 10m, Moheskhali university collage at 470m, Moheshkhali Livestock Hospital at 500m, Upazila Porishad at 520m, Moheshkhali Thana at 550m and Moheshkhali Upazila Mosque at 570m are located of the sub-project location. Shrimp project at 50m, Moheskhali dighi at 350m, Muktijoddha Complex at 500m, Moheskhali municipal mosque at 700m and Gorakghata khal at 800m are located on east side from the sub-project boundary. There are some important socio-environmental foundations are located on the west side, such as Moheshkhali Idle High School at 100m, High School Mosque at 110, a Pond at 115m, Fire Service station at 500m and Moheshkhali Girls High School at 700m of the proposed location.

The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Moheshkhali
Union	Moheshkhali Municipality, Ward No. 2
GPS position	21.521667 N and 91.962778 E
Distance from Upazila HQ	0.5 km
Nearby major road	Gorakghata-Shaplapur-Janata Bazar Road
Nearby river/canal	Gorakghata Khal is located at 600m distance on north side of the sub-project component.
North-Eastern side	Pekua Upazila
North-Western side	Kutubdia Channel and Kutubdia Upazila
South side	Bay of Bengal
South-Eastern side	Cox's Bazar Sadar Upazila
East side	Moheshkhali Channel, Chakaria Upazila and Cox's Bazar Sadar Upazila
West side	Bay of Bengal

[Sources of data: Field survey, 2021]

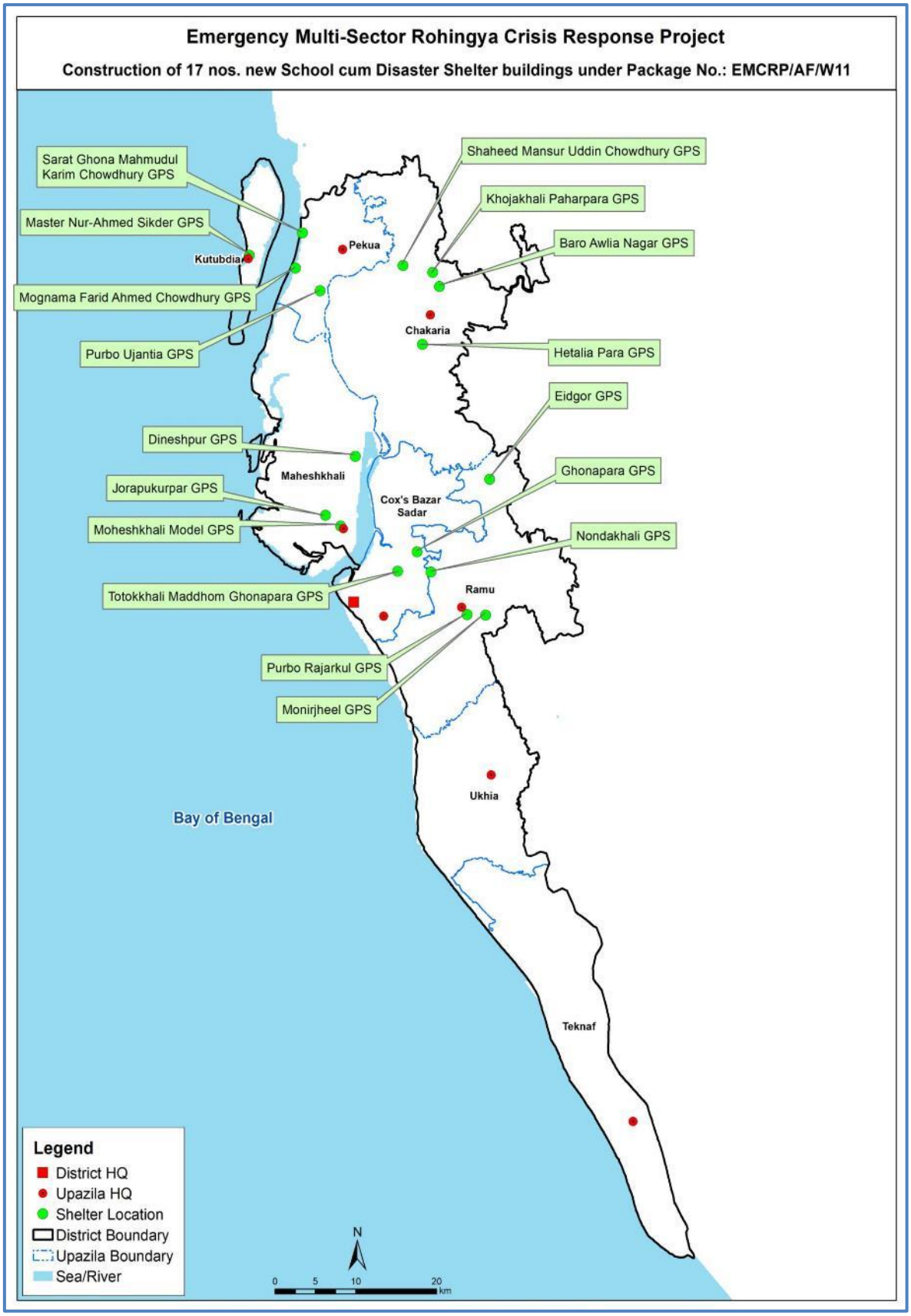


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

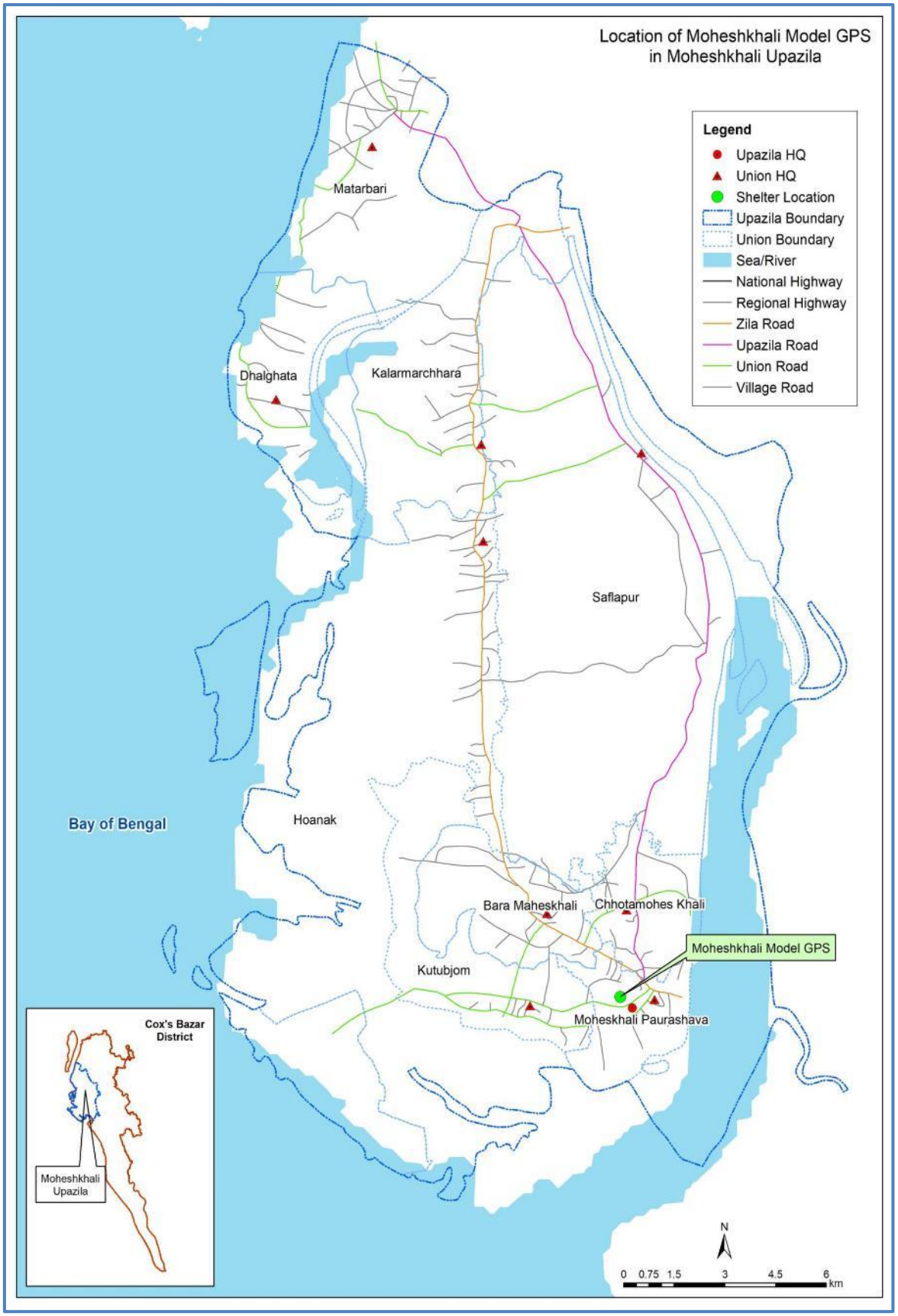


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Shrimp project (50m), Moheskhali model high school (220m), Gorakghata Khal (600m)
South side	Upazila Resource Center (10m), Shrimp project (20m), Moheskhali university collage (470m), Moheshkhali Livestock Hospital (500m), Upazila Porishad (520m), Moheshkhali Thana (550m), Moheshkhali Upazila Mosque (570m)
East side	Shrimp project (50m), Moheskhali dighi (350m), Muktijoddha Complex (500m), Moheskhali municipal mosque (700m), Gorakghata khal (800m), Rakhainpara GPS (1km)
West side	Moheshkhali Idle High School (100m), High School Mosque (110), Pond (115m), Fire Service station (500m), Moheshkhali Girls High School (700m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site (the one-story building shown on the picture will be demolished and replaced by the proposed building)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 25 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 28 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Moheshkhali Model GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time.

Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.

- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 25 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. An old structure will be replaced by the proposed new multipurpose school building within the same boundary so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub

project. Within the close proximity (120m) to the sub-project site, Shrimp project at 50m on north side, Upazila Resource Center at 10m and another Shrimp project at 20m on south side, a high school named Moheshkhali Idle High School at 100m, High School Mosque at 110m and a Pond at 115m on west side are found from the sub-project area. Some socio-cultural features are found around the subproject location such as, on the south side Moheskhali university college at 470m, Moheshkhali Livestock Hospital at 500m, Upazila Porishad at 520m, Moheshkhali Thana at 550m and Moheshkhali Upazila Mosque at 570m distance are located of the sub-project component. There are some components such as Shrimp project at 50m, Muktijoddha Complex at 500m, Moheskhali municipal mosque at 700m, Gorakghata khal at 800m and Rakhainpara GPS at 1km are found on the east side of the sub-project. Some surface water bodies are found such as Gorakghata Khal at 600m on north side, Moheskhali dighi at 350m on east side from the sub-project location. About 12ft. wide HBB School linking road is passing near by the sub-project which is connected with Gorakghata-Shaplapur-Janata Bazar Road on south side. A Fire Service station at 500m and Moheshkhali Girls High School at 700m distance are found on the west side of the sub-project component. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land within the sub-project boundary. An old structure will be demolished during pre-construction period and replaced with the new proposed disaster shelter. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down in the periphery of the school. Some socio-cultural features are located on south side such as Moheskhali university college at 470m, Moheshkhali Livestock Hospital at 500m, Upazila Porishad at 520m, Moheshkhali Thana at 550m and Moheshkhali Upazila Mosque at 570m distance of the sub-project component. On the east side Muktijoddha Complex at 500m, Moheskhali municipal mosque at 700m, Gorakghata khal at 800m and Rakhainpara GPS at 1km are found of the sub-project. About 12ft. wide HBB School linking road passing by the sub-project which connect with Gorakghata-Shaplapur-Janata Bazar Road on south side. A Fire Service station at 500m and Moheshkhali Girls High School at 700m distance are found on west side of the sub-project component. Some surface water bodies are found such as Gorakghata Khal at 600m on north side, Moheskhali dighi at 350m on east side from the sub-project location. Within the close proximity (120m) to the sub-project site, Shrimp project at 50m on north side, Upazila Resource Center at 10m and another Shrimp project at 20m on south side, a high school named Moheshkhali Idle High School at 100m, High School Mosque at 110m and a Pond at 115m on west side from the proposed site might get affected during the construction period with the generated noise, debris and dust, though

for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the

environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Moheshkhali will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face

coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Moheshkhali Model GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Moheshkhali **Union**: Moheshkhali Municipality, Ward No. 2

Name of Community/Local Area: Putivila

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are one three-storied building, one two-storied building, a one-story building, a one-story old building, shaheed Minar, one deep Tubewell and, a toilet. An existing one stored old structure will be demolished during pre-construction period and the new school cum disaster shelter will be constructed there. About 12 ft. wide HBB school linking road on west side is found which connected with Gorakghata-Shaplapur-Janata Bazar Road on the south side of the sub-project. A high school named Moheskhali model high school at 220m is located on north side of the sub-project component. On the south side, some socio-cultural features such as Upazila Resource Center at 10m, Moheskhali university collage at 470m, Moheshkhali Livestock Hospital at 500m, Upazila Porishad at 520m, Moheshkhali Thana at 550m and Moheshkhali Upazila Mosque at 570m are located of the sub-project location. Shrimp project at 50m, Moheskhali dighi at 350m, Muktijoddha Complex at 500m, Moheskhali municipal mosque at 700m and Gorakghata khal at 800m are located on east side from the sub-project boundary. There are some important socio-environmental foundations are located on the west side, such as Moheshkhali Idle High School at 100m distance, High School Mosque at 110, a Pond at 115m, Fire Service station at 500m and Moheshkhali Girls High School at 700m distance of the proposed location. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the

initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolishing an old building and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. About 12ft. wide HBB School linking village road is passing near the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Shrimp project (50m), Moheskhali model high school (220m), Gorakghata Khal (600m); on south side Upazila Resource Center (10m), Shrimp project (20m), Moheskhali university college (470m), Moheshkhali Livestock Hospital (500m), Upazila Porishad (520m), Moheshkhali Thana (550m), Moheshkhali Upazila Mosque (570m); on east side Shrimp project (50m), Moheskhali dighi (350m), Muktijoddha Complex (500m), Moheskhali municipal mosque (700m), Gorakghata khal (800m), Rakhainpara GPS (1km) and on west side Moheshkhali Idle High School (100m), High School Mosque (110m), Pond (115m), Fire Service station (500m), Moheshkhali Girls High School (700m) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions: A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.
Sub-project Location: The sub-project area is situated in Moheshkhali Municipality, Ward 2, under Moheshkhali Upazila of Cox's Bazar district. The sub-project area is located at 21.521667 N and 91.962778 E. Catchment villages of this sub-project area are Putivila, Palpara, Mosharaf Ali para, Mobarak Ali para, Thana para, College para and Amir Chand para. The distance from the Upazila headquarter is about 0.5 km. A 12 ft. wide HBB school linking village road is passing by the sub-project site. Total available land area of this sub-project is 57 decimals. The school code is·91412020103 **Land ownership** The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.
Expected construction period: 24 (Twenty four months)
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted: Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is an old structure which will be replaced by the proposed new multipurpose school building on the north-eastern side within the same boundary. At north side Shrimp project (50m), Moheskhali model high school (220m), Gorakghata Khal (600m); at south side Upazila Resource Center (10m), Shrimp project (20m), Moheskhali university college (470m), Moheshkhali Livestock Hospital (500m), Upazila Porishad (520m), Moheshkhali Thana

(550m), Moheshkhali Upazila Mosque (570m); at east side Shrimp project (50m), Moheskhali dighi (350m), Muktijoddha Complex (500m), Moheskhali municipal mosque (700m), Gorakghata khal (800m), Rakhainpara GPS (1km) and at west side Moheshkhali Idle High School (100m), High School Mosque (110m), Pond (115m), Fire Service station (500m), Moheshkhali Girls High School (700m) are located of the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site. Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

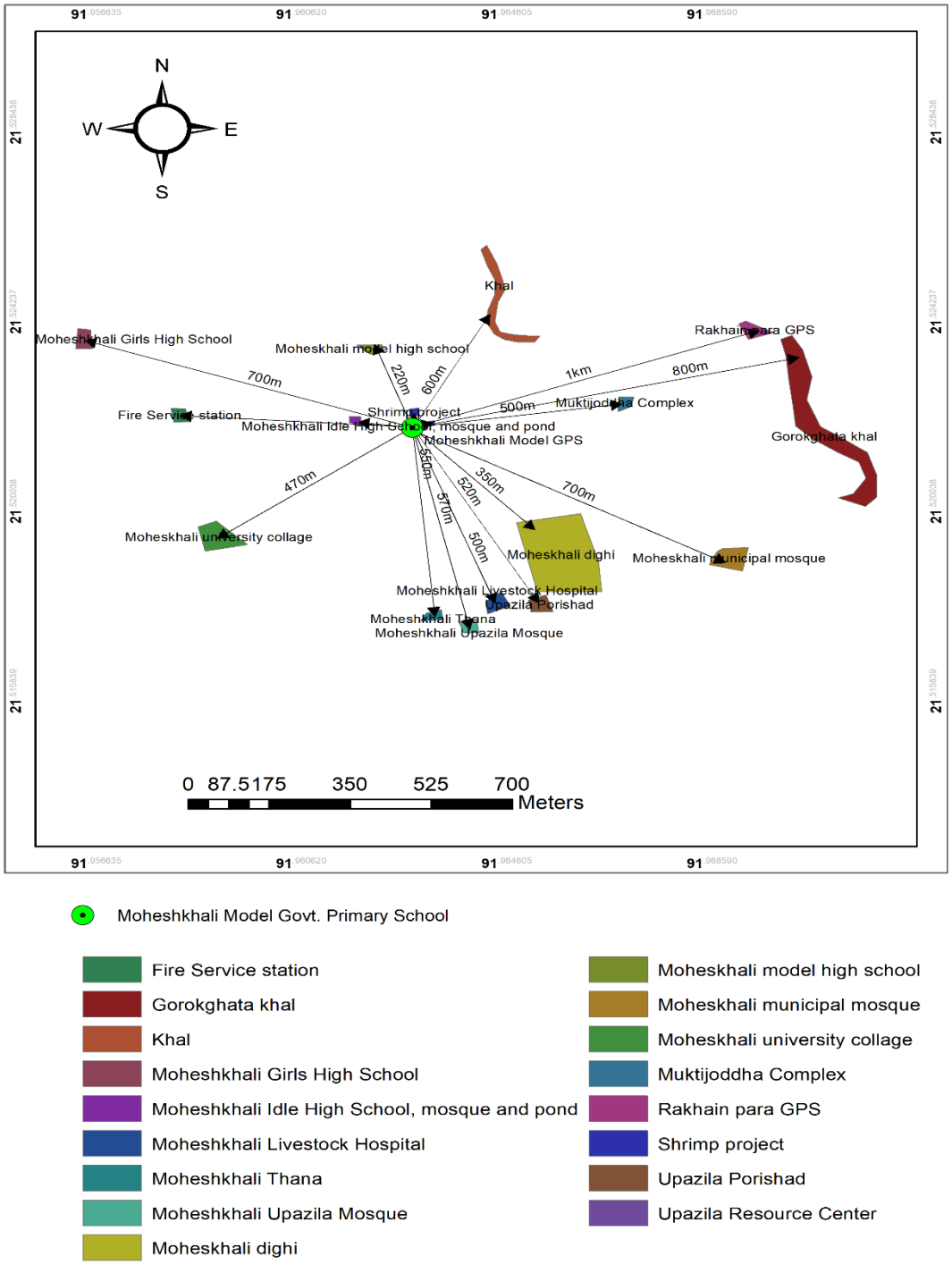
***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site):

Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side Shrimp project (50m), Moheskhali model high school (220m), Gorakghata Khal (600m); at south side Upazila Resource Center (10m), Shrimp project (20m), Moheskhali university college (470m), Moheshkhali Livestock Hospital (500m), Upazila Porishad (520m), Moheshkhali Thana (550m), Moheshkhali Upazila Mosque (570m); at east side Shrimp project (50m), Moheskhali dighi (350m), Muktijoddha Complex (500m), Moheskhali municipal mosque (700m), Gorakghata khal (800m), Rakhainpara GPS (1km) and at west side Moheshkhali Idle High School (100m), High School Mosque (110m), Pond (115m), Fire Service station (500m), Moheshkhali Girls High School (700m) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, temple, graveyard, crematorium, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 550 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 450-700ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to

681µs/cm, Fe-0.08 to 4.6 mg/l, Cl^--8.0 to 475mg/l, Salinity- 0.07 to 1.28mg/l and As-Nil (DPHE Test Report, 2021)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 12ft. wide HBB road is passing by the west side of the sub-project. It is connected with Gorakghata-Shaplapur-Janata Bazar Road. It is possible to carry the construction materials to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 550 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the north side of the school boundary could be used for setting up a temporary labor camp.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 12ft. wide HBB school linking village connecting road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected with Gorakghata-

Shaplapur-Janata Bazar Road.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, south side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or

around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though Gorakghata Khal at 600m on north side and Moheskhali dighi at 350m on east side are found which are outside of the construction area, these will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)

Low. The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A HBB road connects the sites with a main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and

emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Constructi on works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	students, children, animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Demolishing of an existing structure	Under the sub-project intervention the overall score is Medium	• Water spraying at the demolition site • Fencing / Installing barriers should be shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Do not accumulate and burn waste at the site • Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders • It needs to Identify proper location to dispose solid waste from demolition and other activities in consultation with respective bodies • Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. • Further guidance on demolition works and wastes management is given in the appendix 2,	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			below the ESMP table, to be followed by the contractor.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
					meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly
	Biodiversity	Under the sub-project	• Prohibit employees from cutting of trees for firewood.	Contractor, Environmental	If tree cutting required, to	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	(There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	intervention the overall score is low.	• If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Specialists of PIU and D&SC	be determined during Design stage, Numbers of complaints from sensitive receptors	
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			separately.			
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in	Contractor; monitored by Consultant of	Worksite is restored to original	Over the completion of

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the re-vegetation specification that forms part of the bidding document.	D&SC and PIU	conditions.	Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Moheshkhali Model GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction	Site Selection &	• Selection of sub-project sites and all implementing	PIU	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	implementing interventions: Human-elephant conflict	interventions must take place outside of the elephant corridor/influence area.		Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction	Labour Base Camp: Conflicts with the local	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual	Contractor	Social Development

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	residents	harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		(safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	(including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.		
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.		

Demolition and Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For demolition works:

- All electric, gas, water, sewer, and other energy services or power lines shall be capped/blinded and/or otherwise cut before the commencement of demolition work.
- All asbestos, insulation materials, glass and other hazardous materials and substances shall be removed. Such materials shall not be stored within the structure to be demolished.
- Openings and weak flooring shall be prominently marked or barricaded before the commencement of demolition. Operators of machinery and equipment and workers involved in demolition work shall be informed of such hazardous location.
- Demolition work shall commence from the top of a structure and progress downward.
- Proper entrances of adequate strength to protect workers from falling materials shall be erected for access into the structure.
- The entire demolition site shall be effectively barricaded with appropriate safety signs displayed.
- The lower floor where demolition wastes are collected shall be properly barricaded and guarded to prevent materials from ricocheting and injuring workers or passer-by.
- Excessive debris shall not be allowed to accumulate inside a demolished structure. All demolition waste and debris shall be cleared from the work site on a daily basis.

- Refuse containers shall be provided at worksite for the storage of demolition wastes and debris.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ১১:৩০ ঘটিকা তারিখ: ২৫/১০/২০২১
স্কুলের নাম: মহেশখালী সদর সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: 412020103
মত বিনিময় স্থান: স্কুলের কক্ষ প্রাঙ্গণে
গ্রাম: পুটিবিলা ওয়ার্ড নং: ০২ ইউনিয়ন: মহেশখালী পৌরসভা ডাকঘর: গোরকঘাটা
উপজেলা: মহেশখালী জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	সিদ্দিক উদ্দিন চৌধুরী	৫১	পুরুষ	পুটিবিলা	
০২	আবছার মিয়া	৪০	পুরুষ	পুটিবিলা	
০৩	মো: আবদুল মান্নান	৪০	পুরুষ	পুটিবিলা	
০৪	এম, গিয়াস উদ্দিন	৪৪	পুরুষ	পুটিবিলা	
০৫	সাজিদুল আলম	৪২	পুরুষ	পুটিবিলা	
০৬	মো: রেজাউল কাইয়ুম	৪৬	পুরুষ	পুটিবিলা	
০৭	কামরুন্নাহার	৪২	মহিলা	পুটিবিলা	
০৮	হামিদা বেগম	৪৬	মহিলা	পুটিবিলা	
০৯	মিনারা বেগম	৫৫	মহিলা	গোরকঘাটা	
১০	বেবী আক্তার	৩০	মহিলা	গোরকঘাটা	
১১	চম্পা বড়ুয়া	৩১	মহিলা	গোরকঘাটা	
১২	তৌহিদা আক্তার	৪০	মহিলা	পুটিবিলা	
১৩	তৌহিদা আক্তার	২২	মহিলা	পুটিবিলা	
১৪	খলিফা তাহমিনা	৪৬	মহিলা	পুটিবিলা	
১৫	কাজলা বালা দে	৪৮	মহিলা	পুটিবিলা	
১৬	নজীন আক্তার	৪০	মহিলা	পুটিবিলা	

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জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
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সময়: ১১:৩০ মিনিট তারিখ: ২৫/১০/২০২১
স্থানের নাম: মহেশখালী মডেল সরকারী প্রাথমিক বিদ্যালয়
স্থল অইডি নম্বর: ৪১২০২০১০৬
মত বিনিময় স্থান: স্কুলের শ্রেণী কক্ষে
গ্রাম: ৪ পুটিবিলা ওয়ার্ড নং: ০২ ইউনিয়ন: মহেশখালী পৌরসভা/কলাতলী: পৌরসভা
উপজেলা: মহেশখালী জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	মোছনা আক্তার	৩০	মহিলা	পুটিবিলা	মোছনা
১৮	রোজনা আক্তার	৩৭	মহিলা	পুটিবিলা	রোজনা
১৯	সুরাইয়া আক্তার	৩০	মহিলা	পুটিবিলা	সুরাইয়া
২০	রাজেদা আক্তার	৩০	মহিলা	পুটিবিলা	রাজেদা
২১	সন্ধ্যা দে	৪২	মহিলা	পুটিবিলা	সন্ধ্যা
২২	তৈবী আক্তার	২৮	মহিলা	পুটিবিলা	তৈবী
২৩	বিপ্লবা পাল	৪০	মহিলা	পুটিবিলা	বিপ্লবা
২৪	নেলী পাল	৪১	মহিলা	পুটিবিলা	নেলি
২৫	মুহাম্মদ ছিদ্দিক বুড়ী	৬১	পুরুষ	পুটিবিলা	
২৬	কোহিনুর আক্তার	৩৭	মহিলা	পুটিবিলা	
২৭	ফরিদা ইয়াছমিন	২৪	মহিলা	পুটিবিলা	
২৮	ফরিদুল আলম	৪০	পুরুষ	[illegible]	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Monirjheel Govt. Primary School
Educational Institution ID: 91412040602
Village: Monirjheel; Union: Kawerkhop; Upazila: Ramu
District: Cox's Bazar

Funded by:

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Kawerkhop union of Ramu Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding village of Monirjheel. Typical rural settings of the area offer farmer to be the prime professional engagement, while the service holder stand 2nd in option.

The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,500 households, containing 8,000 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Monirjheel GPS
Educational Institute ID	91412040602
District	Cox's Bazar
Upazila	Ramu
Union	Kawerkhop
Owner of land	GPS
Catchment household	1,500
Catchment Population	8,000 (Male: 3,840, Female: 4,160)
Profession	Farmer 70%, Service holder 10%, Businessman 5% and others 15%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Monirjheel
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	12 ft. wide BFS road named Monirjheel-Ramu Road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Monirjheel GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6

Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the East side of Ramu Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 12 ft. wide BFS road named Monirjheel-Ramu Road on the west side which is connected to the Arakan Road. A Pond is found at 30m and Monirjheel Mohidulla Ebtadayee Madrasah at 50m on south side of the proposed location. The location details of the Sub-project have been summarized in Table 1.4.1.

The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ramu
Union	Kawerkhop
GPS position	21.422500 N and 92.134306 E
Distance from Upazila HQ	10 km
Nearby major road	Monirjheel- Ramu Road
Nearby river/canal	Bakkhali River is located at 400m north side of the sub-project.
North side	Chakaria and Cox's Bazar Sadar Upazila
South side	Ukhiya and Naikhyongchhari Upazila
East side	Naikhyongchhari Upazila
West side	Cox's Bazar Sadar and the Bay of Bengal

[Sources of data: Field survey, 2021]

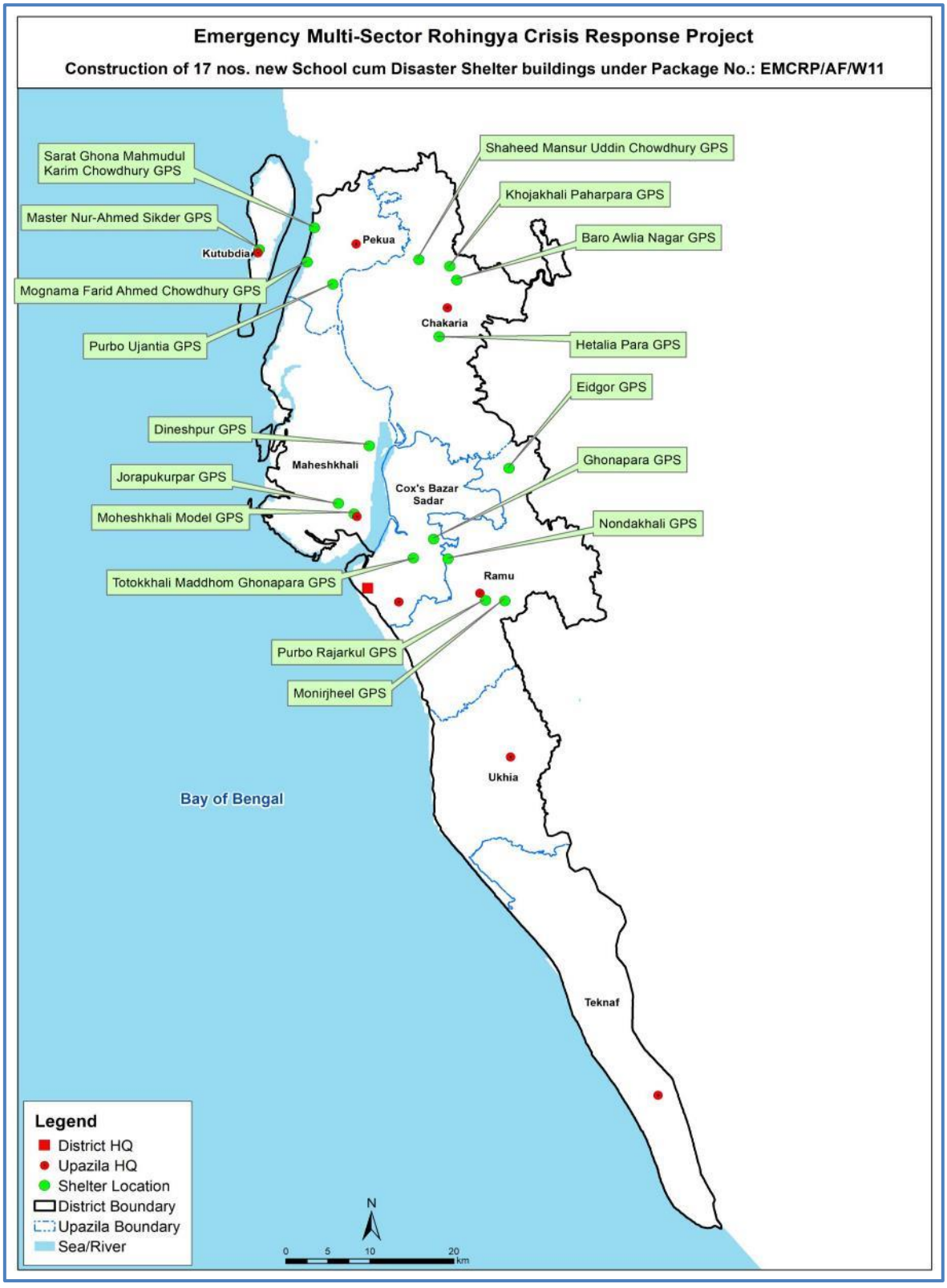


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

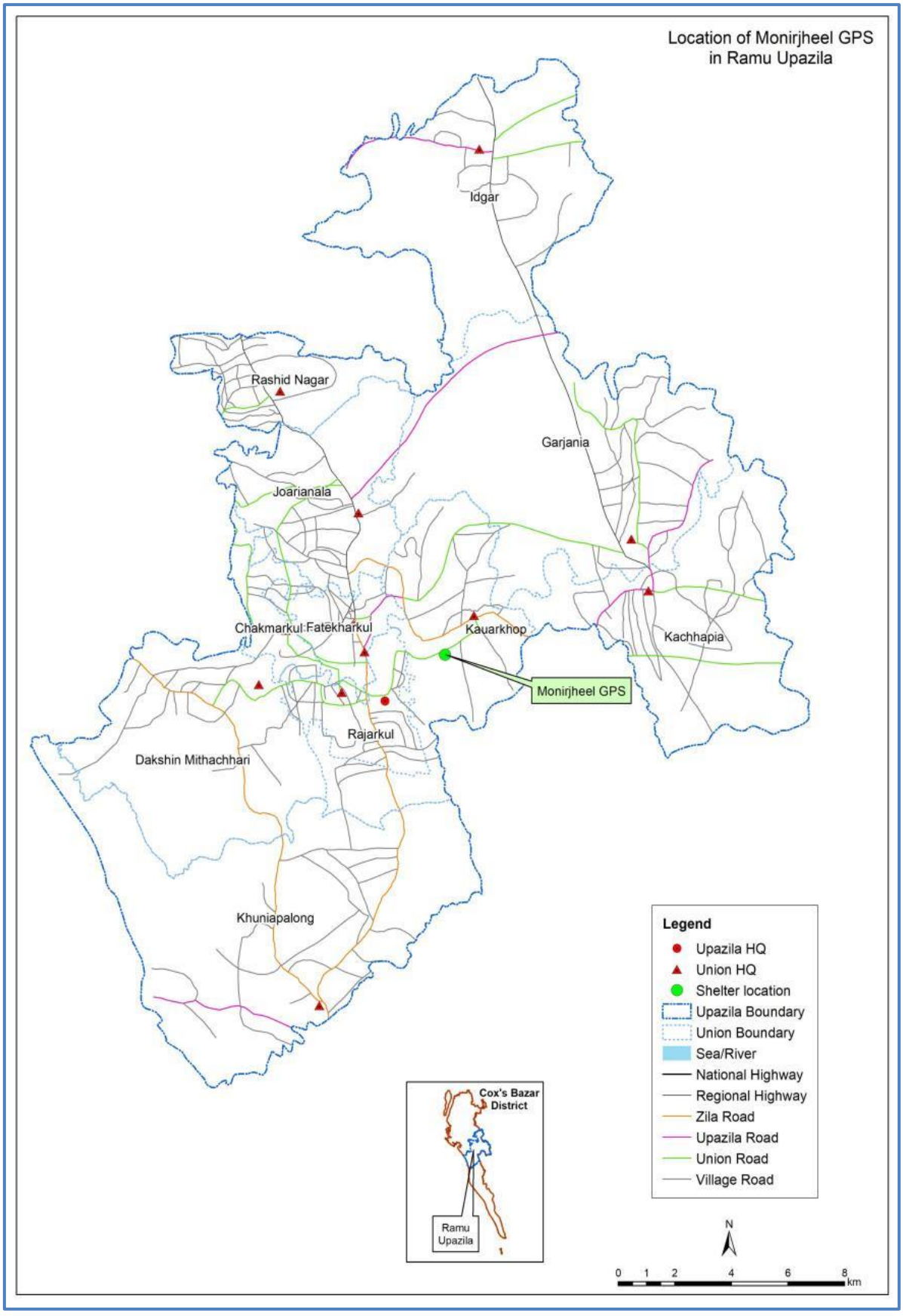


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Bakkhali river (400m)
South side	Monirjheel Mohidulla Ebtadayee Madrasah (50m), Pond (30m), Monirjheel Community clinic (1km), Sonaichori Rubber dam (800m)
East side	Mohiskum Mosque (400m), East Monirjheel hill (1km)
West side	Tajbirjheel Central Mosque (50m), Tajbirjheel graveyard (70m), Chora (600m), Tajbirjheel Forkania Madrasah (700m), Baitul Mamur Mosque (700m),

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 26 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 24 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Monirjheel GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separate for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 26 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. A madrasah named Monirjheel Mohidulla Ebtadayee Madrasah is found at 50m and a Pond at 30m on south side of the sub-project site. There are found some religious foundations on the west side, like as Tajbirjheel Central Mosque at 50m, Tajbirjheel graveyard at 70m, Tajbirjheel Forkania Madrasah at 700m and Baitul Mamur Mosque at 700m from the construction site. Bakkhali River is located at 400m on north side of the sub-project. A 12 ft. wide BFS road named Monirjheel-Ramu Road is located near to the subproject area. No significant disturbance to all these establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water

bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this plan is to formulate measures which will mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the western side. Due to the construction activities of this Sub-project, No tree will be cut down in the periphery of the school. There is a madrasah named Monirjheel Mohidulla Ebtadayee Madrasah is found at 50m on the south side of the sub-project. Tajbirjheel Central Mosque is found at 50m distance and Tajbirjheel graveyard is located at 70m distance on the west side from the construction location. Further, a pond found at 30m south side and some settlements of sub-project area might get affected during the construction period with the generated debris and dust, though for the time

being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance as part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the

surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ramu will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a

half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation

should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Monirjheel GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Ramu **Union**: Kawerkhop

Name of Community/Local Area: Monirjheel

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, a two-story building, a tin shed school building, one Tubewell and one wash block. A 12 ft wide BFS road on west side of the sub-project. Monirjheel Mohidulla Ebtadayee Madrasah is found at 50m on south side, Tajbirjheel Central Mosque is 50m and Tajbirjheel graveyard is located at 70m west of the sub-project. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A BFS road named Monirjheel-Ramu road is passing near the sub-project area. There are some important socioeconomic, cultural, religious and sensitive features located within 1km from the sub project, on north side Bakkhali river (400m); on south side Monirjheel Mohidulla Ebtadayee Madrasah (50m), Pond (30m), Monirjheel Community clinic (1km); on east side East Monirjheel hill (1km) and on west side Tajbirjheel Central Mosque (50m), Tajbirjheel graveyard (70m), Tajbirjheel Forkania Madrasah (700m), Baitul Mamur Mosque (700m). But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand

wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Kawerkhop Union under Ramu Upazila of Cox's Bazar district. The sub-project area is located at 21.422500 N and 92.134306 E. Catchment village of this sub-project area is Monirjheel. The distance from the Upazila headquarter is about 10 km. A 12 ft. wide BFS road passing by the sub-project site, which is connected with Cox's Bazar-Chattogram highway. Total available land area of this sub-project is 100 decimals. The school code is.91412040602

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side Bakkhali river (400m); at south side Monirjheel Mohidulla Ebtadayee Madrasah (50m), Pond (30m), Monirjheel Community clinic (1km); at east side East Monirjheel hill (1km) and at west side Tajbirjheel Central Mosque (50m), Tajbirjheel graveyard (70m), Tajbirjheel Forkania Madrasah (700m), Baitul Mamur Mosque (700m) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site. Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

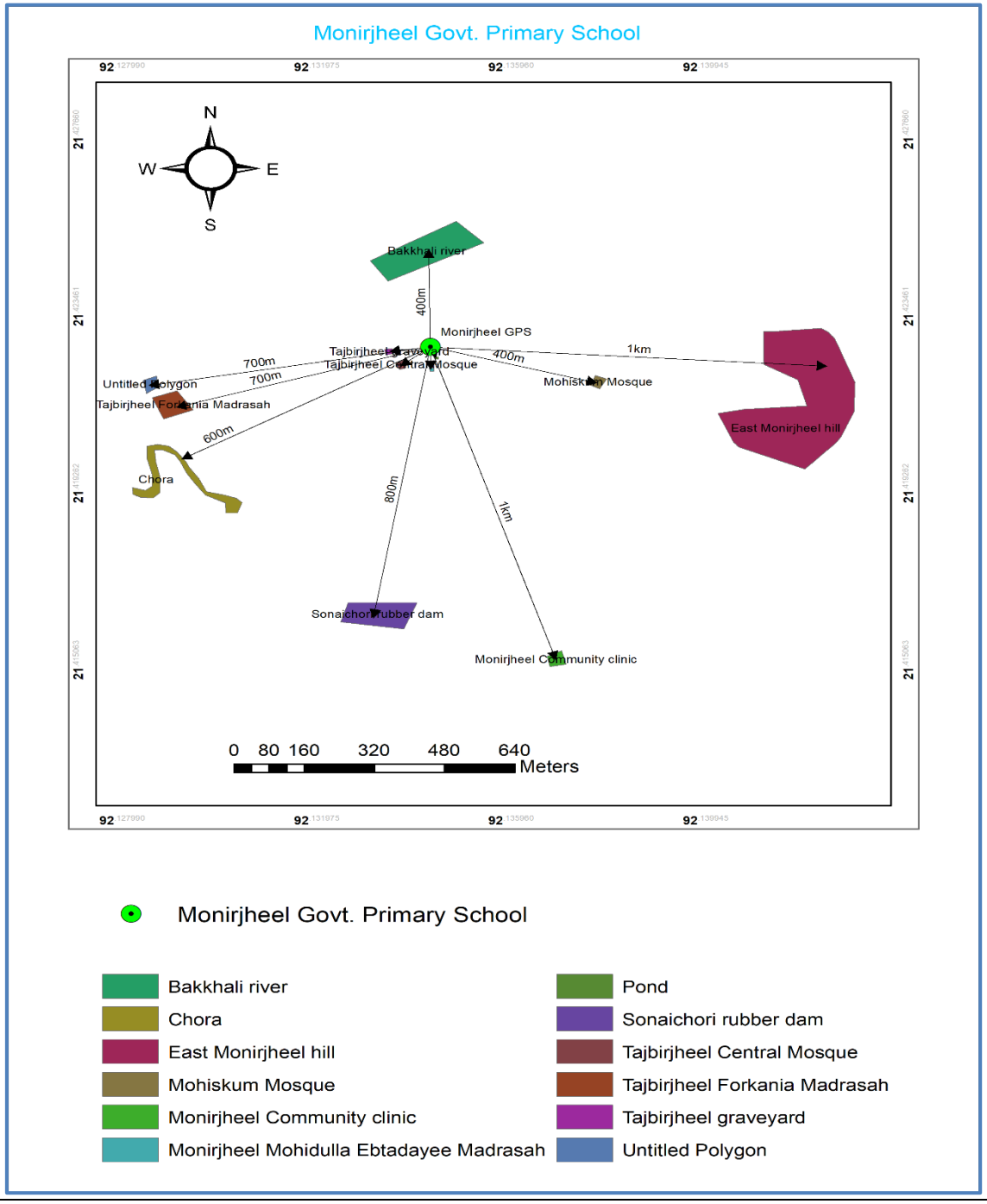
***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious and sensitive features located within 1km from the sub project, at north side Bakkhali river (400m); at south side Monirjheel Mohidulla Ebtadayee Madrasah (50m), Pond (30m), Monirjheel Community clinic (1km); at east side East Monirjheel hill (1km) and at west side Tajbirjheel Central Mosque (50m), Tajbirjheel graveyard (70m), Tajbirjheel Forkania Madrasah (700m), Baitul Mamur Mosque (700m) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the

proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, educational institution and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February

2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:
Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:
Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:
The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):
N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):
Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 650 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-700ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 12ft. wide BFS road is passing by the west side of the sub-project. It is connected with Cox's Bazar-Chattogram highway. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One tube-well is found within the school boundary and aquifer depth is about 650 feet. But the Tubewell doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the east side of the school boundary could be used for setting up a temporary labor camp.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 12ft. wide BFS road named Monirjheel-Ramu road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, east side within the school boundary

would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)

No pre - existing drainage channel is found. Though Bakkhali river is located at 400m north which is clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BFS road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be

produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A BFS road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	students, children, animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	small area and reversible by mitigation measures.				records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies.	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Monirjheel GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for	Contractor	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	water bodies, flora and fauna			
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ০১:৩০ তারিখ: ২৫/১০/২০২১

স্কুলের নাম: মনির খিল সরকারী প্রাথমিক বিদ্যালয়

স্কুল আইডি নম্বর: ৪২০৪০৬০২

মত বিনিময় স্থান: বিদ্যালয় কক্ষে

গ্রাম: মনির খিল ওয়ার্ড নং: ০২ ইউনিয়ন: কাউয়ারটপ ডাকঘর: কাউয়ারটপ

উপজেলা: উখিয়া জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	নুর মোহাম্মদ	৫৭	পুরুষ	মনির খিল	
২.	সাইফুল ইসলাম	৫০	পুরুষ	মনির খিল	
৩.	আব্দুল খালেক	৪০	পুরুষ	"	
৪.	[illegible]	৪৯	পুরুষ	"	
৫	[illegible]	৪৫	"	"	
৬	নূর [illegible]	২৮	"	মনির খিল	
৭.	নুরুল [illegible]	২৫	"	"	
৮	[illegible]	৪৫	"	"	
৯.	[illegible]	৩৫	"	"	
১০	ইসমাইল	২৭	"	"	
১১.	[illegible]	৩৫	"	"	
১২	নূর [illegible]	২০	"	"	
১৩	[illegible]	৫০	"	"	
১৪.	[illegible]	৪৫	"	"	
১৫	[illegible]	৩০	"	"	
১৬	[illegible]	৪২	"	"	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List
Focus Group Discussion

সময়: তারিখ: ২৬/১০/২০২১

স্থানের নাম: ০১:৩০ ঘটিকা
স্থল আইডি নম্বর: মনির্মিল সরকারী প্রাথমিক বিদ্যালয়
মত বিনিময় স্থান: ৪১২০৪০৬০২
গ্রাম: মনির্মিল ওয়ার্ড নং: ০২ ইউনিয়ন: কাউয়ারুপা ডাকঘর: কাউয়ারুপা
উপজেলা: রামু জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	হারুনর রশিদ	২১	পুঃ	মনির্মিল	
১৮	জহির উদ্দিন	২২	ঐ	ঐ	মো ওহিদা খাতুন
১৯	নূর হুদা উদ্দিন কাপ্তু	৪০	পুঃ	ঐ	
২০	মোঃ খোকন	২১	পুঃ	ঐ	
২১	জাহিদ উল্লাহ মনু	২৫	পুংঅ	ঐ	
২২	কামরুল ইসলাম	৩৫	ঐ	ঐ	কামরুল ইসলাম
২৩	শাফুর রহমান	৪২	পুংঅ	ঐ	শাফুর
২৪	মোঃ ওসমান গনি	৫৫	পুঃ	ঐ	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Nandakhali Govt. Primary School
Educational Institution ID: 91412040404
Village: Nandakhali; Union: Joarianala; Upazila: Ramu
District: Cox's Bazar

Funded by:

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Joarianala union of Ramu Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Nandakhali Boropara, Uttarpara, Murapara, Poschimpara, Purbo Murapara and Gucchogram. Typical rural settings of the area offer farmers to

be in the prime professional engagement, while the fishermen stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 800 households, containing 4,270 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Nandakhali GPS
Educational Institute ID	91412040404
District	Cox's Bazar
Upazila	Ramu
Union	Joarianala
Owner of land	GPS
Catchment household	800
Catchment Population	8,000 (Male: 3,840, Female: 4,160)
Profession	Farmer 85%, Fishermen 5%, and others 10%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Nandakhali Boropara, Uttarpara, Murapara, Poschimpara, Purbo Murapara and Gucchogram
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	12 ft. wide HBB road named Nandakhali road on west side.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Nandakhali GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3

Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the West side of Ramu Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 12ft wide HBB road on the west side which is connected to the LGED main road. Nandakhali Kendriopara boro mosque & Moktob and a Pond are situated within 20m on the east side of the proposed location. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ramu
Union	Joarianala
GPS position	21.470361 N and 92.069750 E
Distance from Upazila HQ	11 km
Nearby major road	Nandakhali Road
Nearby river/canal	Sonaichori khal on south side, Nandakhali Lamar khal on east side and Fhari khal on west side are situated within 500m distance of the proposed location.
North side	Chakaria and Cox's Bazar Sadar Upazila
South side	Ukhiya and Naikhyongchhari Upazila
East side	Naikhyongchhari Upazila
West side	Cox's Bazar Sadar and the Bay of Bengal

[Sources of data: Field survey, 2021]

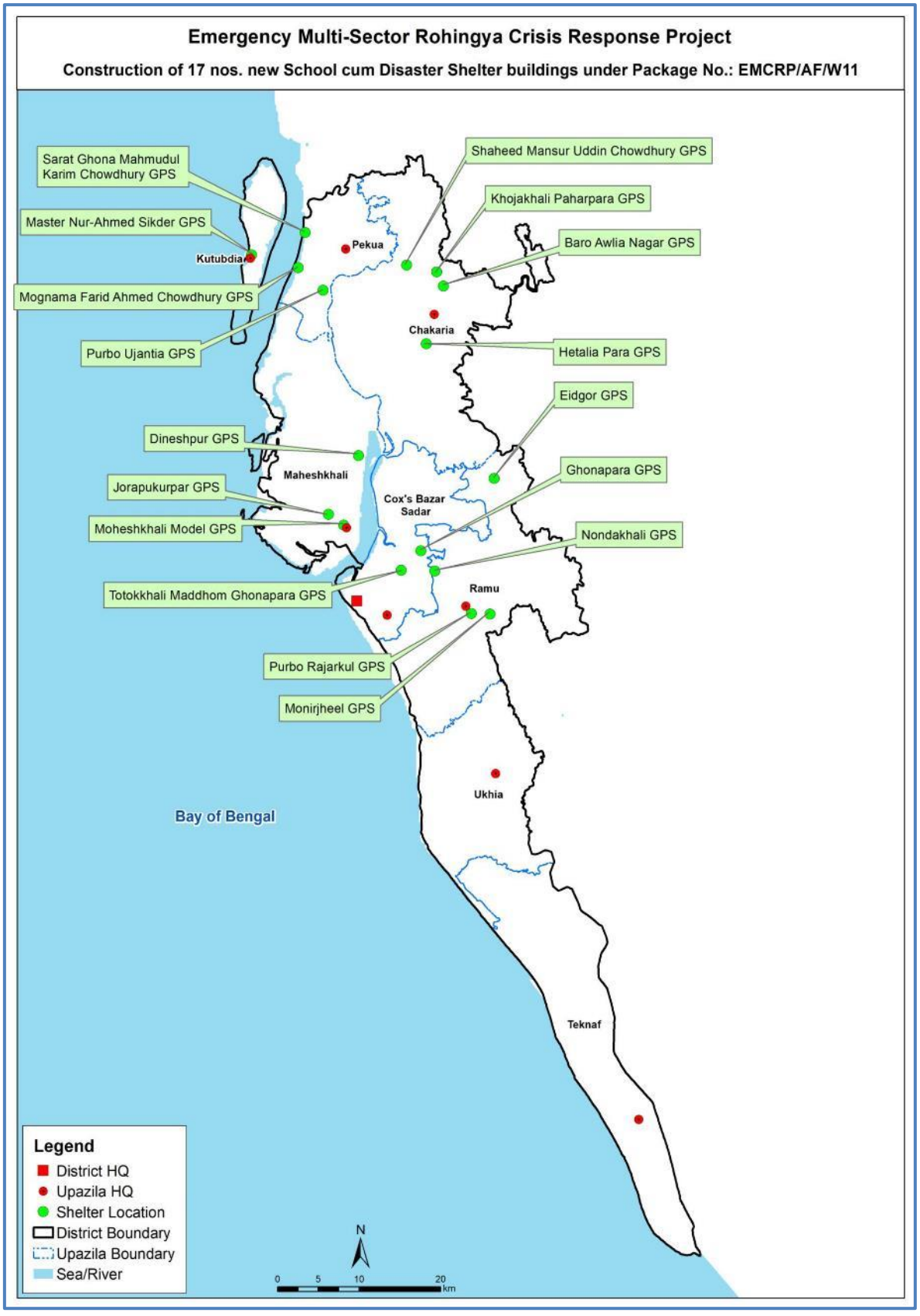


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

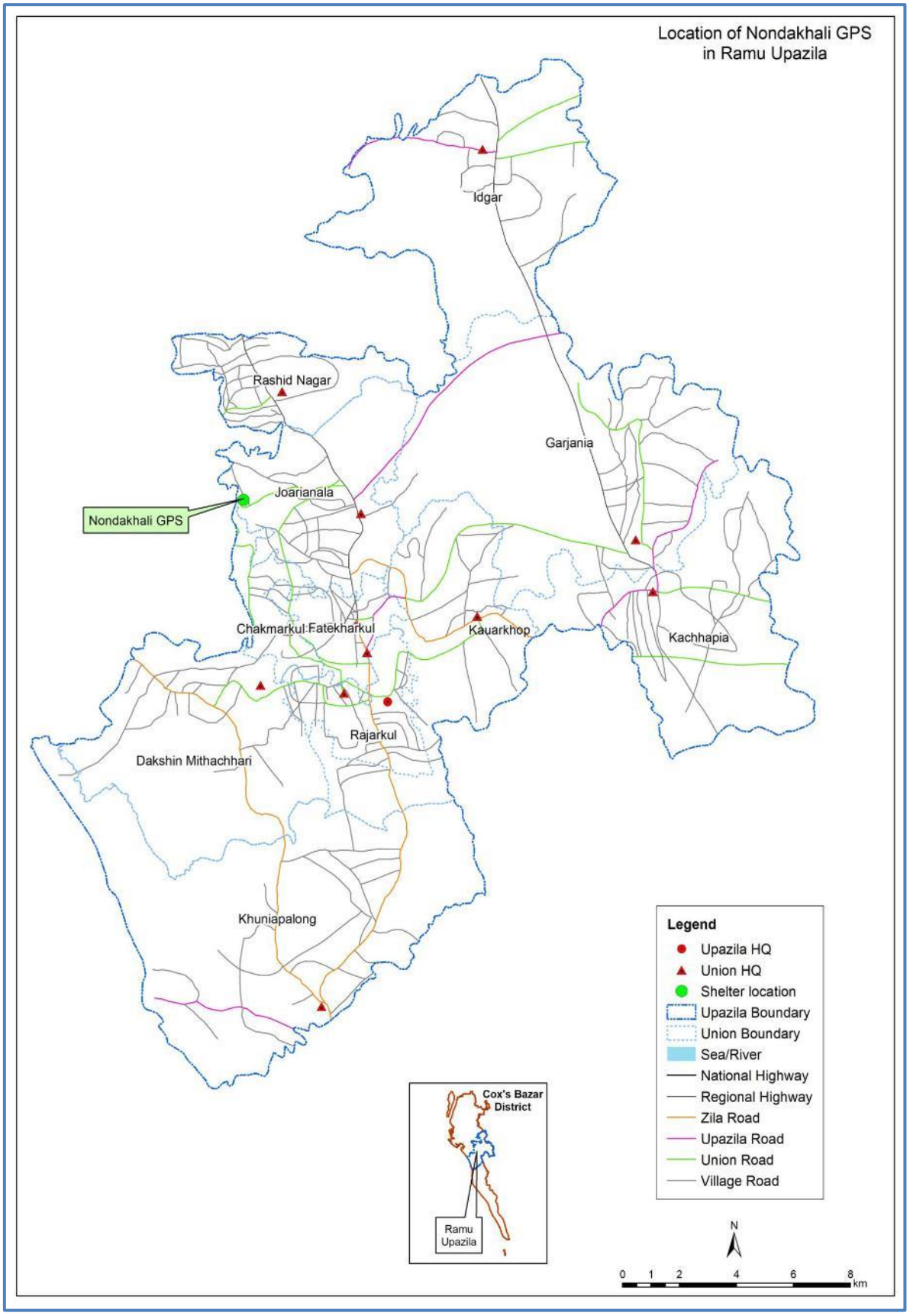


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Nandakhali Uttarpara mosque & Moktob (500m), Pond (500m).
South side	Nandakhali Kendriopara boro mosque & Moktob (20m), Pond (20m), Nandakhali purbopara jame mosque (200m), Sonaichori khal (500m), Nandakhali Nuraripara mosque & madrasah (700m), Fhari khal (1km), Nonachori mosque (1km),
East side	Nurul huda mia market (100m), Nandakhali Lamar khal (500m), Shoillaghona mosque (1km)
West side	Fhari khal (500m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site (the wash block shown on the picture will be demolished and replaced by the proposed building)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 26 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 28 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Nandakhali GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 26 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary demolishing/replacing an existing a wash block, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. A mosque named Nandakhali Kendriopara boro mosque & Moktob at 20m and a Pond are found at 20m on south side of sub-project component. There are three khals located within the influences at 500m from the sub-project site, such as Sonaichori khal on south side, Nandakhali Lamar khal on east side and Fhari khal on west side. Nandakhali Uttarpara mosque & Moktob at 500m and a Pond are located at 500m on the north side of the sub-project location. A 12 ft. wide HBB road named Nandakhali road is located on the west side. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water

bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation, and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures

including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and

female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down in the periphery of the school. A mosque named Nandakhali Kendriopara boro mosque & Moktob at 20m and a Pond are found at 20m distance on the south side of sub-project component. Some human settlements and vegetations from the proposed site might get affected

during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and

adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ramu will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited

and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Nandakhali GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Ramu **Union**: Joarianala

Name of Community/Local Area: Nandakhali

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a three-story building, one deep Tubewell and 2 nos. toilets. An existing wash block will be demolished during pre-construction period and the new school cum disaster shelter will be constructed there. 12 ft wide HBB road named Nandakhali village connecting road is passing on the west side of the sub-project. Nandakhali Kendriopara boro mosque & Moktob and a Pond are located within 20m on the south side of the sub-project. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to demolishing a wash block and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A 12ft wide HBB road named Nandakhali road is passing near the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On south side Nandakhali Kendriopara boro mosque & Moktob (20m), Pond (20m), Sonaichori khal (500m), Nandakhali Nuraripara mosque & madrasah (700m), Fhari khal (1km), Nonachori mosque (1km) are located; On east side Nandakhali Lamar khal (500m), Shoillaghona mosque (1km) and on west side Fhari khal (500m) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included

and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Joarianala Union under Ramu Upazila of Cox's Bazar district. The sub-project area is located at 21.470361 N and 92.069750 E. Catchment villages of this sub-project area are Nandakhali Boropara, Uttarpara, Murapara, Poschimpara, Purbo Murapara and Gucchogram. The distance from the Upazila headquarter is about 11 km. A 12 ft. wide HBB road passes near by the sub-project site, which is connected with LGED road. Total available land area of this sub-project is 30 decimals. The school code is.91412040404

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is a wash block which will be replaced by the proposed new multipurpose school building within the same boundary.

At north side Nandakhali Uttarpara mosque & Moktob (500m), Pond (500m); at south side Nandakhali Kendriopara boro mosque & Moktob (20m), Pond (20m), Sonaichori khal (500m), Nandakhali Nuraripara mosque & madrasah (700m), Fhari khal (1km), Nonachori mosque (1km); at east side Nandakhali Lamar khal (500m), Shoillaghona mosque (1km) and at west side Fhari khal (500m) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

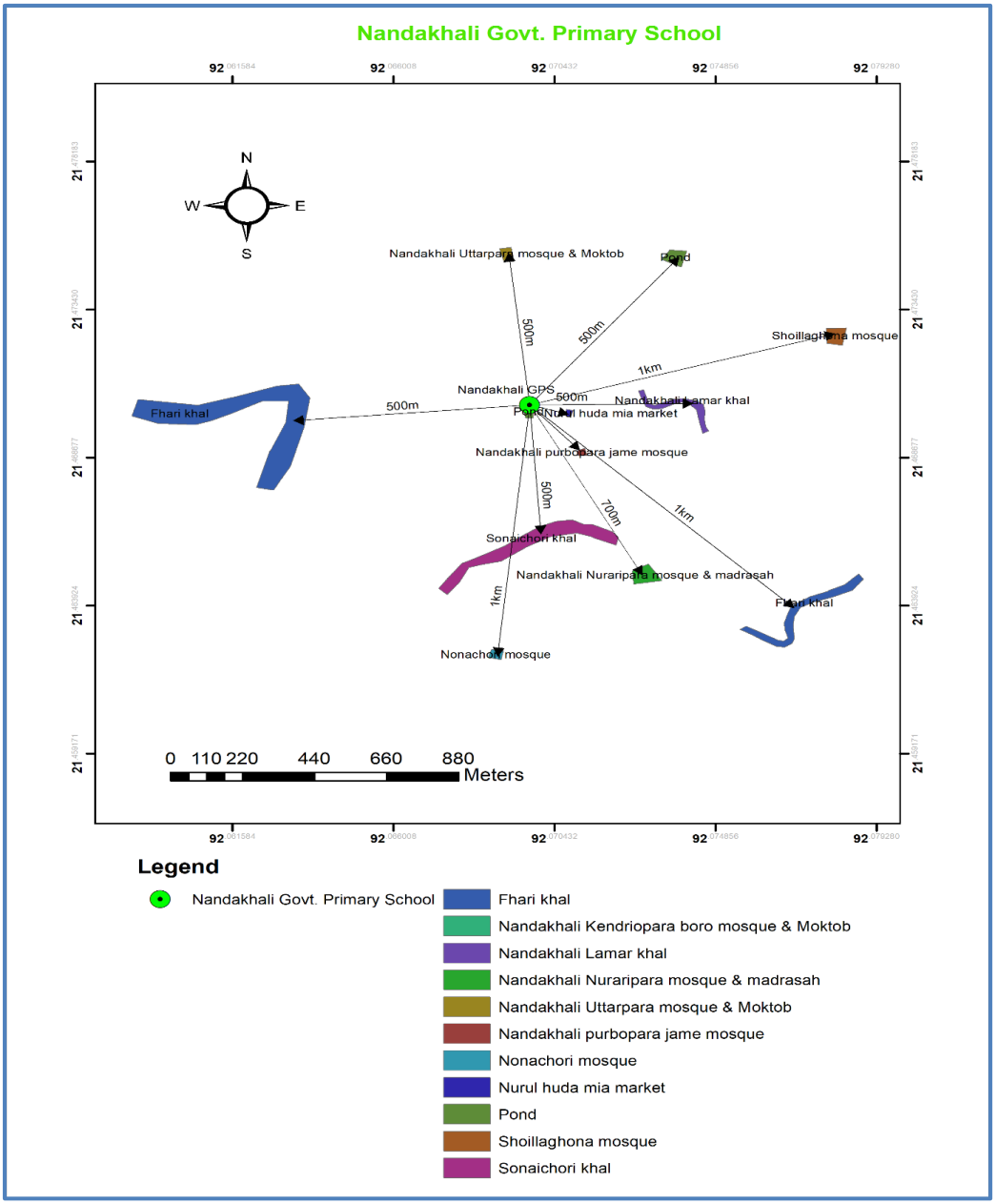
***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project, such as at north side Nandakhali Uttarpara mosque & Moktob (500m) and Pond (500m) are located; On the south side Nandakhali Kendriopara boro mosque & Moktob (20m), Pond (20m),

Sonaichori khal (500m), Nandakhali Nuraripara mosque & madrasah (700m), Fhari khal (1km) and Nonachori mosque (1km) are located; at east side Nandakhali Lamar khal (500m), Shoillaghona mosque (1km) are located and at west side Fhari khal (500m) are located but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, pond and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed in a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 800 feet. Teachers and students are

consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-850ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes. Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 12ft. wide HBB road is passing by the west side of the sub-project. It is connected with LGED main road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 800 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On north side of the proposed sub-project boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized

materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 12ft. wide HBB Nandakhali village connecting road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project site.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, north side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 12 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment.

There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though three khals named Sonaichori khal on south side, Nandakhali Lamar khal on east side and another Fhari khal on west side are located within 500m influences of the sub-project location which are clearly outside of the construction area, these will not be affected because of having a fair distance from the construction site. One surface water body like a pond is located within 20m of the sub-project get might affected during construction period and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution work is intensified for the sheltered people. So, causing any health

hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) Existing drainage channels or surface water bodies are present within the sub-project boundary area will not disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A HBB road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • A mosque is located nearby the school boundary so labor camp needs to be set up in such a location that the mosque is not disturbed in any way.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)		Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Demolishing of an existing structure	Under the sub-project intervention the overall score is Medium	• Water spraying at the demolition site • Fencing / Installing barriers should be shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Do not accumulate and burn waste at the site • Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders • It needs to Identify proper location to dispose solid waste from demolition and other activities in consultation with respective bodies • Make mandatory the use of safety gears	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			(helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. • Further guidance on demolition works and wastes management is given in the appendix 2, below the ESMP table, to be followed by the contractor.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing equipment and sound	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	mitigation measures.					
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of	Complaints from communities	Site inspection daily /

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
				D&SC and PIU		weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Nandakhali GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		and awareness.		PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation &	Odours and pollution caused by leaking latrines	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	and faecal sludge impacting surrounding water bodies, flora and fauna			Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Demolition and Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For demolition works:

- All electric, gas, water, sewer, and other energy services or power lines shall be capped/blinded and/or otherwise cut before the commencement of demolition work.
- All asbestos, insulation materials, glass and other hazardous materials and substances shall be removed. Such materials shall not be stored within the structure to be demolished.

- Openings and weak flooring shall be prominently marked or barricaded before the commencement of demolition. Operators of machinery and equipment and workers involved in demolition work shall be informed of such hazardous location.
- Demolition work shall commence from the top of a structure and progress downward.
- Proper entrances of adequate strength to protect workers from falling materials shall be erected for access into the structure.
- The entire demolition site shall be effectively barricaded with appropriate safety signs displayed.
- The lower floor where demolition wastes are collected shall be properly barricaded and guarded to prevent materials from ricocheting and injuring workers or passer-by.
- Excessive debris shall not be allowed to accumulate inside a demolished structure. All demolition waste and debris shall be cleared from the work site on a daily basis.
- Refuse containers shall be provided at worksite for the storage of demolition wastes and debris.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.

- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ১০:০০ মিনিট তারিখ: ২৫/১০/২০২১
স্কুলের নাম: নদাখালী সরকারী প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ৪১২০৪০৪০৪
মত বিনিময় স্থল: বিদ্যালয়ের প্রধান শিক্ষক কক্ষে
গ্রাম: নদাখালী বড়পাড়া ওয়ার্ড নং: ০৩ ইউনিয়ন: জোয়ারিয়ানালা ডাকঘর: জোয়ারিয়াবাজার
উপজেলা: রামু জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	মুস্তিবুর রহমান	৪১	পুরুষ	জোয়ারিয়া নালা	
২	মোঃ এনায়েত উল্লাহ	৪৩	"	নদাখালী	
৩	হাসিনা আক্তার	২৮	নারী	জোয়ারিয়া নালা	
৪	ছালেহা আক্তার	২৭	"	"	
৫	ফাতেমাতুল জোহরা নাসরিন	২৭	"	"	
৬	মাছুরাহ সুলতানা সুনিয়া	২৬	"	"	
৭	মোঃ ইলিয়াছ	৫১	পুরুষ	নদাখালী বড় পাড়া	মোহাম্মদ ইলিয়াছ 0/8656294552
৮	মনোয়ারা বেগম সুন্নি	২৮	নারী	"	মনোয়ারা বেগম সুন্নি
৯	জাবের আলম	৫৫	পুরুষ	নদাখালী	
১০	আবুছ ছালাম	৪৫	"	"	আবুস ছালাম
১১	আবুর রহিম	৫৩	"	"	আবদুর রহিম
১২	মোঃ একরাম	২৮	"	"	মোঃ একরাম
১৩	আমিন উল্লাহ	৫০	"	"	আমিন উল্লাহ
১৪	মফিজোমনম	৫০	"	"	মফিজ আলম
১৫	মাহফুজুর রহমান	৫৫	"	"	মাহফুজুর
১৬	রশিদ আহমদ	৫৩	"	"	রশিদ আহমদ

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ১০:০৫ এম/পি তারিখ: ২৫/১০/২০২১

স্কুলের নাম: নদফাঁলী সরকারি প্রাথমিক বিদ্যালয়

স্কুল আইডি নম্বর: ৪৯২০৪০৪০৪

মত বিনিময় স্থান: বিদ্যালয়ের পূর্বদিন অফিসক কক্ষে

গ্রাম: নদফাঁলী বড়পাড়া ওয়ার্ড নং: ০৬ ইউনিয়ন: জোয়ারিয়ানালা ভাকঘর: জোয়ারিয়ানালা

উপজেলা: রামু জেলা: কক্সবাজার

সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	ছমির উল্লাহ	৩০	পুরুষ	নদফাঁলী	
২	সালেহ আহমদ	৬০	"	নদফাঁলী	
৩	আবুর বহিম	৬০	"	"	
৪	আনু মিয়া	৫০	"	"	
৫	ছালেহ আহমদ	৫০	"	"	
৬	রফিকুল আমিন	৩০	"	"	
৭	মোঃ জামাল আলম	৪০	"	"	
৮	আহমদুর রহমান	৪২	"	"	
৯	মোঃ বাদশা কামাল	৩৫	"	"	
১০	মোবারক হোসেন	৩৭	"	"	
১১	কফিল উদ্দীন	৪২	"	"	
১২	আবদু ছালাম	৩৮	"	"	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Purbo Rajarkul Govt. Primary School
Educational Institution ID: 91412040703
Village: Hazipara; Union: Rajarkul; Upazila: Ramu
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Rajarkul union of Ramu Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding village of Purbo Rajarkul, Fulunir Char, Baruapara, Charpara, Naiyapara, Hazipara, Murapara, Purbodip Fatekarkul, Dakhinpara and Purbo Paharpara. Typical rural

settings of the area offer farmer to be the prime professional engagement, while the day labor stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,180 households, containing 6,040 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Purbo Rajarkul GPS
Educational Institute ID	91412040703
District	Cox's Bazar
Upazila	Ramu
Union	Rajarkul
Owner of land	GPS
Catchment household	1,180
Catchment Population	6,040 (Male: 2,900, Female: 3,140)
Profession	Farmer 70%, Day labor 15%, Businessmen 10% and others 5%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Purbo Rajarkul, Fulunir Char, Baruapara, Charpara, Naiyapara, Hazipara, Murapara, Purbodip Fatekarkul, Dakhinpara and Purbo Paharpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	10.5 ft. wide RCC road named Hazipara-Baruapara road on west side which is connected with Hazipara main road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Purbo Rajarkul GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3

Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the South-Eastern side of Ramu Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 10.5ft wide RCC road on the west side which is connected to the Hazipara road. Some socio-environmental foundations, like Sucharu Madhabi Community clinic is situated at 250m and Baruapara Saddar Modoy Buddhist Bihar at 500m on north side, Hazipara mosque cum graveyard & Forkania Madrasah at 100m, Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah at 400m on north side of the proposed location.

The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ramu
Union	Rajarkul
GPS position	21.423333N and 92.112222 E
Distance from Upazila HQ	2 km
Nearby major road	Hazipara road
Nearby river/canal	Purbodip Fatekarkul chorra is located at 500m on south side and Bakkhali river is at 400m distance on west side of the sub-project component.

North side	Chakaria and Cox's Bazar Sadar Upazila
South side	Ukhiya and Naikhyongchhari Upazila
East side	Naikhyongchhari Upazila
West side	Cox's Bazar Sadar and the Bay of Bengal

[Sources of data: Field survey, 2021]

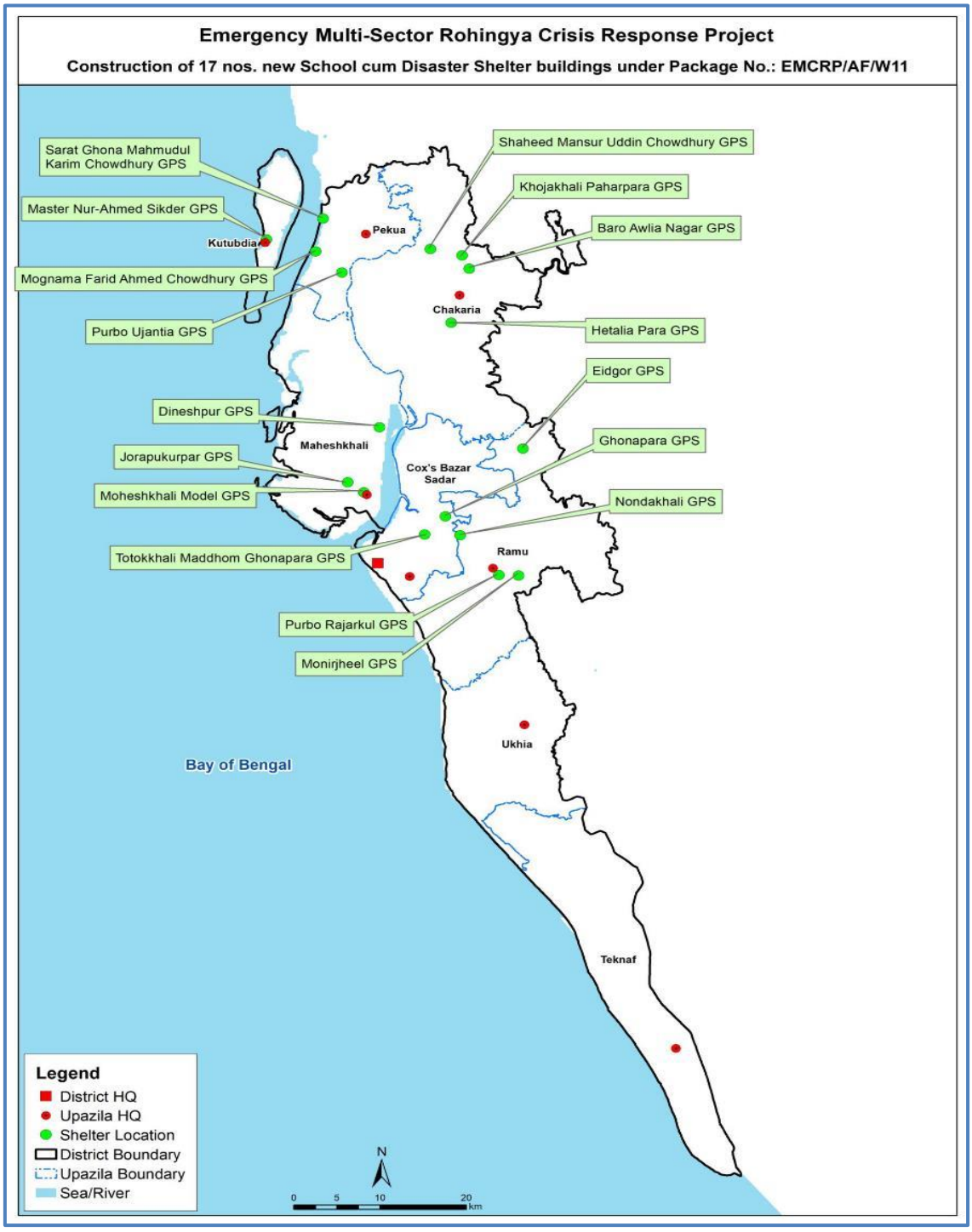


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

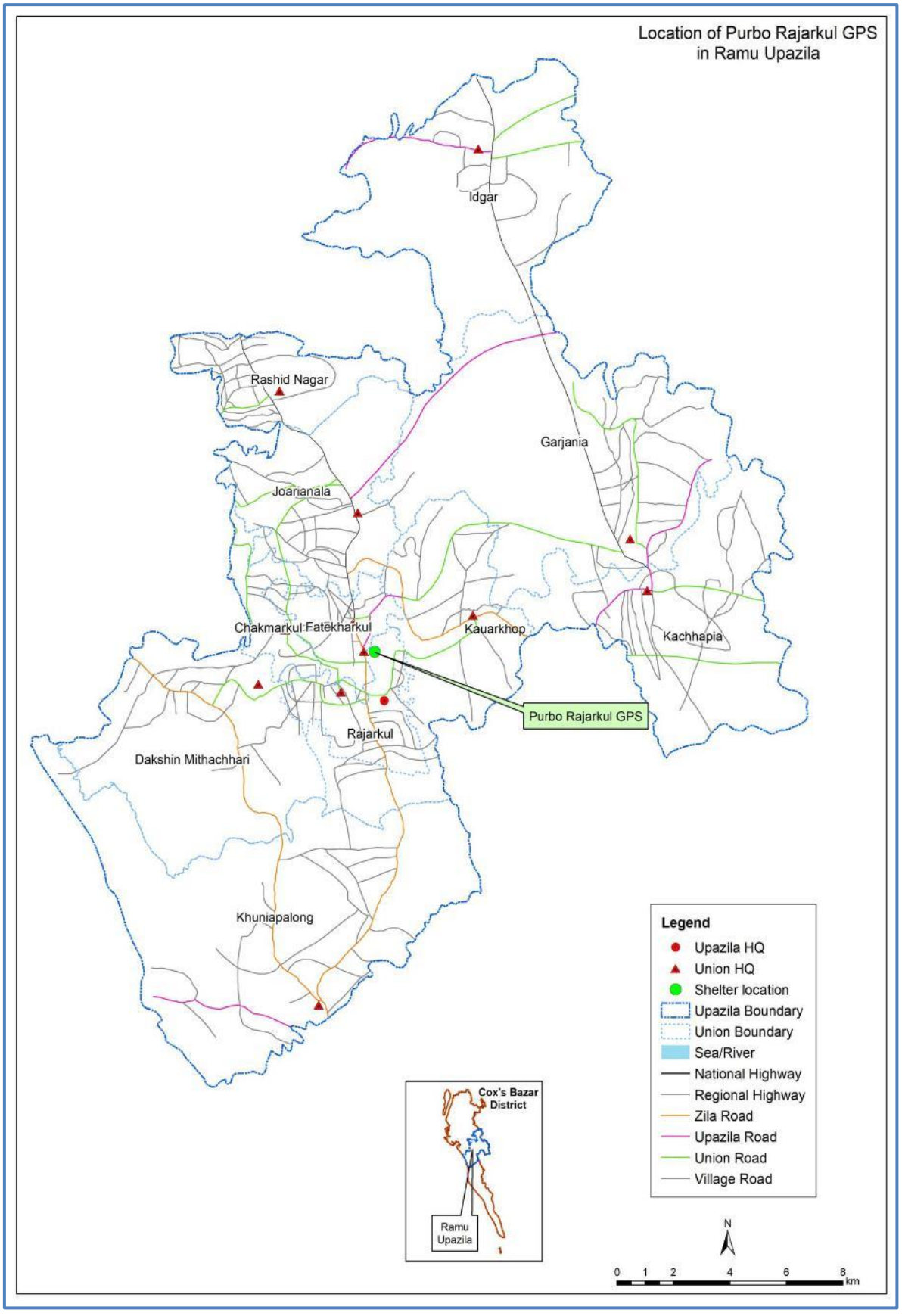


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Sucharu Madhabi Community clinic (250m), Baruapara Saddar Modoy Buddhist Bihar (500m), Buddhist crematorium (700m)
South side	Hazipara mosque cum graveyard & Forkania Madrasah (100m), Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah (400m), Purbodip Fatekar kul chorra (500m), Abdus Salam community clinic (600m), Purbodip Fatekar kul central mosque (800m)
East side	Mohammadia mosque (500m), Purbo Rajarkul Janglee pir madrasah cum Hefzakhana & orphanage (800m), Jongli pir islamiya mosque (800m), Rajarkul Buddhist Sutpa Thaw kayang (900m), Dargahmura hill (900m), Bakkhali river (1km)
West side	Charpara Baitul-Nur Mosque (300m), Bakkhali river (400m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 26 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 31 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Purbo Rajarkul GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separate for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 26 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. There are found a community clinic named Sucharu Madhabi Community clinic at 250m, Baruapara Saddar Modoy Buddhist Bihar at 500m and Buddhist crematorium 700m on north side from the proposed site boundary. A river named Bakkhali river located at 1km on east side and at 400m on west side as well as Purbodip Fatekar kul chorra is located at 500m on south side of the sub-project. Hazipara mosque cum graveyard & Forkania Madrasah at 100m, Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah at 400m, another community clinic named Abdus Salam community clinic at 600m and Purbodip Fatekar kul central mosque at 800m are located on south side of the proposed location. A 10.5ft wide RCC road is passing on the west side. On the east side there are some socio-environmental foundations are located, like as Mohammadia mosque at 500m, Purbo Rajarkul Janglee pir madrasah cum Hefzakhana & orphanage at 800m and Dargahmura hill at 900m. A mosque named Charpara Baitul-Nur Mosque is found at 300m on west side of the sub-project. No significant disturbance to all these establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or

gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this plan is to formulate measures which will

mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down from the periphery of the school. Some important socio-environmental features, such as a community clinic named Sucharu Madhabi Community clinic is found at 250m, Baruapara Saddar Modoy Buddhist Bihar at 500m and a Buddhist crematorium at 700m on north side from the construction site. Within the close proximity from the sub-project site, Hazipara mosque cum graveyard & Forkania Madrasah is located at 100m and Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah at 400m on south side. A river named Bakkhali river located at 1km on east side and 400m on west side as well as Purbodip Fatekar kul chorra is located at 500m on south side of the sub-project. A 10.5ft wide RCC road is passing on the west side. There are two mosques Mohammadia mosque at 500m on east side and Charpara Baitul-Nur Mosque at 300m on west side from the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ramu will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are

perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and Upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.

- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **04 Lac & 97 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Purbo Rajarkul GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Ramu **Union**: Rajarkul

Name of Community/Local Area: Hazipara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, one two-story building, one three-story building, a playground, two Tubewells and two number of toilets. The new school cum disaster shelter will be constructed on vacant place at north side with the existing school periphery. 105 ft wide RCC village road on west side of the sub-project. There are found a community clinic named Sucharu Madhabi Community clinic at 250m, Baruapara Saddar Modoy Buddhist Bihar at 500m and Buddhist crematorium 700m on north side from the proposed site boundary. A river named Bakkhali river located at 1km on the east side and at 400m on west side as well as Purbodip Fatekar kul chorra is located at 500m on south side of the sub-project. Hazipara mosque cum graveyard & Forkania Madrasah at 100m, Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah at 400m, another community clinic named Abdus Salam community clinic at 600m and Purbodip Fatekar kul central mosque at 800m are located on south side of the proposed location. At the east side there are some socio-environmental foundations are located, like as Mohammadia mosque at 500m, Purbo Rajarkul Janglee pir madrasah cum Hefzakhana & orphanage at 800m and Dargahmura hill at 900m. A mosque named Charpara Baitul-Nur Mosque is found at 300m on the west side of the sub-project. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the

construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. There are some important socioeconomic, cultural, religious and sensitive features located within 1km from the sub project, on north side Sucharu Madhabi Community clinic (250m), Baruapara Saddar Modoy Buddhist Bihar (500m), Buddhist crematorium (700m); on south side Hazipara mosque cum graveyard & Forkania Madrasah (100m), Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah (400m), Purbodip Fatekar kul chorra (500m), Abdus Salam community clinic (600m), Purbodip Fatekar kul central mosque (800m); on east side Mohammadia mosque (500m), Purbo Rajarkul Janglee pir madrasah cum Hefzakhana & orphanage (800m), Dargahmura hill (900m), Bakkhali river (1km) and on west side Charpara Baitul-Nur Mosque (300m), Bakkhali river (400m). But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, Buddhist Bihar, crematoriums, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Rajarkul Union under Ramu Upazila of Cox's Bazar district. The sub-project area is located at 21.423333 N and 92.112222 E. Catchment villages of this sub-project area are Purbo Rajarkul, Fulunir Char, Baruapara, Charpara, Naiyapara, Hazipara, Murapara, Purbodip Fatekarkul, Dakhinpara and Purbo Paharpara. The distance from the Upazila headquarter is about 2 km. A 10.5 ft. wide RCC road passing by the sub-project site, which is connected with Hazipara road. Total available land area of this sub-project is 81 decimals. The school code is .91412040703

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side Sucharu Madhabi Community clinic (250m), Baruapara Saddar Modoy Buddhist Bihar (500m), Buddhist crematorium (700m); at south side Hazipara mosque cum graveyard & Forkania Madrasah (100m), Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah (400m), Purbodip Fatekar kul chorra (500m), Abdus Salam community clinic (600m), Purbodip Fatekar kul central mosque (800m); at east side Mohammadia mosque (500m), Purbo Rajarkul Janglee pir madrasah cum Hefzakhana & orphanage (800m), Dargahmura hill (900m), Bakkhali river

(1km) and at west side Charpara Baitul-Nur Mosque (300m), Bakkhali river (400m) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

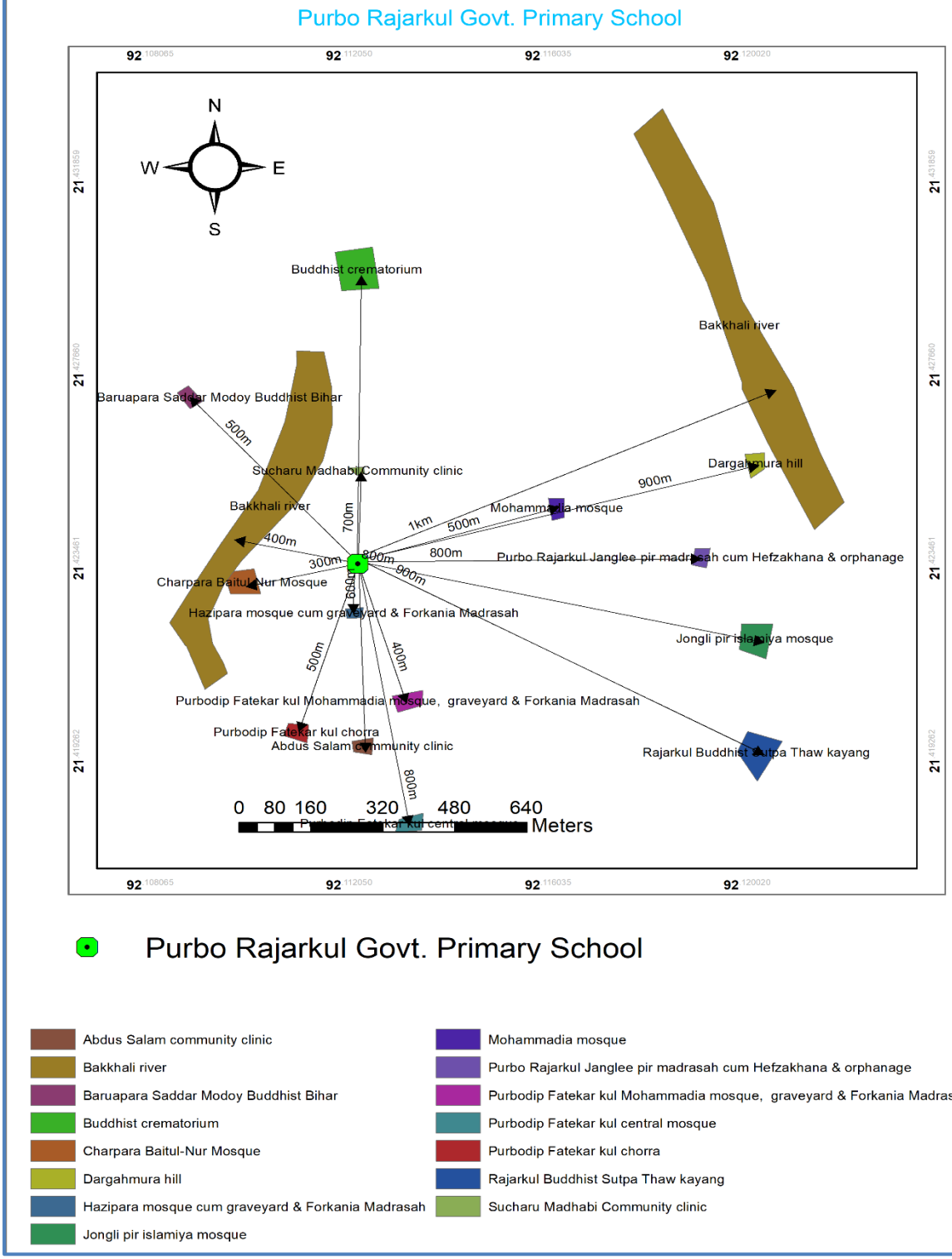
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious and sensitive features located within 1km from the sub project, at north side Sucharu Madhabi Community clinic (250m), Baruapara Saddar Modoy Buddhist Bihar (500m), Buddhist crematorium (700m); at south side Hazipara mosque cum graveyard & Forkania Madrasah (100m), Purbodip Fatekar kul Mohammadia mosque cum graveyard & Forkania Madrasah (400m), Purbodip Fatekar kul chorra (500m), Abdus Salam community clinic (600m), Purbodip Fatekar kul central mosque (800m); at east side Mohammadia mosque (500m), Purbo Rajarkul Janglee pir madrasah cum Hefzakhana & orphanage (800m), Dargahmura hill (900m), Bakkhali river (1km) and at west side Charpara Baitul-Nur Mosque (300m), Bakkhali river (400m) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, temples, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. There are two number of tube-well found within the school boundary. The depth are about 280 feet and 850 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 650-900ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 10.5ft. wide RCC road is passing by the west side of the sub-project. It is connected with Hazipara road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow and One deep tube-well are found within the school boundary and aquifer depth are about 280 and 850 feet respectively. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the south side of the existing school boundary could be used for setting up a temporary labor camp.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 10.5ft. wide RCC village connecting road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project site and connected to Hazipara road.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should

be consulted with local Communities. Considering the criteria, west side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 12 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies

(wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though Purbodip Fatekar kul chorra is located at 500m on south side and Bakkhali river at 400m on west side are found which areclearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent RCC road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little

amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A RCC road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	students, children, animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	small area and reversible by mitigation measures.				records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies.	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Purbo Rajarkul GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction	Labour Base Camp: Conflicts with the local	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual	Contractor	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	residents	harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of	• Provision to proper measure of mitigation and monitoring to	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.		PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.

- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			shelters i.e. 35, 000 Tk.*24 months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable	20 sets	@ Tk. 5,000 for each set	100,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles			
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.	10 nos.	@ Tk. 1000 for each tree.	10,000
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**497,753**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ৩:০০ ঘটিকা — তারিখ: ২৫/১০/২০২১ইং
স্থানের নাম: পূর্ব বাহুরকুল সরকারি প্রাথমিক বিদ্যালয়
মুল আইডি নম্বর: ৯২৪১২০৪০৯০৬
মত বিনিময় স্থান: বিদ্যালয়ের শ্রেণী ঘর
গ্রাম: হাজীপাড়া ওয়ার্ড নং: ০৯ ইউনিয়ন: বাহুরকুল ডাকঘর: রাঙ্গু ৪৭৩০
উপজেলা: রাঙ্গু জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	জসির হোসেন	৭০	পুরুষ	হাজিপাড়া	
০২	আক্তার কামাল	৪০	″	″	আক্তার কামাল
০৩	বেজাউল করিম	৩৮	″	″	বেজাউল করিম
০৪	ওবাইদুল হক	৩২	″	″	ওবাইদুল হক
০৫	মোঃ মনির	২৮	″	″	মনির
০৬	দিল মোহাম্মদ	৬৫	″	″	দিল মোহাম্মদ
৭	ফোরকান আহমদ	৬৪	পুরুষ	নাসিরকুল	ফুরকান
৮	মোঃ সিকান্দর	৬৭	″	দঃ পাড়া	মোঃ সিকান্দর
৯	নুরুল আজিম	৪৬	″	হাজী পাড়া	
১০	আব্দু তাহের	৪৫	″	হাজীপাড়া	আব্দু তাহের
১১	কামরুল আলম	৫৩	″	দঃ পাড়া	কামরুল আলম
১২	জাহেদ নাসির	৩০	″	″	Zisb
১৩	নুরুল ইসলাম	৫২	″	হাজিপাড়া	নুরুল ইসলাম
১৪	আহাম্মদুল হক	৩৫	″	″	আহাম্মদুল হক
১৫	সিরাজুল হক	৩৮	″	দঃ পাড়া	সিরাজুল হক

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ৩:৪০ মিনিট তারিখ: 26/10/2022 ইং
স্কুলের নাম: দক্ষিণ রাইখালকুল সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ২২৪১২০৪০৯০৬
যত দিনিয়ন হল: বিদ্যালয়ের শ্রেণী কক্ষ
গ্রাম: হাজীপাড়া ওয়ার্ড নং: ০৯ ইউনিয়ন: রাইখালকুল ডাকঘর: রামু ৪৭৬০
উপজেলা: রামু জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৮	মোহাম্মদ ইসলাম	৭৩	পুরুষ	হাজী পাড়া	
১৭	সফর মিয়া	৫০	〃	দক্ষিণ পাড়া	
১৮	নুরুল হক সওদাগর	৬৩	〃	〃	
১৯	মনির আহাম্মদ	৫৩	〃	〃	
২০	মনির আহাম্মদ ②	৭০	〃	〃	
২১	আবুল কাশেম	৪৫	〃	〃	
২২	আবছার মিয়া	৪০	〃	〃	
২৩	ফজির রহমান	৫১	〃	〃	
২৪	মোহাম্মদ নাছির	৫৩	〃	চরপাড়া	
২৫	কল্পনা তঞ্চঙ্গ্যা	৩৮	নারী	দক্ষিণ পাড়া	
২৬	সাবিত্রি তঞ্চঙ্গ্যা	৪৫	পুরুষ	〃	
২৭	বিটন তঞ্চঙ্গ্যা	৩৪	〃	〃	
২৮	হারুন কানিগর	৪৫	〃	চরপাড়া	
২৯	অরুন চন্দ্র তালুকদার	৪২	নারী	〃	
৩০	দিদারুল আলম	৪৪	পুরুষ	দক্ষিণ পাড়া	
৩১	মনির আহম্মদ	৫৫	〃	〃	

Public Consultation Participants' List

Government of The People's Republic of Bangladesh

Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Purbo Ujantia Government Primary School

Educational Institution ID: 91412080701

Village: Nurirpara; Union: Ujantia; Upazila: Pekua
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. The project is being implemented under the financial grant assistance from the World Bank; but part of the enlisted schemes (2 work-packages) under the additional financing of the project is being financed by German Investment and Development Bank (KFW). Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for Resilience shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Ujantia union of Pekua Upazila under Cox's Bazar district. The catchment area of the

subproject comprises the surrounding villages of Nurirpara, Sutasura, Pekuyarchor, Tekpara, Malekpara, Godarpara and sundori Para. Typical rural settings of the area offer farmers to be in the prime professional engagement, while the labor stands 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 4000 households, containing 25,000 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Purbo Ujantia GPS
Educational Institute ID	91412080701
District	Cox's Bazar
Upazila	Pekua
Union	Ujantia
Owner of land	GPS
Catchment household	4000
Catchment Population	25,000 (Male: 12,000, Female: 13,000)
Profession	Farmer 70%, Labor 15%, job holder 10% and others 05%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Nurirpara, Sutasura, Pekuyarchor, Tekpara, Malekpara, Godarpara and sundori Para
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	15 ft. wide BC Katabari Road on west side
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Purbo Ujantia GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floor	3
Number of classroom	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3

Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located in the North-West side of Pekua Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 15ft wide BC Katabari Road is located at west of the subproject site. Ujantia Sutachora khal is located at 20m west, Nurirpara Mosque located at 30m south and Ujantia High School is within 30m distance of the subproject. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Pekua, chakaria, Moheskhali and Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively.

The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Pekua
Union	Ujantia
GPS position	21.778722 N and 91.941472 E
Distance from Upazila HQ	8 km
Nearby major road	A 15ft BC road named Katabari road is located at 10m west.
Nearby river/canal	A river named Matamuhuri River is located at 300m east.
North side	Banshkhali and Chakaria Upazila
South side	Moheshkhali Upazila
East side	Chakaria Upazila
West side	Kutubdia Channel

[Sources of data: Field survey, 2021]

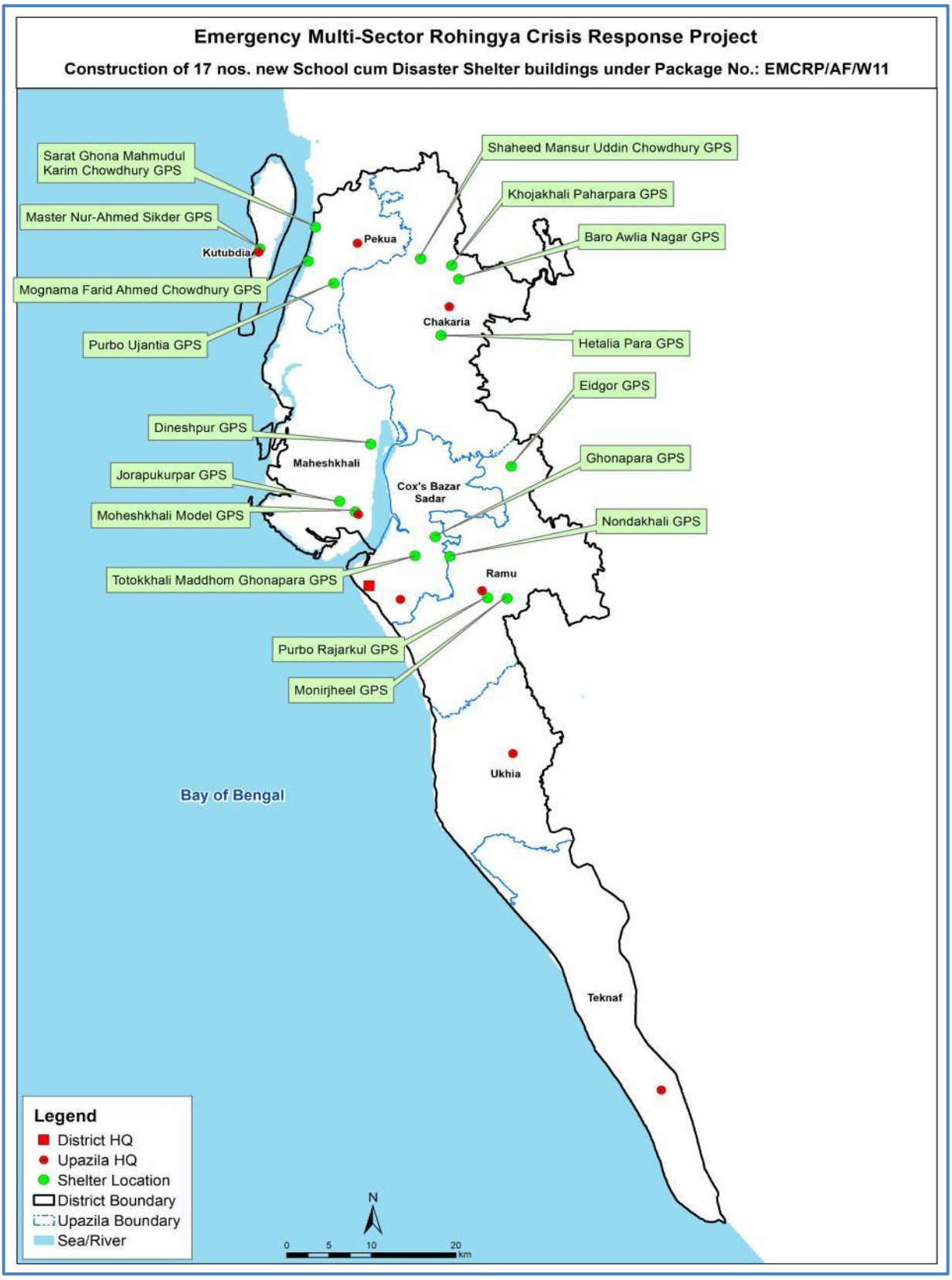


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Pekua, chakaria, Moheskhali and Kutubdia)

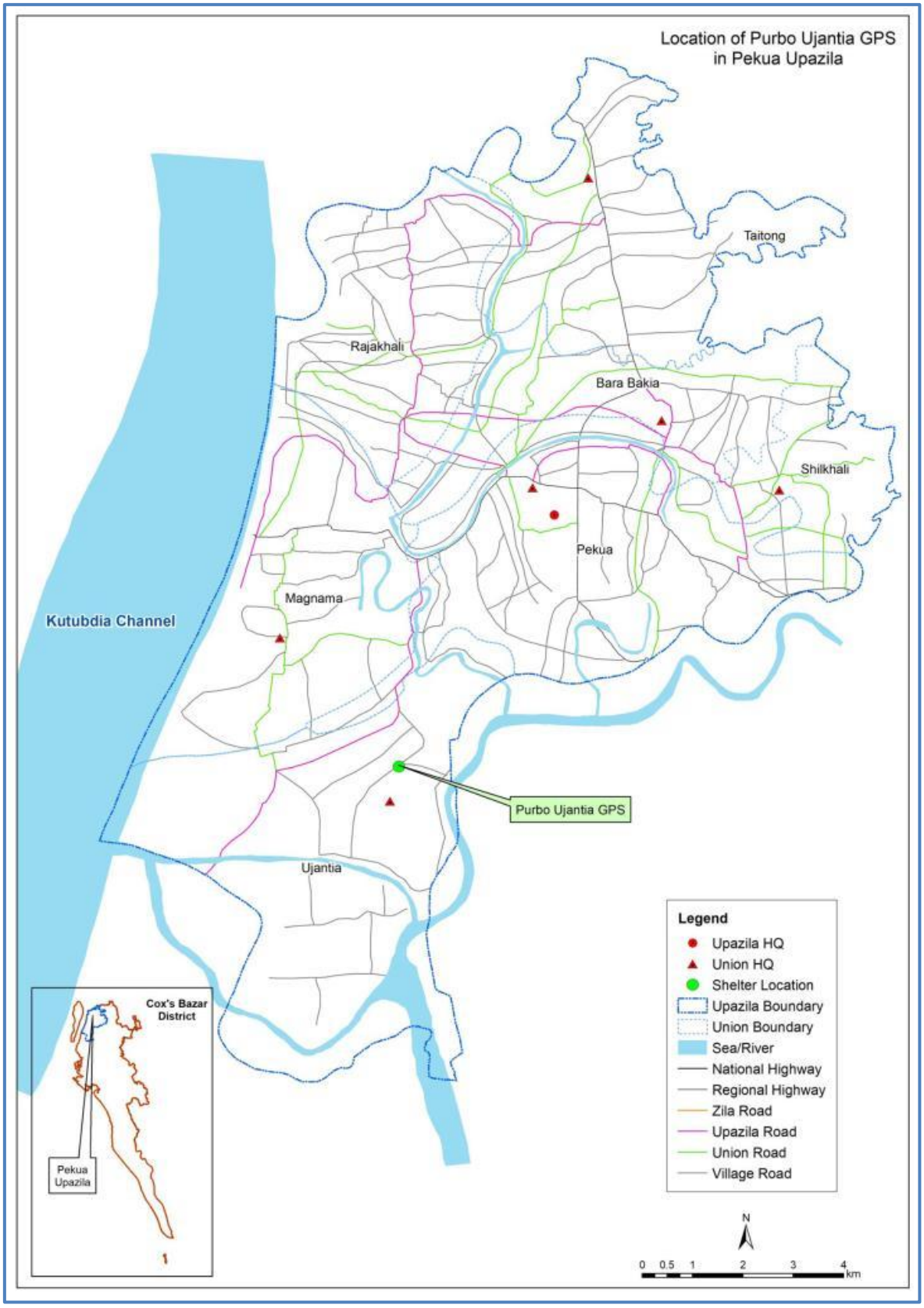


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Godarpara graveyard (250m), Nurir Bazar (300m)
South side	Nurirpara Mosque (30m), Ujantia High School (30m), Ujantia UP office (200m)
East side	Matamuhuri River (300m)
West side	Ujantia Sutachora khal (20m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the Sub-project site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 27 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 23 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the **Purbo Ujantia GPS** and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So the cyclone shelter would provide new space for additional classroom.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this resilience shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 27 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new school cum disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Within the close proximity of the proposed construction site, Godarpara graveyard located at 250m north and Nurir Bazar located at 300m north of the subproject. On the south side, Nurirpara Mosque (30m), Ujantia High School (30m) and Ujantia UP office (200m) are found. A river named Matamuhuri River is located at 300m east and Ujantia Sutachora khal is located at 20m west of the subproject. A 15ft BC road named Katabari road is located at 10m west. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small-scale during the construction period. Top soil in agricultural land will be avoided without any failure in earthwork and that productive part of the soil will be conserved and replaced, if underneath soil is taken from any agricultural land. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials.

Noise and vibration effect generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank[3] has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where no vegetation is found. No trees will be cut down due to the construction activities of this Subproject. All the socio-economic and environmental features and establishments locating within close proximity (within 100m) such as Nurirpara Mosque located at 30m south and Ujantia High School is 30m distance on south of the

subproject. Ujantia Sutachora khal is located at 20m west of the subproject might get affected during the construction period with the generated debris, dust and noise, though for the time being. As part of the standard site management practices, Contractor must adhere to the best practice wastes management procedure and regular adoption of dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP

measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Pekua will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and Upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 09 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of

market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Purbo Ujantia GPS)

Name of Sub-Project: **Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)**

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Pekua **Union**: Ujantia

Name of Community/Local Area: Chander Para

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, a two stored school building, another three stored school building, a Martyr Monument and a wash block are found. Godarpara graveyard located at 250m north and Nurir Bazar located at 300m north of the subproject. On the south side, Nurirpara Mosque (30m), Ujantia High School (30m) and Ujantia UP office (200m) are found. A river named Matamuhuri River is located at 300m east and Ujantia Sutachora khal is located at 20m west of the subproject. A 15ft BC road named Katabari road is located at 10m west. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new school cum disaster shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested

to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic, human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A 15ft BC road named Katabari road is located at 10m west. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. Godarpara graveyard located at 250m north and Nurir Bazar located at 300m north of the subproject. On the south side, Nurirpara Mosque (30m), Ujantia High School (30m) and Ujantia UP office (200m) are found. A river named Matamuhuri River is located at 300m east and Ujantia Sutachora khal is located at 20m west of the subproject.

But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples; and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events.

Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Ujantia Union under Pekua Upazila of Cox's Bazar district. The sub-project area is located at 21.778722 N and 91.941472 E. The distance from the Upazila headquarter is about 8 km. Nearby major road is Katabari road (15ft Bc road on west). Total available land area of this sub-project is 56 decimals. The school code is 91412080701

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

Godarpara graveyard located at 250m north and Nurir Bazar located at 300m north of the subproject. On the south side, Nurirpara Mosque (30m), Ujantia High School (30m) and Ujantia UP office (200m) are found. A river named Matamuhuri River is located at 300m east and Ujantia Sutachora khal is located at 20m west of the subproject.

No disturbance is anticipated due to construction activities. Agriculture lands are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site. Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

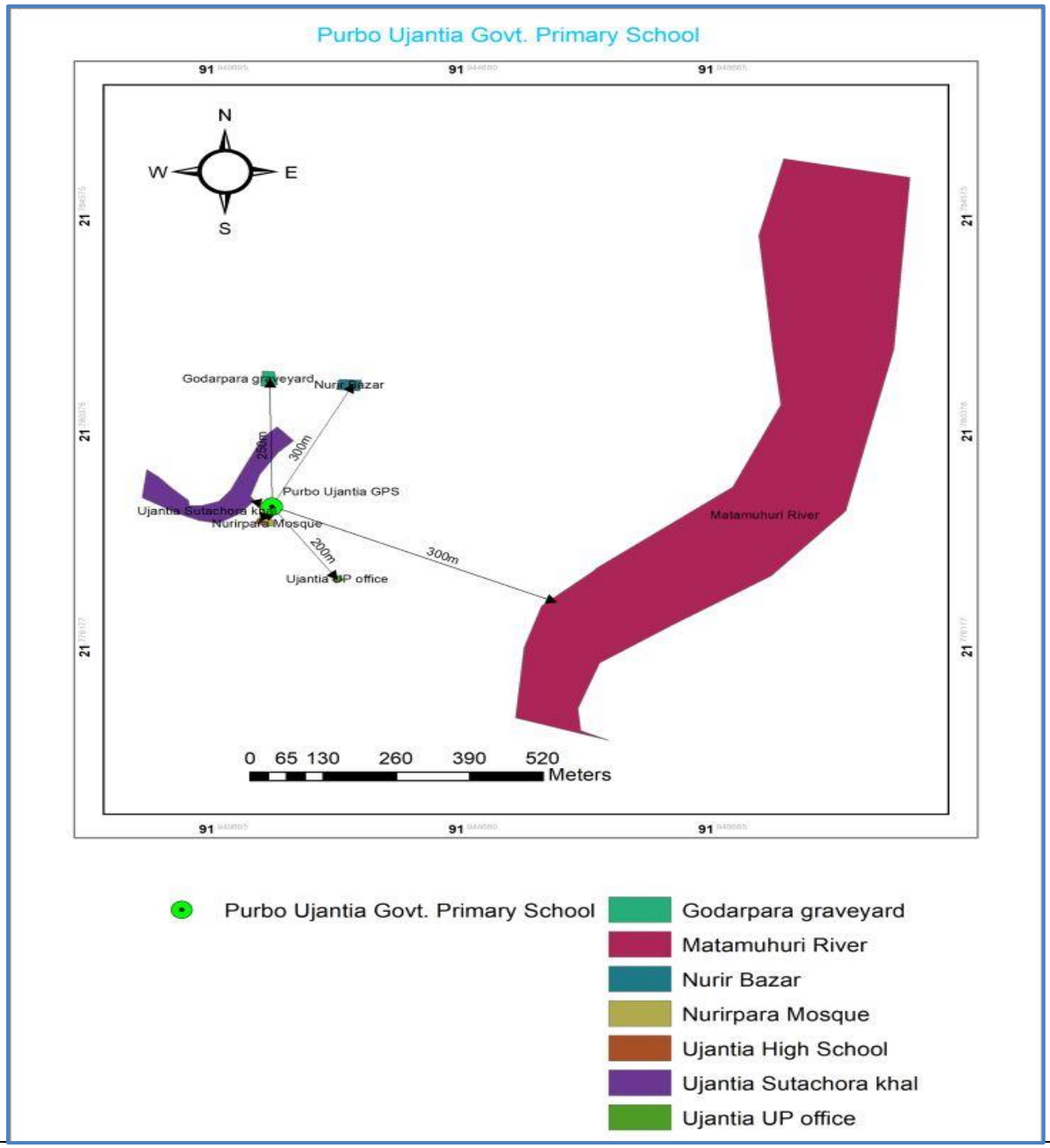
***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as Godarpara graveyard located at 250m north and Nurir Bazar located at 300m north of the subproject. On the south side, Nurirpara Mosque (30m), Ujantia High School (30m) and Ujantia UP office (200m) are found. A river named Matamuhuri River is located at 300m

east and Ujantia Sutachora khal is located at 20m west of the subproject but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, high school and agriculture lands were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of

elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within existing school boundary)
*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:
Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:
Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:
The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of Organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):
N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):
Groundwater is the main source of potable water in the Sub-project area. In this school, water is lifting by electric motor from the ground. Its depth is almost shallow depth. The shallow depth is about 300-350 feet. Teachers and students consume water from this shallow tube-well. They are reportedly suffer from different water borne diseases at times. In the sub-project area, deep groundwater is salty but arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 700-750ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.19mg/l, TDS-23.40 to 325 mg/l, EC -25.7 to

681µs/cm, Fe-0.5 to 7.6 mg/l and As-Nil (DPHE Test Report, 2021)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 15ft. wide BC road named Katabari road is passing by the west side of the sub-project. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow connection which already operated by electric motor is found within the school boundary and aquifer depth is about 300-350 feet. But the tubewell doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: It is possible to construction of labor camp on the west side of the subproject location. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): A 15ft. wide BC road named Katabari road is the main way for transportation of raw/construction materials. It is located on west side of the adjacent sub-project site.

Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, west side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 8 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or

around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A river named Matamuhuri River is located at 300m east of the school boundary, which is clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** There are some terrestrial flora species around the subproject site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is low for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BC road; the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed new School cum Disaster shelter building will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for

male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.

Likely direct and indirect impacts on economic development in the project areas by the sub-project:

During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.

Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)

A river named Matamuhuri River is located at 300m east of the sub-project area but no extent of disturbance or modification during the operation period is anticipated.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

There is no protected area in or around the sub-project sites, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

N/A

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

N/A

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

The proposed site is situated near to a locality. A 15 ft BC Katabari road is located on west. The roads are mainly used for pedestrian access and by light vehicles like bicycles, three wheelers etc. therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during

the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate Resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children,	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet. • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate. • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	mitigation measures.				records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles,	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.			
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter buildings (LGED/EMCRP/AF/W11): Purbo Ujantia GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for	Contractor	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. • Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	water bodies, flora and fauna			
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, D&SC, +8801714980171

Ms. Sadia Azad, Disaster and Climate Change Specialist, PIU.

Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, PIU, +8801913442006

Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			Tk.*24 months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal at a safe distance etc. all complete as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**509,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ০৪:২০ পিএম তারিখ: ২৭/১০/২০২১
স্কুলের নাম: পূর্ব উকিয়ানটিয়া সরকারী প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: 914120807 01
মত বিনিময় স্থল: বিদ্যালয়ের অফিস কক্ষে
গ্রাম: মুহুরীপাড়া ওয়ার্ড নং: ৭ ইউনিয়ন: উকিয়ানটিয়া ডাকঘর: সাগরমাথা
উপজেলা: পেকুয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	মোহাম্মদ আবছার উদ্দিন	৩১	পুরুষ	উকিয়াটোনা (পাকুয়া	
02	মোঃ- নাছির উদ্দিন	৩৩	পুরুষ	মিস্তার পাড়া	নাছির
০৩	মোঃ ওমর ফারুক	৪৫	"	সোদার পাড়া	ওমর ফারুক
০৪	আহসান কবির	৪৭	"	মুহুরী পাড়া	কবির
০৫	দিল মোহাম্মদ	৫২	"	মগনের পাড়া	দিল মোহাম্মদ
০৬	সাদ্দাম	২৯	ম	সোদার পাড়া	সাদ্দাম
০৭	আবদুল্লাহ	৩২	ম	মুহুরী পাড়া	আবদুল্লাহ
০৮	মুহাম্মদ	৫৫	ম	কদমতলীপাড়া পাড়া	মুহাম্মদ
০৯	মোঃ ওমর ফারুক	৩৫	ম	মুহুরী পাড়া	মোঃ ওমর ফারুক
১০	মোঃ ছৈয়দ আলম	৭৩	পুরুষ	মুহুরী পাড়া	মোঃ ছৈয়দ আলম
১১	সালেহ ইসলাম	৩৬	ম	সোদার পাড়া	সালেহ
১২	মোঃ হোসেন মোহন,	৪৫	ম	মুহুরী পাড়া	মোঃ হোসেন মোহন
১৩	দেলোয়ার	৪২	ম	সোদার পাড়া	দেলোয়ার
১৪	আবু তাহের	৩৮	ম	মুহুরী পাড়া	তাহের
১৫	কামাল উদ্দিন ছোট	৪২	ম	মহুরী পাড়া	কামাল
১৬	ইউনুছ	৩৪	ম	মুহুরী পাড়া	ইউনুছ

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ৪টা ২০ মিনিট তারিখ: ২৯/১০/২০২০
স্কুলের নাম: পূর্ব উখিয়াপালং সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ২১৪১২০৪০৭০১
মত বিনিময় স্থান: বিদ্যালয়ের অফিস কক্ষে
গ্রাম: নুরীর পাড়া ওয়ার্ড নং: ৭ ইউনিয়ন: উখিয়াপালং ডাকঘর: মগনামা
উপজেলা: পেকুয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	আবু নাছের	৪০	পুরুষ	নুরীর পাড়া	
১৮	মকছুদ আলম	৩৪	ঐ	দঃ সুতাকুড়া	মকছুদ আলম
১৯	তাজুল ইসলাম	৩৮	ঐ	বেদাবপাড়া	তাজুল ইসলাম
২০	মোশারফ হোসেন	৪২	ঐ	নুরীর পাড়া	মোশারফ
২১	আবুল কালাম	৩৪	ঐ	নুরীর পাড়া	আবুল কালাম
২২	জোহরেদ আলম	৩৪	ঐ	নুরীর পাড়া	জোহরেদ আলম
২৩	আহাদ চৌধুরী	৪২	ঐ	নুরীর পাড়া	আহাদ চৌধুরী

Public Consultation Participants' List

Government of The People's Republic of Bangladesh

Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Sarat Ghona Mahmudul Karim Chowdhury Government Primary School
Educational Institution ID: 91422081581
Village: Sarat Ghona; Union: Mognama; Upazila: Pekua
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. The project is being implemented under the financial grant assistance from the World Bank; but part of the enlisted schemes (2 work-packages) under the additional financing of the project is being financed by German Investment and Development Bank (KFW). Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11)..

1.2 Rationale of Site Selection for Resilience shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Mognama union of Pekua Upazila under Cox's Bazar district. The catchment area of

the subproject comprises the surrounding villages of North Sharat Ghona and South Sharat Ghona. Typical rural settings of the area offer farmers with crop production and salt cultivation to be in the prime professional engagement, while the fishermen stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 1,500 households, containing 6000 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Sarat Ghona Mahmudul Karim Chowdhury **GPS**
Educational Institute ID	91422081581
District	Cox's Bazar
Upazila	Pekua
Union	Mognama
Owner of land	GPS
Catchment household	1500
Catchment Population	6000 (Male: 2,940, Female: 3,060)
Profession	Farmer 65%, Fishermen 20% and others 15%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	North Sharat Ghona and South Sharat Ghona
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	A 12 ft. wide BC road named Mognama Sharat ghona is located at north side.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Sarat Ghona Mahmudul Karim Chowdhury GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floor	3
Number of classroom	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3

Sarat Ghona Mahmudul Karim Chowdhury GPS	
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located in the North-West side of Pekua Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 12ft wide BC road named Mognama Sharat Ghona Shikdarpara Road is located at north. The proposed construction site is surrounded by paddy land. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Pekua, chakaria, Moheskhali and Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively.

The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Pekua
Union	Mognama
GPS position	21.842028 N and 91.921194 E
Distance from Upazila HQ	12 km
Nearby major road	A 12ft wide BC road named Mognama Sharat Ghona Shikdarpara Road is located on north.
Nearby river/canal	A khal named Kutubdia khal is found at 500m west and Kutubdia channel located at 1km west of the subproject. Petkata khal is within 1km distance from the subproject location and A khal named volar khal located at 50m north of the subproject.

North side	Banshkhali and Chakaria Upazila
South side	maheshkhali Upazila
East side	Chakaria Upazila
West side	Kutubdia Channel

[Sources of data: Field survey, 2021]

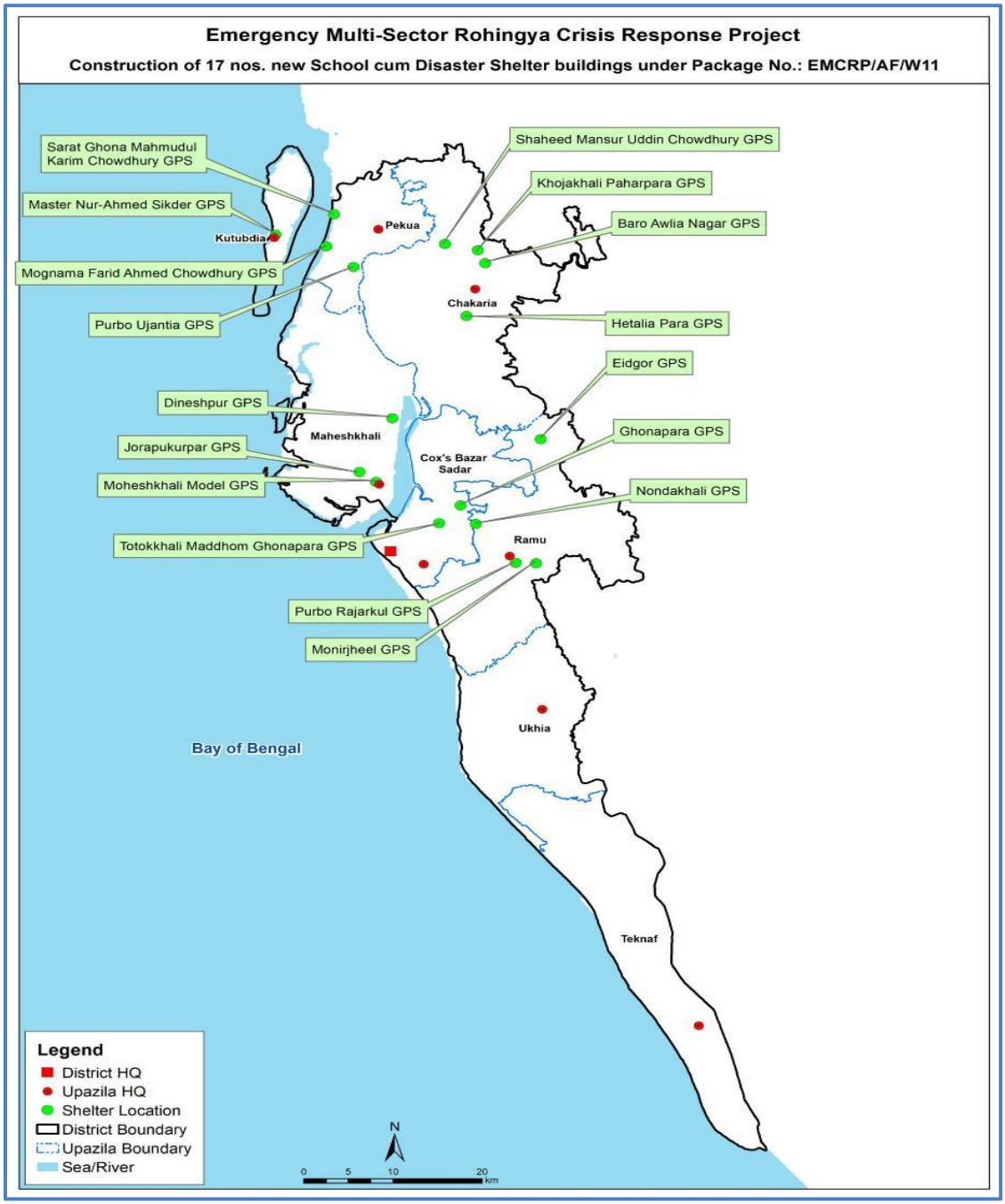


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Pekua, chakaria, Moheskhali and Kutubdia)

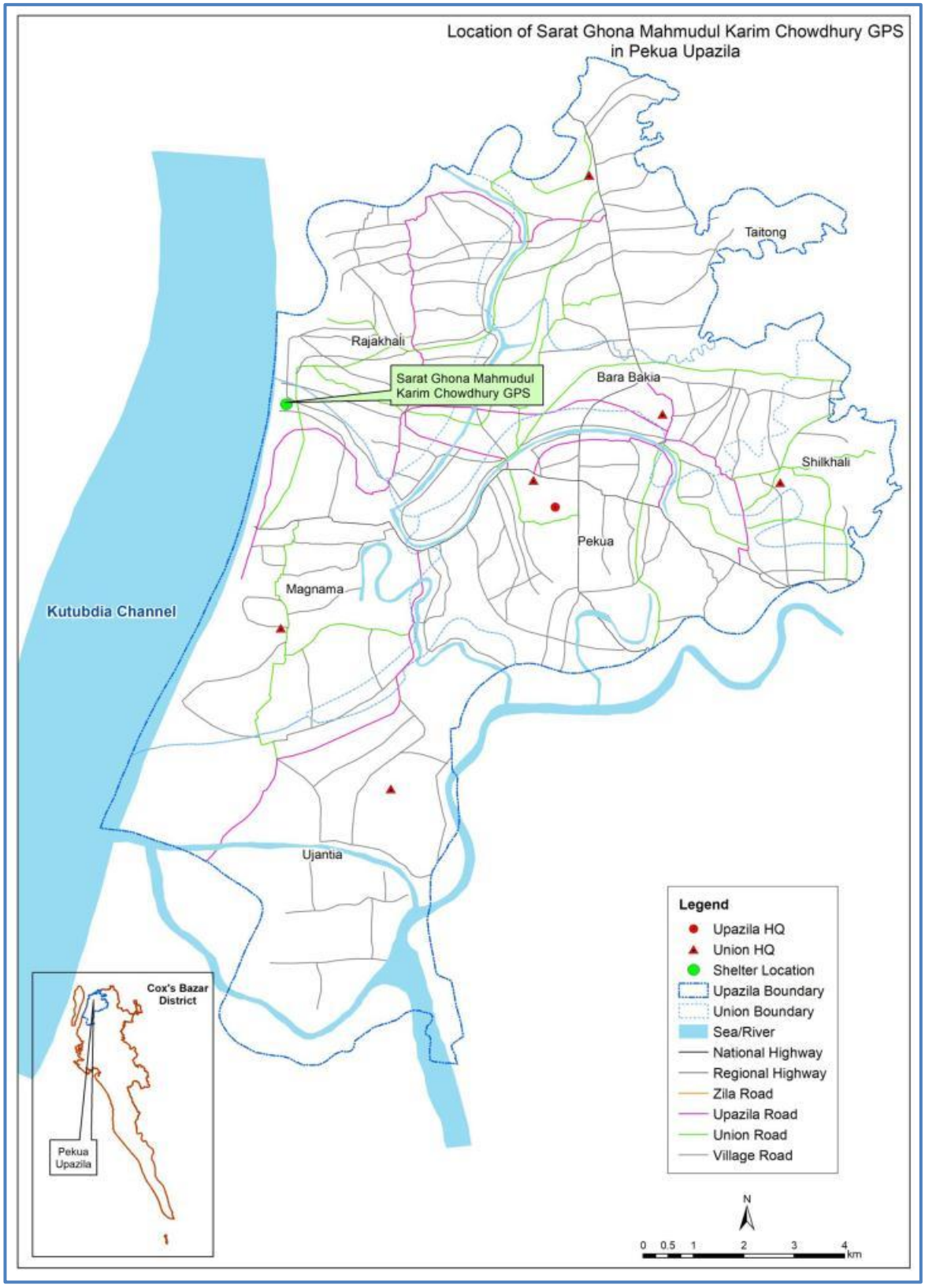


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been

summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Salt field (20m), Volar khal (50m)
South side	Salt field (20m), Dighirpara mosque & graveyard (600m), Pond (600m)
East side	Baitus Sarat Mosque & graveyard (500m), Pond (500m), Petkata khal (1km), Sarat ghona maitus sorof jame mosque (500m)
West side	Dighirpara graveyard (200m), Kutubdia khal (500m), Kutubdia channel (1km)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the Sub-project site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 27 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 22 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Sarat Ghona Mahmudul Karim Chowdhury GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So the cyclone shelter would provide new space for additional classroom.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this resilience shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 27 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new school cum disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Within the close proximity of the proposed construction site, a salt cultivation field is located at 20m north and another salt cultivation field is located at 20m south of the subproject. These salt cultivation fields are used for crop production during rainy season. A khal named volar khal is located at 50m north of the subproject. Dighirpara graveyard is located within 200m distance from the subproject. A 12ft wide BC road named Mognama Sharat Ghona Shikdarpara Road is located at 20m north of the subproject. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small-scale during the construction period. Top soil in agricultural land will be avoided without any failure in earthwork and that productive part of the soil will be conserved and replaced, if underneath soil is taken from any agricultural land. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials.

Noise and vibration effect generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank[3] has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where no vegetation is found. No trees will be cut down due to the construction activities of this Subproject. All the socio-economic and environmental features and establishments locating within close proximity (within 100m) such as a salt cultivation field is located at 20m north and another salt cultivation field is located at 20m south of the subproject. These salt cultivation fields are used for crop production during rainy

season. A khal named volar khal is located at 50m north and 2 houses located at 20m north of the subproject might get affected during the construction period with the generated debris, dust and noise, though for the time being. As part of the standard site management practices, Contractor must adhere to the best practice wastes management procedure and regular adoption of dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP

measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Pekua will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 09 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of

market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed disaster shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Sarat Ghona Mahmudul Karim Chowdhury GPS)
Name of Sub-Project: **Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)**
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 814,062,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox's Bazar **Sub-District**: Pekua **Union**: Mognama
Name of Community/Local Area: Sharat Gona
Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.
Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, one stored school building, a shallow tubewell and a wash block are found. A salt field is located at 20m north and another salt field is located at 20m south of the subproject. A khal named volar khal located at 50m north of the subproject. Dighirpara mosque & graveyard with a pond is located at 600m south side and another mosque named Baitus Sarat Mosque & graveyard with pond is located at 500m east of the subproject. Petkata khal is within 1km distance of the subproject location. There is a mosque named Sarat ghona maitus sorof jame mosque is found at 500m east of the subproject. Dighirpara graveyard is within 200m distance from the subproject. A khal named Kutubdia khal is situated at 500m west and Kutubdia channel located at 1km west of the subproject. A 12ft wide BC road named Mognama Sharat Ghona Shikdarpara Road is located on north. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments
People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new school cum disaster shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster

services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic, human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:
Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A road named Mognama Sharat Ghona Shikdarpara Road (A 12ft wide BC) is located at north side of the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. A salt field is located at 20m north and another salt field is located at 20m south of the subproject. A khal named volar khal located at 50m north of the subproject. Dighirpara mosque & graveyard with a pond is located at 600m south side and another mosque named Baitus Sarat Mosque & graveyard with pond is located at 500m east of the subproject. Petkata khal is within 1km distance of the subproject location. There is a mosque named Sarat ghona maitus sorof jame mosque is found at 500m east of the subproject. Dighirpara graveyard is within 200m distance from the subproject. A khal named Kutubdia khal is situated at 500m west and Kutubdia channel located at 1km west of the subproject. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples; and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people. Some human settlements (20m) on north are found of the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below
Section A: Sub-Project Overview

Description of sub-project/component interventions:
A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an

existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Mognama Union under Pekua Upazila of Cox's Bazar district. The sub-project area is located at 21.842028 N and 91.921194 E. The distance from the Upazila headquarter is about 12 km. Nearby major road is Mognama Sharat Ghona Shikdarpara Road (A 12ft wide BC) is located at north side. Total available land area of this sub-project is 30 decimals. The school code is 91422081581

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. A salt field is located at 20m north and another salt field is located at 20m south of the subproject. A khal named volar khal located at 50m north of the subproject. Dighirpara mosque & graveyard with a pond is located at 600m south side and another mosque named Baitus Sarat Mosque & graveyard with pond is located at 500m east of the subproject. Petkata khal is within 1km distance of the subproject location. There is a mosque named Sarat ghona maitus sorof jame mosque is found at 500m east of the subproject. Dighirpara graveyard is within 200m distance from the subproject. A khal named Kutubdia khal is situated at 500m west and Kutubdia channel located at 1km west of the subproject. Some human settlements located at 20m north of the sub-project area.

No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site. Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

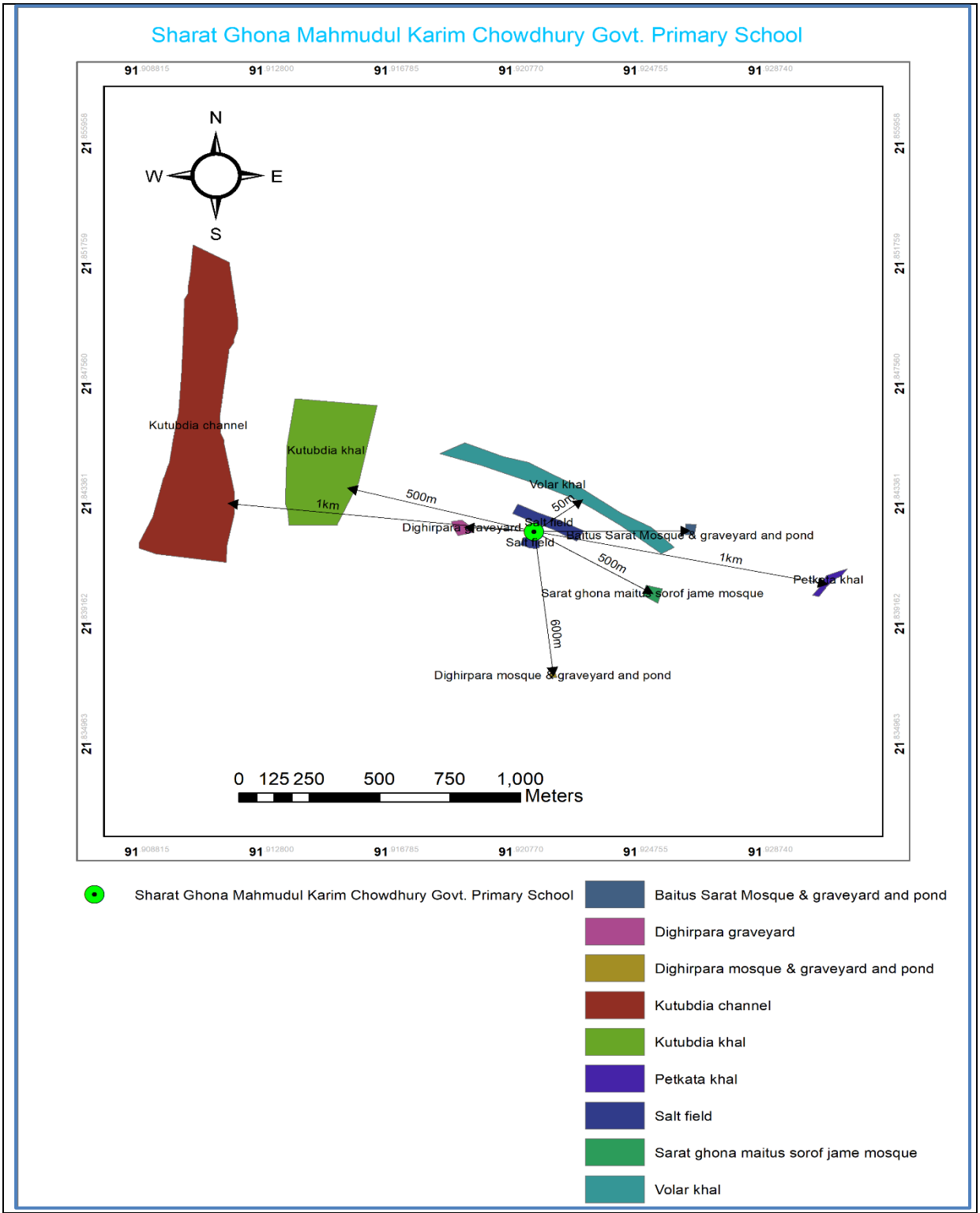
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as a salt field is located at 20m north and another salt field is located at 20m south of the subproject. A khal named volar khal located at 50m north of the subproject. Dighirpara mosque & graveyard with a pond is located at 600m south side and another mosque named Baitus Sarat Mosque & graveyard with pond is located at 500m east of the subproject. Petkata khal is within 1km distance of the subproject location. There is a mosque named Sarat ghona maitus sorof jame mosque is found at 500m east of the subproject. Dighirpara graveyard is within 200m distance from the subproject. A khal named Kutubdia khal is situated at 500m west and Kutubdia channel located at 1km west of the subproject. Some human settlements located at 20m north of the sub-project area but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasa, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of Organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One shallow tube-well is found within the school boundary. The shallow depth is about 300-350 feet. Teachers and students consume water from this shallow tube-well. They are reportedly suffer from different water borne diseases at times. In the sub-project area, deep groundwater is salty but arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 700-800ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.19mg/l, TDS-23.40 to 325 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.6 mg/l and As-Nil (DPHE Test Report, 2021)

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A road named Mognama Sharat Ghona Shikdarpara Road (A 12ft wide BC) is located at north side of the sub-project area. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow tube-well is found within the school boundary and aquifer depth is about 300-350 feet. But the tubewell doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: It is possible to construction of labor camp on the north-east side of the subproject boundary. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): A road named Mognama Sharat Ghona Shikdarpara Road (A 12ft wide BC) is located at north side of the sub-project area which is the main way for transportation of raw/construction materials. It is located on north east side of the sub-project site.

Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, north-east side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 8 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir

may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A khal named volar khal is located at 50m north, Petkata khal is 1km distance from the subproject location and another khal named Kutubdia khal is found at 500m west of the subproject. Kutubdia channel located at 1km west of the subproject. These features are clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** There are some terrestrial flora species around the subproject site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is low for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BC road; the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed new School cum Disaster shelter building will be equipped with full facilities for

conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A khal named volar khal is located at 50m north, Petkata khal is 1km distance from the subproject location and another khal named Kutubdia khal is found at 500m west of the subproject. Kutubdia channel located at 1km west of the subproject. These features are clearly outside of the subproject area and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project sites, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is situated near to a locality. A BC road named Mognama Sharat Gona road (12ft BC) is located on North of the subproject site. The roads are mainly used for pedestrian access and

by light vehicles like mini truck, bicycles, three wheelers etc. therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate Resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children,	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet. • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate. • Litter is to be collected daily.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times.	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.		equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	mitigation measures.				records.	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles,	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.			
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.* Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter buildings (LGED/EMCRP/AF/W11): Sarat Ghona Mahmudul Karim Chowdhury GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction	Site Preparation: Soil	• Selected site will be far away from any water bodies or	PIU &	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	Erosion; Alteration of natural drainage	natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	Contractor	Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction	Labour Base Camp: Conflicts	• Awareness building session will be undertaken about	Contractor	Social Development

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity	with the local residents	prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg.	Contractor	Environmental Consultant of PIU/D&SC, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. • Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.

- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000 Tk.*24	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal at a safe distance etc. all complete as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**509,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ২:৩০ মিনিট তারিখ: ২৭/১০/২০২১
স্থানের নাম: নয়াপাড়া মাহমুদুল করিম চৌধুরী সরকারী প্রাঃ বিদ্যালয়
স্থল আইডি নম্বর: ১১৪১২০৮১৫৮১
মত বিনিময় স্থান: বিদ্যালয়ের অফিস কক্ষ
গ্রাম: নয়াপাড়া ওয়ার্ড নং: ০১ ইউনিয়ন: উখিয়া ডাকঘর: উখিয়া
উপজেলা: পেকুয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১	মোঃ কামাল হোসেন	৫১	পুরুষ	চৌধুরীপাড়া	
২	মোঃ জাহাঙ্গীর	৫১	পুরুষ	নয়াপাড়া	
৩	মোঃ রেজাউল করিম	৩৮	পুরুষ	নয়াপাড়া	
৪	মুঃ আনোয়ার হোসেন	৩১	ঐ	ঐ	
৫	মোঃ মনজুর আলী	৫২	ঐ	নয়াপাড়া	
৬	আলম সরদার	৪৫	ঐ	ঐ	
৭	আসাদুজ্জামান নূর	২৪	ঐ	ঐ	
৮	মিলন	২০	ঐ	নয়াপাড়া	
৯	আবুল রশিদ	২২	ঐ	নয়াপাড়া	
১০	মোঃ আরিফ	২৮	ঐ	নয়াপাড়া	
১১	মোঃ জাহাঙ্গীর	২৮	ঐ	নয়াপাড়া	
১২	ওমর ফারুক	২৮	ঐ	নয়াপাড়া	
১৩	জাফর	৪৫	ঐ	ঐ	
১৪	বদরআলম	৪৯	ঐ	ঐ	
১৫	আ জ্জার আলী	৫৩	ঐ	ঐ	
১৬	মোহাঃ নাজেমউদ্দীন	৫৬	ঐ	ঐ	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

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১৮	জুয়েদুর	৩২	ঐ	ঐ	জুয়েদুর
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Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Shaheed Monsur Uddin Chowdhury Govt. Primary School
Educational Institution ID: 99412051705
Village: Bibirkhil; Union: Baraitali; Upazila: Chakaria
District: Cox's Bazar

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and effects of climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in Baraitali union of Chakaria Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Bibirkhil, Paharchanda, Jelepara, Shilpara and

Charpara. Typical rural settings of the area offer farmer to be in the prime professional engagement, while the fishermen stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 580 households, containing 2,900 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Shaheed Monsur Uddin Chowdhury GPS
Educational Institute ID	99412051705
District	Cox's Bazar
Upazila	Chakaria
Union	Baraitali
Owner of land	GPS
Catchment household	580
Catchment Population	2,900 (Male: 1,421, Female: 1,479)
Profession	Farmer 60%, Fishermen 30%, Businessmen 2%, Service holder 2% and others 6%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Bibirkhil, Paharchanda, Jelepara, Shilpara and Charpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	10 ft. wide BFS road named Bibirkhil-Doubletoli road on east side which is connected with Baniarchara-Mognama road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Shaheed Monsur Uddin Chowdhury GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3
Tube well	5

Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North-West side of Chakaria Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 10ft wide BFS road on the east side which is connected to the Baniarchara-Mognama road. There are some socio-environmental foundations are located on south side, such as Emdadia mosque & graveyard at 50m, Matamuhuri river at 300m and Khil Chadak mosque at 500m of the proposed location. Three temples named Jelepara Jagannath Mondir at 350m, Shilpara Hori Mondir at 420m and Shilpara Kali Mondir at 450m as well as Shilpara crematorium at 800m are located on west side from the sub-project component. The location details of the Sub-project have been summarized in Table 1.4.1. The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively.

The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Chakaria
Union	Baraitali
GPS position	21.805111 N and 92.040972
Distance from Upazila HQ	8 km
Nearby major road	Baniarchara-Mognama Road
Nearby river/canal	Habrang chorir khal is located at 500m distance on north side and Matamuhuri river is at 300m on south side of the sub-project component.
North side	Bashkhali & Lohagara Upazila of Chattagram district and Lama Upazila of Bandarban district
South side	Ramu and Cox's Bazar Sadar Upazila

East side	Lama & Naikhyongchori Upazila of Bandarban district
West side	Moheshkhali and Pekua Upazila

[Sources of data: Field survey, 2021]

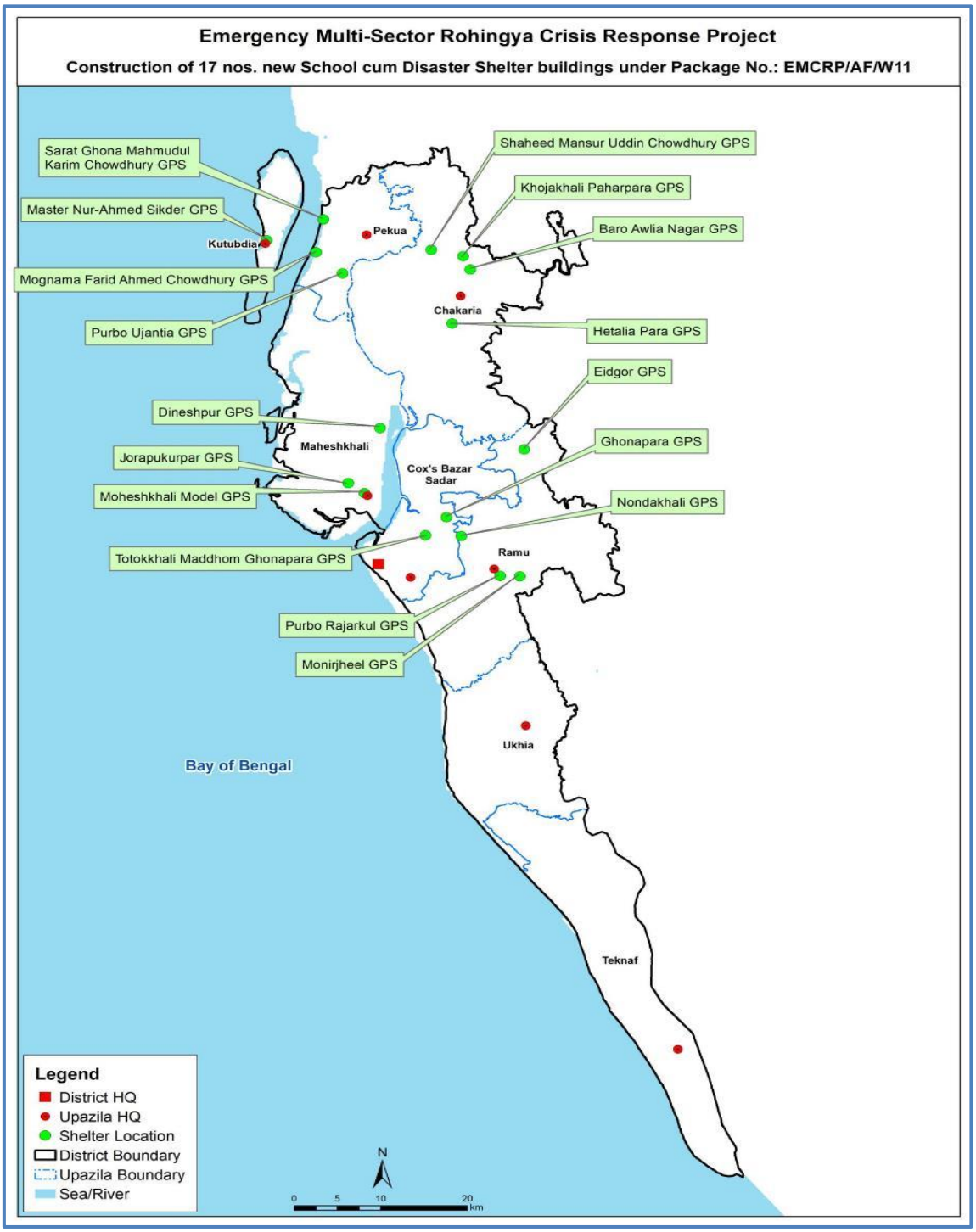


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

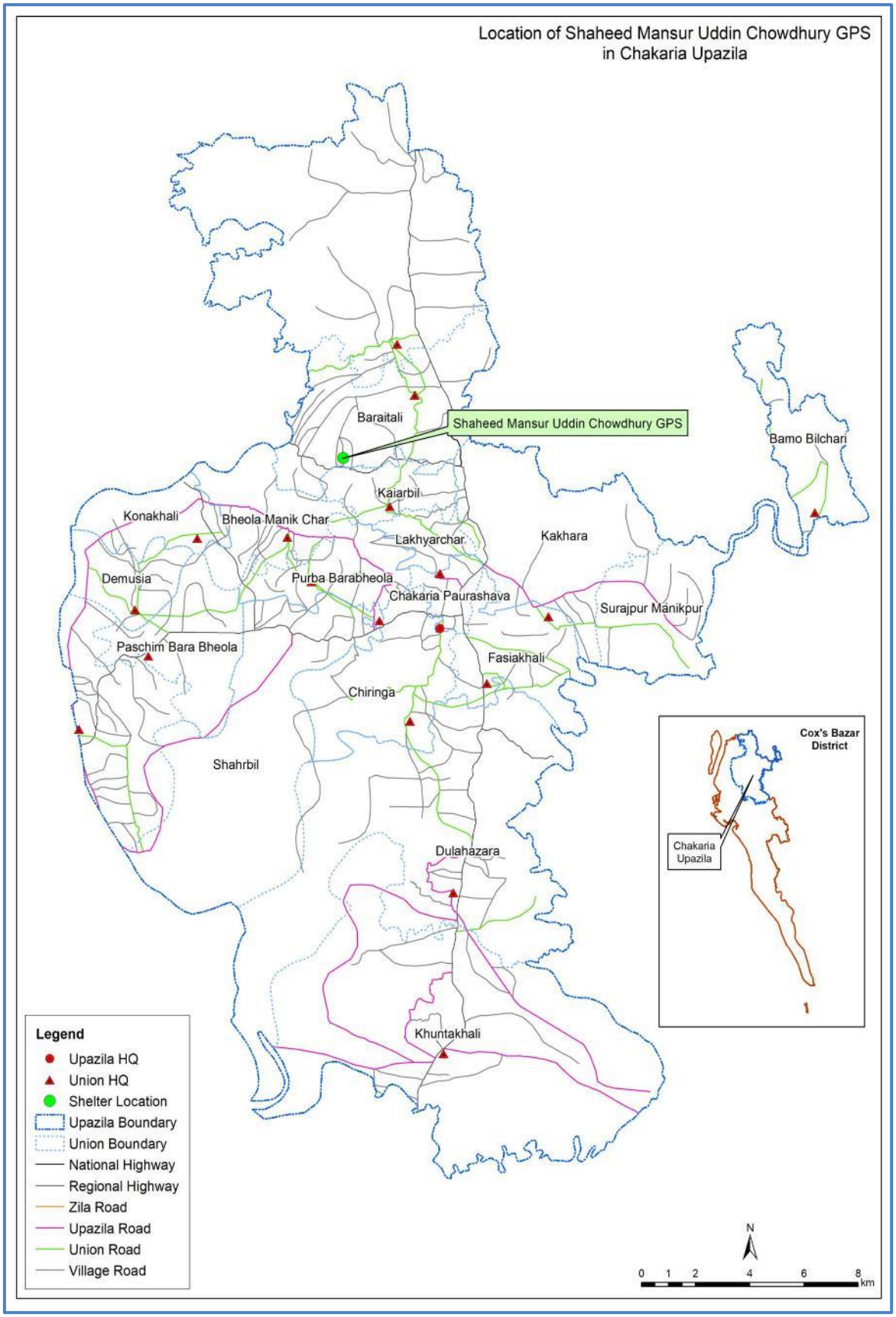


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Bibirkhil Uttarpara mosque & graveyard (300m), Mosjid-e-safiya Yusuf (500m), Habrang chorir khal (500m), Bodor Mokam mosque (800m), Fazlul Rahman mosque (850m), Gurimora mosque & graveyard (1km),
South side	Emdadia mosque & graveyard (50m), Matamuhuri river (300m), Khil Chadak mosque (500m)
East side	Habrang chorir khal (750m)
West side	Jelepara Jagannath Mondir (350m), Moulavir Dokan station (400m), Shilpara Hori Mondir (420m), Shilpara Kali Mondir (450m), Bibirkhil Dokhinpara mosque (600m), Shilpara crematorium (800m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 29 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 15 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Shaheed Monsur Uddin Chowdhury GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 29 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1.

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. There are some major socio-environmental establishments, such as Bibirkhil Uttarpara mosque & graveyard at 300m, Habrang chorir khal at 500m, Bodor Mokam mosque at 800m, Fazlul Rahman mosque at 850m, Gurimora mosque & graveyard at 1km on north side are located from the sub-project component. On the south side there are two mosques are located such as Emdadia mosque & graveyard at 50m and Khil Chadak mosque at 500m. A river named Matamuhuri river is located at 300m on south side of the sub-project. Another socio-cultural features such as Jelepara Jagannath Mondir at 350m, Shilpara Hori Mondir at 420m, Shilpara Kali Mondir at 450m, Bibirkhil Dokhinpara mosque at 600m and Shilpara crematorium at 800m distances are located on west side of the sub-project site. A 10 ft. wide BFS road named Bibirkhil-Doubletoli road on east side which is connected with Baniarchara-Mognama road. No significant disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil

can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the east side. Due to the construction activities of this Sub-project, trees (small and medium size) will not be cut down in the periphery of the school. There are some major religious institutions, such as Bibirkhil Uttarpara mosque & graveyard at 300m, Bodor Mokam mosque at 800m, Fazlul Rahman mosque at 850m on north side are located from the sub-project component. A khal named Habrang chorir khal at 500m on north side and a river named Matamuhuri river are located at 300m on south side of the sub-project component. Another important socio-cultural features such as Jelepara Jagannath Mondir at 350m, Shilpara Hori Mondir at 420m, Shilpara Kali Mondir at 450m, Bibirkhil Dokhinpara mosque at 600m and Shilpara crematorium at 800m distances are located on west side of the sub-project site. Emdadia mosque & graveyard at 50m is found at south side and some settlements on west side at 10m which are adjacent to the proposed construction site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Chakaria will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are

perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and Upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.

- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lac & 09 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Shaheed Monsur Uddin Chowdhury GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Chakaria **Union**: Baraitali

Name of Community/Local Area: Bibirkhil

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. In the school boundary, there are a two-story building, a shaheed Minar, one Tubewell and two toilets. The new school cum disaster shelter will be constructed on the vacant space at east side of the sub-project component. A 10ft. wide BFS village connecting road on east side and Baniarchara-Mognama road located within 20m on the south side of the sub-project. Bibirkhil Uttarpara mosque & graveyard at 300m, Habrang chorir khal at 500m, Bodor Mokam mosque at 800m, Fazlul Rahman mosque at 850m, Gurimora mosque & graveyard at 1km on north side are located from the sub-project component. On the south side there are two mosques are located such as Emdadia mosque & graveyard at 50m and Khil Chadak mosque at 500m. A river named Matamuhuri river is located at 300m on south side of the sub-project. Another socio-cultural features such as Jelepara Jagannath Mondir at 350m, Shilpara Hori Mondir at 420m, Shilpara Kali Mondir at 450m, Bibirkhil Dokhinpara mosque at 600m and Shilpara crematorium at 800m distances are located on west side of the sub-project site. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase

the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A 10ft. wide HBB road named Bibirkhil-Boubletoli road is passing near the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Bibirkhil Uttarpara mosque & graveyard (300m), Habrang chorir khal (500m), Bodor Mokam mosque (800m), Fazlul Rahman mosque (850m), Gurimora mosque & graveyard (1km); on south side Emdadia mosque & graveyard (50m), Matamuhuri river (300m), Khil Chadak mosque (500m); on east side Habrang chorir khal (750m) and on west side Jelepara Jagannath Mondir (350m), Moulavir Dokan station (400m), Shilpara Hori Mondir (420m), Shilpara Kali Mondir (450m), Bibirkhil Dokhinpara mosque (600m), Shilpara crematorium (800m) are located. But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people. Some human settlements and agricultural lands are found around the sub-project area.

No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in Baraitali Union under Chakaria Upazila of Cox's Bazar district. The sub-project area is located at 21.805111 N and 92.040972 E. Catchment village of this sub-project areas are Bibirkhil, Paharchanda, Jelepara, Shilpara and Charpara. The distance from the Upazila headquarter is about 8 km. A 10 ft. wide BFS road passing by the sub-project site, which is connected with Baniarchara-Mognama Road. Total available land area of this sub-project is 160 decimals. The school code is.99412051705

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site.

At north side Bibirkhil Uttarpara mosque & graveyard (300m), Habrang chorir khal (500m), Bodor Mokam mosque (800m), Fazlul Rahman mosque (850m), Gurimora mosque & graveyard (1km); at south side Emdadia mosque & graveyard (50m), Matamuhuri river (300m), Khil Chadak mosque (500m); at east side Habrang chorir khal (750m) and at west side Jelepara Jagannath Mondir (350m), Moulavir Dokan station (400m), Shilpara Hori Mondir (420m), Shilpara Kali Mondir (450m), Bibirkhil Dokhinpara mosque (600m), Shilpara crematorium (800m) are located of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found around

the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.
Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

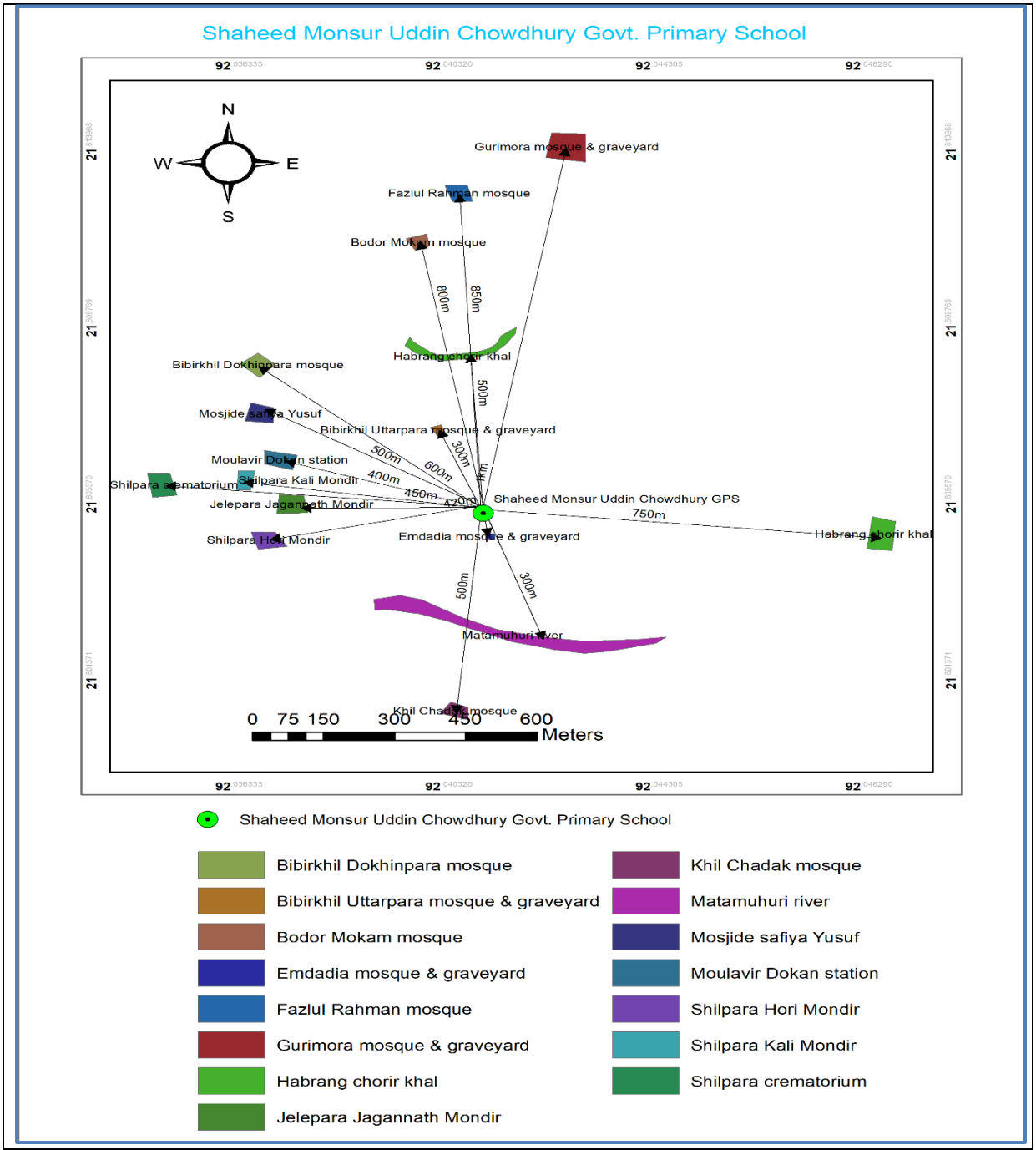
Section B: Environmental Screening

***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side Bibirkhil Uttarpara mosque & graveyard (300m), Habrang chorir khal (500m), Bodor Mokam mosque (800m), Fazlul Rahman mosque (850m), Gurimora mosque & graveyard (1km); at south side Emdadia mosque & graveyard (50m), Matamuhuri river (300m), Khil Chadak mosque (500m); at east side Habrang chorir khal (750m) and at west side Jelepara Jagannath Mondir (350m), Moulavir Dokan station (400m), Shilpara Hori Mondir (420m), Shilpara Kali Mondir (450m), Bibirkhil Dokhinpara mosque (600m), Shilpara crematorium (800m) but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, temple, high school and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the

consultation meeting

(2) Potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within existing school boundary)
*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:
Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:
The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):
N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):
Groundwater is the main source of potable water in the Sub-project area. One deep tube-well is found within the school boundary. The depth is about 700 feet. Teachers and students are consuming water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 650-850ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes.

Groundwater quality: pH-5.17 to 7.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.21 to 6.9 mg/l, Cl^--6.0 to 225mg/l, Salinity- 0.11 to 0.63mg/l and As-Nil (DPHE Test Report, 2021)

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 10ft. wide BFS road is passing by the east side of the sub-project. It is connected with Baniarchara-Mognama road. It is possible to carry the construction materials on the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tube-well is found within the school boundary and aquifer depth is about 700 feet. But the tubewells doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On the south side of the school boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 10ft. wide BFS Bibirkhil-Doubletoli road is the main way for transportation of raw materials. It is located on east side of adjacent sub-project site which is connected with Baniarchara-Mognama Road.
Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, **south** side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir

may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though two surface water bodies named Habrang chorir khal at 500m on north side and Matamuhuri river at 300m distance on the south side are found which are clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent HBB road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)

Low. The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A BFS road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and

emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC. • A mosque is located nearby the school boundary so labor camp needs to be set up in such a location that the mosque is not disturbed in any way.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)		Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.			
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage.	Contractor, Environmental Specialists of	Number of complaints from stakeholders,	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
		low.	• Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.	PIU and D&SC	Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.		sites to maximum of 20 km/h. • Regular monitoring of air quality.		and pollution control devices, Maintain records	
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works.	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.		walkways signage, and metal sheets placed at project location;	
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			all temporary services.			
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.* Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Shaheed Monsur Uddin Chowdhury GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	• Selected site will be far away from any water bodies or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction	Safety Issues	• Unauthorized entry to the site area is completely prohibited	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement and operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.

- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 8 shelters i.e. 35, 000 Tk.*24	105,000

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/8 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 2000.per person (twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**509,420**

Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: বেলা ১১:৫৫ ঘটিকা তারিখ: ২৯/১০/২০২১ ইং,
স্কুলের নাম: শহীদ মাস্টার ফজির চৌধুরী সরকারি প্রাথমিক বিদ্যালয়
স্কুল আইডি নম্বর: ২২৪১২০৫০৭০৫
মত বিনিময় স্থান: বিদ্যালয়ের অভ্যন্তর
গ্রাম: বিরিঞ্চিখিল, পাহাড়টিলা ওয়ার্ড নং: ০৭ ইউনিয়ন: হিমছড়ি ডাকঘর: পাহাড়টিলা ৪৭৪১
উপজেলা: চকোরিয়া জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	[illegible]	৬২	পুরুষ	বিরিঞ্চিখিল পাহাড়টিলা	[illegible]
০২	হাবিবুর নাসির	৭০	"	বিরিঞ্চিখিল পাহাড়টিলা	[illegible]
০৩	[illegible]	৪৮	"	বিরিঞ্চিখিল	[illegible]
০৪	রফিনা আলম	৫০	নারী	"	[illegible]
০৫	রোকিনা আক্তার	৩২	"	"	রোজিনা আক্তার
০৬	আবু সিদ্দিক	৫০	পুরুষ	"	[illegible]
০৭	সাহিদুল ইসলাম	৪৭	"	"	সাহিদুল ইসলাম
০৮	দুলাল চন্দ্র কানী	৬৮	"	ঝোলা পাহাড়	দুলাল চন্দ্র কানী
০৯	আবুল কালাম	৩৮	"	বিরিঞ্চিখিল	আবুল কালাম
১০	সাবির আহাম্মদ	৫৭	"	"	সাবির আহাম্মদ
১১	মো: আবদুল্লাহ আল ইমান	২৩	"	বিরিঞ্চিখিল	[illegible]
১২	রোমানুল ইসলাম	৩৫	"	"	[illegible]
১৩	তাহমিনা আকতার	৩৪	নারী	"	[illegible]
১৪	আমেনা বেগম	৩৫	"	"	[illegible]
১৫	কবিরুল ইসলাম	৪৮	পুরুষ	"	[illegible]

Public Consultation Participants' List

Government of The People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Of the Sub-project:

Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District, under the Package No. EMCRP/AF/W11

Component: Totokkhali Middle Ghonapara Govt. Primary School
Educational Institution ID: 99412030104
Village: Middle Ghonapara; Union: PM Khali; Upazila: Cox's Bazar Sadar
District: Cox's Bazar

Funded by:

Government of the People's Republic of Bangladesh & World Bank

Design and Supervision Consultancy:

Development Design Consultants Ltd.

November-2021

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ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Bank

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services are prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project is a sustainable development pathway that is resilient to disaster and climate change.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, construction of drainage facilities, rubber dams for irrigation, jetty rehabilitation, climate-resilient primary schools/disaster shelters, and climate-resilient community service centers/disaster shelters, climate-resilient access and evacuation roads and footpaths, awareness program for sanitation as well as lightning protection systems, solar street lights, nano-grids, firefighting/search and rescue warehouses. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Rationale of Site Selection for disaster shelters under the project

LGED conducted a needs assessment of the entire coastal area including the district of Cox's Bazar with the objective of improving the coverage of accessible multipurpose disaster shelters by 2025, under a World Bank funded project named 'Emergency 2007 Cyclone Recovery and Restoration Project (ECRRP)'. This analysis shows that 7,124 multipurpose shelters will be needed by 2025 of which 4,760 will be needed by 2020 to improve the disaster resilience of the population across all fourteen coastal districts. LGED itself with the support from World Bank has constructed 352 new shelters and rehabilitated 459 existing shelters under the ECRRP project and now implementing the

[1] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

rehabilitation and newly construction works of 1000 multipurpose disaster shelters in different coastal districts of Bangladesh under the ongoing MDSP (Multipurpose Disaster Shelter Project) project. The sites for these shelters have been selected based on the need of local communities and their opinions, prevailing socio-economic conditions, and availability of land in the areas (within a government school boundary). As the shelters are to be used as primary schools, land sufficiency for other facilities (e.g., playground) within the school boundary and available funding have always been considered while selecting the best option among the five different building options developed under the project ECRRP. All these shelter construction options are fully aligned with the directives given in the 'Cyclone Shelter Construction, Maintenance and Management Policy 2011' of Bangladesh Government.

As the construction of targeted numbers of multipurpose disaster shelters across the coastal districts is a phased implementation process expected to be carried out under different projects or programs of Bangladesh government, every single site for rehabilitation or construction of shelter is selected in priority basis, considering the need for rational distribution and availability of other means in the areas. Though MDSP is implementing certain numbers of multipurpose disaster shelters in different Upazila of Cox's Bazar District, unprecedented addition of nearly a million DRPs in Ukhiya and Teknaf Upazilas has undermined the previously counted needs for local residents. In order to meet the overwhelmed requirement of sheltering these huge numbers of DRPs in the face of disasters, EMCRP has come up with the intervention to construct/rehabilitate additional numbers of disaster shelters within those school boundaries that could provide sufficient land areas for shelter facilities and local residents are ready to act responsibly with necessary taking care/maintenance through the school management committee, such as, cleaning and maintenance of solar panel, changing of waters in batteries at certain intervals, and so on. All these shelter cum schools will be complementing the numbers of disaster shelters being implemented under MDSP or other government initiatives for the entire population of the areas.

1.3 Background of the Sub-project

EMCRP will support the Government of Bangladesh in addressing the immediate and urgent needs of the displaced people from Myanmar and host communities in Cox's Bazar, within the scope of improving access to basic services and building disaster and social resilience of the displaced population. The makeshift shelters accommodating the displaced population are highly vulnerable to natural disasters, like cyclone and flooding. In order to withstand the loss or casualty in the face of those disastrous events and widen the coverage of vulnerable people and assets with further provision of resilient structural and non-structural measures, new School cum Disaster shelter building will be constructed or rehabilitated in certain locations. These climate resilient disaster shelters will cater services for neighboring catchment population both from the displaced Rohingya community and the host group.

Under the package of LGED/EMCRP/AF/W11, a new School cum Disaster shelter building will be constructed in PM Khali union of Cox's Bazar Sadar Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Middle Ghonapara, Taher Mohammad Ghona, Majher para, Putulirmar dhala, Chatarkatha and Purakatha. Typical rural settings of the area

offer farmer to be the prime professional engagement, while the businessmen stand 2nd in option. The proposed new School cum Disaster shelter building would have to provide refuge to nearly 500 households, containing 2,200 members in total, which is much higher in numbers than the standard capacity of 1300 people to get resorted in the proposed disaster shelter. However, in practical, these types of shelters can accommodate as many as 3000 people for a shorter disaster period though in congestion and the old school buildings would share some burdens, if required. Relevant significant features of the sub-project area and the proposed disaster shelter have been tabulated in Table 1.3.1 and 1.3.2.

Table 1.3.1: Significant features of the area and the Sub-project

Name of the sub project	Totokkhali Middle Ghonapara GPS
Educational Institute ID	99412030104
District	Cox's Bazar
Upazila	Cox's Bazar Sadar
Union	PM Khali
Owner of land	GPS
Catchment household	500
Catchment Population	2,200 (Male: 1,050, Female: 1,150)
Profession	Farmer 80%, Businessmen 10%, Service holder 5%, Day labor 3% and others 2%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (32.625m x 8.875m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Middle Ghonapara, Taher Mohammad Ghona, Majher para, Putulirmar dhala, Chatarkatha and Purakatha
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	15 ft. wide BC road named Bangla Bazar-Bango Bondhu Road on east side connected with Arakan Road.
Land acquisition	Not required

[Field survey, 2021]

Table 1.3.2: Proposed disaster shelter features under the Sub-project

Totokkhali Middle Ghonapara GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	289.54
Number of floors	3
Number of classrooms	3
Teachers room	1
First-Aid room	1
Room for pregnant women	1
Store room	1
Toilet (male)	3
Toilet (Female)	3

Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1300
Capacity (livestock)	180

The objective of This Environmental Screening Report is to screen out the major environmental features of the proposed sub-project site and surrounding areas and assess the potential impacts in respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the North side of Cox's Bazar Sadar Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 15ft wide BC road on the east side which is connected to the Arakan Road. Totokkhali Middle Ghonapara Bottoli jame mosque and Bou Bazar are situated within 500m on the north side of the proposed location. The location details of the Sub-project have been summarized in Table 1.4.1.

The Location of new School cum Disaster shelter building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia) map and Union Map with Sub-project location have been shown in Figure 1.4.1 and Figure 1.4.2 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a significant number of people during storm/ cyclonic events, while act as a regular primary school for the pupil during the normal period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Cox's Bazar Sadar
Union	PM Khali
GPS position	21.471711 N and 92.0300 E
Distance from Upazila HQ	7 km
Nearby major road	Bangla Bazar- Bango Bondhu Road
Nearby river/canal	Kamolaghona Chorra is located at 150m on south side of the sub-project.
North side	Chakaria Upazila
South side	Ramu Upazila and The Bay of Bengal
East side	Ramu Upazila
West side	Moheshkhali channel, Moheshkhali Upazila and The Bay of Bengal

[Sources of data: Field survey, 2021]

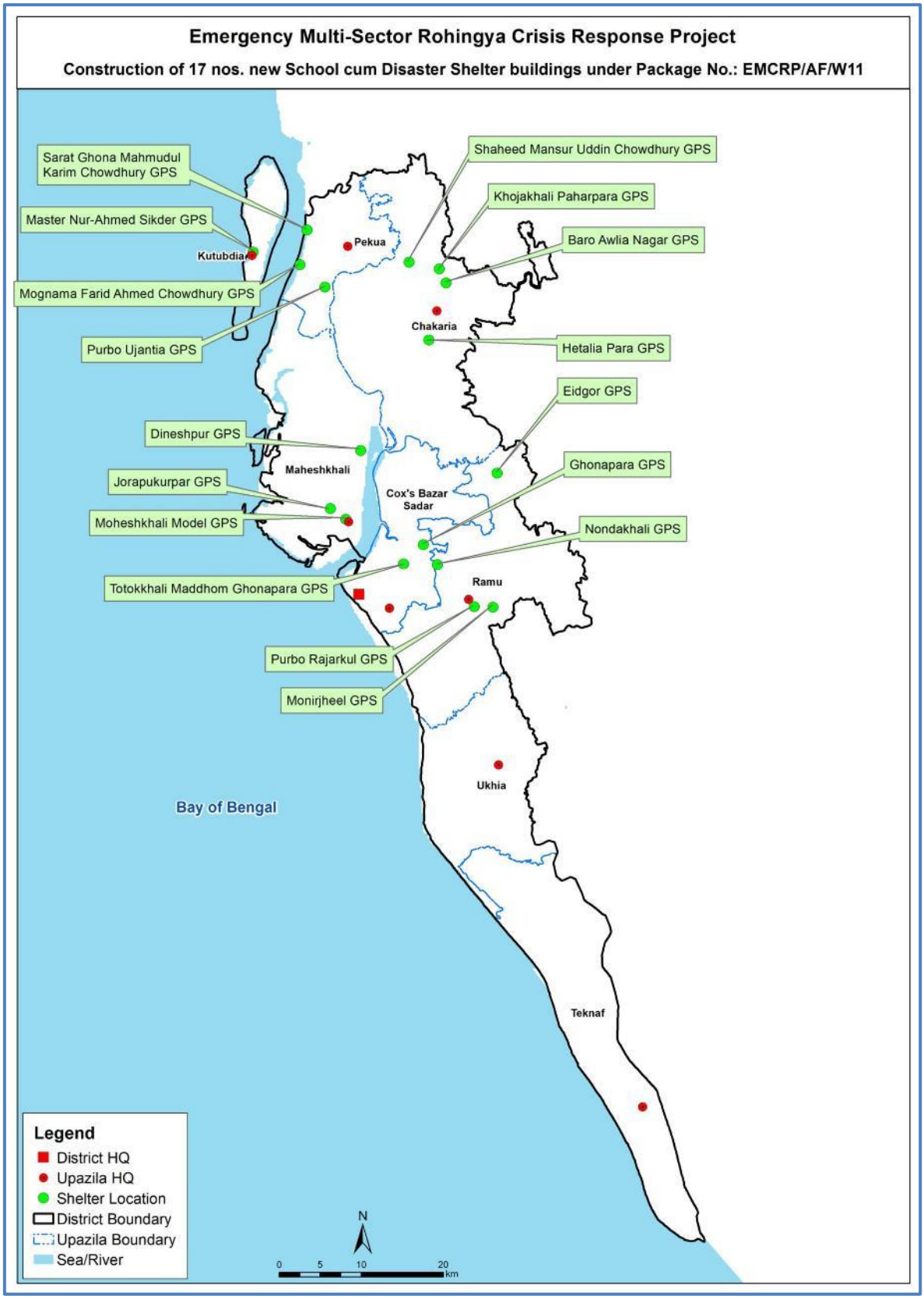


Figure 1.4.1: Location of Multipurpose Disaster Steel frame building (Cox's Bazar Sadar, Ramu, Moheshkhali, Chakaria, Pekua & Kutubdia)

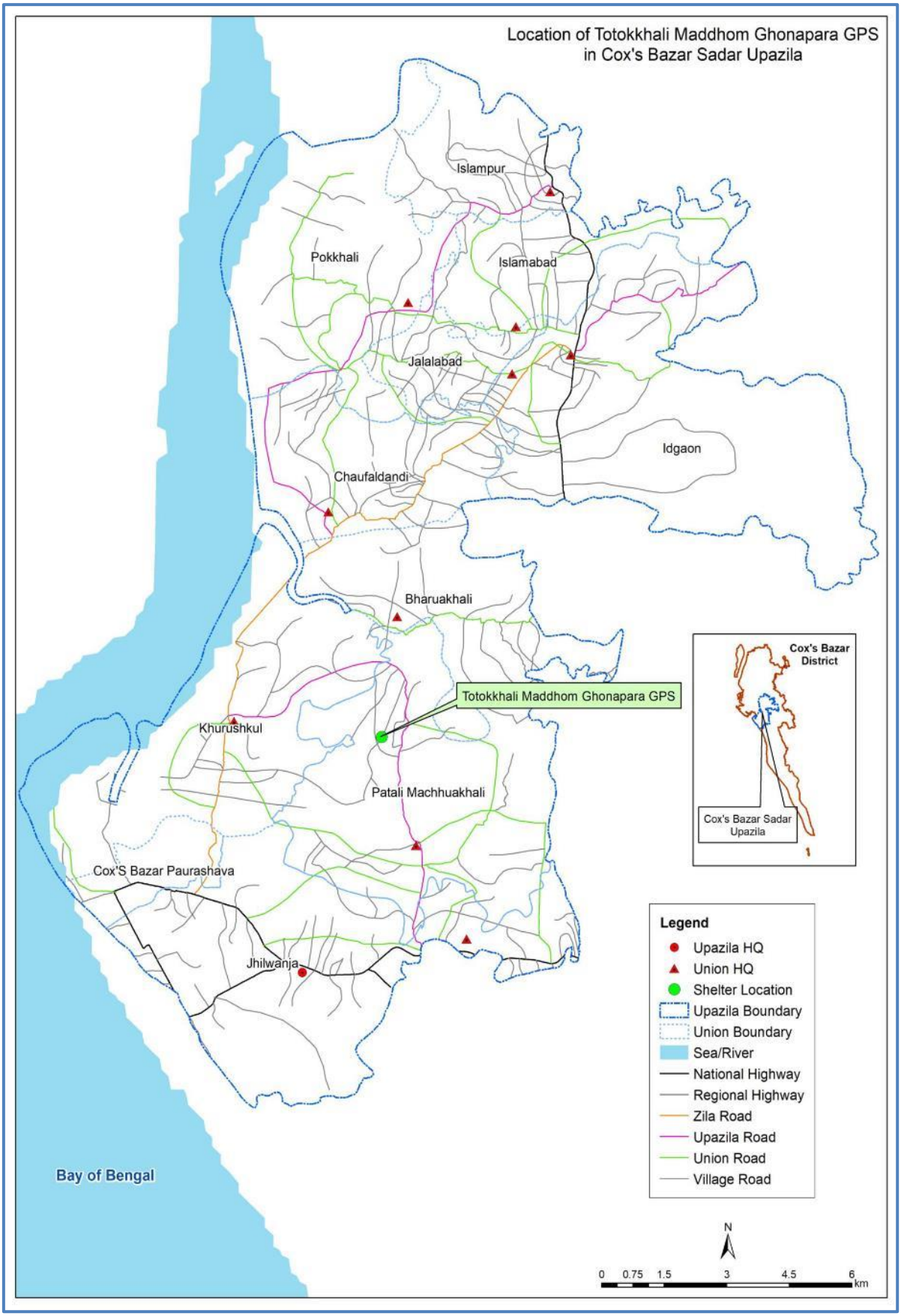


Figure 1.4.2: Union Map with proposed Sub-project component location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the proposed site, mostly within one km radial distance from the site which might face direct impacts from the construction works, have been summarized in **Table 1.5.1**. Photographs showing present condition of the proposed site and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Tottokkhali Middle Ghonapara Battoli Mosque (400m), Bou Bazar (500m), Social Forest on hill (800m), Totokkhali bit office (1km), Shikdar para central mosque (1km)
South side	Kamolaghona Chorra (150m), Kamolaghona hill (700m)
East side	Kamolaghona Chorra (600m), Taher Mohammad ghona Mosque (1km)
West side	Hill (20m), Social Forest (300m)

[Sources of data: Field survey, 2021]

Figure 1.5.1: Present condition of the proposed site and surrounding area

Figure 1.5.2: Location of the construction site (the one-story building shown on the picture will be demolished and replaced by the proposed building)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Field visit has been carried out on 24 October 2021 in and around the Sub-project component site. As part of the impact assessment, participatory public consultation was conducted in that area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 19 persons and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-4** for selected photographs of the participatory public consultation held at site of the Totokkhali Middle Ghonapara GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also held. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects and possible mitigation measures. The participants were also informed about the project GRM (Grievance Redress Mechanism) system in detail and the disclosure of project documents in websites, and their unrestricted and unintimidated access to those system and resources.

As such, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

Figure 2.1.1: Public Consultation Meeting in the Proposed Sub-project Site

2.2 Issues Raised by the Participants

The issues raised by the participants were as follows:

- They are very much vulnerable to disaster such as cyclone, flood etc. So, shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises. So, the cyclone shelter would provide new spaces for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate space for cattle.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- Inadequate toilet facilities.
- Lack of the availability of dry foods and ready-made clothes during the disastrous events.
- Inadequacy of toilet facilities- separately for male and female.

2.3 Suggestions and recommendations of the participants

The participants presented the following suggestions and recommendations:

- Local people considered that the selected site is suitable for the construction of new School cum Disaster shelter building from both the technical (disaster shelter with ramp, strong windproof windows, spaces for cattle, rainwater harvesting system, water supply facilities in all floors, solar powered electricity, room for pregnant women, etc.) and social point of view.
- Shelters should have a bigger capacity to sufficiently cater the catchment people.
- The participants have expressed their greater interest for this cyclone shelter for their safety during disaster period and using this facility for education purpose.
- Numbers of male and female latrines need to be increased.
- School children's safety should be ensured by properly fencing the work sites, and workers' safety by providing necessary safety gears/first aid boxes, as required.
- They also requested to keep provision for post-disaster services and facilities in respect to diseases, sanitation and hygiene, power supply facilities, etc.
- They also requested to involve the local community to construction works.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Participants, especially who are from school management committee, assured that they would provide maintenance services on a regular basis, such as maintenance of buildings including fixtures and fittings, color coating, solar panel and batteries and so on.
- They have also ascertained that the selected site is free from any events related to resettlement and environmental impacts.
- The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be of short duration, yet proper management/conservative options should be adopted.

3. ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures, an extensive field visit was carried out on 24 October 2021 in the Sub-project area. Environmental Screening form, as adopted in Appendix 2 of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents.

The screening data and information for this Sub-project and details screening summary have been formulated and shown in Appendix-1

3.2 Major Findings

The proposed sub-project (construction of new School cum Disaster shelter building) is not located within any environmentally sensitive area and will not cause any severe negative effects to the environmental settings of the area, neither to important environmental features. The disaster shelter will be constructed within an existing school boundary. An old structure will be demolished during pre-construction period and the new school cum disaster shelter will be constructed there, so no agricultural land/ activities or fish farming will be disturbed due to the construction of the sub project. Tottokkhali Middle Ghonapara Battoli Mosque at 400m, Bou Bazar at 500m, Social Forest on hill at 800m and Totokkhali bit office at 1km are located on north side from the proposed site boundary. A 15ft wide BC road is connected to the villages by the Banglabazar-Bangobondhu road. Some human settlements are found at north and western side from the site. There are a chorra named Kamolaghona chorra at 150m and Kamolaghona hill at 700m found on south side from sub-project. Another local hill is found at 20 and social forest on hilltop at 300m on east side of the sub-project. No significant disturbance to all these establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts more likely to be generated during the pre, post and construction period. Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Soil can further be eroded and polluted from chemical spills or improper disposal of waste materials. Noise and vibration effects generated from pilling and drilling may also trigger landslides and

harmful disturbances to local fauna. Impact on surface and ground water bodies might get acute due mainly to the high abstraction rate and disposal/leakage of pollutants to the surface/ground water bodies. Clearing of trees, bushes or any type of vegetation may put impact on floral species and unscrupulous clearance also trigger habitat loss. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the sub-project area; neither any history of human-elephant conflicts was revealed. It should be noted that the IUCN has conducted a study on such type of conflict and with the support of UNHCR, they have been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. Moreover, different protective initiatives have been undertaken in the conflicting areas, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers).

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study[3] conducted by World Bank has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also, rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones. Also, forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources.

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures including tree planation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time. And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

The impacts of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and Thunder storm has been seen to have increase and is found to have highest impact in the area. Water stagnation has not been found.

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tubewell in the school building, solar power as energy sources are suggested to be incorporated in the design and to be implemented as part of the construction works of the shelter. As there is very low impact of cyclonic storm surge in the area the mitigation measures for flooding potential are not provided here. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental Management Plan (EMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this plan is to formulate measures which will mitigate adverse impacts on various environmental components and protect environmental resources and enhance the value of environmental and social components where possible.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the west side. Due to the construction activities of this Sub-project, 6-7nos. of trees (small and

medium size) will be cut down and as a mitigation measure, 35 nos. of trees will be replanted in the periphery of the school. Some important socio-environmental features, such as the Tottokkhali Middle Ghonapara Battoli Mosque are found at 400m and Bou Bazar at 500m on north side of the sub-project. A chorra named Kamolaghona chorra is located at 150m distance on south side and 600m on east side from the construction site. Within the close proximity (about 120m), there are some settlements found on south and west from the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

Once the construction work is over, the shelter will be handed over to the LGED/SMC. During that post-construction period, all regular maintenance works of the school building and it's parts, repairing of non-functional tools and instruments, and other small rehabilitation works are the responsibilities of SMC. Bigger maintenance or rehabilitation works will be carried out by the Education Engineering Department (EED) or LGED (under any relevant project/Program) – whichever organization government wants to engage for that particular works.

The subproject specific environmental and social management plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

4.2 Health and Safety Measures under COVID situation

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with

shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

However, among many other relevant issues, the guidelines emphasize on following line of directives:

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.
c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, a set of items are included in the BOQ of this sub-project. The estimated cost to implement the ESMP is shown in Appendix-3.

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. A comprehensive monitoring framework is suggested in Project ESMF

and the responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Cox's Bazar Sadar will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situation prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed

guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

6. LIMITATIONS OF THIS STUDY

We know that the whole world has been facing an unprecedented situation due to the devastation being caused by COVID-19, and Bangladesh is facing the same. Economic activities became limited and restrictions were imposed on movement and activities several times during the last one and a half year of infliction. The government has recently lifted the restrictions on public movement and activities from 11 August 2021, with reminding the authorities to make sure that people wear face coverings, maintain distances and follow other health safety guidelines when they are outdoors. Government has directed the local government division, information ministry, religious affairs ministry, health service division and district and Upazila administrations to hold public awareness campaigns to stem the spread of the lethal virus. Besides, the Government has started mass vaccination program in full swing as part of the effort to reduce human losses and revive the economy of the country, which has been shattered heavily for the discontinued economic activities in last one and a half years.

This new-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, education, employment, and disaster management will be ensured once the scheme is in operation.

The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits in terms of quality of life, particularly with reducing disaster vulnerability, and getting access to better education facilities, infrastructure, transportation & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan.
- The project will create employment for the local community who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development with large-growing trees at the periphery of the site will give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

- The tentative cost has been estimated around **05 Lac & 22 Thousand BDT** (Bangladeshi Taka) to implement the ESMP (excluding the budget for COVID response). The detail cost estimation has been shown in **Appendix-3.** This budget can be varied due to change of market prices and if the project implementation period extends or any unanticipated situation evolved.

Implementation of this Sub-project component (this particular proposed resilient shelter building) will have large positive impacts to the communities as stated above. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form: (Tottokkhali Middle Ghonapara GPS)

Name of Sub-Project: Construction of 17 nos. new School cum Disaster shelter buildings in Cox's Bazar District (LGED/EMCRP/AF/W11)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)

Estimated total cost of sub-project (in Taka): 814,062,000 Tk.

Estimated construction period duration: 24 months

Estimated Operation and Maintenance period (life of sub-project): 15 years

District: Cox's Bazar **Sub-District**: Cox's Bazar Sadar **Union**: PM Khali

Name of Community/Local Area: Middle Ghonapara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

Estimated footprint / land area for this sub-project is 289.54 sq. meter

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:

Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within a school boundary. Within the school boundary, there are a one-story old building attached a tin shed school room, one deep Tubewell, a toilet and some open space. An existing one stored old structure will be demolished during pre-construction period and the new one will be constructed there. 15 ft wide BC village connecting road named Bangobondhu road located within 10m on the east side of the sub-project. Tottokkhali Middle Ghonapara Battoli Mosque at 400m and Bou Bazar at 500m are found on north side from the sub-project. No Important environmental features which might be affected significantly by the project works are found within the sub-project area.

Overall Comments

People of the subproject area are very much eager to see the success of the project and are interested to participate in the project activities. Considering the location, design, targeted measures, and people's interest in the sub-project, this component, seems to be environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended in the participatory public consultation meeting. Local communities and their community leaders have no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe living of both human being and cattle during any cyclonic event. The public consultation meeting results confirmed that presence of new cyclone shelters will increase the sense of security of the communities. Shelters were extremely important to them as they were very much vulnerable to cyclones. They also requested to keep provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

The proposed Sub-project area for the construction of School cum disaster Shelters is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction works. As the building construction work is restricted to within the school boundary, no outside disturbing activity will be involved.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to demolishing an old building and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic and human wastes including kitchen wastes might be generated in labor camps. Expired/damaged batteries of solar system will be a hazardous waste to be produced during the operation period, which needs to be disposed off properly.

Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including elephant migration routes and remaining forests:

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A BC road named Bangla Bazar- Bangobondhu road is passing on east side of the sub-project area. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, which are quoted here. This list is not exhaustive, but includes prime features and distances given in parenthesis are from the proposed site. On north side Tottokkhali Middle Ghonapara Battoli Mosque (400m), Bou Bazar (500m), Social Forest on hill (800m), Totokkhali bit office (1km); on south side Kamolaghona Chorra (150m), Kamolaghona hill (700m); on east side Kamolaghona Chorra (600m), Taher Mohammad ghona Mosque (1km) and on west side Hill (20m), Social Forest (300m). But there is no chance to cause significant disturbances due to the sufficient distance in between. Community based institutions including religious centers like Mosques, temples, graveyards and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided for uninterrupted electricity supply during a storm event. The class rooms will be provided with furniture and other teaching tools. Floors will have a mosaic finish and

bathrooms have tiles for easy maintenance and cleaning. The shelters are designed to withstand wind speeds of 260 km/hour and placed higher than the expected surge levels. A walkway will be constructed from the school entrance to the proposed building for the ease and safe movement during the rainy season.

Sub-project Location:

The sub-project area is situated in PM Khali Union under Cox's Bazar Sadar Upazila of Cox's Bazar district. The sub-project area is located at 21.471711 N and 92.0300 E. Catchment villages of this sub-project area are Middle Ghonapara, Taher Mohammad Ghona, Majher para, Putulirmar dhala, Chatarkatha and Purakatha. The distance from the Upazila headquarter is about 7 km. A 15 ft. wide BC road named Bangobondhu road passing by the sub-project site, which is connected with Cox's Bazar-Chattogram highway (Arakan Sarak). Total available land area of this sub-project is 33 decimals. The school code is 99412030104

Land ownership

The subproject will be implemented within the existing school boundary and the land ownership of the proposed site is bestowed upon the school itself.

Expected construction period: 24 (Twenty four months)

Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted:

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is an old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

At north side Tottokkhali Middle Ghonapara Battoli Mosque (400m), Bou Bazar (500m), Social Forest on hill (800m), Totokkhali bit office (1km); at south side Kamolaghona Chorra (150m), Kamolaghona hill (700m); at east side Kamolaghona Chorra (600m), Taher Mohammad ghona Mosque (1km) and at west side Hill (20m), Social Forest (300m) are located. No disturbance is anticipated due to construction activities. Some human settlements are found around the sub-project area, but there is no scope to be affected by the construction activities due to having sufficient distance from the proposed site.

Besides these components, no other sensitive environmental, cultural, historical or archaeological sites including elephant migration routes (checked with local IUCN representative) were identified.

Section B: Environmental Screening

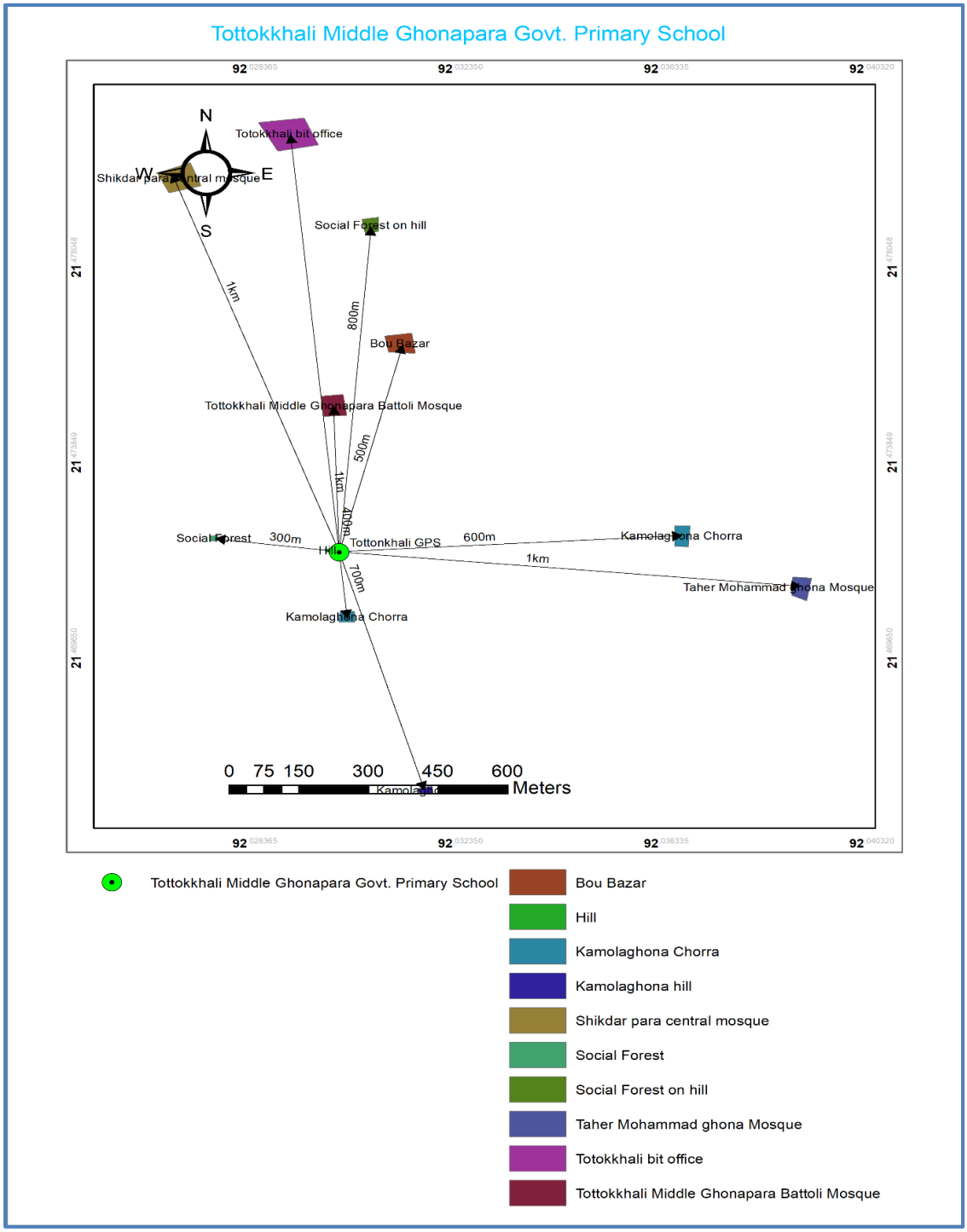
***B.1*: Environmental feature of sub-project location**

Description of cultural properties (if applicable, including distance from site): Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:

Some important socioeconomic, cultural, religious or sensitive features located within 1km from the sub project site, such as at north side Tottokkhali Middle Ghonapara Battoli Mosque (400m), Bou Bazar (500m), Social Forest on hill (800m) and Totokkhali bit office (1km) are located; at south side

Kamolaghona Chorra (150m) and Kamolaghona hill (700m) are located; at east side Kamolaghona Chorra (600m) and Taher Mohammad ghona Mosque (1km) are located and at west side Hill (20m) and Social Forest (300m) are located but there is no scope to be affected significantly by the construction activities.

A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below:



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured

vegetation around the site. Several mosques, madrasah, business foundation, academic institution and human settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing school boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

(1) Within/near Elephant Migration Routes Yes/No*

There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

(2) Potential impacts on remaining forests in/around camps Yes/No

N/A (This activity will be confined within existing school boundary)

*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN

Baseline air quality and noise levels:

Ascertaining distinctively the baseline air and noise quality level in respect to any sites at different parts of Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the predevelopment period can only be anticipated and results of visual observation are worth to be presented here.

Dust:

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as Truck, dumper, motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

The Sub-project area is located mainly on red, alluvial, muddy and sandy soil. The soils developing from the weathered sandstones tend to be sandy to clay loams. Presence of organic matter content in the soil is moderate.

Landslide potential (high/medium/low, with explanation):

N/A (the sub-project will be constructed on a plain land and within an existing school boundary)

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):

Groundwater is the main source of potable water in the Sub-project area. One tube-well is found within the school boundary. The depth is about 300 feet. Teachers and students are consuming

water from this tube-well. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-700ft (Field survey, 2021). Local people usually use deep tube-well water for drinking and other domestic purposes. Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Homestead vegetation is very common and popular in the area. Besides, tree plantation in discrete patches are also observed in different places around the proposed site, which are safely distant from the school boundary and will not face any significant detrimental effects from the construction works.
Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): A 15ft. wide BC road named Bangobondhu road is passing by the east side of the sub-project. It is connected with Cox's Bazar-Chattogram highway on Banglabazar point. It is possible to carry the construction materials to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One tube-well is found within the school boundary and aquifer depth is about 300 feet. But the Tubewell doesn't work properly during dry season and students' suffering from potable water supply is a common problem. In order to make a sustainable solution to this problem even at a disaster period, five numbers of tube wells will be installed as part of the construction works, and out of those five, one tube well will be installed first to meet the basic water supply requirement for the labors as well as for the students. The cost of installation of the tube wells are included into the civil works item, therefore is not repeated in ESMP budget. Electricity is available in the school. Toilet facilities are available within the school boundary for students. But it is insufficient and should not be used by the workers/contractor's staffs during the construction period. Two toilets will be constructed along with the construction of labor camp- one for male and another for female.
Possible location of labor camps: On north side of the existing school boundary could be used for setting up a temporary labor camp. Contractor also can choose different suitable location for the same purpose, within his/her capacity but under a very clear contract with the land owner.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of

materials used for the construction of labor shed, site office and material storage area during the preconstruction stage.
Identification of access road for transportation (Yes/No): About 15ft. wide BC road is the main way for transportation of raw/construction materials. It is located on east side of adjacent sub-project site and connected to the Cox's Bazar – Chattogram highway.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local Communities. Considering the criteria, north side within the school boundary would be a good option. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during preconstruction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): **Solid waste:** Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires, excavated soils etc. **Quantity:** It is difficult to give exact figures of construction waste produced on a typical construction site. However, in order to approximate the quantity, it is estimated that nearly 10 kg of waste would be generated each working day, which are mainly construction wastes. Some plastic, paper and organic waste will be generated from the use of workers, though a very negligible amount- half a kilogram a day maximum. Wastes from food and kitchen (biodegradable organic waste) will be generated at an amount of 2 kg per day in the labor camp. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 5 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) Bamboo & wood from mobilized materials by and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figure of raw materials to be used on a typical construction site. It varies with the daily type, schedule and quantity of works.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste

dumps, and equipment yards: Around 289.54 sq. meter soil land is required for the sub-project establishment. There are some discrete vegetation around the sup-project area. The vegetation will not be affected by construction works. Due to construction activities of this Sub-project, no tree will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel is found. Though one chorra named Kamolaghona chorra at 150m on south side is found which is clearly outside of the construction area and will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) **Low:** The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase of this subproject, small amount of dust and exhaust gas might be produced by the vehicles bound to this school and while passing over the adjacent BC road, the quantity of exhaustion is expected to be bit high only for a small period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people. So, causing any health

hazards and interference of plant growth is not very likely to happen by such activities for quite a short duration.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) There is no chance of activities during the operation period, which can lead to any long-term or semi-permanent destruction of soils.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) **Low.** The proposed school cum disaster shelter will be equipped with full facilities for conducting classes and sheltering disaster affected people, including separate toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced that require transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic stuffs is likely to be produced in a typical school-day and higher amount of wastes including organic kitchen wastes will be produced during the disaster period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the school site and any water bodies, and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this climate resilient multi-purpose disaster shelter cum primary school will improve the socioeconomic condition of the population of the catchment area by providing better education, paving the way to get access to further development and better occupational choices, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this facility will have improved capacity to fight the grave disaster scenario and will play a strong pivotal role in saving people from becoming dead, vulnerable and impoverished, and ultimately help them rebound their own situation by returning to the workforce within shortest time period after the disasters, which certainly will have a huge positive impact in economic development of the project areas and the country as a whole.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies are present within the sub-project boundary area, and no extent of disturbance or modification during the operation period is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the sub-project site, and no known areas of ecological interest. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A 15ft. wide BC road connects the sites with main highway. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

High = Likely to cause long-term impacts or over large area (>1sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5sqkm)

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	Contractor, Environmental Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.			
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. • Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	students, children, animals, etc.)		to be secure, to minimize the risk of crime and to be safe from access by students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.			
	Demolishing of an existing structure	Under the sub-project intervention the overall score is Medium	• Water spraying at the demolition site • Fencing / Installing barriers should be shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Do not accumulate and burn waste at the site • Carry out demolition activities in stages, give adequate notice and information of activities to the adjoining stakeholders • It needs to Identify proper location to dispose solid waste from demolition and other activities in consultation with respective bodies • Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. • Further guidance on demolition works and wastes management is given in the appendix 2,	Contractor, Environmental Specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			below the ESMP table, to be followed by the contractor.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor, Environmental Specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during	Contractor, Environmental Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			construction period.		meter (dB)	
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor, Environmental Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, Environmental Specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc.,	Contractor, Environmental Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.			
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures rehabilitated/compensated. • 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. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory; camp has been restored to pre project conditions.	After the completion of Works
	Odor & waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor; and monitored by Consultant of D&SC and PIU	Complaints from communities	Site inspection daily / weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor; monitored by Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: High = Likely to cause long-term E&S impacts; Medium = Likely to cause temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes
****If yes, please specify what assessments/plans would be required.*** Mention some recommendation on E&S assessment …. ESMP
If site specific environmental and social management plan (ESMP) is followed the impacts can be mitigated and monitored. ESMP is attached.

Appendix-2: Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Construction of 17 nos. new School cum Disaster shelter Steel Frame buildings (LGED/EMCRP/AF/W11): Tottokkhali Middle Ghonapara GPS

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activity so, there is no mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact on livelihoods of the people of catchment area.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All the project stakeholders will be consulted • Separate community level consultation meeting with the potentially affected HHs • Consultation meeting with nearby residents about the project objectives and scope of works • People living in nearby community and SMC will be involved with the GRM	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction	Site Preparation: Soil Erosion;	• Selected site will be far away from any water bodies	PIU &	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Stage	Alteration of natural drainage	or natural flow path to avoid the flash flood or any kind or surface runoff. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. • The existing slope and natural drainage pattern on the site should not be significantly altered. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	Contractor	Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities will be finished at day time within 05 PM. Proper measures will be taken to avoid any disturbances. • All Personal Protective Equipment (PPE) will be available in site before starting any kind of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction	Safety Issues	• Unauthorized entry to the site area is completely	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		prohibited and the site will be properly fenced with a single entry, for this purpose. • It will be ensured that proper training and guidance are provided on general and occupational health and safety to Contractors' personnel and labors forces, and records of training sessions are to be kept on site. • All kinds of Child labor will be completely prohibited.		Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will discuss with traffic management authorities and take site specific traffic management measures to avoid traffic jam and any unwanted incidents or accidents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction work starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction	Increase in road accidents	• Maintain safety measures during the movement and	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		operation of heavy machineries and equipment. • Local community will be trained up about traffic management and awareness.		Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labor camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared time to time for all types of work activities on site. • Proper walkways will be prepared for students and teachers in existing school boundary. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise,	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight/make aware of the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance after the construction). The impacts are similar to those listed in construction stage: • Pollution from waste materials. Health & Safety risks to workers and local community	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during demobilization, which are anticipated to be similar to those identified for the construction phase. • Contractor must prepare a Waste management Plan considering relevant directives from "Waste management Plan Principles" given hereunder and follow the plan strictly.	Contractor	Environmental Consultant of PIU/D&SC, XEN, Cox's Bazar, PSC.
Operation & Maintenance	Noise disturbances to fauna	• Provision to maintain noise from the operation and maintenance of machinery and equipment by proper monitoring and measures.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.		
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. Expired/ damaged batteries of solar system are to be disposed off properly (or sold to an authorized collector/buyer, etc.). • Water tanks should be cleaned properly at least once in a quarter.	SMC	UNO, Upazila Chairman of Upazila Parishad

Demolition and Waste Management Plan:

The Contractor shall develop a demolition plan and a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food and organic waste etc.) prior to commencing of construction and submit to LGED for approval. The plans must include following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

For demolition works:

- All electric, gas, water, sewer, and other energy services or power lines shall be capped/blinded and/or otherwise cut before the commencement of demolition work.
- All asbestos, insulation materials, glass and other hazardous materials and substances shall be removed. Such materials shall not be stored within the structure to be demolished.
- Openings and weak flooring shall be prominently marked or barricaded before the commencement of demolition. Operators of machinery and equipment and workers involved in demolition work shall be informed of such hazardous location.
- Demolition work shall commence from the top of a structure and progress downward.
- Proper entrances of adequate strength to protect workers from falling materials shall be erected for access into the structure.
- The entire demolition site shall be effectively barricaded with appropriate safety signs displayed.
- The lower floor where demolition wastes are collected shall be properly barricaded and guarded to prevent materials from ricocheting and injuring workers or passer-by.
- Excessive debris shall not be allowed to accumulate inside a demolished structure. All demolition waste and debris shall be cleared from the work site on a daily basis.
- Refuse containers shall be provided at worksite for the storage of demolition wastes and debris.

For wastes and demolition debris:

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach, and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Construction site shall be maintained in a cleaner, tidy and safe condition and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in the stack yard and sold to local recyclers. Parts of construction debris (Brick, concrete and masonry) can be recycled as filling materials on the ground or be sold for using as sub-base material or driveway bedding.

- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.
- Other leftover non-hazardous wastes, including construction debris shall be transported to an approved disposal site by pick up tracks or back loaded vehicles with proper care.
- Organic wastes produced in the camp site during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in the construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Mitigation and Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	2 nos.	@6500 Tk. Per box	13,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	Each	Lump sum @ 80,000 BDT	80,000
4.	**Environmental management** Environmental management costs for employing an Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 9 shelters i.e. 35, 000 Tk.*24	93,333

Sl no.	Description of item	Quantity	Unit price	Total amount
			months*(1/9 one shelter). (Net payment excluding Tax &VAT).	
5.	**Health safety warning sign** Health safety warning sign and as per direction of the E.I.C.	Each	Lump sum @ 5000	5,000
6.	**Motivation training** Motivation training (twice: before and after construction start) to the Upazila Engineers and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	40,000
7.	**Site Cleaning and preparation** Site Cleaning and preparation including providing necessary protective fencing and safety measures with sign board and removal and disposal of wastes at a safe distance etc. as per direction of E.I.C.	Each	Lump sum @ 19,000	19,000
8.	**Providing Safety gear** Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 35 nos. of	35 nos.	@ Tk. 1000 for each tree.	35,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	trees need to be replanted along the periphery of the proposed site at an interval of 10 feet.			
10.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
11.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2 nos.	@20,000 each	40,000
12.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	3 nos.	@3500tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be installed** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, Water samples are to be collected periodically (half yearly) from the first installed tube well for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report).	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			**522,753**

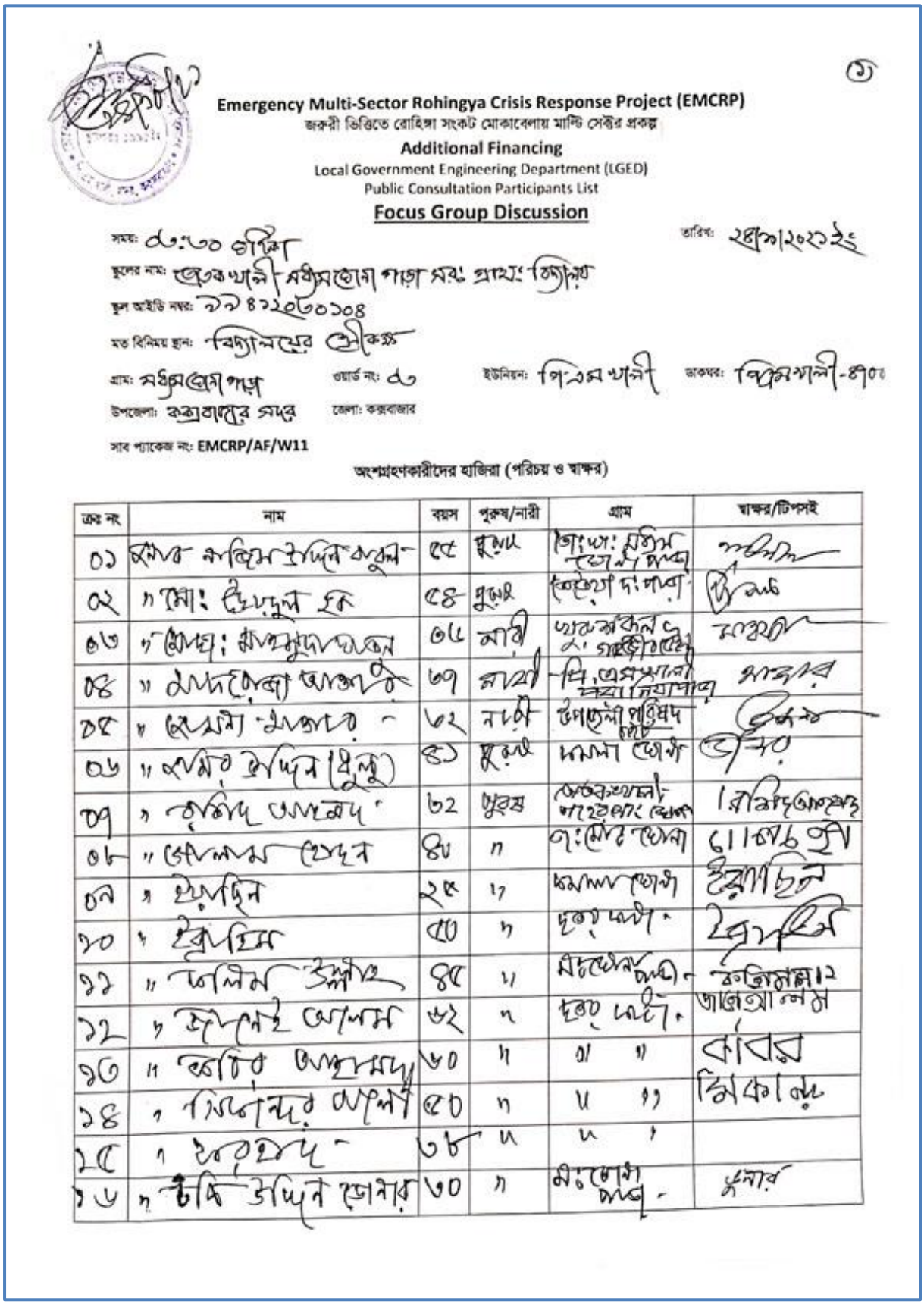
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/AF/W11).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2.	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3.	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4: List of Participants in the Consultation meeting



Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ৫:৩০ ঘটিকা তারিখ: ২৪/১২/২০২১ইং
স্কুলের নাম: [illegible] স্কুল আইডি নম্বর: ১১ ৪ ১২০৬০১০৪
মত বিনিময় স্থান: বিদ্যালয়ের শ্রেণিকক্ষ
গ্রাম: [illegible] ওয়ার্ড নং: ৫ ইউনিয়ন: [illegible] ডাকঘর: [illegible]
উপজেলা: [illegible] জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
০১	[illegible]	৫৫	পুরুষ	[illegible]	
০২	[illegible]	৫৪	পুরুষ	[illegible]	
০৩	[illegible]	৩৫	নারী	[illegible]	
০৪	[illegible]	৩৭	নারী	[illegible]	
০৫	[illegible]	৩২	নারী	[illegible]	
০৬	[illegible]	৪১	পুরুষ	[illegible]	
০৭	[illegible]	৩২	পুরুষ	[illegible]	
০৮	[illegible]	৪৩	"	[illegible]	
০৯	[illegible]	২৫	"	[illegible]	
১০	[illegible]	৫৩	"	[illegible]	
১১	[illegible]	৪৫	"	[illegible]	
১২	[illegible]	৩২	"	[illegible]	
১৩	[illegible]	৩০	"	[illegible]	
১৪	[illegible]	৫০	"	[illegible]	
১৫	[illegible]	৩৮	"	[illegible]	
১৬	[illegible]	৩০	"	[illegible]	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প
Additional Financing
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: ০৬:৩০ এশিল তারিখ: ২৪/০৪/২০২১ ইং
স্থলের নাম: চৌফলদণ্ডী কবিরমেলা পাড়া সরকারি প্রাথমিক বিদ্যালয়
স্থল আইডি নম্বর: ২১৪১২০১৩০২০৪
মত বিনিময় স্থান: বিদ্যালয়ের শ্রেণী কক্ষ
গ্রাম: কবিরমেলা পাড়া ওয়ার্ড নং: ০৩ ইউনিয়ন: চিরিঙ্গাচালী ডাকঘর: চিরিঙ্গাচালী-৪৭০০
উপজেলা: রামুকাকারের সদর জেলা: কক্সবাজার
সাব প্যাকেজ নং: EMCRP/AF/W11

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর/টিপসই
১৭	মোঃ রেজাউল করিম সিদ্দিক	৪৬	পুরুষ	চৌঃ খাঃ সিদ্দিক দাড়া	
১৮	নজু মিয়া	৫৩	"	কবিরমেলা	নজু মিয়া
১৯	তাহমুল ইসলাম	৩৮	"	"	

Public Consultation Participants' List