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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Abdur Rahman Badi Govt. Primary School

Educational Institution ID: 91412010506

Village: Pachim Painnashia; Union: Jaliapalong; Upazila: Ukhiya;

District: Cox's Bazar

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Consultant:

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
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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, the makeshift shelters accommodating the displaced Rohingya 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Jaliapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Jummapara, Chakkata and Paineshiya. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would provide refuge to nearly 450 households, containing 2700 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and proposed disaster shelter features 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	Abdur Rahman Badi GPS
Educational Institute ID	99412010506
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
Owner of land	GPS
Catchment household	450
Catchment Population	2700 (Male: 1400, Female: 1300)
Profession	Farmer 50%, day labor 30%, businessman 5% and others 15%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building with a dimension-35.427m x 14.20m)
Capacity of Shelter	1300 persons and 200 livestock
Catchment village	Jummapara, Chakkata, Paineshiya
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 muddy road is passing by the sub-project
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Abdur Rahman Badi 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)	200

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 Ukhiya Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 8ft wide muddy road passing by the sub project area, which is connected to the Inani-Court Bazar road. Baitun Nur Jame mosque is situated within 20m reaches of the proposed site. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location map of proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
GPS position	21°16' 31.70"N and 92° 04' 36.40"E
Distance from Upazila HQ	12 km
Nearby major road	Inani-Court Bazar road
Nearby river/canal	A khal named Reju khal is located at 2km east, The Bay of Bengal is located at 5km west of the sub project
Boundary of the containing Upazila	Ramu upazila on the North,
	Teknaf Upazila on the South,
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

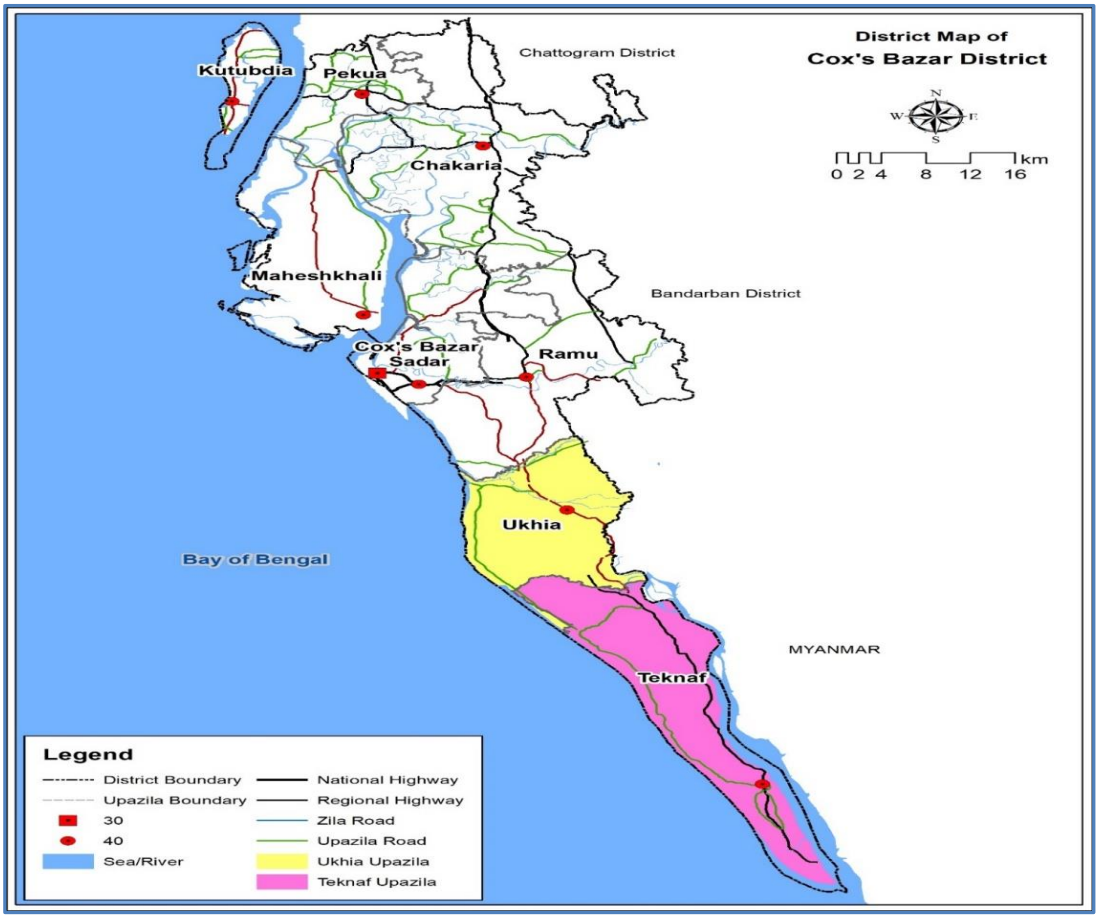


Figure 1.4.1: District Map with project location

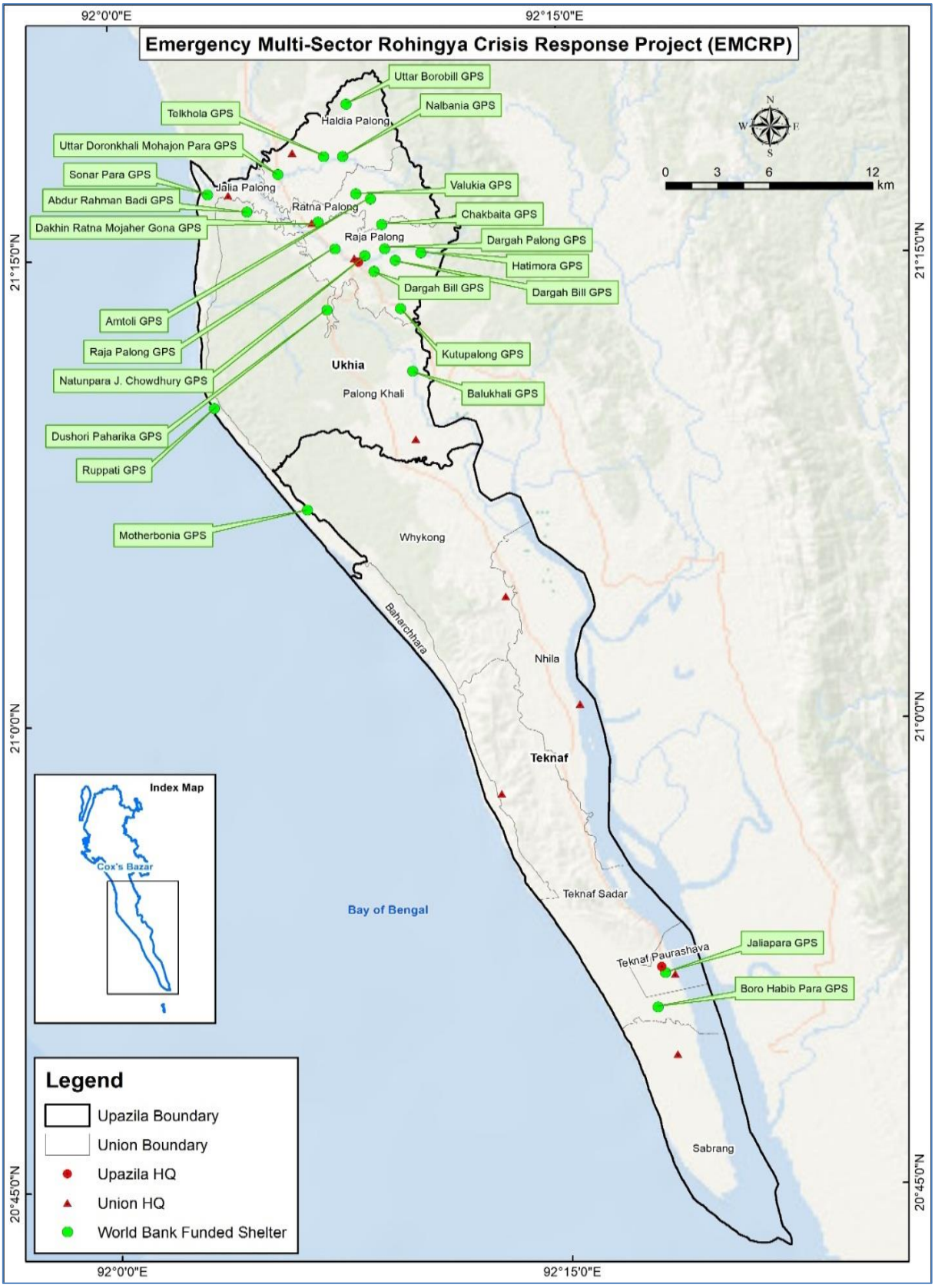


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

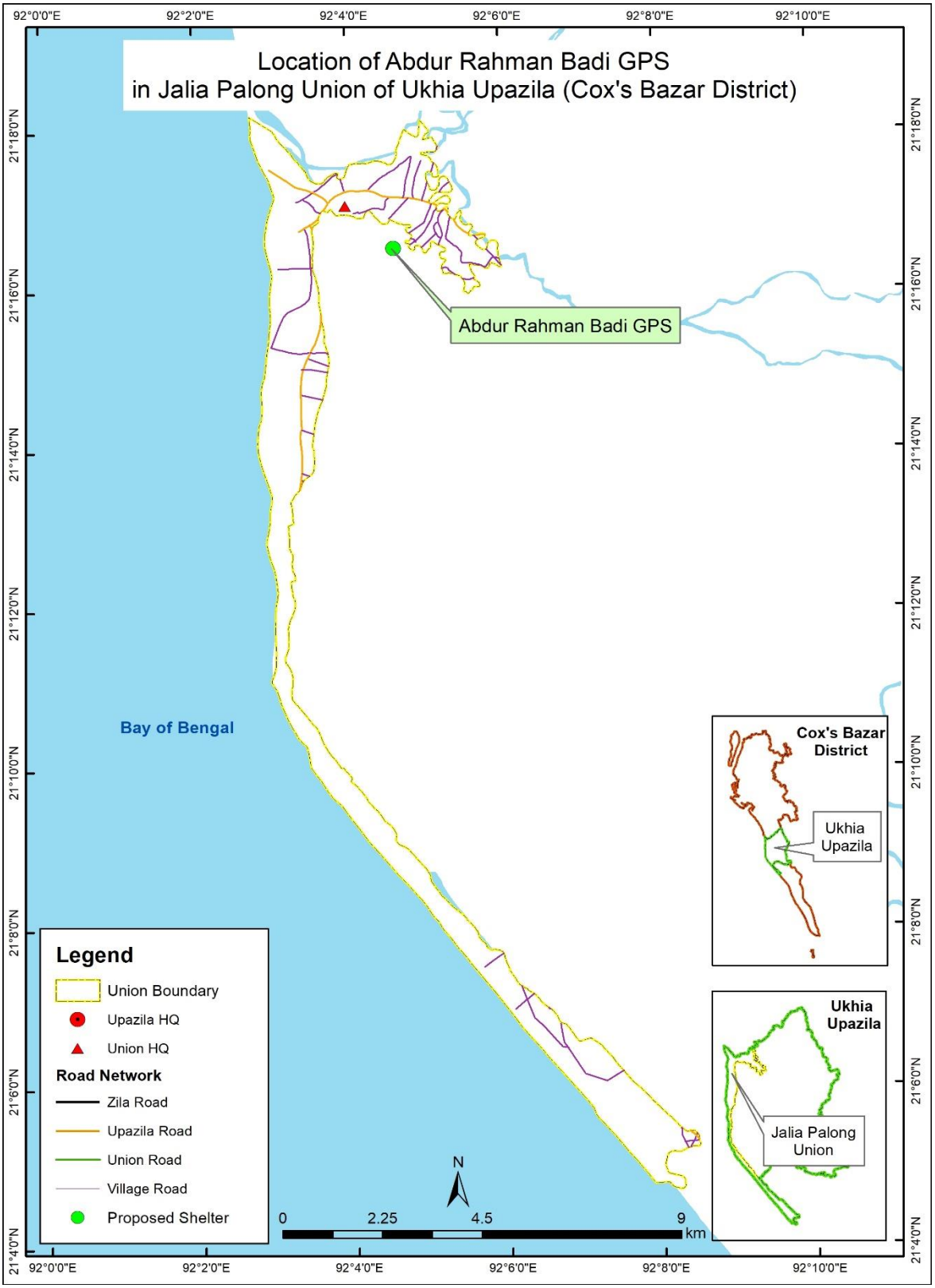


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area and location of construction area have been presented in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important Establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Tree garden (10m), Muddy road (8ft) (10m)
South side	Baitun Nur Jame mosque (20m), Patches of vegetation (200m)
East side	Tree garden (50m), Marshy land (100m), 10 nos. of settlement (50m)
West side	Tree garden (60m), Mosque (2km)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area (existing school building and adjoining earthen road)



Figure 1.5.2: Location of 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 19 December 2019 in and around the Sub-project 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 40 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-5** for selected photographs of the participatory public consultation held at site of the Abdur Rahman Badi GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also carried out. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, and 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 free/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 disasters such as cyclone, flood etc. So, a disaster 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 classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate spaces for cattle or livestock.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 major 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 persist for a 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 19 December 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. A khal named Rejur khal is located at 2km east. The Bay of Bengal is located at 5km west of the sub project. A marshy land is located at 100m east side of the sub-project, which could be impacted by produced dust during the construction period. A mosque named Baitun Nur Jame mosque is located at 20m south side that could be affected by noise and dust pollution. Some human settlements are found at 50m east side of sub-project area and it is within the reach of dust and noise pollution. An 8 feet wide earthen road is passing by the north side and is connected to the Inani-Court Bazar road. Transporting construction materials over this road would cause serious dust pollution, throughout the dry period of the year. A stretches of high land is located at north side. Patches of vegetation containing large and matured trees on the south and eastern side are located within 200m radius of the sub-project. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 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. Vibration effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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 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. In fact, forests would protect those lands from high wind and storm surges, whereas demolishing the trees has made the area more vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater from about 150 feet below the ground has made water availability to a

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

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, rainwater harvesting from every disaster shelters, 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 impact of cyclone and precipitation has higher burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone has been seen to have increased in the past few years. Salinity has not been found in the vicinity of the subproject. Cyclonic storm surge has medium impact in the area. Temperature has increased and Thunder storm has been seen to have increased and is found to have the highest impact in the area. Water stagnation has not been found. Natural drainage channel has been found in the vicinity of the school area.

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 of the shelters. . 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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the western and eastern side. Further, the nearer mosque found at 20m south side and a cluster of human settlements at 50m east side of the sub-project area might get affected during the construction period with the generated 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 19 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 overseeing 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 to 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 Ukhiya and Teknaf 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. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the suggested 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 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, public health 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 improving health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come by 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Abdur Rahman Badi GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Jaliapalong

Name of Community/Local Area: Pachim Painnashia

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 an existing school boundary. A one-storied school building is located on south side of the school boundary. A mosque named Baitun Nur Jame Mosque is located at 20m south side of the sub-project. An 8 feet wide earthen road is passing by the north side and is connected to the Inani-Court Bazar road. A stretches of high land is located at north side. Patches of vegetation containing large and matured trees on the south and eastern side are located within 200m radius of the sub-project. No Important environmental features are found within the sub-project. A tinshed structure will be demolished during pre-construction period and the new one will be constructed there.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 8ft muddy road is passing by the sub-project area. There are 2 mosques (one is nearby, but other is nearly 2 km away) found within the catchment area. The closer one named Baitun Nur Jame Mosque is situated at 20m south of the sub-project. 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. A marshy land is located at 100m east side of the sub-project, but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements and patches of vegetation are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 4 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Jaliapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°16' 31.70"N and 92° 04' 36.40"E. The distance from the Upazila headquarter is about 12 km. Nearby major road is Inani-Court Bazar road, which is connected to the proposed site with an 8 ft. wide muddy road. The school code is 91412010506

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 are a one story relatively new building being used for classrooms, and a small tin shed old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

A khal named Rejur khal is located at 2km east. The Bay of Bengal is located at 5km west of the sub project. A marshy land is located at 100m east side of the sub-project. No disturbance is anticipated due to construction activities. Some human settlements are found at 50m east side of sub-project area, but there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

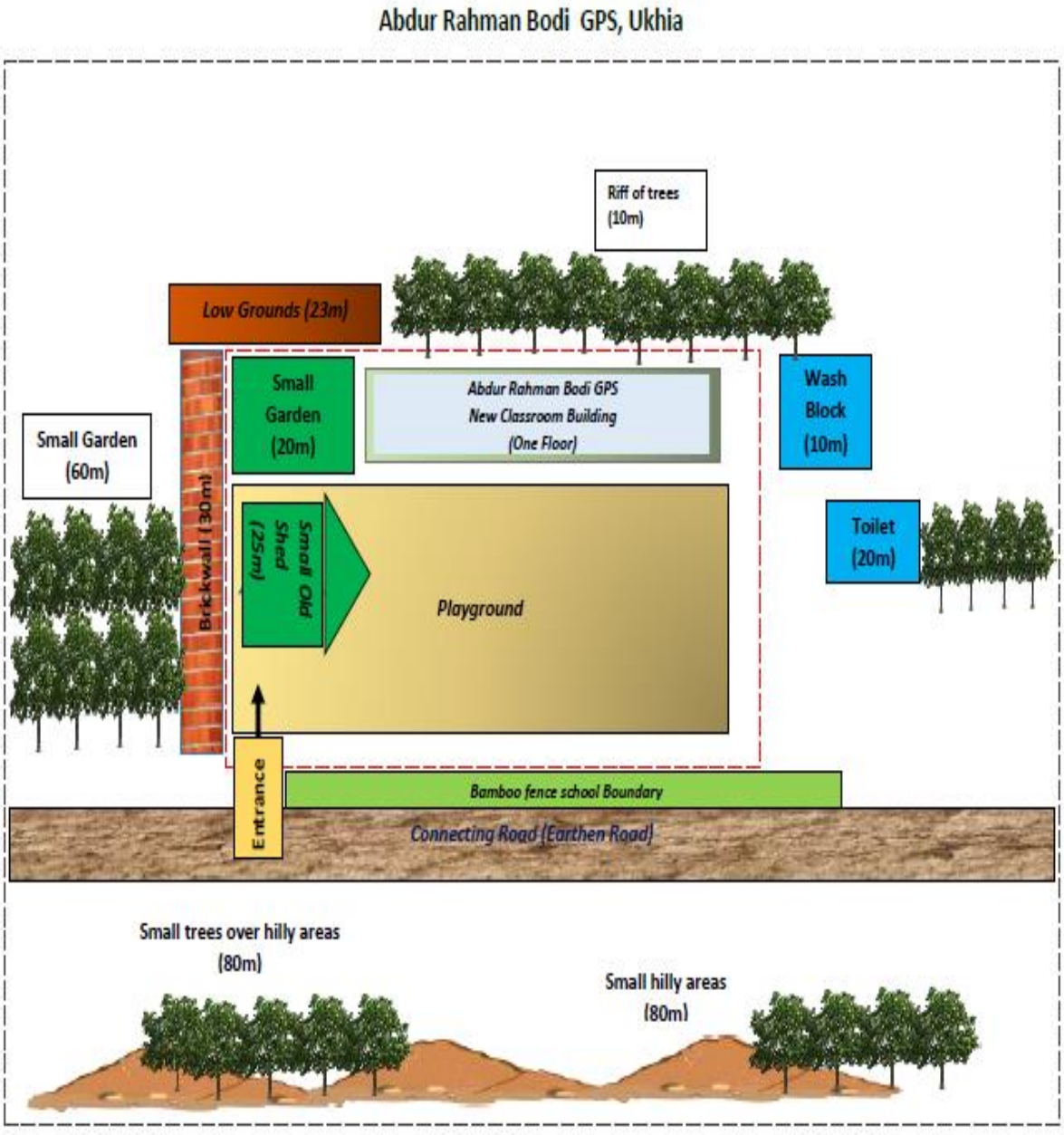
***B.1*: Environmental feature of sub-project location**

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:

A mosque named Baitun Nur Jame Mosque is located at 20m south and another mosque is located at 2 km west of the sub-project but there is no scope of being significantly affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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/ preventable by mitigation measures.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 soil 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 shallow tube-well and a deep tubewell are found within the school boundary. The shallow depth is about 100 feet and deep tubewell depth is 550 feet. In the sub-project area, deep groundwater is salty and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 500-700ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. A marshy land is found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project. 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: Patches of vegetation containing large and matured trees on the south and eastern side of the proposed construction areas are located within 200m radial distance.
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 muddy road is passing by the north side of the sub-project. It is connected to Inani-Court Bazar 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 and a deep tubewell are found within the school boundary and depth is about 100 feet and 550 feet respectively. But the tubewells are not working properly in 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 already available at the site. 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 existing school boundary.
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 and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction.
Identification of access road for transportation (Yes/No): About 8ft. wide muddy road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to Cox's Bazar -Teknaf highway.
Location identification for raw material storage: On the west side within the existing school boundary. 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.): **Solid waste:** An old tin shed structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 6 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 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 an 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 land is required for the sub-project establishment. There is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 marshy land is found outside of the construction area, but 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 muddy 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 for 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, except a marshy land located at 100 m east from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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 a locality. A muddy road connects the site with the main road. The muddy road is mainly used for pedestrian access and 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 (20m) 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 substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	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 to be secure, to minimize the risk of crime and	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
			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, below the ESMP table, to be followed by the contractor.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage
	Setting up of labor camp(Generation of	Under the sub-project	• Construction camp should be located at a site favorable for the workers and proposed by the	Contractor, environmental	Complaints from	Prior to the start

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	intervention the overall score is low.	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.	specialists of PIU and D&SC	community; Regular inspection of waste management activity; Waste disposal record.	of Construction works
	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport	Before and during construction phase

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.		vehicles.	
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 meter (dB)	Weekly
	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	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying 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	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		receptors, Heavy 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
	Workers 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 location;	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.			
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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Abdur Rahman Badi 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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	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.	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 washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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 Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding 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. • 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:

- 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 (BDT)
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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e. 35,000	70000

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
	the E.I.C.		Tk.*24 months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
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 around 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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
	direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C.	during construction period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420.00

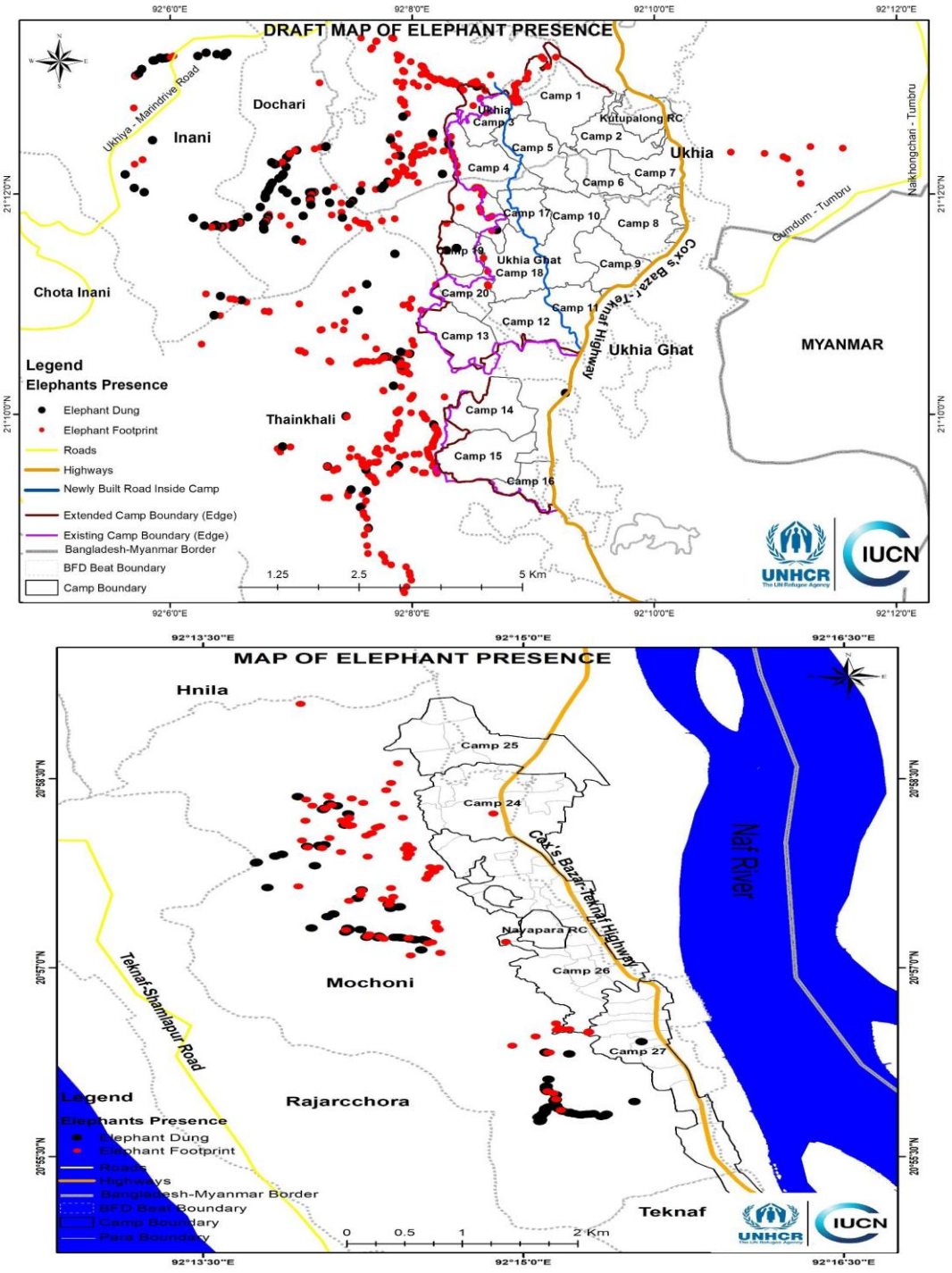
Cost of H&S Measures under COVID 19 Situations

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

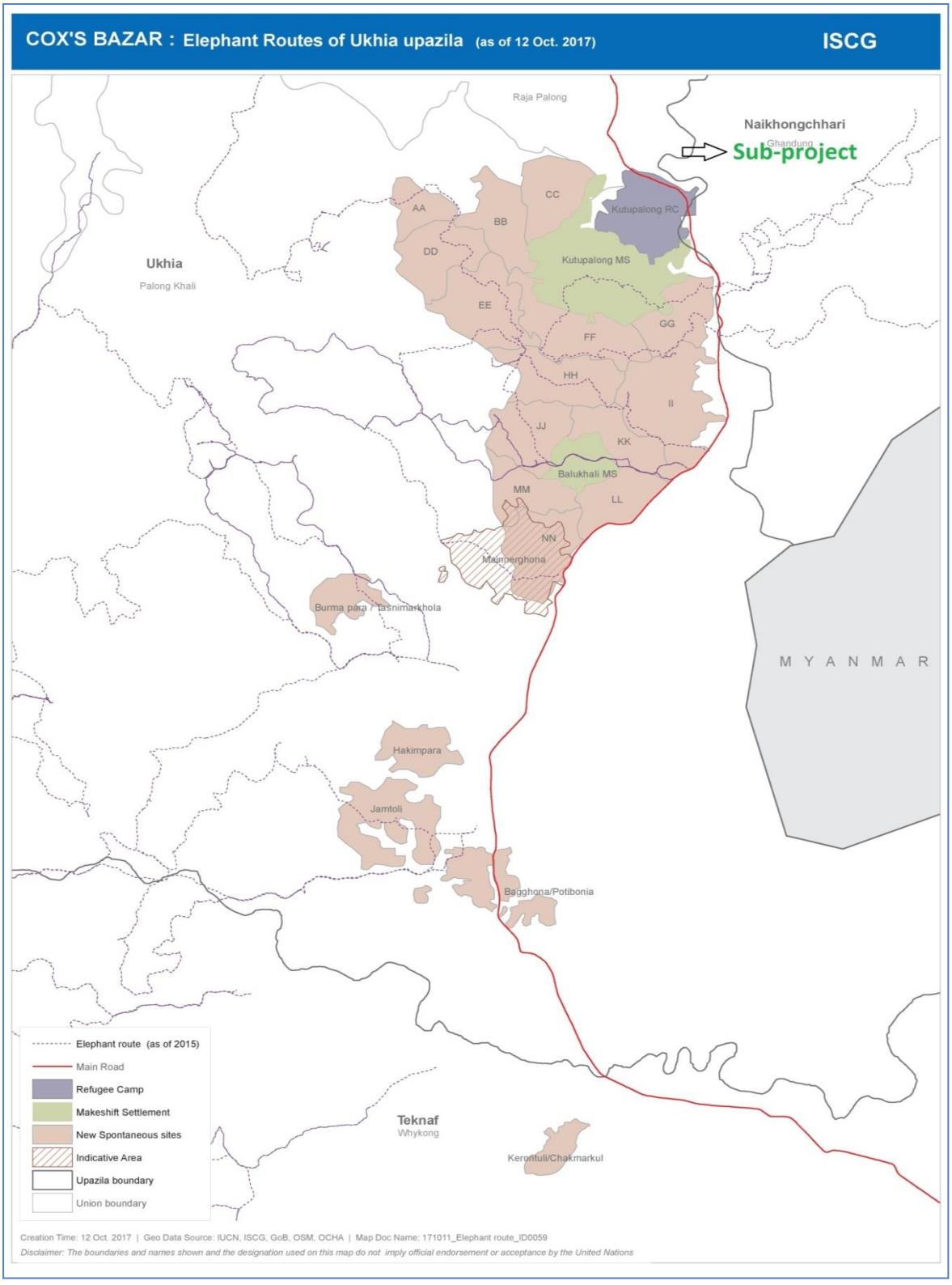
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:.....10:.am..... Date.....২৯/১২/১৯

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ
মত বিনিময়ের তারিখঃ ২৯/১২/১৯

কোড নংঃ ২২৪৯২০১৯০৫৮৩
স্থানঃ আবদুর রহমান বদি. ন.প্রা.বি
ইউনিয়নঃ জালিয়া পালং
ডাকঘরঃ [illegible]
উপজেলাঃ [illegible]
জেলাঃ [illegible]

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	আবদুর রহমান	৪২	পুরুষ	কাশখালী	
০২	ছেহের আলী	৬৫	,,	পশ্চিম পাঃ	
০৩	আবদুছালাম	৬৫	,,	জুম্মা পাড়া	
০৪	আবদুল আহমদ	৫৫	,,	পঃ পাঃ	
০৫	আবদুল হক	৬০	,,	জুম্মা পাড়া	
০৬	নুরুল ইসলাম	৫০	,,	পাঃ পাঃ	
০৭	ছাদু আলম	২৭	,,	,,	
০৮	শামসুল আলম	৫০	,,	জুম্মা পাড়া	
০৯	সাগর আলী	৬০	,,	পাঃ পাঃ	
১০	হাবিব আলী	৫৫	,,	পাঃ পাঃ	
১১	নাজির আহমদ	৭৫	,,	জুম্মা পাড়া	
১২	ফরিদ আহমদ	৫৫	,,	পাঃ পাঃ	
১৩	ছিয়দ নুর	৬০	,,	জুম্মা পাড়া	
১৪	খালেদা বেগম	৪০	মহিলা	সোনাই ডাঙ্গি	
১৫	আজিমা খাতুন	২২	,,	পাঃ পাঃ	
১৬	সুমি আকতার	২৫	,,	জুম্মা পাড়া	
১৭	শামিমুন নাহার	৩৫	,,	পাঃ পাঃ	
১৮	মনোয়ারা	৩২	,,	জুম্মা পাড়া	
১৯	জোবেদা খাতুন	২২	,,	জুম্মা পাড়া	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:.....10:am..... Date.২৩/১২/২১

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ
মত বিনিময়ের তারিখঃ ২৩/১২/২১

কোড নংঃ ৩১৪১২০২১০৫৩৫
স্থানঃ আবদুর রহমান বদি ১ প্রা: বি
ইউনিয়নঃ হালিয়া পালং
ডাকঘরঃ ইমানী
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	মাহমুদা বেগম	৩০	নারী	ডুমখালী	মাহমুদা
২১	মোহাম্মদ ওসমান	২৫	"	দঃ পাঃ	ওসমান
২২	ক খুব লিদা বেগম	২৮	"	"	খুকিদা
২৩	তাহিমা বেগম	৩৫	"	দঃ পাঃ	তাহিমা
২৪	খালেদা বেগম	৩০	"	"	হালেদা
২৫	দিলুয়ারা বেগম	২৩	"	"	দিলুয়ারা
২৬	খালিদা বেগম	২৮	"	"	খালেদা
২৭	রাবিয়া বেগম	৫০	"	"	চাচিয়া
২৮	ফাতেমা বেগম	২৩	"	"	ফাতেমা
২৯	দলা মিতি	৫০	"	"	দলা
৩০	হোসন আরুন	৫৫	"	"	হোসনারা
৩১	হাফিজ আহমদ	৩০	পুঃ	"	হাফিজ আহমদ
৩২	সাহাবুল আলম	৪০	পুঃ	"	সাহাবুল
৩৩	জাফর আলম	৪৩	"	"	জাফর আলম
৩৪	মোঃ হারুন	৩২	"	"	হারুন
৩৫	সাবির	২০	"	"	সাবির
৩৬	আবাস	২২	"	"	আবাস

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Amtoli Govt. Primary School

Educational Institution ID: 412010206

Village: Amtoli; Union: Ratnapalong; Upazila: Ukhiya;

District: Cox's Bazar

April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, the makeshift shelters accommodating the displaced Rohingya 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Ratnapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Valukia, Chakbaita, Amtoli and koija Baper para. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 550 households, containing 4000 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and proposed disaster shelter features 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	Amtoli GPS
Educational Institute ID	412010206
District	Cox's Bazar
Upazila	Ukhiya
Union	Ratnapalong
Owner of land	GPS
Land available	40 decimal
Catchment household	550
Catchment Population	4000 (Male: 2000, Female: 2000)
Profession	Farmer 45%, day labor 30%, businessman 15% and others 10%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Valukia, Chakbaita, Amtoli, koija Baper para
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road named Valukia- Ukhiya road is passing by the sub-project.
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Amtoli 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)	200

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-East side of Ukhiya 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 BCC road named Valukia-Ukhiya road, which is passing by the sub-project. A community clinic is situated within 50 m reaches of the proposed site. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location map of proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Ratnapalong
GPS position	21°16' 53.90"N and 92° 08' 44.80"E
Distance from Upazila HQ	12 km
Nearby major road	Valukia-Ukhiya road
Nearby river/canal	No major river or canal is found within the catchment area
Boundary of the containing Upazila	Ramu upazila on the North
	Teknaf Upazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

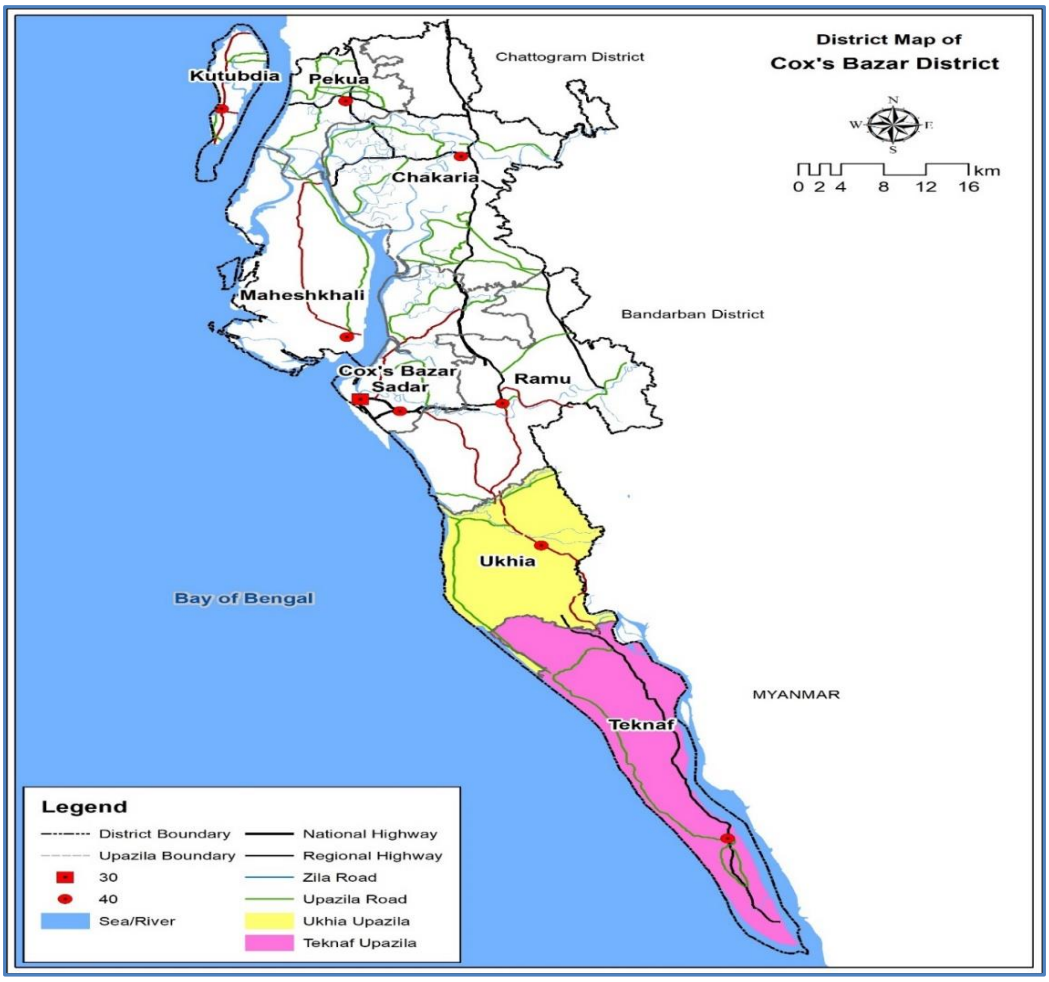


Figure 1.4.1: District Map with project location

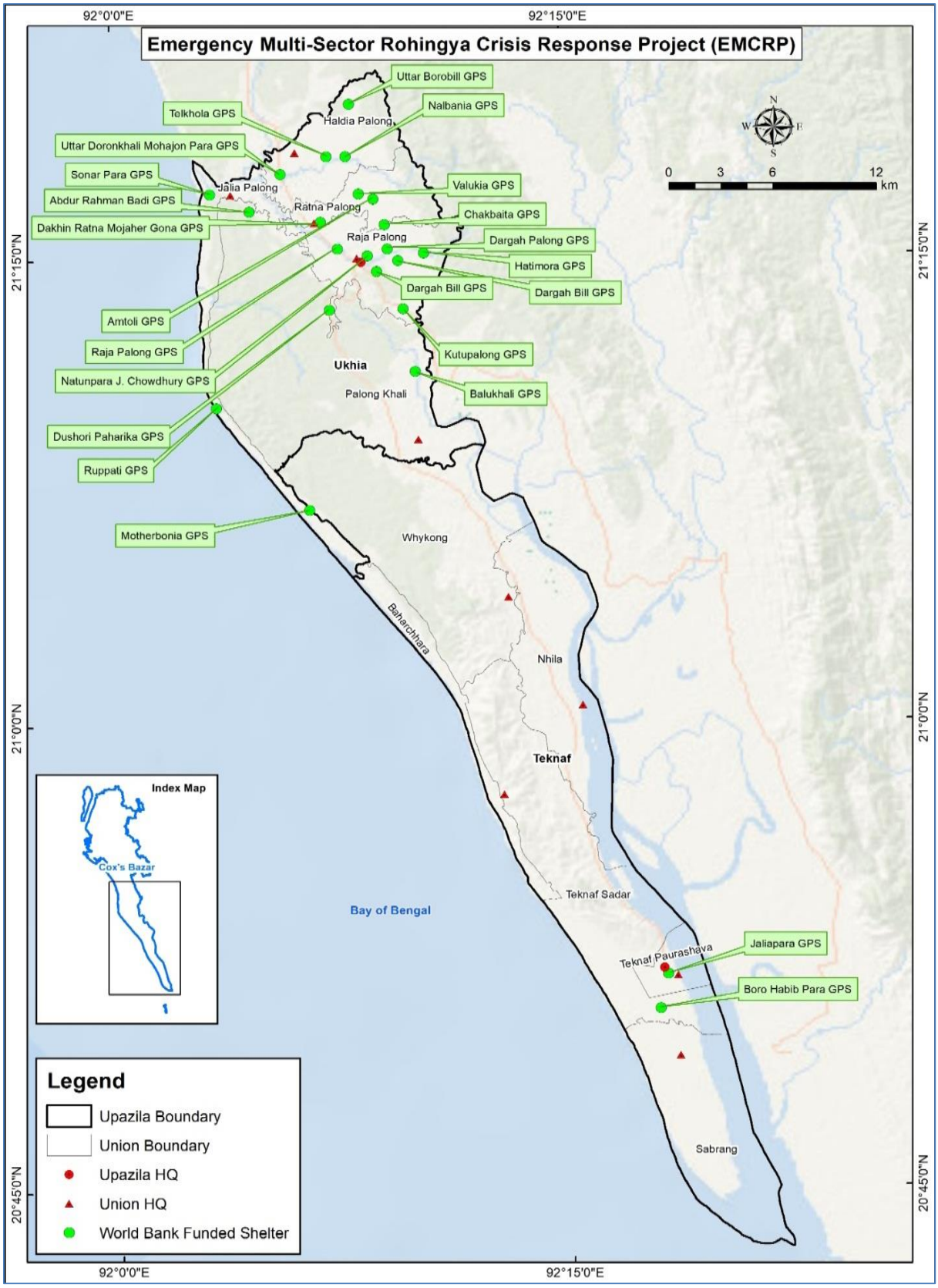


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings

(Ukhiya & Teknaf)

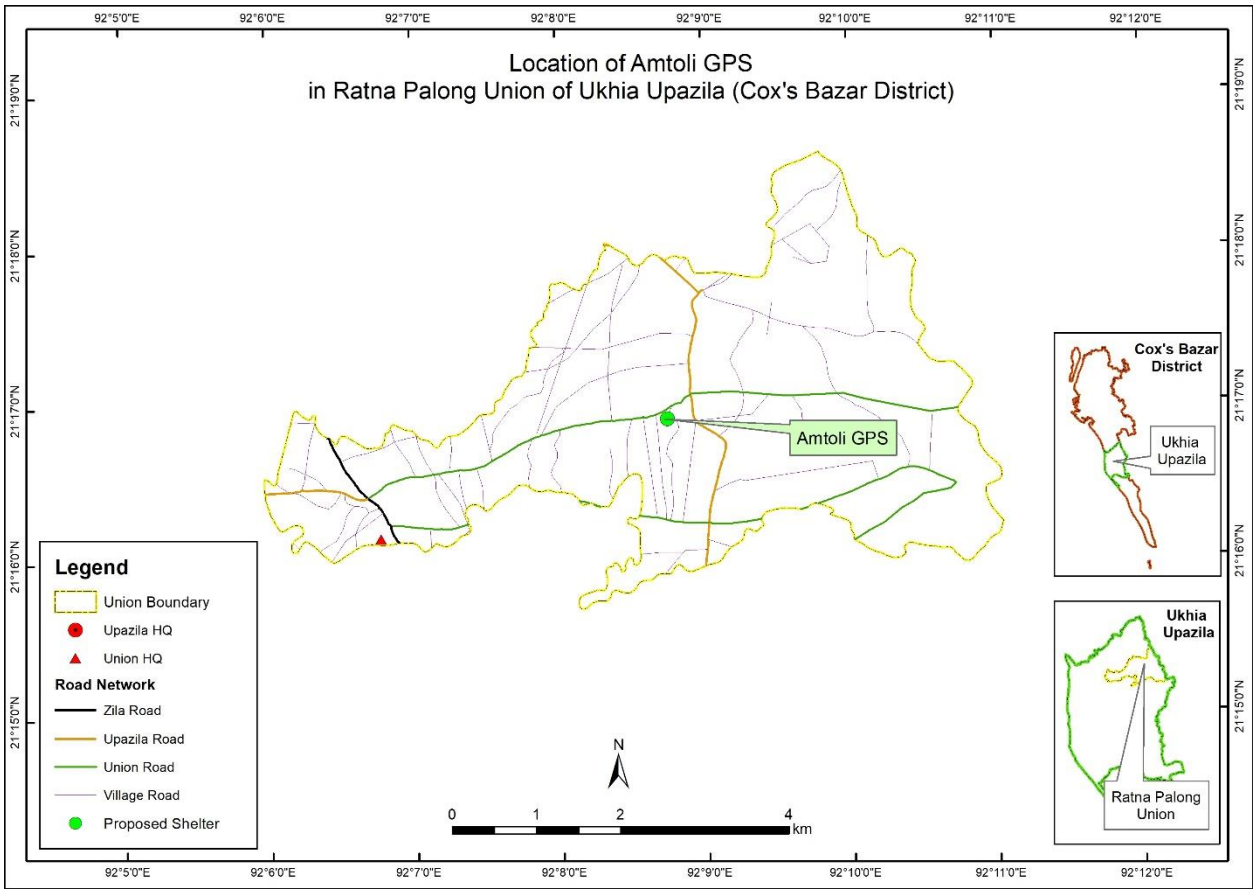


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area 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 establishment
North side	Valukia palong high school (1km),Community clinic (50m), 4 nos. of settlements (100m), Amtoli mosque (100m)
South side	5 nos. of Settlements (50m), paddy land (50m), Pond (200m)
East side	Road (20m), open field (40m), Tulatoli jame mosque (400m), Abdulah jame mosque (500m)
West side	Baitul Mamur jame mosque (1km), Valukia buddihst temple (1km), Paddy land (50m), a small low lying area (500m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 19 December 2019 in and around the Sub-project 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 32 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-5** for selected photographs of the participatory public consultation held at site of the Amtoli GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also carried out. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, its benefits, and 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 free/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 disasters such as cyclone, flood etc. So, a disaster shelter is very much necessary to construct in that catchment area. They also feel a lack of sheltering option for cattle or livestock during the cyclonic events.
- 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 spaces for cattle or livestock.

- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 18 December 2019 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 disaster shelter) 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 old structure, so no agricultural land/ activities or fish farming will be disturbed due to the construction 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 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. A small low lying area is located at 500m west of the sub project and a pond is found within the catchment area and distance is about 200-250m from the sub-project. Agriculture land is found at 100m north east side of school boundary. A community clinic is found at 50m north of the sub-project. There are five religious institutions located in the catchment area: the nearest Amtoli mosque is at 100 m north, two mosques are at 400 m east and 500 m east respectively, and the rest one is located at 1 km away from the proposed site boundary; a temple is also found at 1 km west of the site. None of these religious institutions will be affected significantly by the sub-project implementation works; except noise and dust may cause little problem to the nearest one, though for the time being. Some human settlements are found at 100meter north side and 50m south side of the school building. A high school named Valukia Palong High School is located at 1 km north of the site. No disturbance to all these establishments/features is anticipated due to construction activities for having sufficient distance from the construction site, and strict 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. Vibration effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and

informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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 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. In fact, forests would protect those lands from high wind and storm surges, whereas demolishing the trees has made the area more vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

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

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 impact of cyclone and precipitation has higher burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone has been seen to have increased in the past few years. Salinity has not been found in the vicinity of the subproject. Cyclonic storm surge has medium impact in the area. Temperature has increased and Thunder storm has been seen to have increased and is found to have highest impact in the area. Water stagnation has not been found. Natural drainage channel has been found in the vicinity of the school area.

As compared to the entire district area or a 50km resolution for model simulation and estimation, 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 ~~for~~ the construction of the shelters. . 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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the southern side. Due to the construction activities of this Sub-project, 2-3nos. 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. A community clinic is found at 50m north of the sub-project. A mosque named Amtoli Mosque is situated at 100m North-West side of the school

boundary. Further, some human settlements are found at 100meter north side and 50m south side of the school building might get affected during the construction period with the generated 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 will be stored in designated areas or dustbins, and be transported outside for eventual management. 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.

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 has 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 monitor 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 Ukhiya and Teknaf 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. 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 location, design, construction, and/or operation 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, job and public health 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 improving health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan. Moreover, post disaster health, safety and flood problems are common and should be takne into consideration.
- 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Amtoli GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Ratnapalong

Name of Community/Local Area: Amtoli

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 an existing school boundary. A two-storied school building is located on west side of the school boundary. A community clinic is found at 50m north of the sub-project. A mosque named Amtoli Mosque is situated 100m North side, Valukia palong school located at 1km north, Abdullah jame mosque located at 500m east, Tulatoli mosque located at 400m east, Baitul Mamur jame mosque located at 1km west, Valukia Buddhist temple located at 1km west from the school boundary. Some human settlements are found at 100meter north side and 50m south side of the school building. A 12 feet BCC road is passing by the east side and it is connected to the Cox's Bazar-Tekhnaf highway. No Important environmental features are found within the sub-project. Some agricultural lands are found on north-west side, adjacent to the school boundary. An old structure will be demolished during pre-construction period and the new one will be constructed there.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and

school management committee (SMC) attended 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 for 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 among 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 disease 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 or no 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, human wastes including kitchen wastes might be generated in labor camps.

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 12 feet BCC road is passing by the sub-project side. There are four mosques found within the catchment area. One mosque named Abdullah jame mosque found at 500m east, another mosque named Tulatoli jame mosque found at 400m north, Baitul mamur jame mosque located at 1km west and Amtoli jame mosque located at 100m north of the subproject area. A Buddhist temple located at 1km west of the subproject area. 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. A community clinic is situated on north side of the sub-project area, but there is no chance to cause significant disturbances due to the sufficient distance (50m) in between and its placing on the opposite side of the adjoining road.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 6 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Ratnapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°16' 53.90"N and 92° 08' 44.80"E The distance from the Upazila headquarters is about 12 km. Nearby major road is Valukia – Ukhiya road. The school code is 412010206

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.

A small low lying area is located at 500m west of the sub project. A pond is found within the catchment area and distance is about 200-250m from the sub-project. No disturbance is anticipated due to construction activities. Some human settlements are found at 100meter north side and 50m

south side of the school building, agriculture land is found at 100m north east side of school boundary. But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

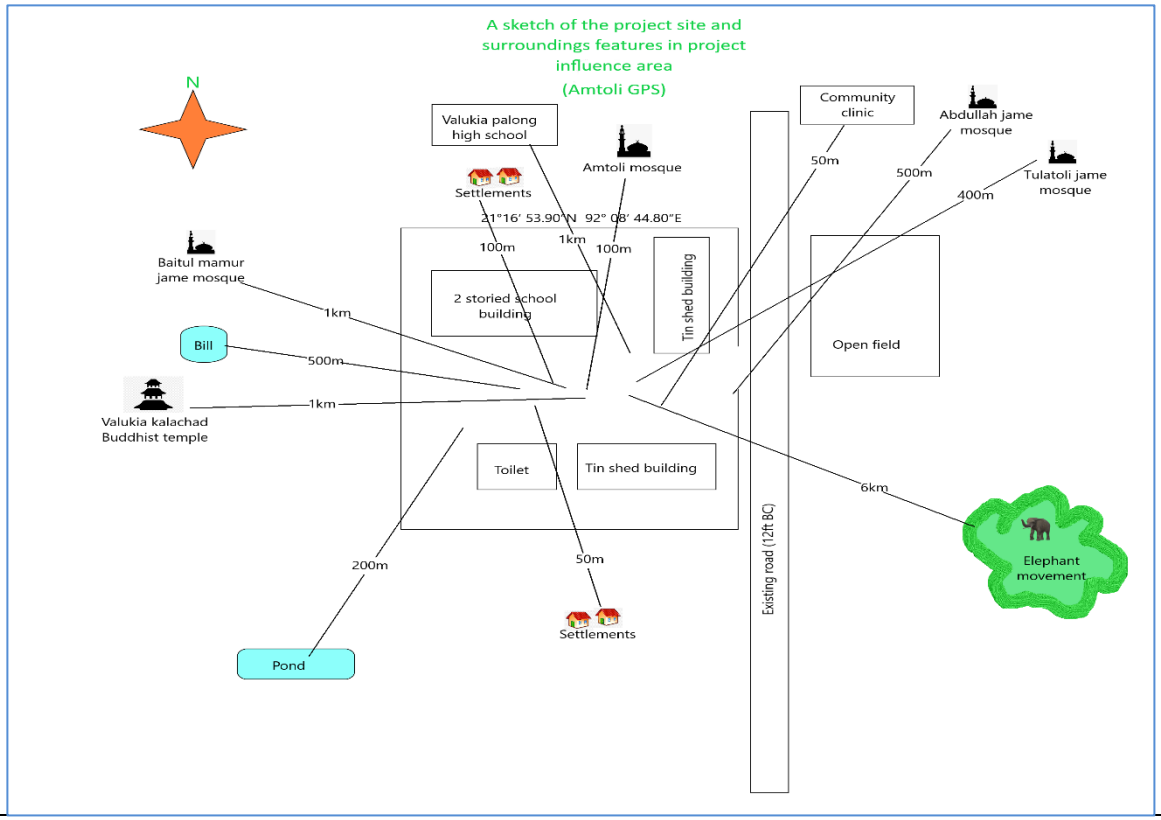
***B.1*: Environmental feature of sub-project location**

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:

There is a community clinic is found at 50m north of the sub-project. A mosque named Amtoli Mosque is situated 100m North side, Valukia palong school located at 1km north, Abdullah jame mosque located at 500m east, Tulatoli mosque located at 400m east, Baitul Mamur jame mosque located at 1km west, Valukia Buddhist temple located at 1km west from the school boundary. Some human settlements are found at 100meter north side and 50m south side of the school building. but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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/ preventable by mitigation measures.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 soil 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 shallow tube-well and a deep tubewell is found within the school boundary. The shallow depth is about 200 feet and deep tubewell depth is 700 feet. In the sub-project area, deep groundwater is salty and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. One pond is found adjacent to the sub-project area, but no disturbance or modification is anticipated by the sub-project. 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: Patches of vegetation containing large and matured trees on the north and southern side of the proposed construction areas are located within 200m radial distance.
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 BC road is passing by the east side of the sub-project. It is connected to Cox's Bazar-Teknaf 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 shallow tube-well and a deep tubewell are found within the school boundary and depth is about 200 feet and 700 feet repectively. But the tubewells are not working properly in dry season. 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 already available at the site. 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 within the existing school boundary.
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 and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction.
Identification of access road for transportation (Yes/No): About 12ft. wide BCC road is the main way for transportation of raw materials. It is located on east side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the west side within the existing school boundary. 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.): **Solid waste:** An old structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 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 land is required for the sub-project establishment. There is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 pond (200m) is found outside of the construction area, but 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 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 for 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 project sites, and no known areas of ecological interest, except a pond located at 200 m south from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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 a locality. A BC road connects the site with the main road. The road is mainly used for pedestrian access and 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to	Contractor, environmental specialists of PIU and D&SC	Visual monitoring of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 (100m) and some human settlements are 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 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.			
	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, below the ESMP table, to be followed by the contractor.	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
	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
	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.	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of	Before and during construct

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• 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.		materials transport vehicles.	ion 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 meter (dB)	Weekly
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of	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-	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		complaints from sensitive receptors, Heavy 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
	Workers 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	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
			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.		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
	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 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 and PMU	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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Amtoli 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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	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.	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 washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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 Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding 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. • 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:

- 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, 01714980171

Tanvir Ahsan Haque, Environmental Specialist, 01688117059

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

Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, +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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	from reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

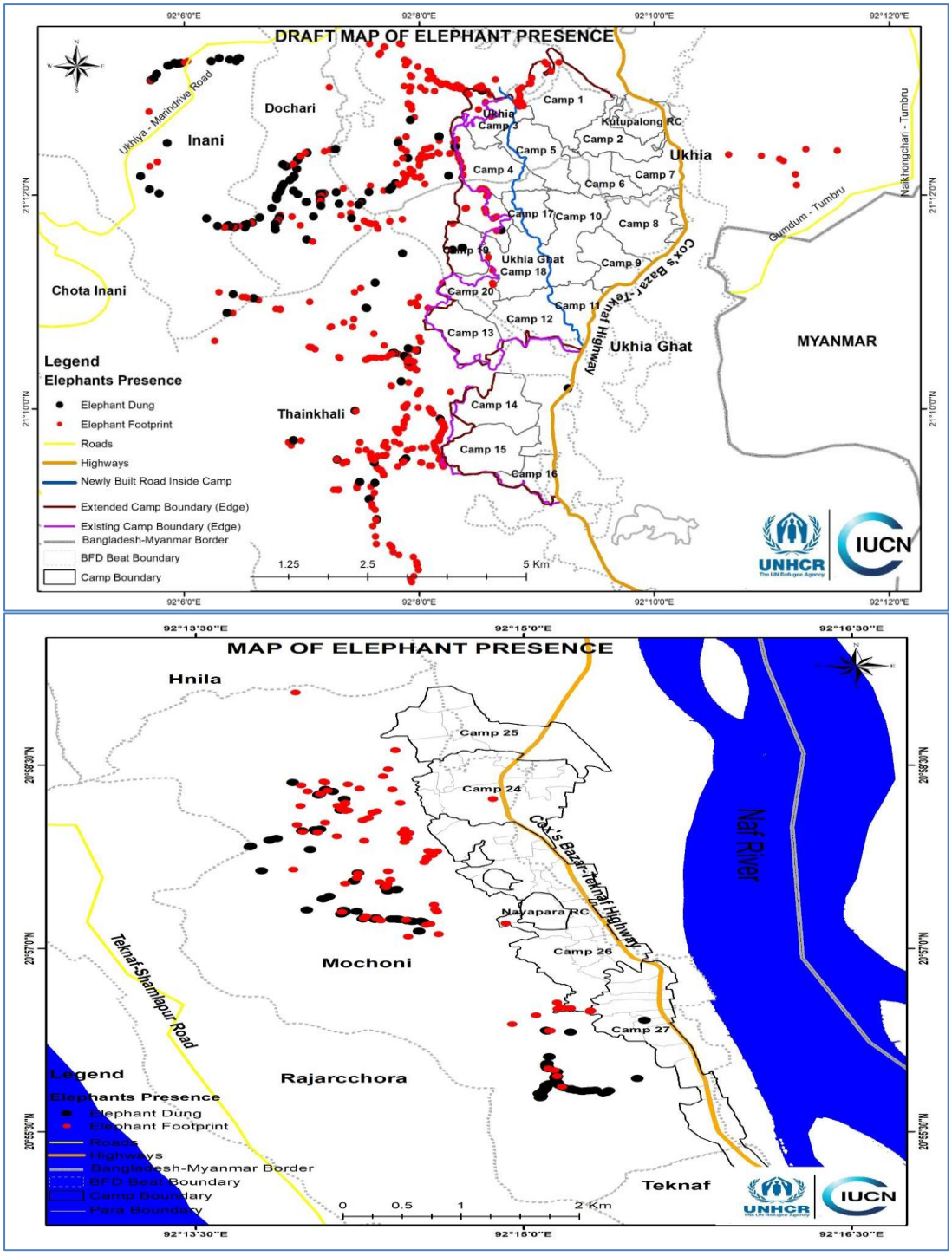
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

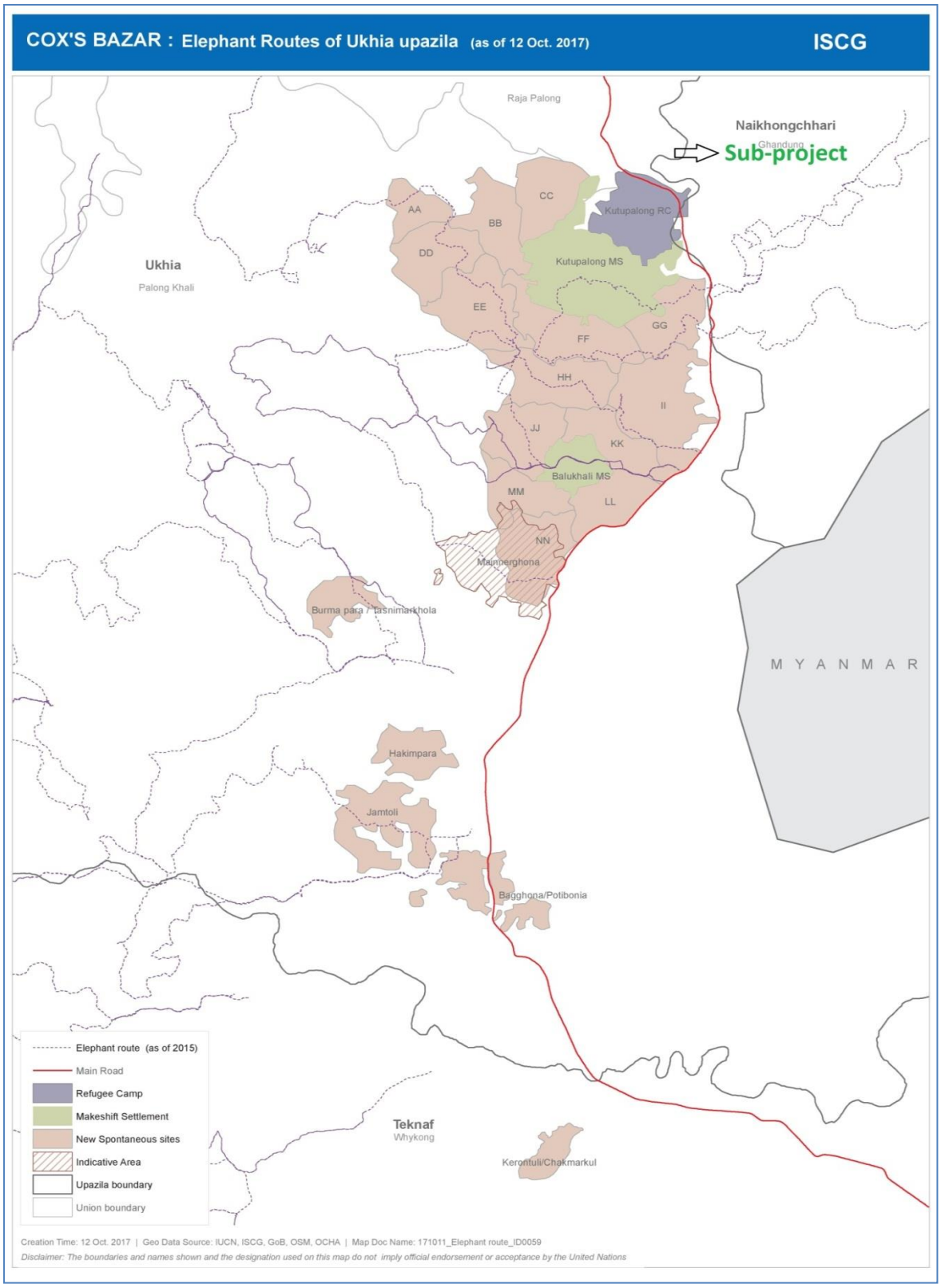
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...12:30PM..... Date.....

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ আমতলি সরঃ প্রাথঃ বিদ্যালয়
মত বিনিময়ের স্থানঃ আমতলি

কোড নং: ৪২০২০২৫৬
ইউনিয়নঃ রত্নাপালং
ডাকঘরঃ চাকঢেকা বাজার
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	টটি বড়ুয়া	৩৮	নারী	বলুখালি-৯	
০২	লুৎফুন নেছা	৬২	নারী	গয়ালমারা	
০৩	মো: খোরশেদ আলম	৩০	পুরুষ	গয়ালমারা	
০৪	রাহেলা পারভীন	২৮	নারী	তালুকিয়া	
০৫	হাজিরা বেগম	২৮	নারী	কোটবাজার	
০৬	রশিদ আহমদ	৬৬	পুরুষ	আমতলী	
০৭	মো: কালু মিয়া	৭০	পুরুষ	আমতলী	
০৮	আবুস ছালাম	৬০	পুরুষ	আমতলী	
০৯	আব্দুল মজিদ	৬৫	পুরুষ	আমতলী	
১০	আবুল কালাম	৬৬	পুরুষ	আমতলী	
১১	মো: আবদুল্লাহ	২০	পুরুষ	আমতলী	
১২	আবুল কালাম	৩৫	পুরুষ	আমতলী	
১৩	এনামুল হক	২১	পুরুষ	আমতলী	
১৪	অবিশ্ব বড়ুয়া	৪৮	পুরুষ	ফেন্যা কলোনী	
১৫	তারেকুল ইসলাম	১৯	পুরুষ	ফেন্যা কলোনী	
১৬	তুষার বড়ুয়া	২৯	পুরুষ	তালুকিয়া	
১৭	মো: সিদ্দিক	৪৫	পুরুষ	আমতলী	
১৮	মো: খোরশেদ আলম	২০	পুরুষ	আমতলী	
১৯	মরিয়ম বেগম	২১	নারী	আমতলী	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:…….. Date……

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ
মত বিনিময়ের স্থানঃ

কোড নং: ৪১২০১০২০৬
ইউনিয়নঃ রত্নাপালং
ডাকঘরঃ চাকবৈঠাবাজার
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	মোঃ ইসলাম হোছেন	৬৬	পুরুষ	ফেজারাপের	
২১	লতিফা বেগম	২৫	নারী	জোমতলী	জাতিসম
২২	মাবিয়ার	২২	নারী	চাকবৈঠা	মাবিয়া
২৩	রেহেনা বেগম	৩৬	নারী	জোমতলী	রেহেনাবেগম
২৪	গোলতাজ বেগম	৩০	নারী	জোমতলী	গুলতাজবে
২৫	ফাতেমা বেগম	২৭	নারী	জোমতলী	ফাতেমা
২৬	রোজিনা আক্তার	২২	নারী	জোমতলী	রোজিনা
২৭	রহিমা খাতুন	৪০	নারী	জোমতলী	রহিমা
২৮	রোকেয়া বেগম	২৮	নারী	চাকবৈঠা	রোকেয়া
২৯	শাহেদা বেগম	৩০	নারী	জোমতলী	শেহেদা
৩০	আমিনা খাতুন	২৮	নারী	জোমতলী	আমিনা
৩১	ফরিদ আলম	২৫	পুরুষ	জোমতলী	ফরিদআলম
৩২	নুরজাহান বেগম	২৫	নারী	জোমতলী	নুরজাহান

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Dargahbill Govt. Primary School
Educational Institution ID: 41201048
Village: Dargabill; Union: Dargahbill; Upazila: Ukhiya;
District: Cox's Bazar
April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 Bond
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 Band

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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 construction/rehabilitation 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, the makeshift shelters accommodating the displaced Rohingya 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Dargahbill union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of East Dargahbill, West Dargahbill. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands ~~on the~~ 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 510 households, containing 2525 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and proposed disaster shelter features 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	Dargahbill GPS
Educational Institute ID	41201048
District	Cox's Bazar
Upazila	Ukhiya
Union	Dargahbill
Owner of land	GPS
Land Available	40 decimal
Catchment household	510
Catchment population	2525 (Male 1445, Female 1440)
Profession	Farmer 60%, day labor 20%, businessman 15% and others 05%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	East Dargahbill, West Dargahbill
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road is connected to Cox's Bazar-Teknaf highway
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Dargahbill 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)	200

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 Ukhiya Upazila in Cox's Bazar District. The site location is relatively a high plain land, free from any obstruction and easily accessible through a 12ft wide HBB road, which is connected to the Cox's Bazar-Teknaf Highway. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location map of proposed Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Dargahbill
GPS position	21°14' 54.9"N and 92° 09' 33.10"E
Distance from upazila HQ	5 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	Reju Khal is located on 1 km north and a big pond is found on west side of the sub-project area
Boundary of the Containing Upazila	Ramu upazila on the North
	Tecna fUpazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

(Sources of data: Field survey, 2019 & LGED, 2015]

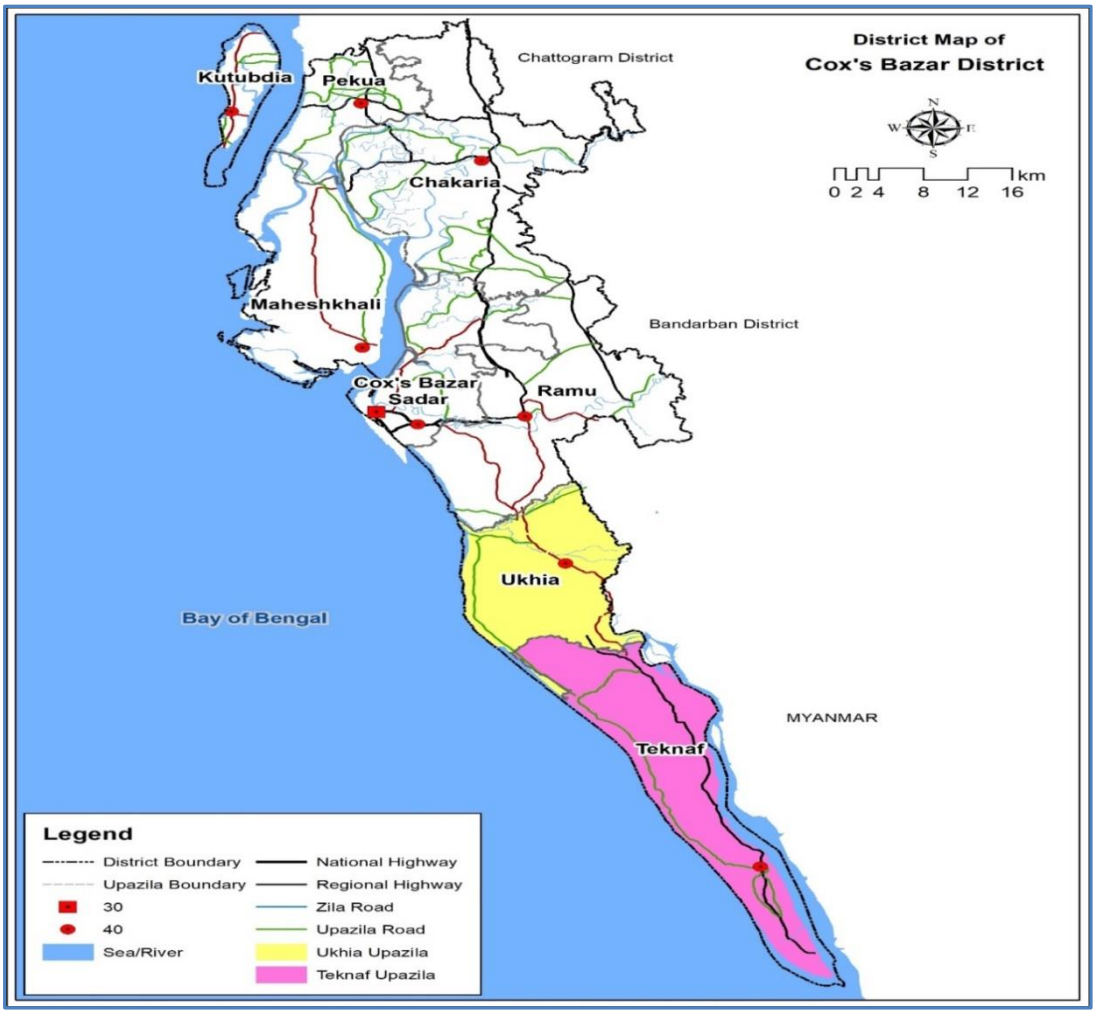


Figure 1.4.1: District Map with project location

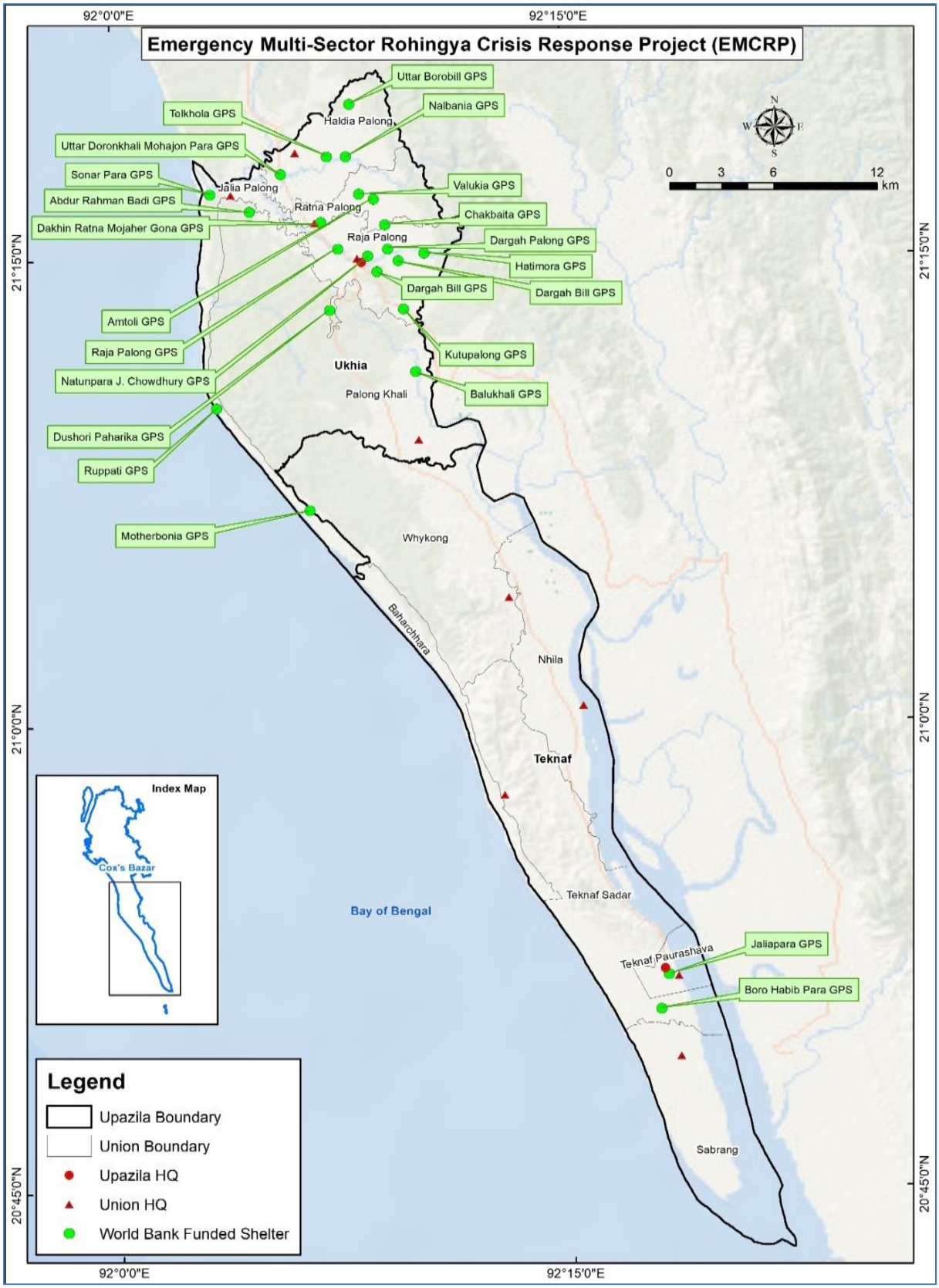


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

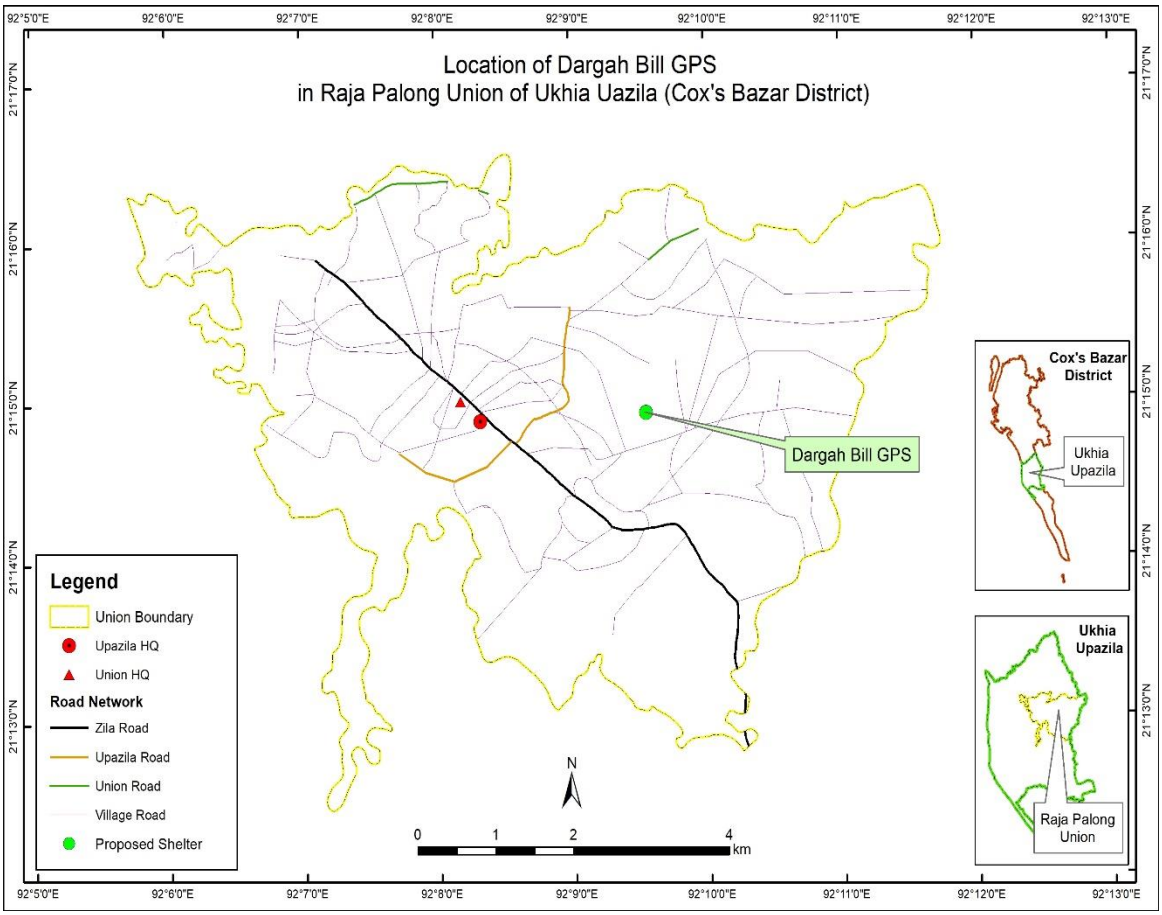


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area and location of construction area has 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	Reju khal (1km), Mosque (200m), 7 nos. of Houses (200m)
South side	Lombaghuna school (1km), 10 nos. 0f settlements (50m), Graveyard (700m)
East side	Paddy land(40m), 8 nos. of houses (200m)
West side	Mosque (900m), Pond (100m), Kharun Munshir Bazar (500m)

[Sources of data: Field survey, 2019]





Figure 1.5.1: Present condition of the Sub-project 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 05 November 2019 in and around the Sub-project 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 20 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-5** for selected photographs of the participatory public consultation held at site of the Dargahbill 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, and 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 free/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 disasters such as cyclone, flood etc. So, a disaster 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 classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate spaces for cattle or livestock.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 05 November 2019 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 disaster shelter) 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 structure, so no agricultural land/ activities or fish farming will be disturbed due to the construction 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 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. One khal named Reju Khal is located on 1 km north of the sub project and a big pond is found at 100m west side of the sub-project area. 2 mosques (one is 1km north-west and other is 900m west), a graveyard (700m south) and a madrasha (1km north-west) are located within 1km of the sub-project. Three clusters of settlements- two at 200m distance from the school boundary and one is at 50 m distance from the school boundary, are found, and may receive a little disturbance (noise and dust) from the construction works. A high school named Lombaghuna High School is situated at 1km south side. No significant disturbance to all these establishments/features is anticipated due to construction activities for being at 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. Vibration effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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 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. In fact, forests would protect lands from high wind and storm surges, where demolishing the trees has made the area more vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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.

The impact of cyclone and precipitation has higher burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone has been seen to have increased in the past few years. Salinity has not been found in the vicinity of the subproject. Cyclonic storm surge has medium impact in the area. Temperature has increased and thus has medium impact on the area 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. Drainage channel has not been found in the area.

As compared to the entire district area or a 50km resolution for model simulation and estimation, the sub-project site is a very tiny point for impact generation, 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 ~~for~~ the construction of the shelters . 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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a high land where some matured vegetation is found on the western side. Due to the construction activities of this Sub-project, 10-12nos. of trees (small and medium size) will be cut down and as a mitigation measure, 50 nos. of trees will be planted in the periphery of the school. Further, some settlements on 100m south side and a pond located at 100m west of the sub-project area might get affected during the construction period with the generated 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. Within the close proximity of the site, a mosque (200m), a pond (100m), 3 clusters of settlement (50 to 200m) might receive impacts from generated noise, dust and polluted water. These impacts have to be managed during the construction period by adopting strict preventive measures like working during the day time only, sprinkling of waters, good working practice in site and vehicle management and so on. 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. Human and construction wastes and debris will 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. 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 and the contractors stand at the first tier on the system, though they have the entire responsibility to construct or implement the sub-projects. 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, resulting from pollution, noise or other causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as monitor 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 second 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 Ukhiya and Teknaf 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.

6. 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 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, public health 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 improving health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come by 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Dargahbill GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Dargahbill

Name of Community/Local Area: Dargabill

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 an existing school boundary. In the school boundary a two storied school building is located on west side and another two storied building is found on north side. An old structure will be demolished during pre-construction period and the new one will be constructed there. A high school named Lombaghuna High School is situated on south side and a graveyard, mosque and some settlements are situated on north side. A bazar named Kharun Munshir Bazar (500m) and another mosque (900m) is situated on west side of the sub-project. A 12 feet HBB road is passing on north-west side and it is connected to Cox's Bazar- Tekhnaf highway. No Important environmental feature is found within the sub-project.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is 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 this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure

safe living for 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 among the communities. Shelters were extremely important to them as, they were very much vulnerable to cyclones. They also requested to keep provision of post-disaster services and facilities in respect to disease 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 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 activity will be involved.

Types of waste to be generated during construction and operation phase:
During preconstruction period solid waste will be generated due to demolition of an old building and later construction of a new building on the same place. 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.

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. One khal named Rijo Khal is located on 1 km north of the sub project and a big pond is found at 100m west side of the sub-project area. No disturbance is anticipated due to construction activities. 2 mosques (one is 1km north-west and other is 900m west), a graveyard (700m south) and a madrasha (1km north-west) are located within 1km of the sub-project. 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. A high school named Lombaghuna High School is situated at 1km south side.

Some human settlements and agricultural land is found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 2 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Dargahbill Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°14' 54.9"N and 92° 09' 33.10"E. The distance from the Upazila headquarter is about 5 km. Nearby major road is Cox's Bazar- Teknaf highway, distance is 5km from the sub-project site. The school code is .41201048

Land ownership
GPS

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.

One khal named Rijo Khal is located on 1 km north of the sub project and a big pond is found at 100m west side of the sub-project area. No disturbance is anticipated due to construction activities. 2 mosques (one is 1km north-west and other is 900m west), a graveyard (700m south) and a madrasha (1km north-west) are located within 1km of the sub-project site. A high school named Lombaghuna High School is situated at 1km south side. Another mosque is found at 200m north side but there is no chance to disturbance during this construction activity.

Some human settlements are found on south side of adjacent school boundary. But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

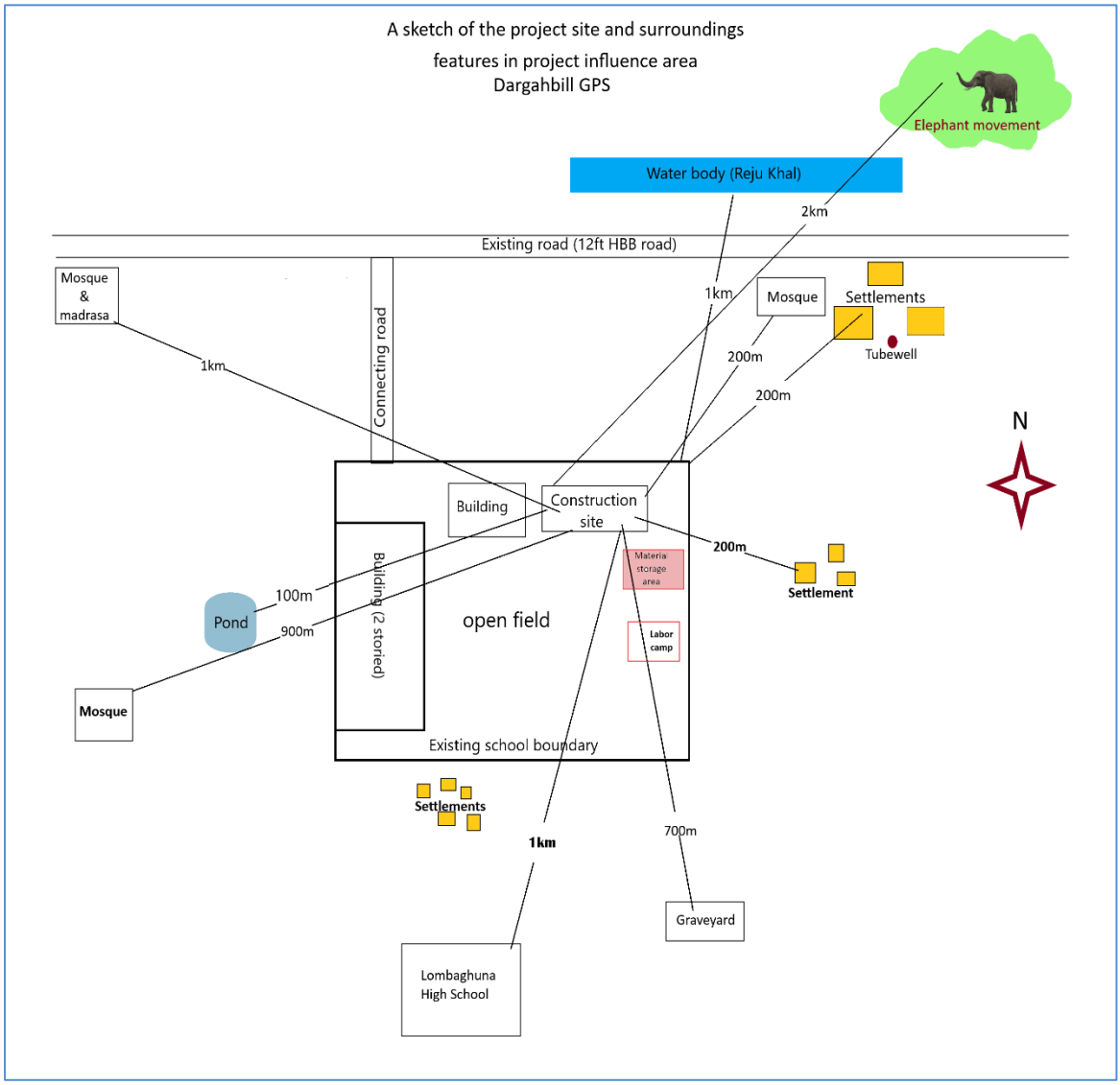
Section B: Environmental Screening

***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:

2 mosques (one is 1km north-west and other is 900m west), a graveyard (700m south) and a madrasha (1km north-west) are located within 1km of the sub-project. A high school named Lombaghuna High School is situated at 1km south side. Another mosque is found at 200m north side.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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. It 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).

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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/ preventable by mitigation measures.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 soil 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. Three shallow tube-well

and a deep tubewell is found within the school boundary. The shallow depth is about 200 feet and deep tubewell depth is 800 feet. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer. One pond is found adjacent to the sub-project area being used for fish cultivation. 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: Patches of vegetation containing large and matured trees on the south and eastern side of the proposed construction areas are located within 200m radial distance.
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 HBB road is passing on the south side of the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials on this road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Three shallow tube-well and a deep tubewell is found within the school boundary and depth is about 200 feet and 800 feet. But the tubewells are 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 already available at the site. 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 within the existing school boundary.

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 and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction.
Identification of access road for transportation (Yes/No): About 8ft. wide HBB road is the main way for transportation of raw materials. It is located on east side of the sub-project and is connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the east side within the existing school boundary. 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.): **Solid waste:** An old school building will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 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 land is required for the sub-project establishment. There is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 pond (100m) is found outside of the construction area, but 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 for 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 project sites, and no known areas of ecological interest, except a pond located at 100 m east from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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. The roads are mainly used for pedestrian access and 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 dust being dispersed around during the dry weather, and accidents may occur due to the bad condition of the access road 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 properly so that no chance of spill.	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• 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 (200m) and some human settlements (100m) are 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 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,	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.)		• 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. • Further guidance on demolition works and wastes management is given in the appendix 2, below the ESMP table, to be followed by the contractor.	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
	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
	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 &	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of	Before and during construct

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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.		materials transport vehicles.	ion 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 meter (dB)	Weekly
	Air Quality Conducting works at dry season and moving large quantity of materials may create	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.	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		• 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.		inspection, Numbers of complaints from sensitive receptors, Heavy 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
	Workers 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	Contractor, environmental specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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.		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 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 monitored by Consultant and	Complaints from communities	Site inspection daily /

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
				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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Dargahbill 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.	PIU	Social Development

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Access road shall be well demarcated and accessibly paved.		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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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	• 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	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
	manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	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 supervision to ensure that the correct methods are being used.		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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	• 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
	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. • 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:

- 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, 01714980171

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

Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, +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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be install** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, **Water samples** to be collected periodically (half yearly) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

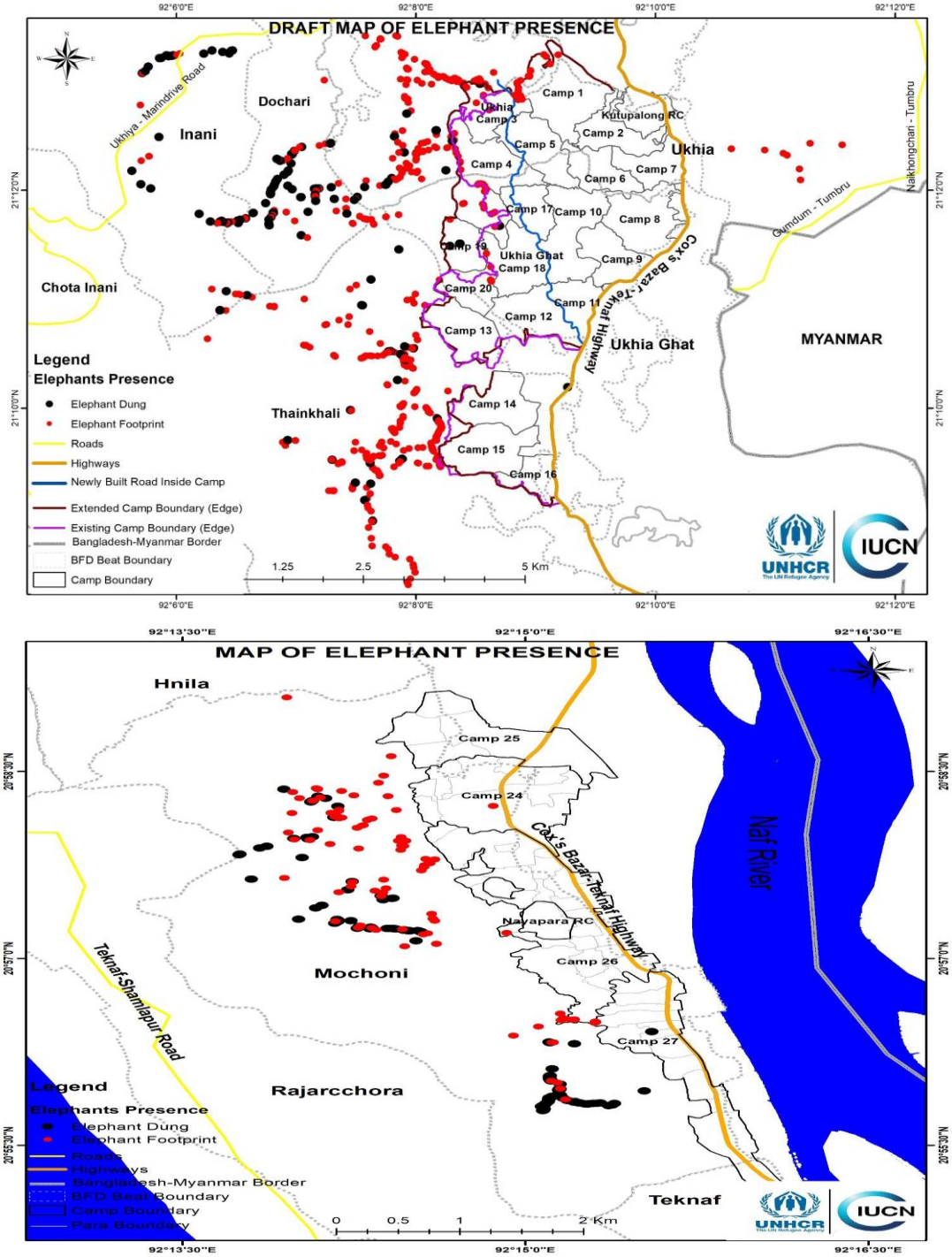
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

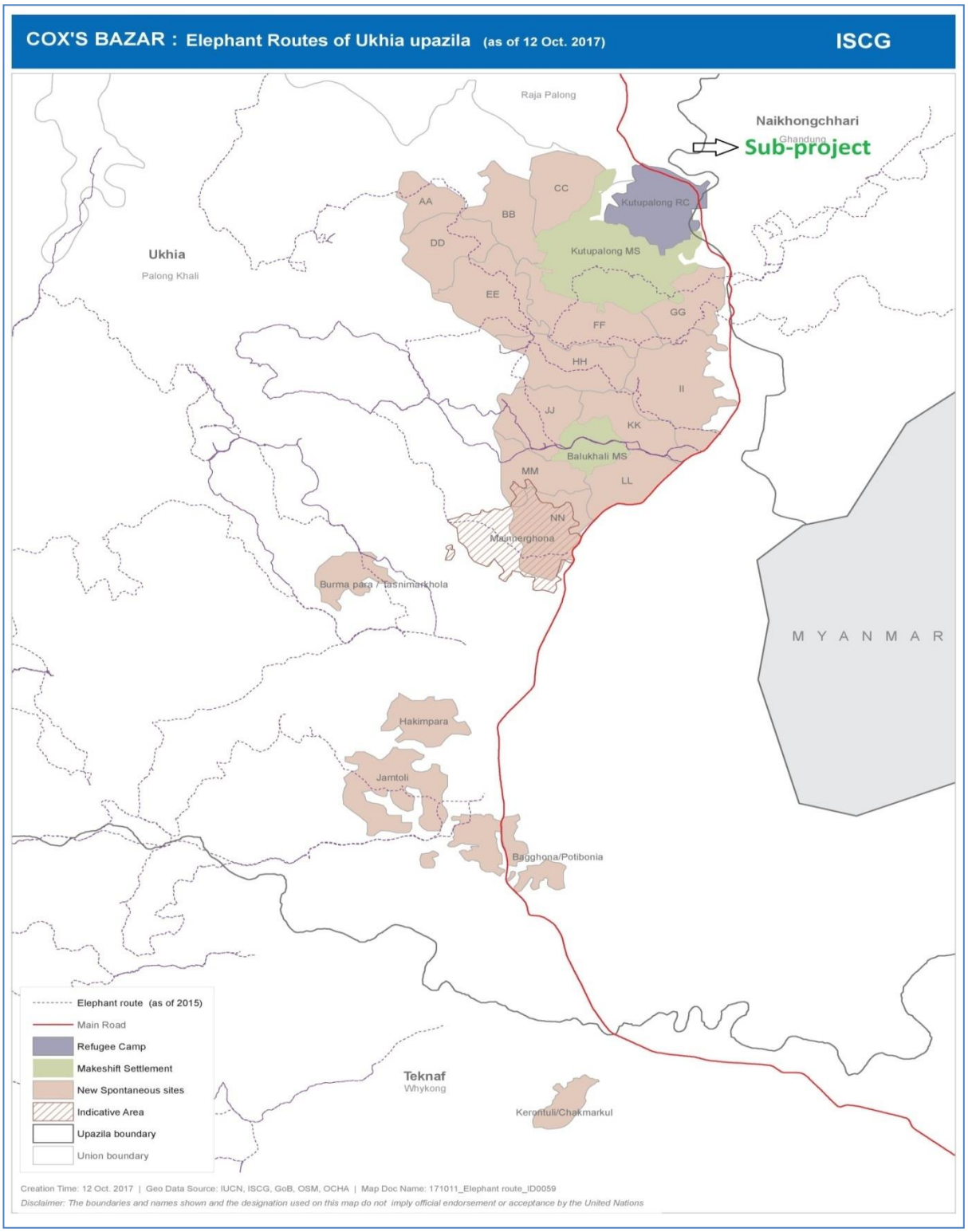
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time: 1:00 PM ..... Date: 5.11.19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ Dargah Bill GPS
মত বিনিময়ের তারিখঃ 05.11.19

কোড নংঃ
স্থানঃ দরগাহ বিল
ইউনিয়নঃ সাহেলা নগর
ডাকঘরঃ উখিয়া
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	পপি রানী দে	২৭	F	দরগাহ বিল	Pumpy
০২	ফাতেমা জিন্নাত তোফা	২৭	"	"	
০৩	খাদিজা বেগম	৩০	"	"	
০৪	আইদা আনম	৩২	"	"	
০৫	রুনা আক্তার	২৩	"	"	
০৬	রেবি আক্তার	২৮	"	"	
০৭	আহামদউল্লাহ	৪০	M	"	
০৮	ফজলুল করিম	৩৮	"	"	
০৯	নুরুল ইসলাম	৫৫	"	"	
১০	আবুসালাম	৪৬	"	"	
১১	মঞ্জুর আলম	৩৬	"	"	
১২	ফরিদ আলম	২৮	"	"	
১৩	সাহামুদুল হক		"	"	
১৪	নুরুল কবির	৪০	"	"	
১৫	সাহু আলম	৪৪	"	"	
১৬	জালাল আহামদ	৫৪	"	"	
১৭	হাছিনা আক্তুন	৩৮	F	"	
১৮	রাকেদা বেগম	৪৩	"	"	
১৯	মরিয়ম আক্তুন	৪০	"	"	
২০	তফুরা বেগম	৩২	"		

Public consultation participant 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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Dargapalong Govt. Primary School
Educational Institution ID: 412010405
Village: Taipalong; Union: Rajapalong; Upazila: Ukhiya;
District: Cox's Bazar
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Consultant:

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
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 Band

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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, the makeshift shelters accommodating the displaced Rohingya 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Rajapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Dargahbill, Shikdarbill, Delapara, Taipalong. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 510 households, containing 2764 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and proposed disaster shelter features 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	Dargahpalong GPS
Educational Institute ID	412010405
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land Available	1 acre
Catchment household	550
Catchment population	2764 (Male 1380, Female 1384)
Profession	Farmer 65%, day labor 20%, businessman 12% and others 3%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building with a dimension- 35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Dargahbill, Shikdarbill, Delapara, Taipalong
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road is connected to Cox's Bazar-Teknaf highway
Land acquisition	Not required

[Sources of data: Field survey, 2019]

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

Dargahpalong 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)	200

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-East side of Ukhiya 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, which is connected to the Cox's Bazar-Teknaf Highway. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location map of proposed Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
GPS position	21^0 15' 17.50"N and 092^0 09' 12.0''E
Distance from Upazila HQ	5 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	Shikdar bill is located on 1.0 km south and another small Chara is situated on 0.5 km east.
Boundary of the containing Upazila	Ramu upazila on the North
	Tecnaf Upazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

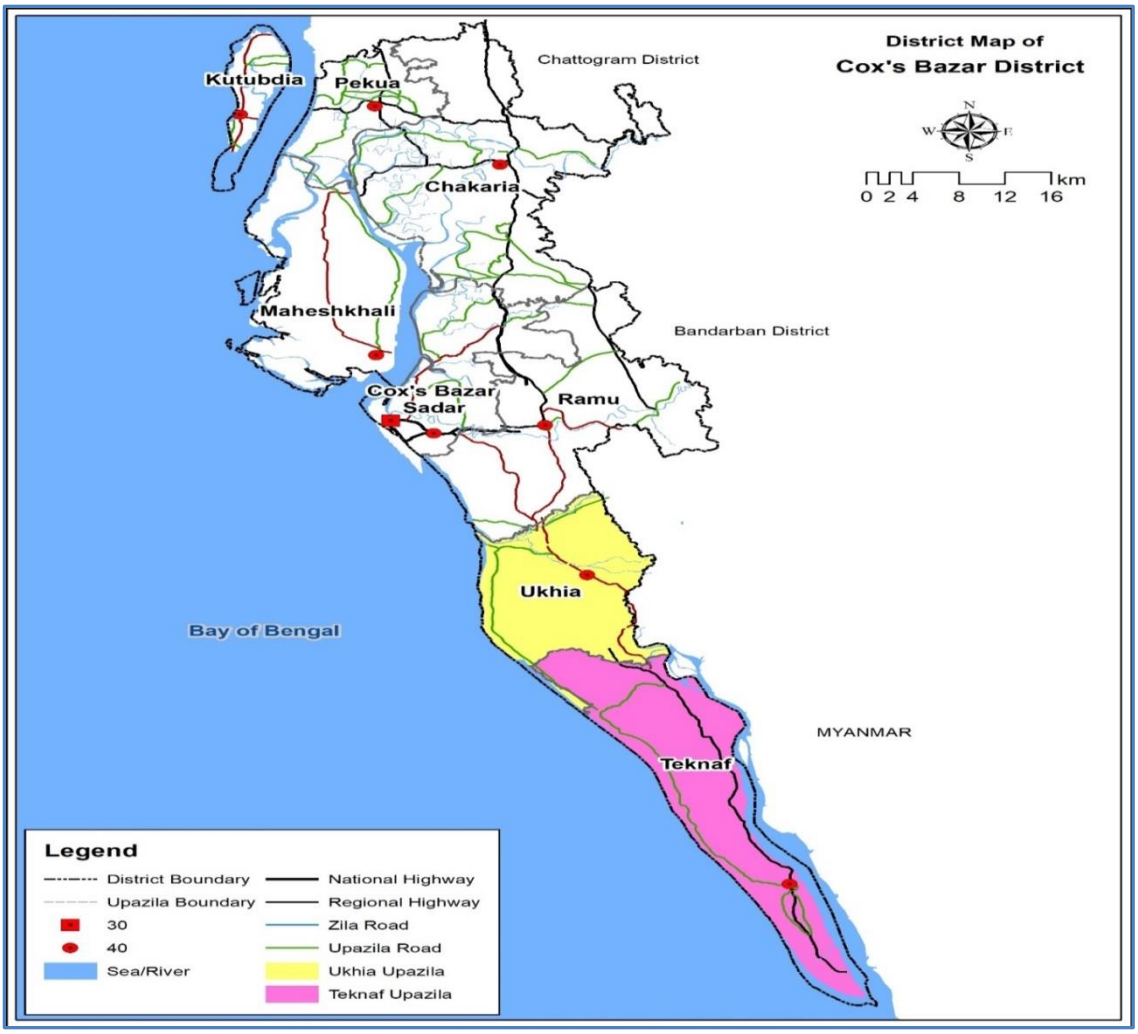


Figure 1.4.1: District Map with project location

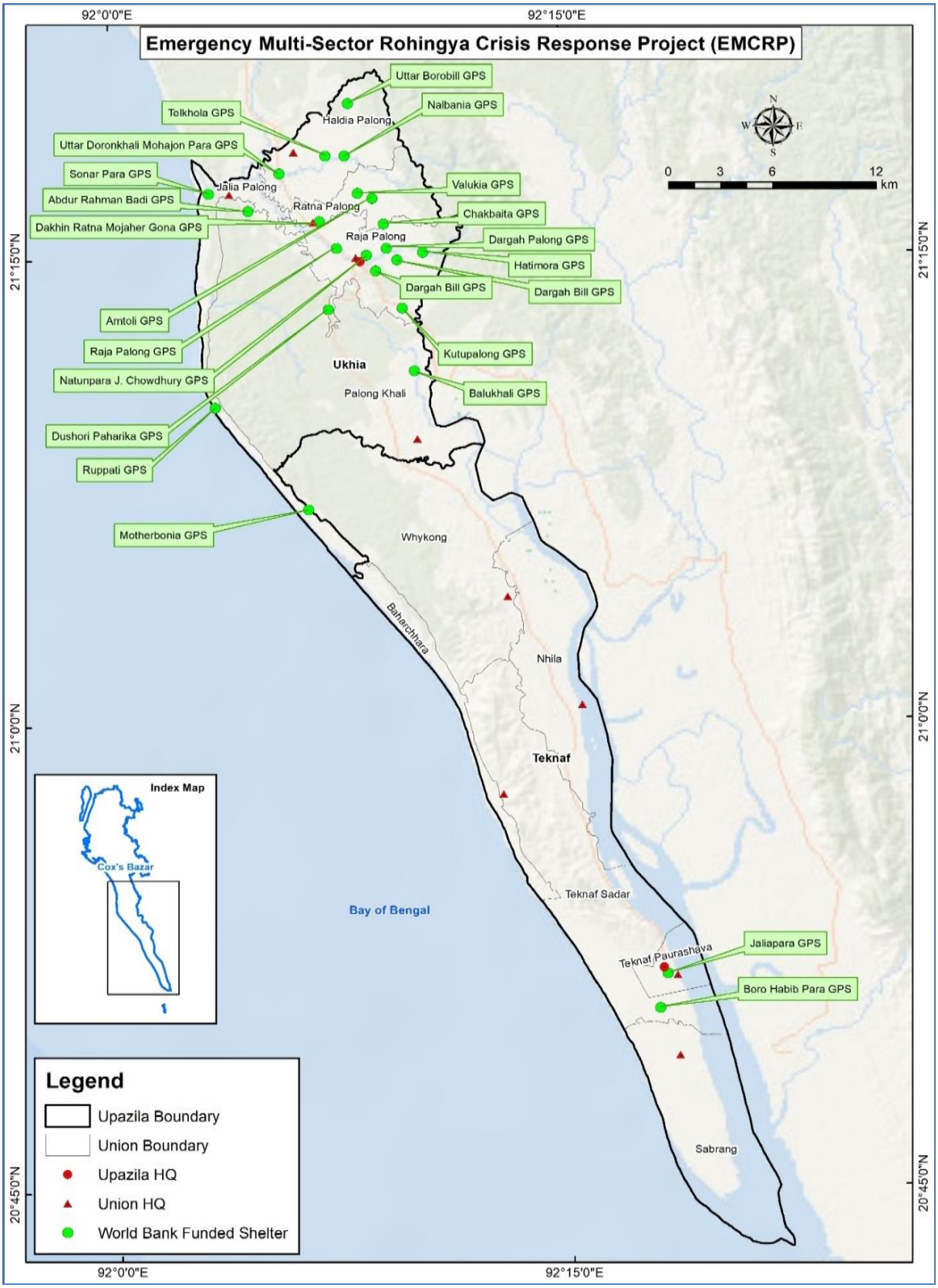


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

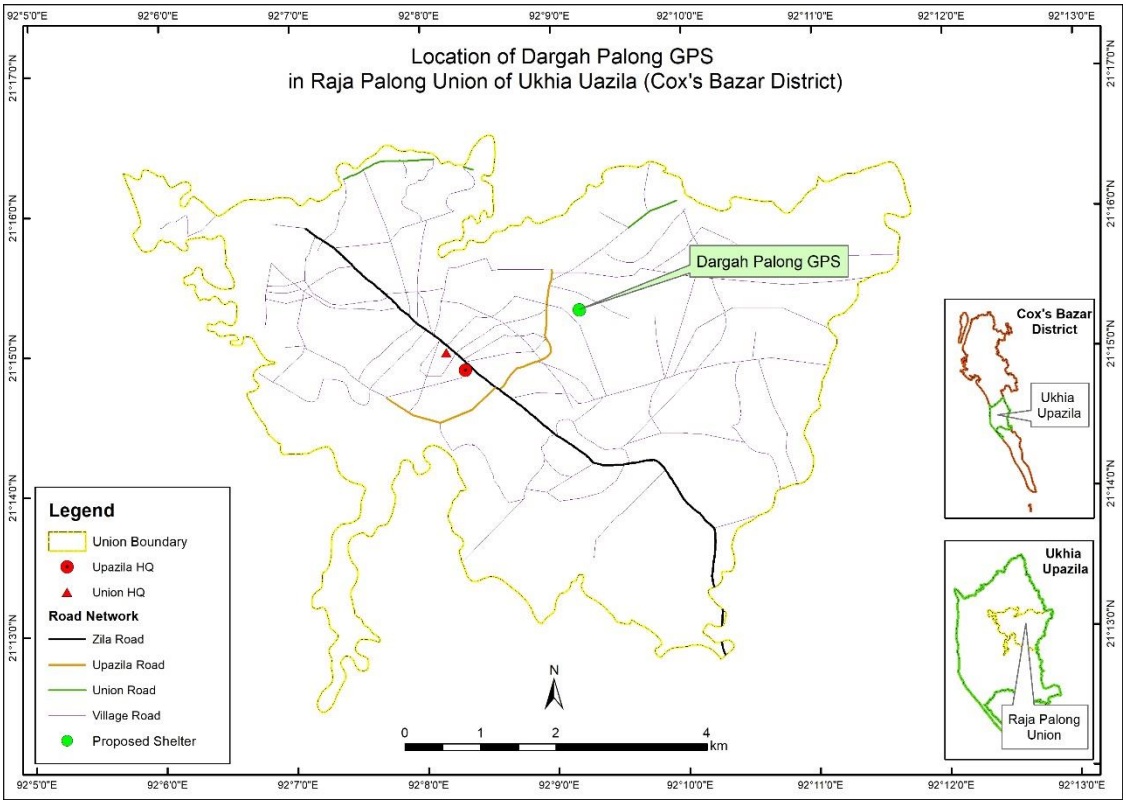


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area and location of construction area have been presented 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	Mosque (100m), Paddy land (40m), 10 nos. of Settlements (50m), roads(10m), Graveyard (500m)
South side	Shikdar Beel (1km), Chhora (500m), paddy land (50m), Mosque (500m)
East side	10 nos. of Settlements (50m), Agricultural land (20m)
West side	Paddy land (20m), Mosque (1km), Pond (150m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 04 November 2019 in and around the Sub-project 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 16 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-5** for selected photographs of the participatory public consultation held at site of the Dorgahpalong GPS and list of attendees in that public consultation meeting, respectively. In addition, several walk-through informal group consultations were also carried out. 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 free/ 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 and concerns 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 classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate spaces for cattle or livestock.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 05 November 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. Within the close proximity of the proposed construction site, agri/paddy land on all four sides (20-50m), a mosque (100m) on the north and a road (10m) is located. One depressed area, named Shikdar beel is located at 1.0 km south of the sub project and another small Chhora is found at 0.5 km south of the sub-project area. Some human settlements are found on south-east side of adjacent school boundary. As the school premises are spacious enough to contain most of the adverse impacts from the surrounding areas, significant disturbance to all important establishments/features is anticipated to be very unlikely, and yet 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. will particularly be followed. 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. Vibration effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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 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. In fact, forests would protect those lands from high wind and storm surges, whereas demolishing the trees has made the area more vulnerable.

Together with the above mentioned hazardous situation and sudden extraction of huge amount of groundwater from about 150 feet below the ground has made water availability 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

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

specific measures including tree planation in sub-project areas, rainwater harvesting from every disaster shelters, 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.

The impact of cyclone and precipitation has higher burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone has been seen to have increased in the past few years. Salinity has not been found in the vicinity of the subproject. Cyclonic storm surge has high impact in the area. Temperature has increased and thus has medium impact on the area and Thunder storm has been seen to have increased and is found to have the highest impact in the area. Water stagnation has not been found. Drainage channel has not been found in the area.

As compared to the entire district area or a 50km resolution for model simulation and estimation, the sub-project site is a very tiny point for impact generation, 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 ~~for~~ the construction of the shelters. 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. Also construction of storm water drainage system is suggested to be incorporated.

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 Environmental Management Plan (EMP) is to formulate measures which will mitigate adverse impacts on various environmental components, which have been identified during observation and protect environmental resources where possible and enhance the value of environmental and social components where possible. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some matured vegetation is found on the southern side. Due to the construction activities of this Sub-project, no trees will be cut down. Further, a pond is found at 150m west side and two clusters of human settlement is found at 50m distance from the sub-project area, which might get affected during the construction period with the generated debris and dust, though for a small duration. Agri and paddy lands around the proposed site might get affected by the dust and air pollutants, and accidental spillage of oil/chemicals to be used during the construction period. Contractor must adhere to the best practice management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effects 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety during the construction period, that need to be minimized through the management plan. Moreover, post disaster health, safety and flood management problems are common and should be taken into consideration.
- The project will create employment for those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Dargahpalong GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Rajapalong

Name of Community/Local Area: Thaipalong

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 an existing school boundary. In school boundary a one storied school building is located on west side. A wash block found on west side of the school boundary. A 12 feet HBB road is passing by the north-west side and it is connected to Cox's Bazar- Teknaf highway. There is an old structure on west side which will be replaced by the proposed new multipurpose school building within the same boundary. No Important environmental feature is found within the sub-project. Some human settlement and agricultural land is found adjacent to the north-western side of the school boundary.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is 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 for 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 among the communities. Shelters were extremely important to them as, they were very much vulnerable to cyclones. They also requested to keep have provision of post-disaster services and facilities in respect to disease 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 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 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 of an old building. The types of wastes are wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic, human wastes including kitchen wastes might be generated in labor camps.

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. There are 3 mosques located around the subproject area. A mosque located at 100m north. Another mosque located at 1km west and the third one located at 500m south. A pond located at 150m west of the subproject. 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. A graveyard located at 500m north.

Some human settlements and patches of vegetation are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration routes near about 4 km away from this site.

Instructions: Attach completed environmental and social screening forms with this form.

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 and flashing over by the potential tidal surge during cyclonic events, 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. 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 Rajapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21^0 15' 17.50"N and 092^0 09' 12.0''E. The distance from the Upazila headquarter is about 5 km. Nearby major road is Cox's Bazar- Teknaf highway, distance is 5km from the sub-project site. The school code is .41201040

Land ownership
GPS

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 are a one story building being used for classrooms, There is an old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

A depression named Shikdar bill is located on 1.0 km south of the sub project and another small Chhora is situated on 0.5 km south of the sub-project area. There are 3 mosques located around the subproject area. A mosque located at 100m north. Another mosque located at 1km west and the third one located at 500m south. A graveyard located at 500m north but there is no chance to disturbance during this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Some human settlements are found at 50m east side of adjacent school boundary. But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

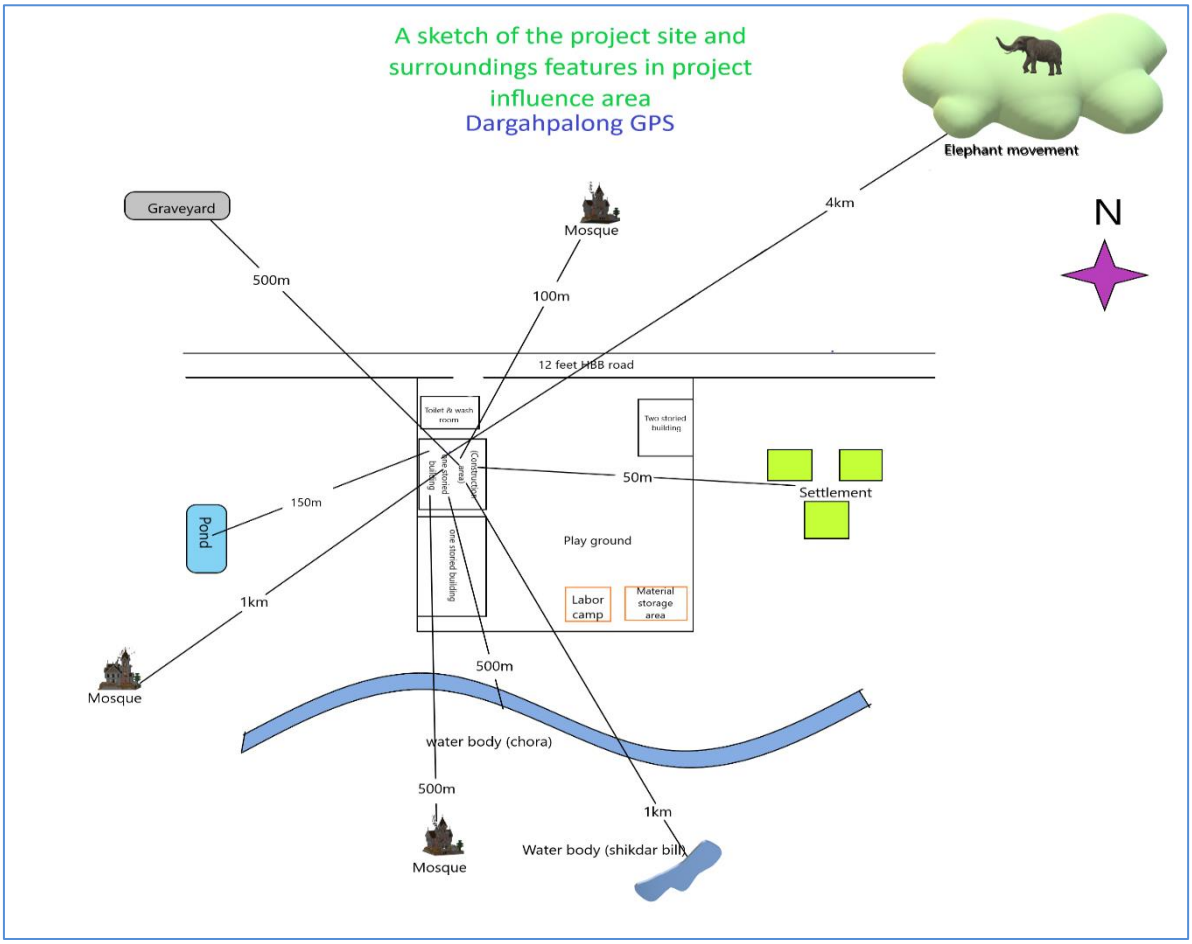
Section B: Environmental Screening

***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:

There are 3 mosques and a graveyard is found in the catchment area. One mosque named West Dorgahbill jame mosque is located at 500m south, another mosque named East Shikdar Beel jame mosque is situated at 1km west and the last one is situated at 100m north of the subproject. A graveyard is located at 500m north west of the subproject. But all those are more likely to be free from any impacts generated by the sub-project construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as mini truck, motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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/ preventable by mitigation measures.

Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 in 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 shallow tube-well is found within the school boundary and its depth is about 200 feet. But the tube well is not working properly. Students are suffering problem due to lack of water. In the sub-project area, deep groundwater is sweet and arsenic free. Shallower aquifers having depth around 100 feet. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. A pond (150m) found near the sub-project area for fish cultivation. 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: Patches of vegetation containing large and matured trees on the west and eastern side of the proposed construction areas are located within 200m radial distance.
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 HBB road is passing on north side of adjacent the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials in construction side.
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 its depth is about 200 feet. But the tube well 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 not available into the school boundary. 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 south west side within the existing school boundary.

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 building material used in construction.
Identification of access road for transportation (Yes/No): About 12ft. wide HBB road is the main way for transportation of raw materials. It is located on north side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the south side within the existing school boundary. 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.): **Solid waste:** An old structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, tin, plastic. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced

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 6 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 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 an exact figures 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 land is required for the sub-project establishment. There is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 pond (150m) is found outside of the construction area, but 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 for 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)** Low. There are very low possibilities of stagnant water deposition in operation period.
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 project sites, and no known areas of ecological interest, except a pond located at 150 m west from the site boundary which will not be affected by any activities within the school premises. Though Shikdar Beel is located at 1 km South of the proposed site, it will not be affected due to a wider distance in between. There is, in fact, none of the activities usually taken place in a school site during the operation phase which may 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. The roads are mainly used for pedestrian access and 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 dust being dispersed around during the dry weather, and accidents may occur due to the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 (100m) and some settlements are located nearby the school boundary so labor camp needs to be set up in such a location that the mosque and settlements are 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 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.			
	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, below the ESMP table, to be followed by the contractor.	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
	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
	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.	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of	Before and during construct

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• 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.		materials transport vehicles.	ion 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 meter (dB)	Weekly
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of	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-	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		complaints from sensitive receptors, Heavy 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
	Workers 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	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
			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.		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
	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 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Dorgapalong 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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	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.	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 washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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 Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding 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. • 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35,000Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be install** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, **Water samples** to be collected periodically (half yearly) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

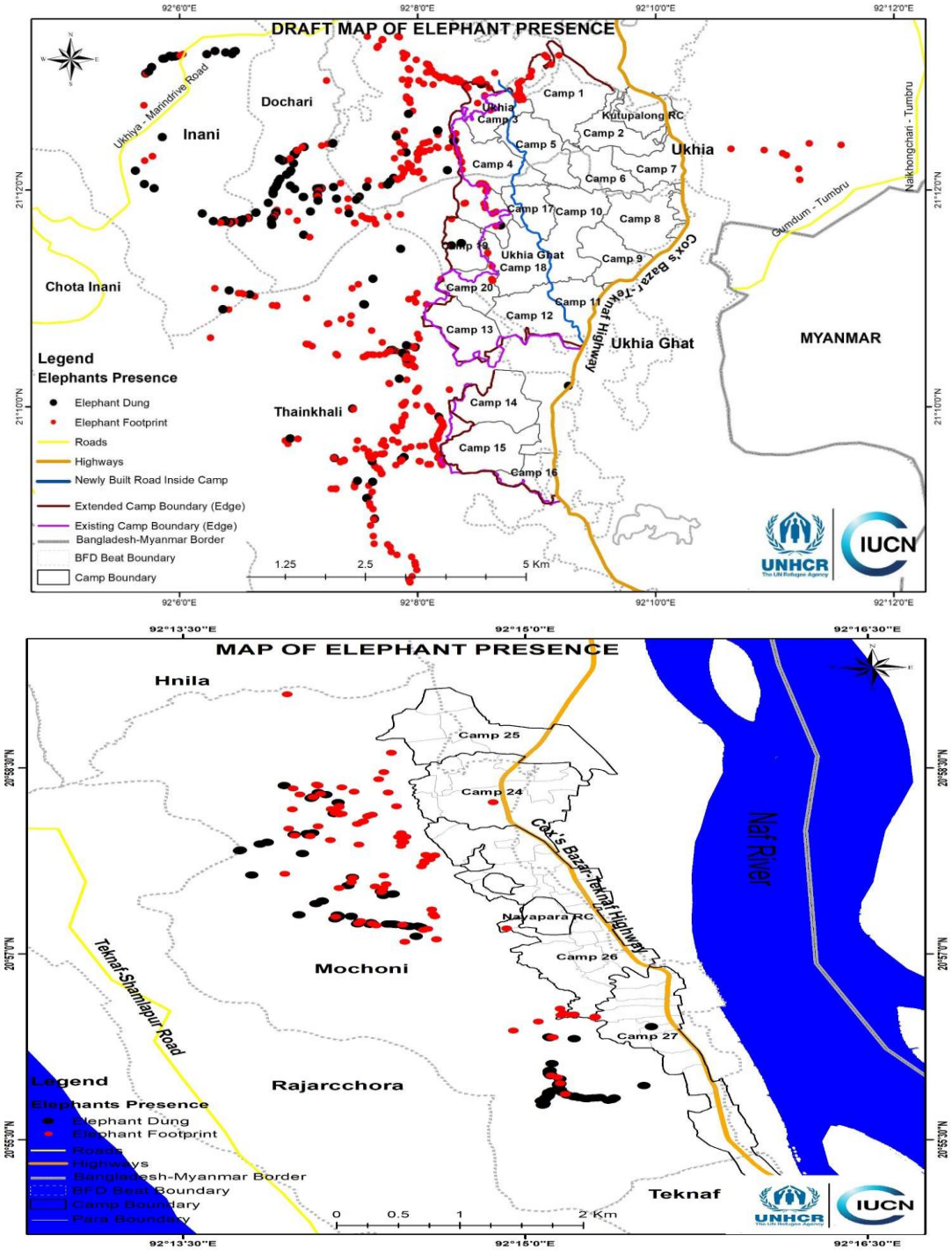
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

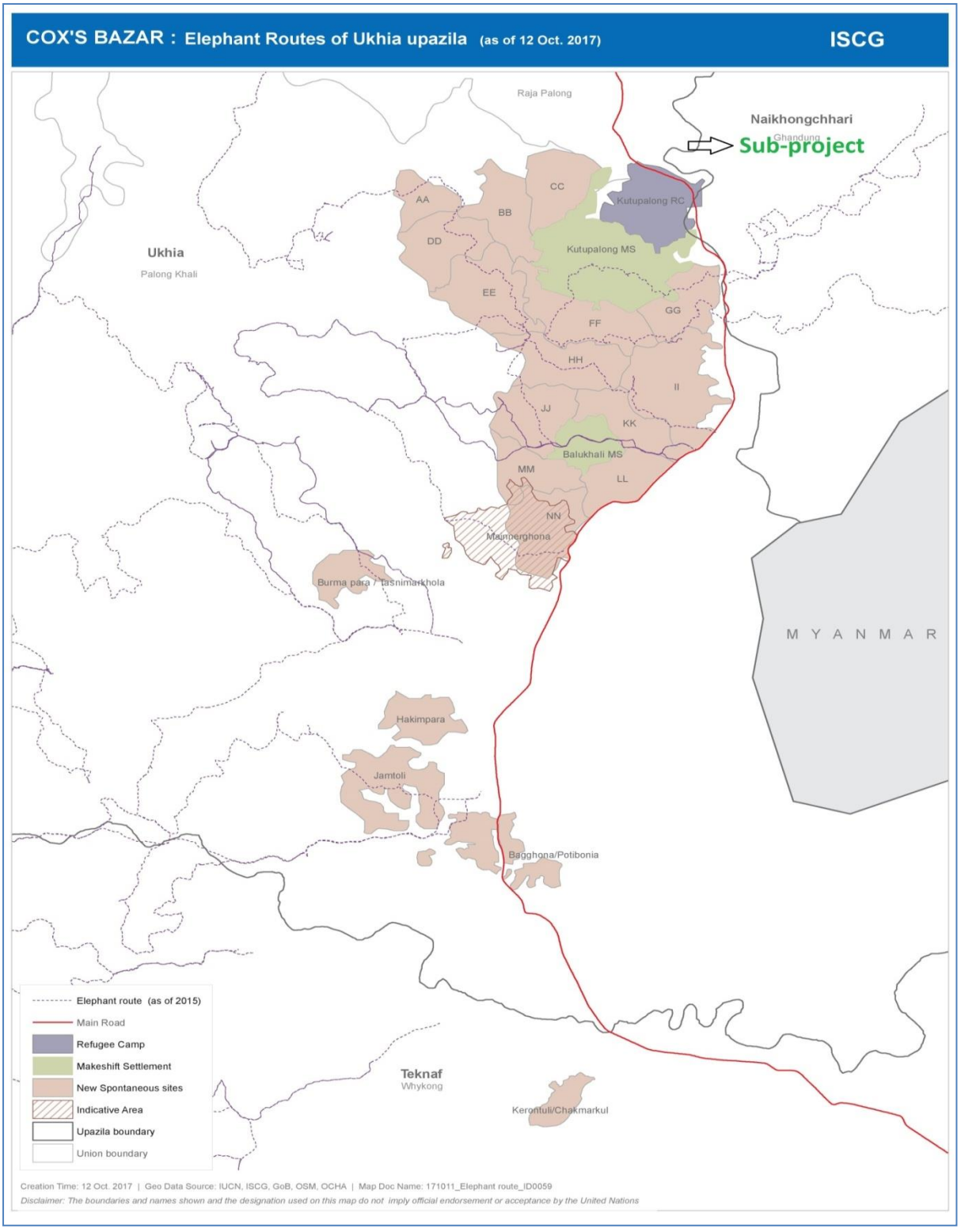
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:3:00 PM..... Date.....

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ Dargah Palong CCFS
মত বিনিময়ের তারিখঃ 05.11.19

কোড নংঃ
স্থানঃ Thaisalong
ইউনিয়নঃ Fatharalong
ডাকঘরঃ Ukhiya
উপজেলাঃ Ukhiya
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	তাহেরা বেগম	৩০	F	থাই পালং	
০২	তৈয়বা বেগম	৩৫	"	"	
০৩	জান্নাতুল ফেরদৌস	৩২	"	"	
০৪	ইছমত আরা জান্নাত	২৭	"	"	
০৫	কুলচুমা আক্তার	৩৩	"	"	
০৬	মোঃ ইমমান গনি	৫০	M	"	
০৭	সৈয়দ আলম	৩৫	"	"	
০৮	আবদুল মাজেদ	৪৭	"	"	
০৯	ফকির আহমদ শিকদার	৩৭	"	"	
১০	ফরিদা বেগম	৪০	F	"	
১১	খুরশিদা বেগম	২৭	"	"	
১২	আয়েশা আক্তুন	৩২	"	"	
১৩	আলোয়ারা বেগম	৩৭	"	"	
১৪	খুরশিদা বেগম	৪০	"	"	
১৫	সাহাব উদ্দিন	৪৭	M	"	
১৬	মোহাম্মদ ইসলাম	৩৩	M	"	

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Dhushori Paharika Govt. Primary School

Educational Institution ID: 412010401
Village: Dhusori; Union: Rajapalong; Upazila: Ukhiya;
District: Cox's Bazar
April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 have 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 and 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 objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Rajapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Changkhola, Vulboiyyar guna, Posshim kul Dhushori and Jaraitola. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 500 households, containing 3000 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and proposed disaster shelter features have been tabulated in Table 1.3.1 and 1.3.2.

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

Name of the sub project	Dhushori Paharika GPS
Educational Institute ID	412010401
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land available	50 decimal
Catchment household	500
Catchment Population	3000 (Male: 1500, Female: 1500)
Profession	Farmer 55%, day labor 30%, businessman 5% and others 10%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Changkhola, Vulboiyyar guna, Posshim kul Dhushori and Jaraitola
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BFS road is passing by the subproject side
Land acquisition	Not required

[Field survey, 2019]

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

Dosori Paharika 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)	200

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 Ukhiya 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 HBB road, which is connected to the Cox's Bazar-Teknaf Highway. Dhushori mosque is situated within 100 m reaches of the proposed site. A khal named Dhusori khal is located at 100m west of the subproject. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location of Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
GPS position	21°13' 20.6"N and 92° 07' 14.50"E
Distance from Upazila HQ	4.00-5.00 km
Nearby major road	Dhushori road
Nearby river/canal	A khal named Dhushori khal is located at 100m west side of the subproject
North side	Ramu upazila
South side	Teknaf Upazila
East side	Naf river and Naikhyungchori Upazila of Bandarban District
West side	Bay of Bengal

[Sources of data: Field survey, 2019 & LGED, 2015]

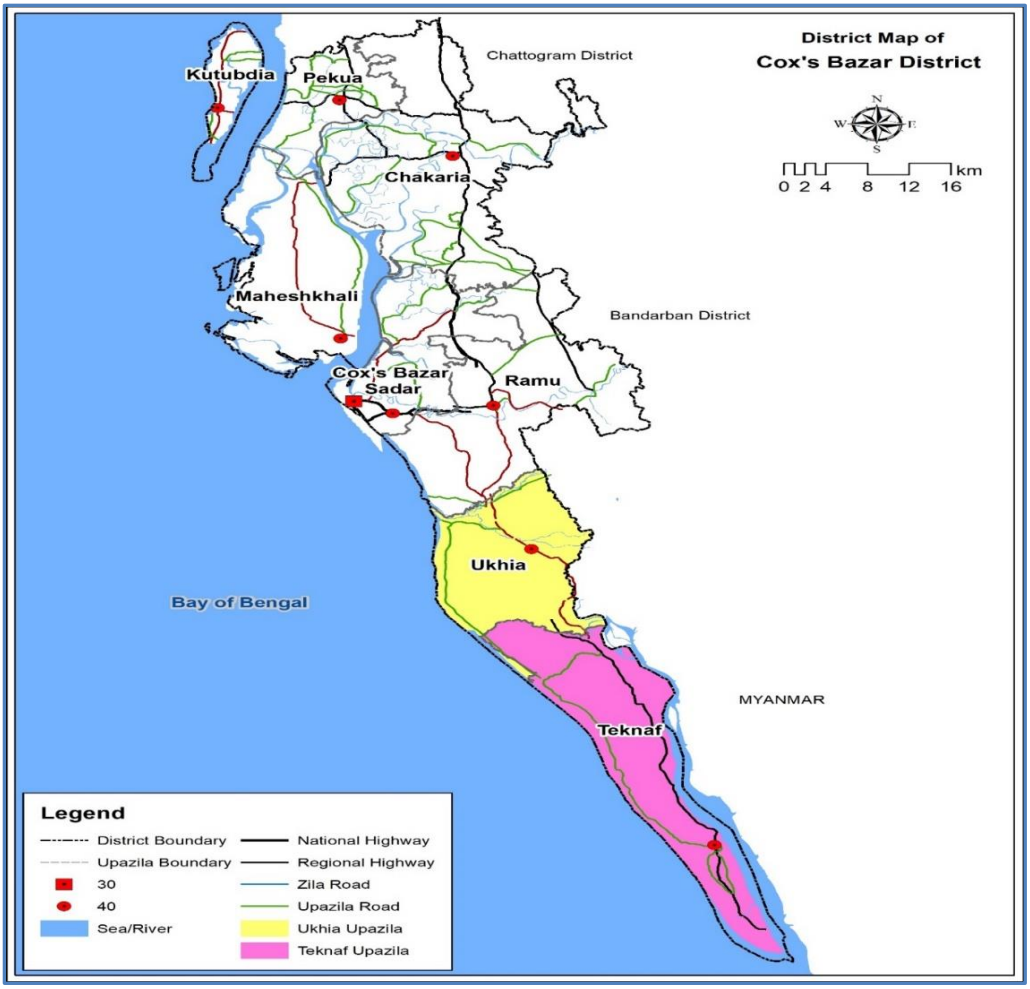


Figure 1.4.1: District Map with project location

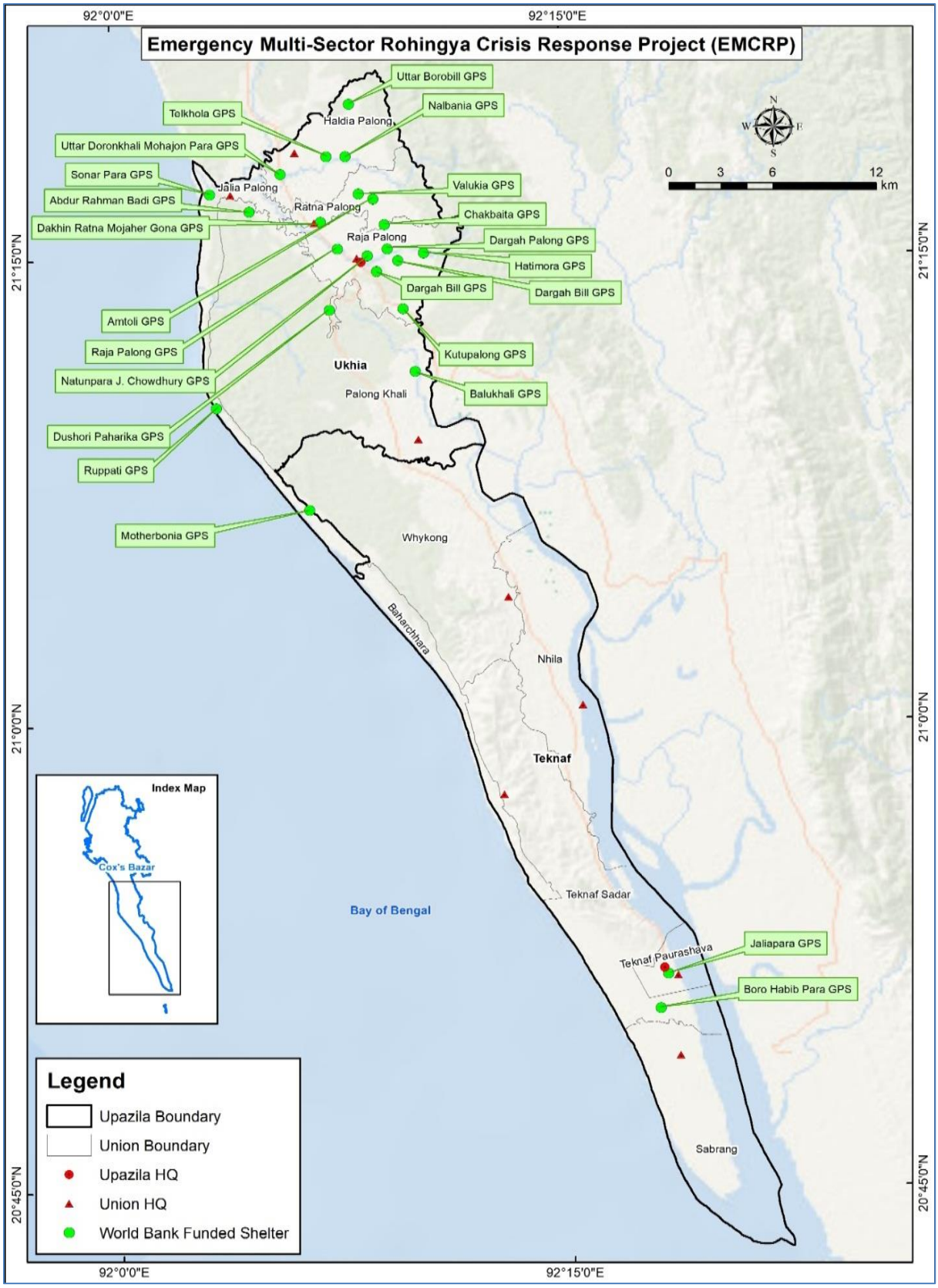


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

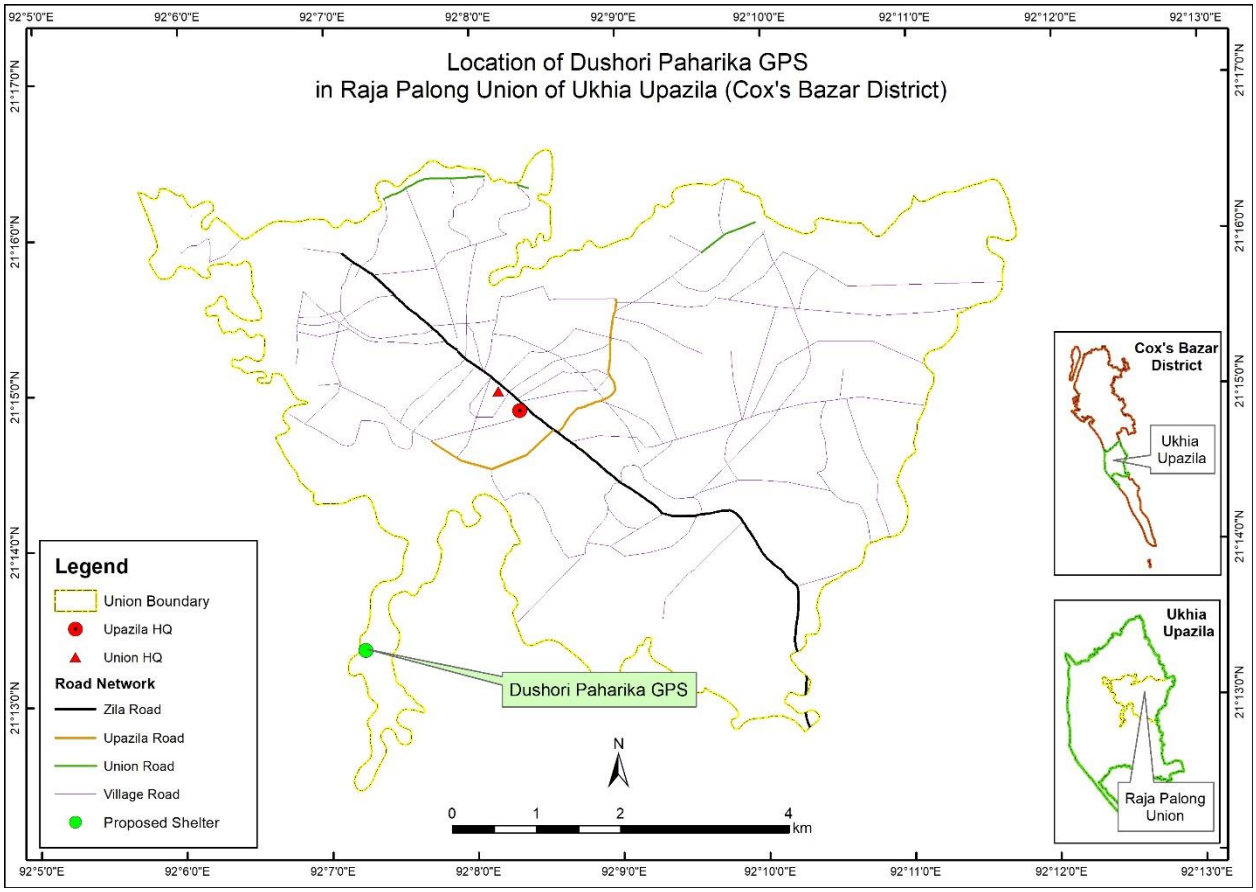


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area 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	Open field (20m), agricultural land (50m)
South side	Agricultural land (40m), Mosque (100m)
East side	Open field(20m), 5 nos. of settlements (50m), mosque (40m)
West side	Road (20m), agricultural land(40m), Dhushori khal (100m)

[Sources of data: Field survey, 2019]



Figure 1.4.1: Present condition of the Sub-project area



Figure 1.4.2: Location of 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 22 December 2019 in and around the Sub-project 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 35 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-5** for selected photographs of the participatory public consultation held at site of the Dhushori Paharika 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 free/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 disasters such as cyclone, flood etc. So, a disaster 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 classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Lack of adequate spaces for cattle or livestock.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.

- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 22 December 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. One khal named dhushori khal is located at 100m west of the sub project. A mosque named Dhushori mosque is located at 100m south of the subproject. Another mosque is situated at 40m east of the subproject area. Some human settlements are found on east side of sub-project 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 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. 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routes and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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, as 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 from about 150 feet below the ground has made water availability 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.

Together with the above mentioned hazardous situation, again due to 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] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf

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 ensamble 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 impact of cyclone and precipitation has higher burden in this area, Intensity of precipitation have been increased according to the participants in consultation meeting and frequency of cyclone has been seen to have increased in the past few years. Salinity has not been found in the vicinity of the subproject. Cyclonic storm surge has medium impact in the area. Temperature has increased and Thunder storm has been seen to have increased and is found to have highest impact in the area. Water stagnation has not been found. Natural drainage channel has been found in the vicinity of the school area.

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 ~~for~~ the construction of the shelters . 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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the southern side. Due to the construction activities of this Sub-project, 3-4nos. 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. A mosque named Dhushori mosque is located at 100m

south of the subproject. Another mosque located at 40m east of the sub-project. There is a khal named Dhusori khal found at 100m west side. Further, some human settlements are found on east side of sub-project area might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 as a result of location, design, construction, and/or operation 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, public health 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 health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come by 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 those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Dhushori Paharika GPS)

Name of Sub-Project: Construction of 10 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W12)

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

Estimated total cost of sub-project (in Taka):

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Rajapalong

Name of Community/Local Area: Dhushori paharika

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 an existing school boundary. A one-storied school building is located on east side of the school boundary. A mosque named Dhushori mosque is located at 100m south of the subproject. Another mosque is situated at 40m east of the subproject area. There is a khal named Dhusori khal found at 100m west side. A hill is located at 400m northwest side. A 12ft BFS road is passing by the west side and it is connected to the Cox's Bazar- Tekhnaf highway. No Important environmental features are found within the sub-project. Some agricultural land is found on north side, adjacent to the school boundary. An open place is located at north side within school boundary. The new cyclone shelter will be constructed here.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 FBS road is passing near the sub-project area. There is a mosque found within the catchment area. 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. A khal named Dhushori khal is situated on west side of the sub-project area, but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements and patches of vegetation are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 8 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. 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 on 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 Rajapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°13' 20.6"N and 92° 07' 14.50"E. The distance from the Upazila headquarter is about 5 km. Nearby major road is Dhushori road. The school code is 412010401.

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 are a one story building being used for classrooms, and an open space found which will be used by the proposed new multipurpose school building within the same boundary.

One khal named dhushori khal is located at 100m west of the sub project. A mosque named Dhushori mosque is located at 100m south of the subproject. Another mosque is situated at 40m east of the subproject area. No disturbance is anticipated due to construction activities. Some human settlements are found on east side of sub-project area, but there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

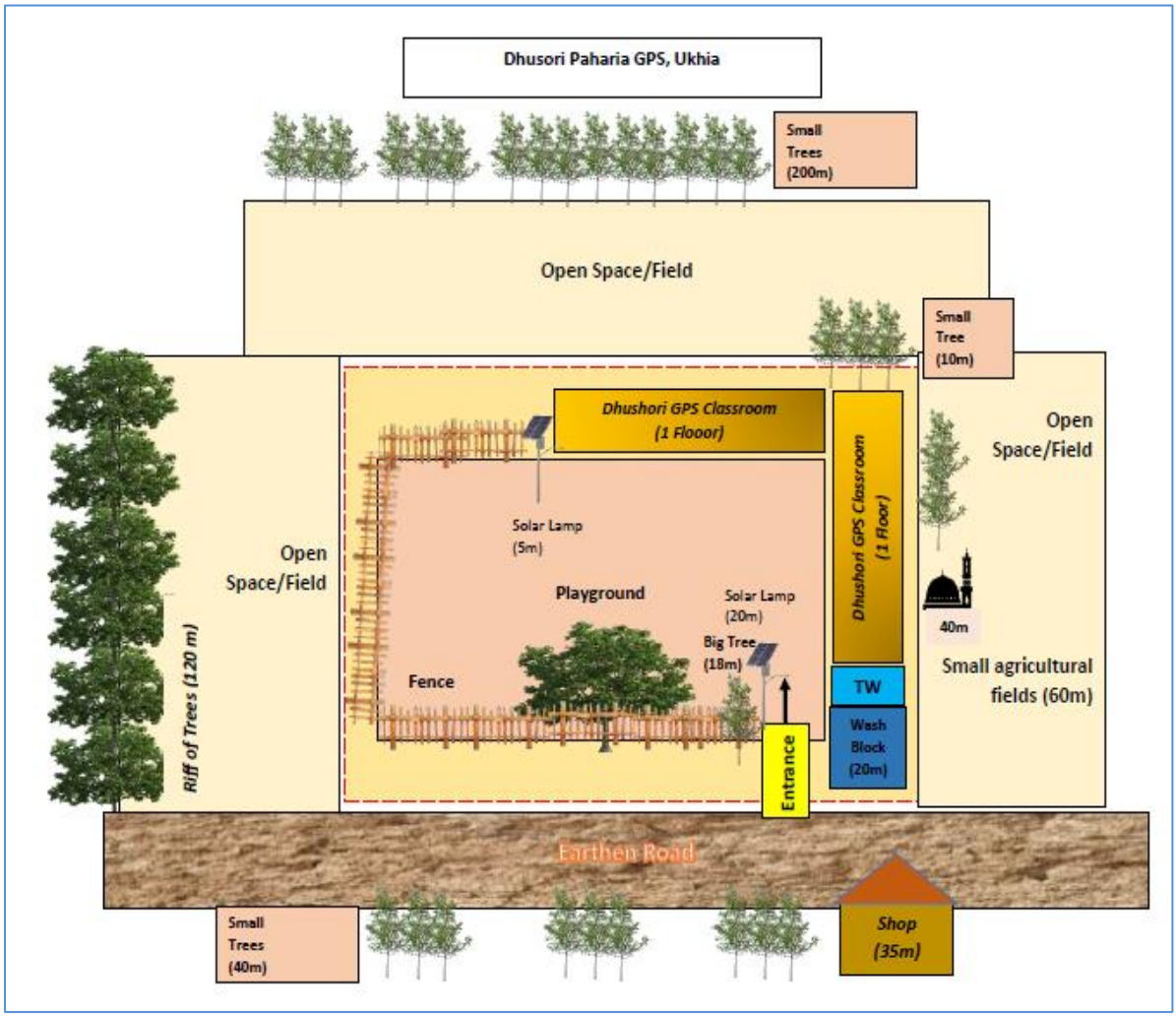
***B.1*: Environmental feature of sub-project location**

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:

There are 2 mosques located within the half km of catchment area. A mosque named Dhushori mosque is located at 100m south of the subproject. Another mosque is situated at 40m east of the subproject area but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 in 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. A deep tubewell is found within the school boundary. The depth is about 400 feet. In the sub-project area, deep groundwater

is salt and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-600ft (Field survey, 2019). 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: Patches of vegetation containing large and matured trees on the north and western side of the proposed construction areas are located within 200m radial distance.
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 BFS road is passing by the west side of the sub-project. It is connected to Cox's Bazar-Teknaf 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: A deep tubewell is found within the school boundary and depth is about 400 feet. But the tubewell is not working properly in dry season But the tubewells are 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 already available into the school boundary. 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 northeast side within the existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 12ft. wide BFS road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the north side within the existing school boundary. 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.): **Solid waste:** During construction period solid waste will be generated. **Type**: wood, copper wires, concrete, iron, plastic etc. **Quantity:** It is difficult to give exact figures of waste produced on a typical construction site.

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 6 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 6 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 an 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 land area is required for the sub-project establishment. There is relatively dense vegetation around the sup-project area. The vegetation will not be affected

by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 (100m west) is found outside of the construction area, but 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 muddy 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 for 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, except a khal located at 100 m west from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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. The roads are mainly used as pedestrian access and light vehicles like bicycles, three wheelers etc. therefore, during construction works 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 the bad condition of the access road and unsafe driving through it. A mitigation measure will be provided in EMP for this unwanted impact.

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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 named Dhushori mosque is located at 100m south of the subproject. Another mosque is situated at 40m east of the subproject area and there is a khal named Dhusori khal found at 100m west side of the school boundary so labor camp needs to be set up in such a location that the mosques and other settlements are 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 substances i.e. oil, paint, chemicals,	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.	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
	bitumen etc., Risk of crime, Access of students, children, animals, etc.)		• 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 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. • 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 barriers, Noise Level	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.		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 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 (There are no protected areas in or around subproject sites, and no known areas of	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	Contractor, environmental specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	ecological interest.)		removing and damaging any flora (plant/vegetation) and fauna.		from sensitive receptors	
	Workers 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 separately.	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
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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Dosori Paharika 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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	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.	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 washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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 Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding 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. • 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 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	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 around 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.	@3500 tk 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) for one Tube well of this shelter 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) as desired by E.I.C.	Total 3 nos. of sets of tests need to be conducted during construction period @Tk. 13,800.00	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
		each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

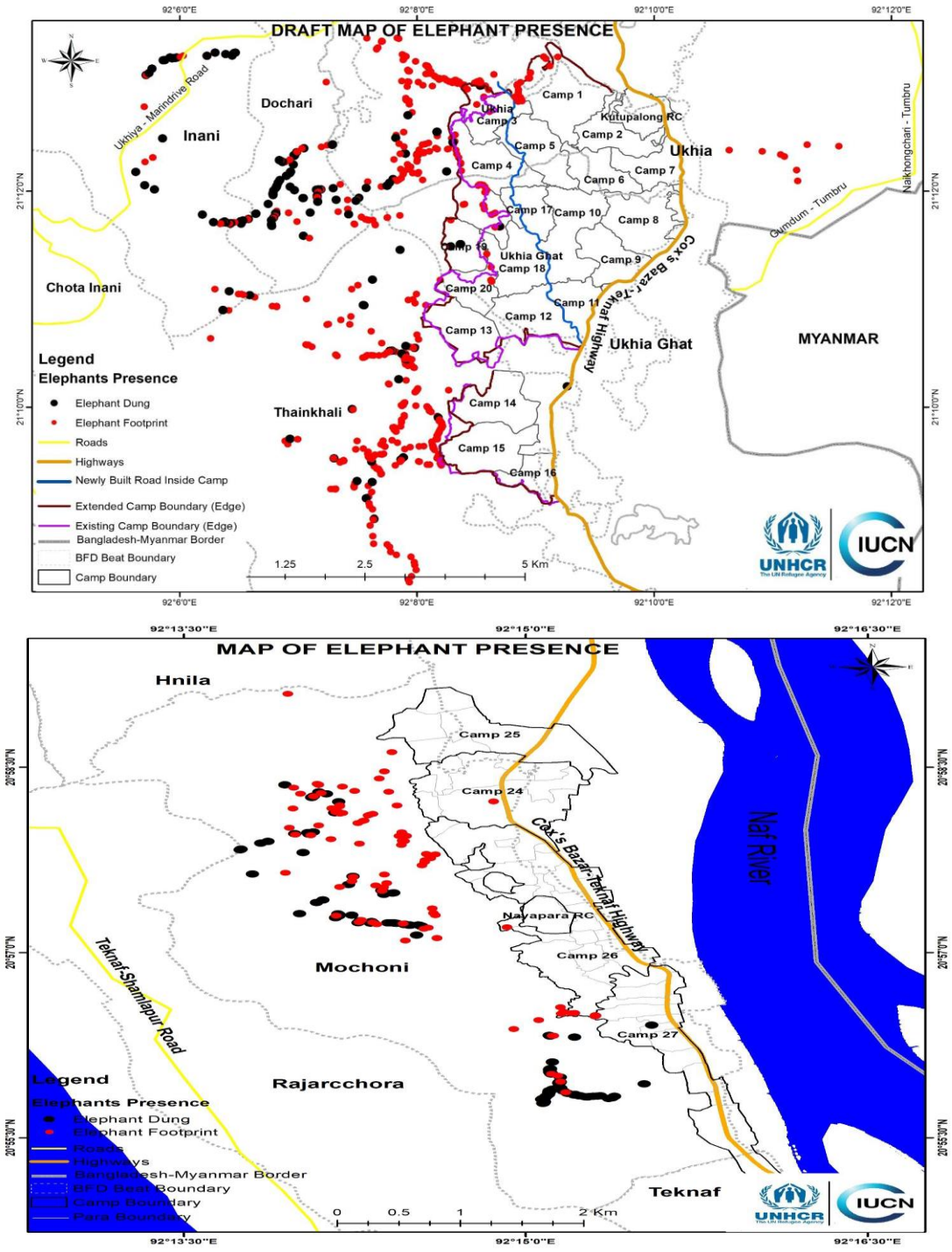
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

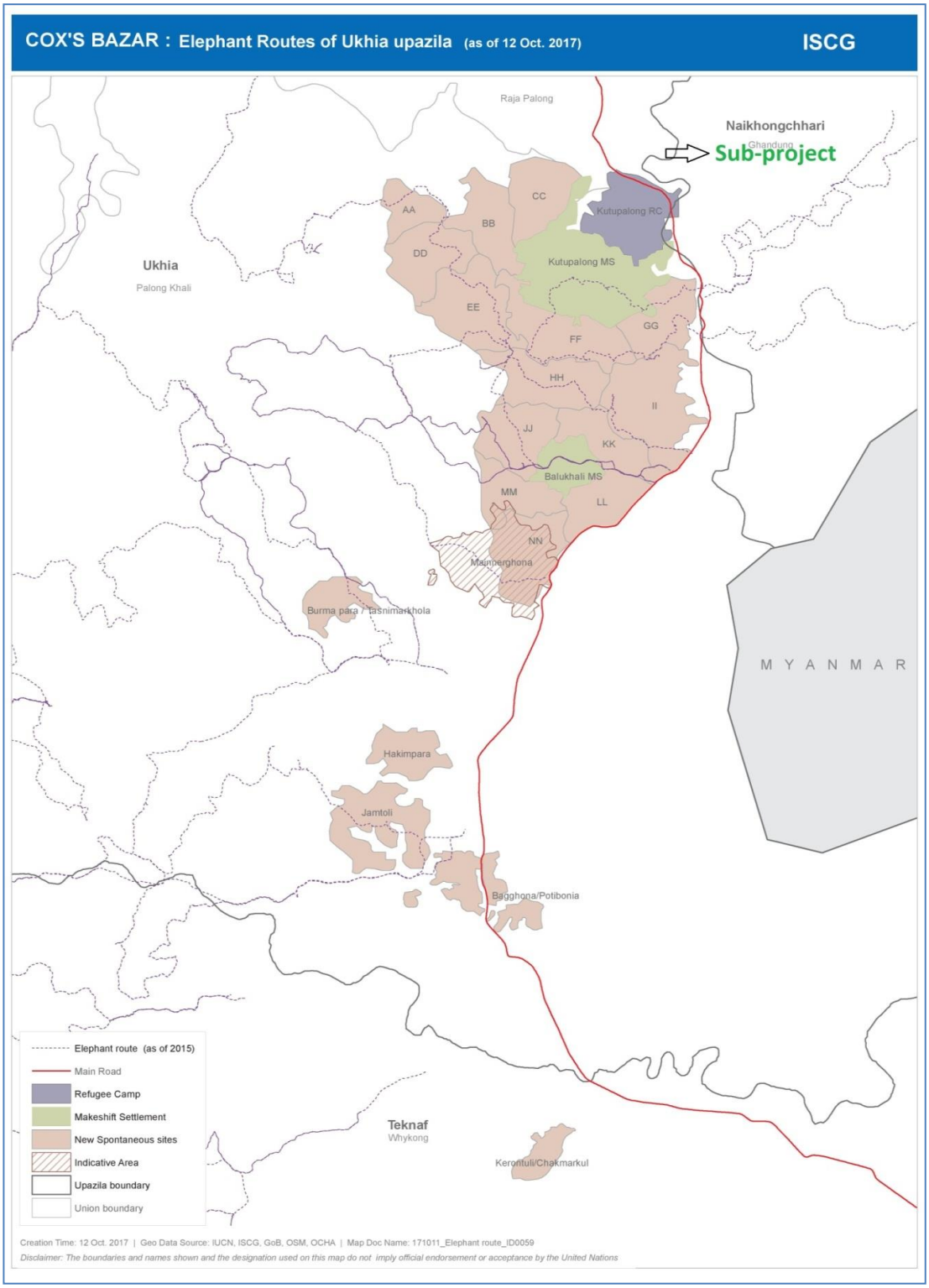
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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

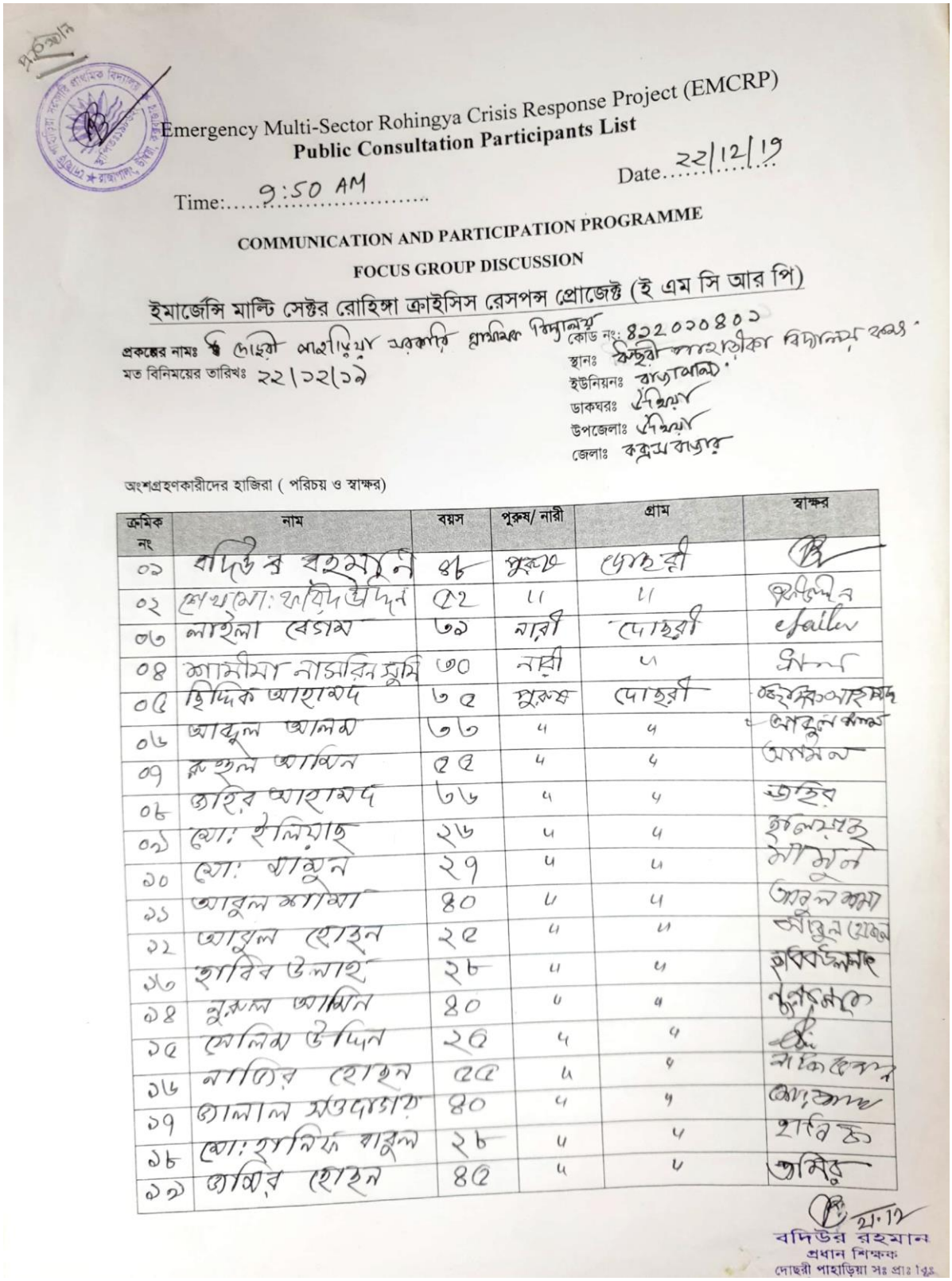


Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5



Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time: 9:50 AM Date: 22/12/19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ দোছরী পাহাড়িয়া সরকারি প্রাথমিক বিদ্যালয় কোড নং: 822020802

স্থানঃ দোছরী পাহাড়ীকা বিদ্যালয় বরফ

ইউনিয়নঃ বাজালিয়া

ডাকঘরঃ দীঘলিয়া

উপজেলাঃ দীঘলিয়া

জেলাঃ কক্সবাজার

মত বিনিময়ের তারিখঃ ২২/১২/১৯

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	বদিউর রহমান	৪৮	পুরুষ	দোছরী	
০২	মোহাম্মদ ফরিদউদ্দিন	৫২	"	"	
০৩	লাইলা বেগম	৩৯	নারী	দোছরী	
০৪	আমিমা নাসরিন সুমি	৩০	নারী	"	
০৫	হিদিক আহাম্মদ	৩৫	পুরুষ	দোছরী	
০৬	আবুল আলম	৩৩	"	"	
০৭	রুহুল আমিন	৫৫	"	"	
০৮	জাহির আহাম্মদ	৩৬	"	"	
০৯	মো: ইলিয়াছ	২৬	"	"	
১০	মো: মামুন	২৭	"	"	
১১	আবুল কাশেম	৪০	"	"	
১২	আবুল হোছন	২৫	"	"	
১৩	হাবিব উল্লাহ	২৮	"	"	
১৪	নুরুল আমিন	৪০	"	"	
১৫	ফেলিস উদ্দিন	২৩	"	"	
১৬	নাজির হোছন	৫৫	"	"	
১৭	জালাল সওদাগর	৪০	"	"	
১৮	মো: হানিফ বাবুল	২৮	"	"	
১৯	জাফির হোছন	৪৫	"	"	

বদিউর রহমান
প্রধান শিক্ষক
দোছরী পাহাড়িয়া সঃ প্রাঃ বিঃ

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
Public Consultation Participants List

Time:..... Date. 22.12.2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ দোহরী পাহাড়িয়া সরকারি প্রা: বি: কোড নং: ৪২২০২০৪০১
মত বিনিময়ের তারিখঃ ২২/১২/২০১৯ স্থানঃ দোহরী
ইউনিয়নঃ রাজাপালং
ডাকঘরঃ উখিয়া
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

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ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	নুরুল আমিন	১৫	পুরুষ	দোহরী	আমিন
২১	মো: আবু নাহের	২০	৫	৫	আবুনাহের
২২	সাদেক হোছেন	২২	৫	৫	সাদেক
২৩	ছৈয়দ হামজা	৩৫	৫	৫	ছৈয়দ
২৪	আলমগীর	২০	৫	৫	Alamm
২৫	জসিম উদ্দিন	২০	৫	৫	জসিম
২৬	মো: কামাল	২৫	৫	৫	Kamal
২৭	ছৈয়দ আলম	২৬	৫	৫	ছৈয়দ আলম
২৮	জয়নাল উদ্দিন	২৮	৫	ছৈয়দোলা	জয়নাল
২৯	নাজির উদ্দিন	২৫	৫	৫	নাজির
৩০	হবিবর আহাম্মদ	৩৮	৫	৫	হবিব
৩১	মো: বেলাল	৪৫	৫	দোহরী	হোসাইন বেলাল
৩২	তোরা মিয়া	৫০	৫	আমুলে	[illegible]
৩৩	মো: কাইজোহান	৪০	৫	৫	কাইজোহান
৩৪	আবুল কালাম	৪০	৫	৫	কালাম
৩৫	আবুল কাশেম	৪৫	৫	৫	কাশেম

২২.১২
রুদিউর রহমান
প্রধান শিক্ষক

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Motherbonia Govt. Primary School

Educational Institution ID: 99412010405

Village: Motherbonia; Union: Jaliapalong; Upazila: Ukhiya;

District: Cox's Bazar

April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Jaliapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Chefotkhali, Motherbonia and Chuyankhali. Typical rural settings of the area offer fisherman to be the prime professional engagement, while the farmer stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 500 households, containing 4000 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. 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	Motherbonia GPS
Educational Institute ID	99412010405
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
Owner of land	GPS
Catchment household	500
Catchment Population	4000 (Male: 2200, Female: 1800)
Profession	Fisherman 50%, Farmer 30%, businessman 5% and others 15%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Chefotkhali, Motherbonia, Chuyankhali
Tribal people	87 families tribal community (catchment area)
Connecting road	01 mud road is connected to LGED road
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Motherbunia 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)	200

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 Ukhiya 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 mud road of nearly 300 m in length, which is connected to the LGED road. Ershadul Ulum madrasa is situated within 100 m reaches of the proposed site. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location of Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) map and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
GPS position	21°06' 54.80"N and 92° 06' 29.7"E
Distance from Upazila HQ	30 km
Nearby major road	Cox's Bazar- Teknaf marine drive (LGED road)
Nearby river/canal	The Bay of Bengal is located at 1km west of the sub-project.
Boundary of the containing Upazila	Ramu upazila on the North,
	Teknaf Upazila on the South,
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

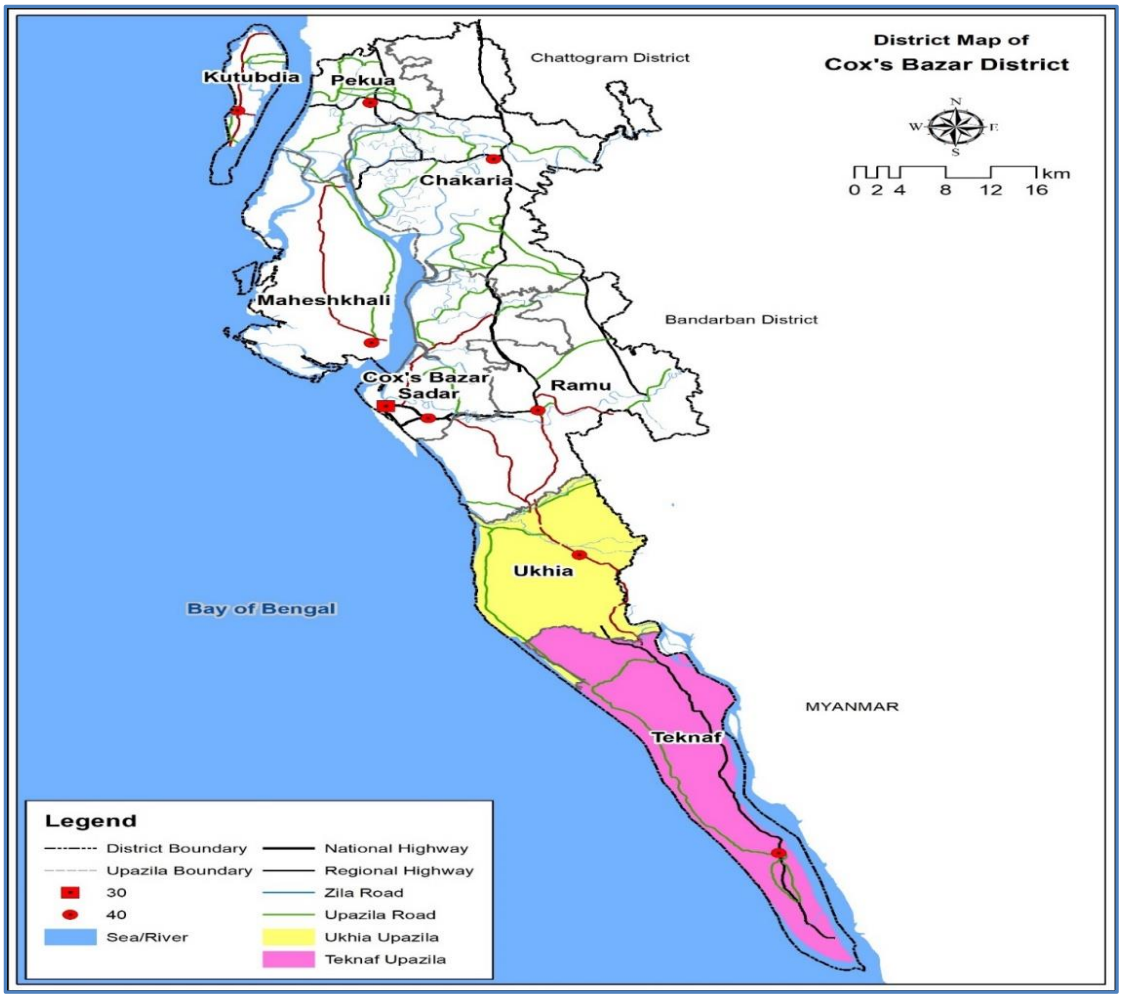


Figure 1.4.1: District Map with project location

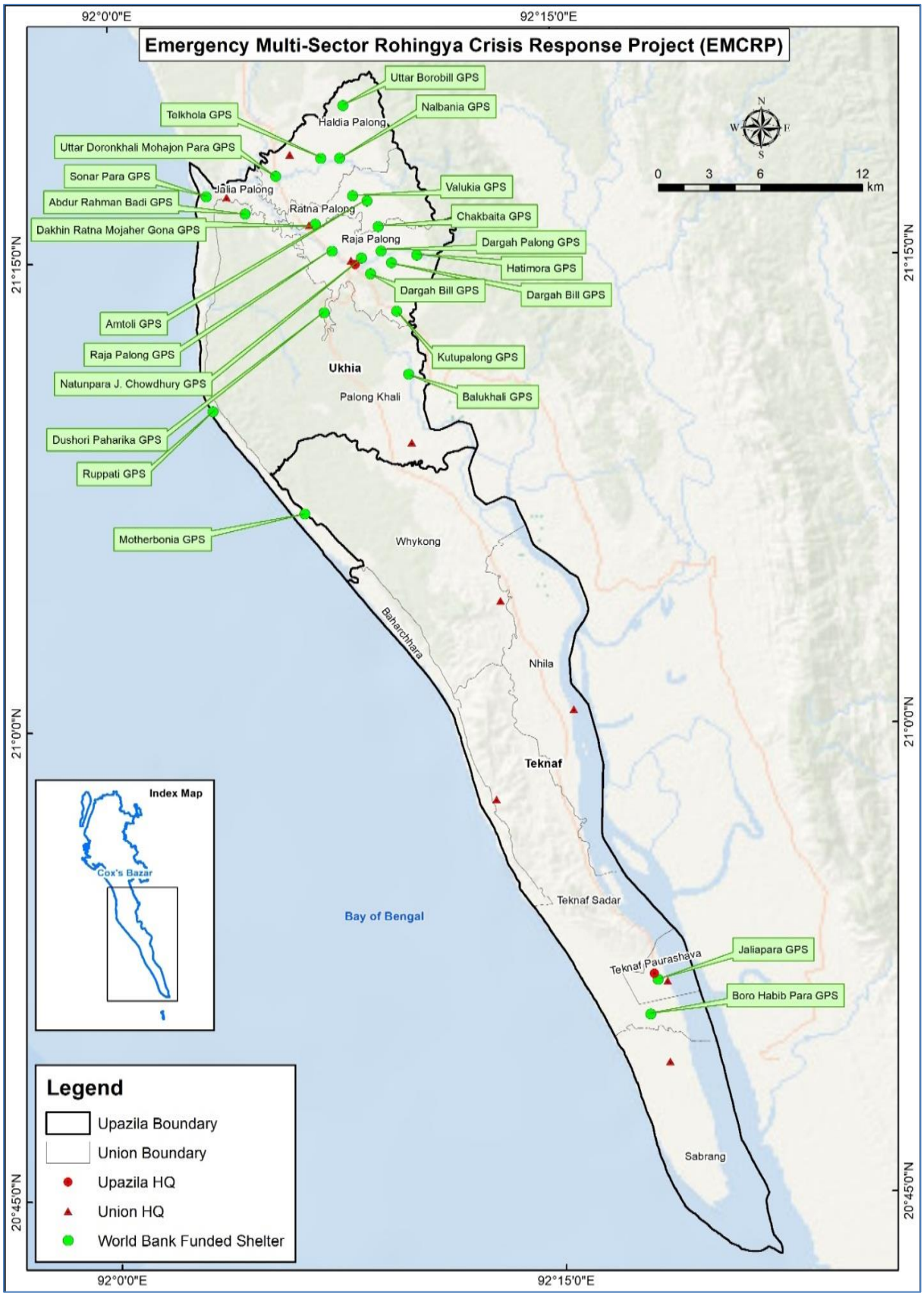


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

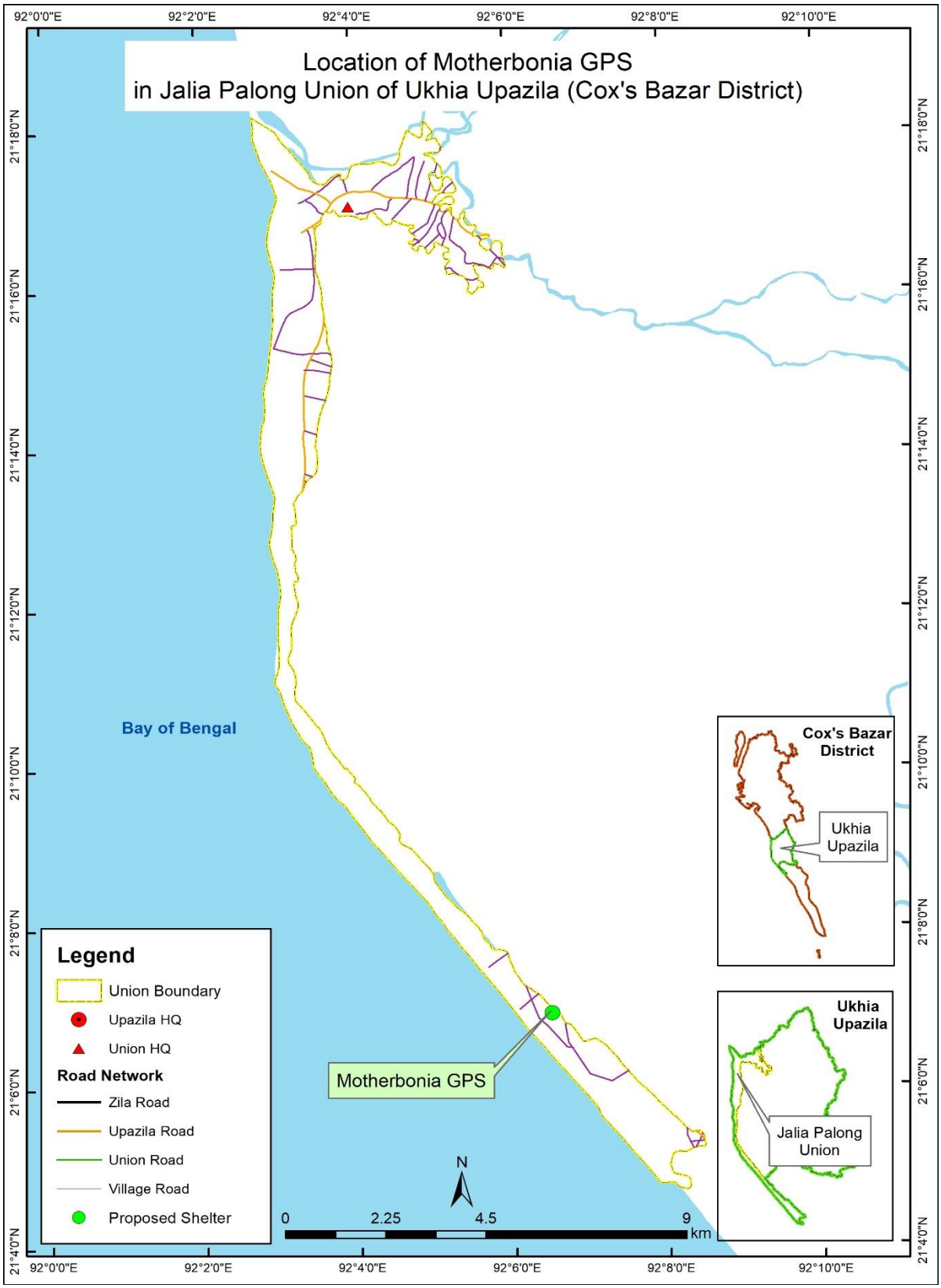


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area 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	7 nos. of Settlements (100m), Chakma pagoda (300m), mosque (300m), Water body (2km)
South side	8 nos. of Settlements (50m), paddy land (40m)
East side	LGED road (100m), Hill (500m), Buddhist temple (700m), Madrasa (500m), Hat baar (1km)
West side	Ershadul Ulum Mdrasa (100m), marine drive (1km), The Bay of Bengal (1km), Hat bazar (100m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 19 December 2019 in and around the Sub-project site. As part of the impact assessment, participatory public consultation was conducted in that area area by the field level staffs, and consultants from PIU and D&SC. The consultation meeting was attended by 32 persons, and local individuals, elites, 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-5** for selected photographs of the participatory public consultation held at site of the Motherbonia 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 free/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.
- Lack of adequate class rooms in the existing school premises.
- 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 disaster shelter cum school 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.
- Priority for jobs should also consider women.
- 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 persist for a 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 19 December 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. Some human settlements are found at 50m west side, 40m south side and 100m north side of the sub-project. An 8 feet mud road is passing by the south side and it is connected to the LGED road. A Buddhist temple named Motherbunia Chakma Pagoda found at 300m north side and another Buddhist temple found at 700m east side of the subproject. A mosque named Motherbunia jame Mosque is located at 300m north. There are two madrasas found within the catchment area. One madrasa named Forkania Madrasa found at 500m east and another madrasa named Ehsanul ulum Madrasa located at 100m west of the subproject. The Bay of Bengal is located at 1km west side of the sub-project area. A khal named Mithachora khal is located at 2km north side. A hill named Motherbonia hill is located at 500m east side of the sub-project. A bazar is located at 100m west side of the subproject area. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 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 effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict were reported in 2018. The IUCN has conducted a study on such type of conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

Moreover, 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, as 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 from about 150 feet below the ground has made water availability to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly

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

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, , rainwater harvesting from every disaster shelters, 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 burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone 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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and

social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the southern side. A madrasa named Ershadul Ulum Madrasa is located at 100m west side of the sub-project. Further, some human settlements are found at 50m west side, 50m south side and 100m north side area might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & 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 need to be minimized through the management plan.
- The project will create employment for those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Motherbonia GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project):
District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Jaliapalong
Name of Community/Local Area: Matherbonia
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 an existing school boundary. A two-storied school building is located on south side of the school boundary. A madrasa named Ershadul Ulum Madrasa is located at 100m west side and another madrasa named Forkania Madrasa is located at 500m east of the sub-project. Some human settlements are found at 50m west side, 40m south side and 100m north side of the sub-project. An 8 feet mud road is passing by the south side and it is connected to the LGED road. No Important environmental features are found within the sub-project. Some agricultural land is found on north- side, adjacent to the school boundary. An open land is situated on north east side within the school boundary. The new cyclone shelter will be constructed on it.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 LGED road is passing near the sub-project area. A Buddhist temple named Motherbunia Chakma Pagoda found at 300m north side and another Buddhist temple found at 700m east side of the subproject. 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. A mosque named Motherbunia jame Mosque is located at 300m north. There are two madrasas found within the catchment area. One madrasa named Forkania Madrasa found at 500m east and another madrasa named Ehsanul ulum Madrasa located at 100m west of the subproject. But there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements and patches of vegetation are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 2 km away from this site.

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 and flashing

over by the potential tidal surge during cyclonic events, 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. 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. 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 Jaliapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°06' 54.80"N and 92° 06' 29.7"E. The distance from the Upazila headquarter is about 30 km. Nearby major road is LGED road, which is connected to the proposed site with an 8 ft. wide mud road having a distance of nearly 300m from site. The school code is .99412010405

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 are a two story building being used for classrooms. An open place located at north east side. The new one will be constructed here.

The Bay of Bengal is located at 1km west side of the sub-project area. A khal named Mithachora khal is located at 2km north side. A hill named Motherbonia hill is located at 500m east side of the sub-project. A Buddhist temple named Motherbunia Chakma Pagoda found at 300m north side and another Buddhist temple found at 700m east side of the subproject. A mosque named Motherbunia jame Mosque is located at 300m north. There are two madrasas found within the catchment area. One madrasa named Forkania Madrasa found at 500m east and another madrasa named Ehsanul ulum Madrasa located at 100m west of the subproject. A bazar is located at 100mwest side of the subproject 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. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence

of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

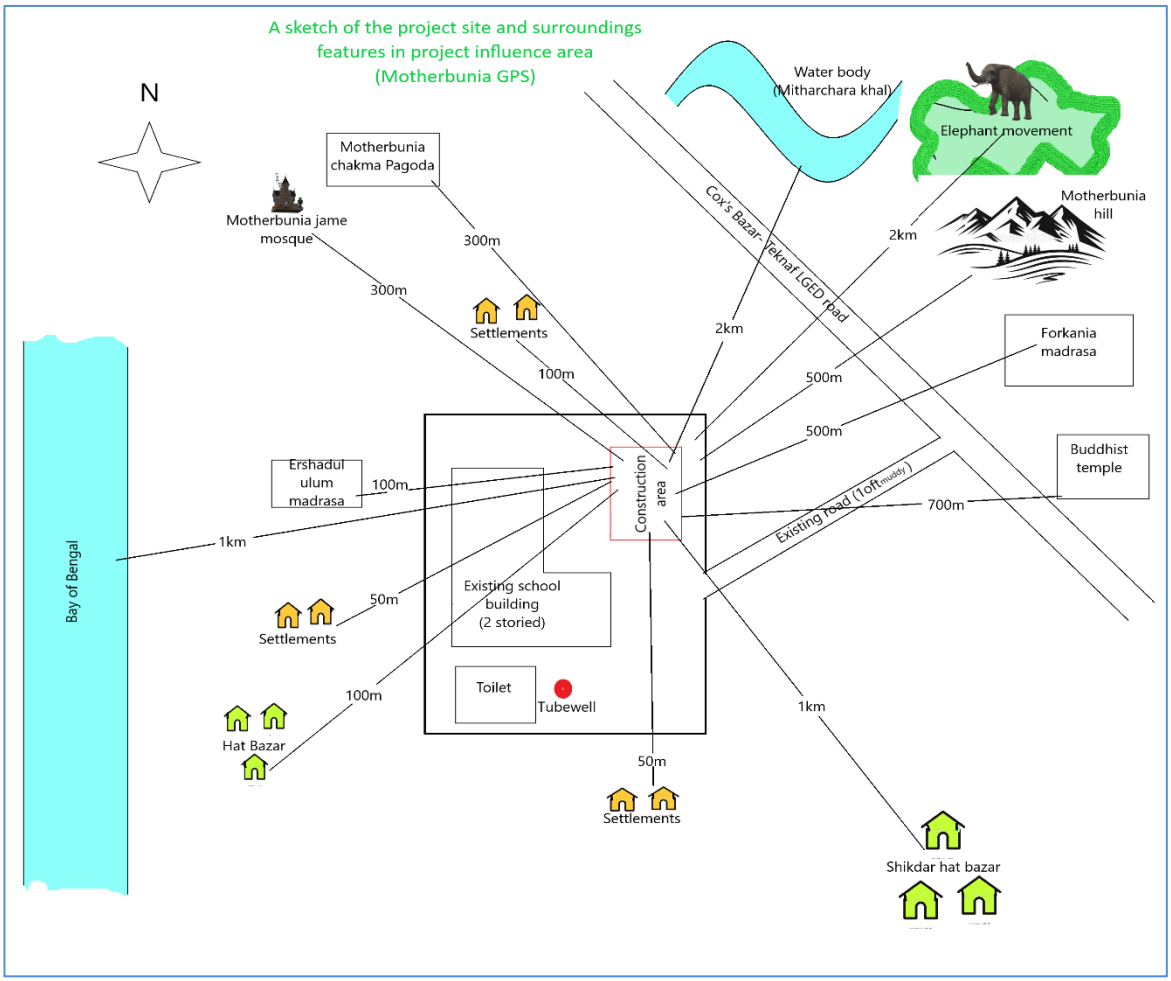
***B.1*: Environmental feature of sub-project location**

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:

A Buddhist temple named Motherbunia Chakma Pagoda found at 300m north side and another Buddhist temple found at 700m east side of the subproject. A mosque named Motherbunia jame Mosque is located at 300m north. There are two madrasas found within the catchment area. One madrasa named Forkania Madrasa found at 500m east and another madrasa named Ehsanul ulum Madrasa located at 100m west of the subproject. A hill named Motherbonia hill is located at 500m east side but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 in 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 shallow tube-well is found within the school boundary. The shallow depth is about 40feet. In the sub-project area, deep groundwater is salt and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). 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: Patches of vegetation containing large and matured trees on the south and western side of the proposed construction areas are located within 200m radial distance.
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 muddy road is passing by the south side of the sub-project. It is connected to 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 shallow tube-well is found within the school boundary and depth is about 40 feet. But the tubewells are 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 already available at the site. 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 south-west side within the existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 8ft. muddy road is the main way for transportation of raw materials. It is located on south side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the north western side within the existing school boundary. 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.): **Solid waste:** Construction debris and other solid wastes will be generated both during the construction periods. **Type**: wood, copper wires, concrete, iron, plastic etc. **Quantity:** It is difficult to give exact figures of waste produced on a typical construction site.

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 6 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 6 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 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 an exact figures 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 is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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.
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 muddy 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 for 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 project sites, and no known areas of ecological interest. There is none of the activities usually taken place in a school site during the operation phase which may 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 muddy road connects the sites with main road. The roads are mainly used as pedestrian access and light vehicles like bicycles, three wheelers etc. therefore, during construction works 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 Madrasa (100m) is located nearby the school boundary so labor camp needs to be set up in such a location that the madrasa 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 substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	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 to be secure, to minimize the risk of crime and	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
			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. • 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.	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
			• 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 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 meter (dB)	weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			construction period.			
	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 (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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Workers 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 separately.	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
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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Motherbonia 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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.	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
	permanent hearing loss, heat stress, and dermatitis.	• 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 supervision to ensure that the correct		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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. • 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 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:

- 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, 01714980171
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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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	from reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

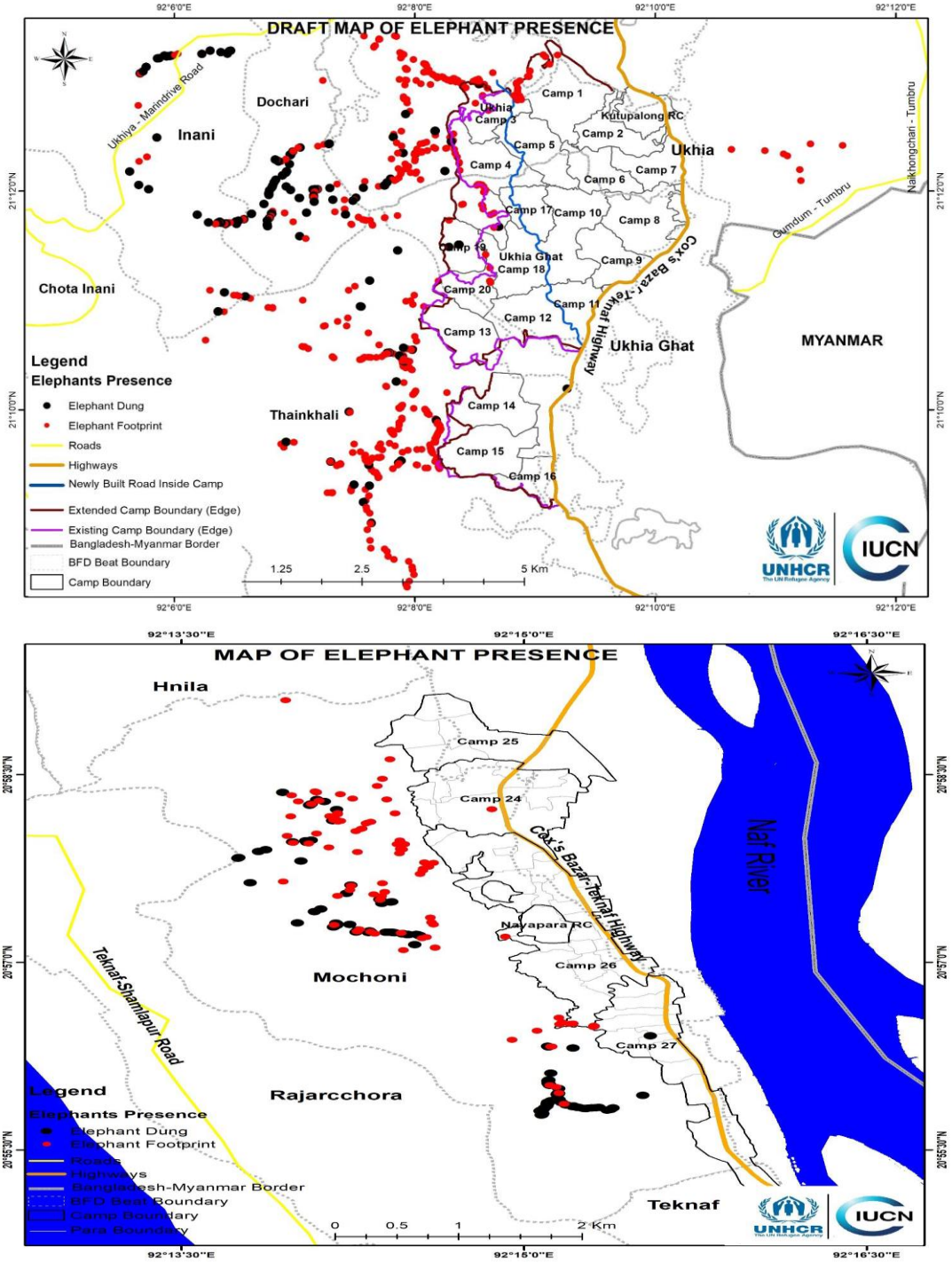
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

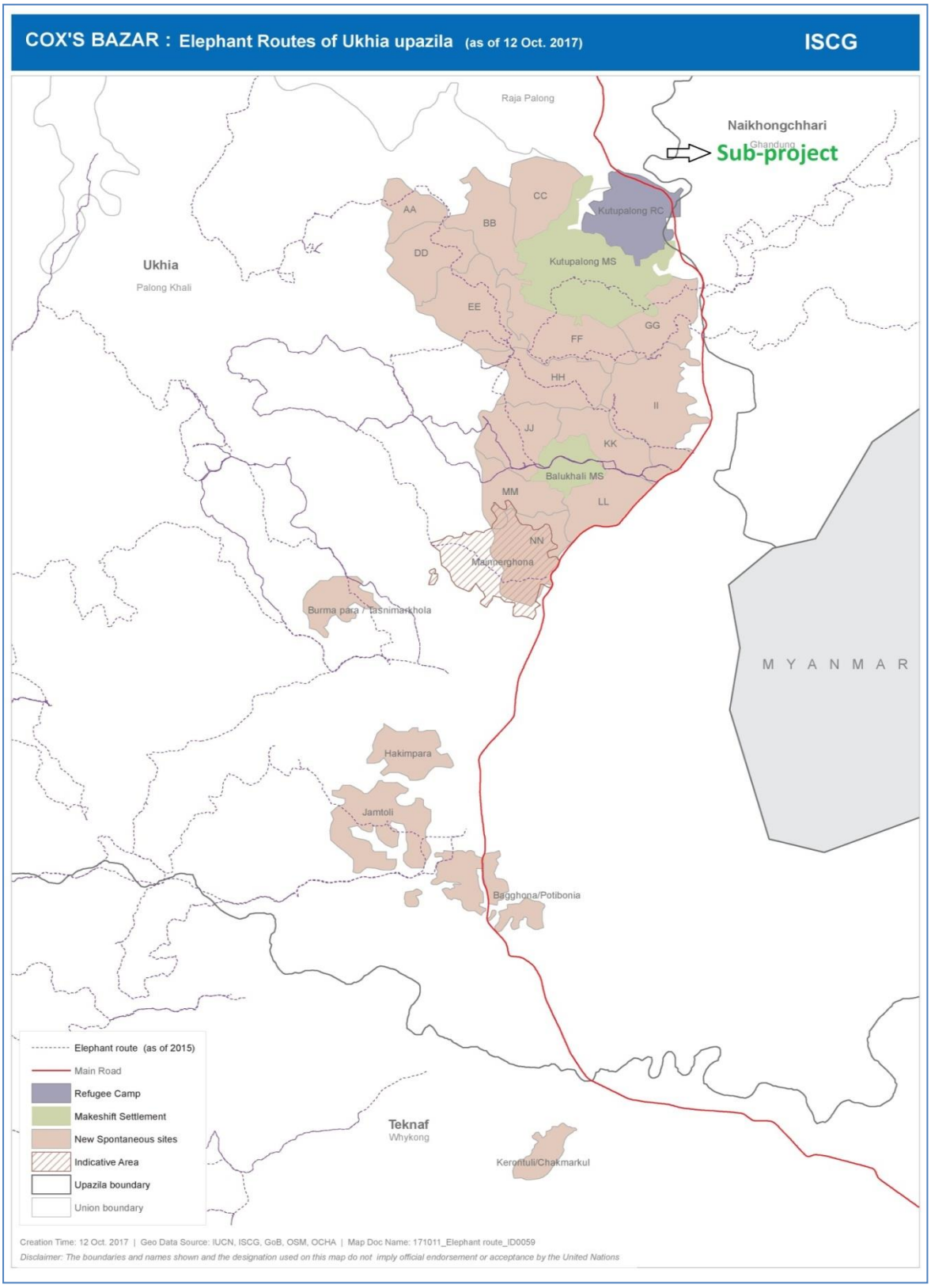
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative placement of the site (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...11:00 PM..... Date...19-12-19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ সাদারবুনিয়া সিনিয়র মাদ্রাসা বিদ্যালয়
মত বিনিময়ের স্থানঃ সাদারবুনিয়া স্কুল

কোড নং: 994120104005
ইউনিয়নঃ Jaliapalong
ডাকঘরঃ Inani
উপজেলাঃ Ukhiya
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১	চেমন বাহার		নারী	সাদারবনিয়া	
২.	মো: এরশাদুল হক		পুরুষ	,,	
৩	সেলিনা আক্তার রুমি		নারী	,,	
৪	নুরুল ইসলাম		পুরুষ	,,	
৫	সাহাবাহান		পুরুষ	,,	
৬	মো: জাকের		,,	,,	
৭	কিচ্ছজন চাকমা		,,	,,	
৮.	মো: হাসন		,,	,,	
৯	কমরাও চাকমা		,,	,,	
১০	জাকের উল্লাহ		,,	,,	
১১	মো: সেলিম		,,	,,	
১২	মো: সোহেল		,,	,,	
১৩	মো: রফেল		,,	,,	
১৪	বশির আহাম্মদ রনি		,,	,,	
১৫	মো: মাইমুন		,,	,,	
১৬	মো: কাচেম		,,	,,	
১৭	জর ওয়ার		,,	,,	
১৮	হারুন		,,	,,	
১৯	রহিম উল্লাহ		,,	,,	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:…….. Date……

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ
মত বিনিময়ের স্থানঃ

কোড নং:
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	শহিদুল্লাহ		পুরুষ	সাদা ঢালি	
২১	মো: তারেক		,,	,,	তারেক
২২	নুর উল্লাহ		,,	,,	
২৩	জাহাঙ্গীর আলম		,,	,,	
২৪	আবুল চাকমা		,,	,,	
২৫	নুরুল আমিন.		,,	,,	
২৬	মো: রাকিব		,,	,,	
২৭	আবদু সালাম,		,,	,,	
২৮	সৈয়দ আলম		,,	,,	
২৯	মো: সিদ্দিক,		,,	,,	
৩০	ইসলাম হাসান		,,	,,	
৩১	মো: আয়ুব		,,	,,	
৩২	মো: কবির,		,,	,,	

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Natunpara J. Chowdhury Govt. Primary School

Educational Institution ID: 412010711

Village: Natunpara; Union: Rajapalong;Upazila: Ukhiya;

District: Cox's Bazar

April 2019

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 Bond
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 Band

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 and 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Rajapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Large Shikdarbill. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 439 households, containing 2500 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and proposed disaster shelter features 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	Natunpara J. Chowdhury GPS
Educational Institute ID	412010711
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land Available	40 decimal
Catchment household	439
Catchment population	2500 (Male 1300, Female 1200)
Profession	Farmer 65%, day labor 20%, businessman 10% and others 5%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Large Shikdarbill
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road is connected to Cox's Bazar-Teknaf highway
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

J. 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)	200

This Environmental Screening Report will 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 Ukhiya 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 BCC road, which is connected to the Cox's Bazar-Teknaf Highway. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location of Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) map and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar

Upazila	Ukhiya
Union	Rajapalong
GPS position	21^0 15' 18.50"N and 092^0 08' 32.1''E
Distance from upazila HQ	About 3.00 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	Rijo is located on the 0.5 km west,Hijolia is situated on 1 km north
Boundary of the containing Upazila	Ramu upazila on the North,
	Teknaf Upazila on the South,
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

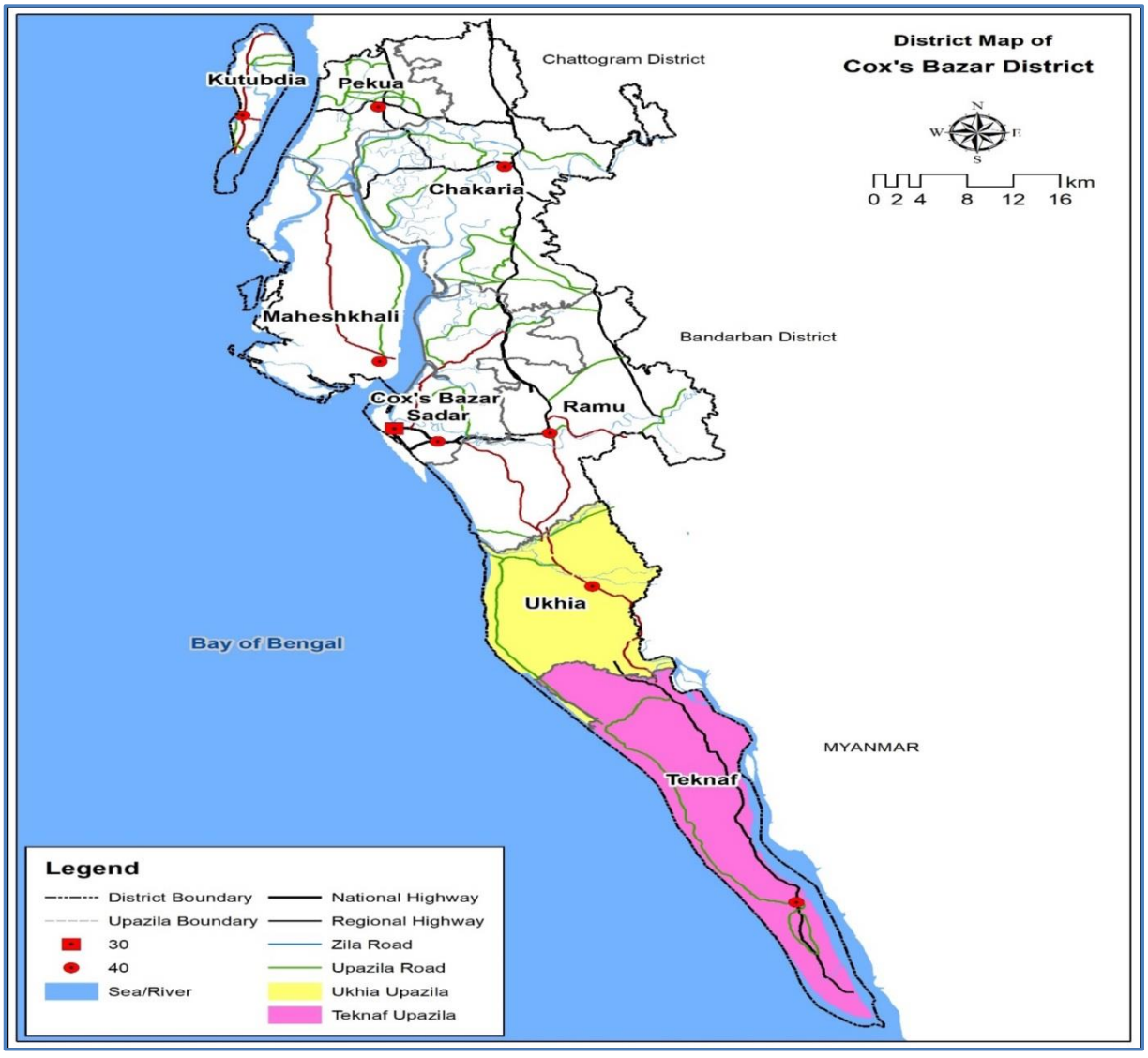


Figure 1.4.1: District Map with project location

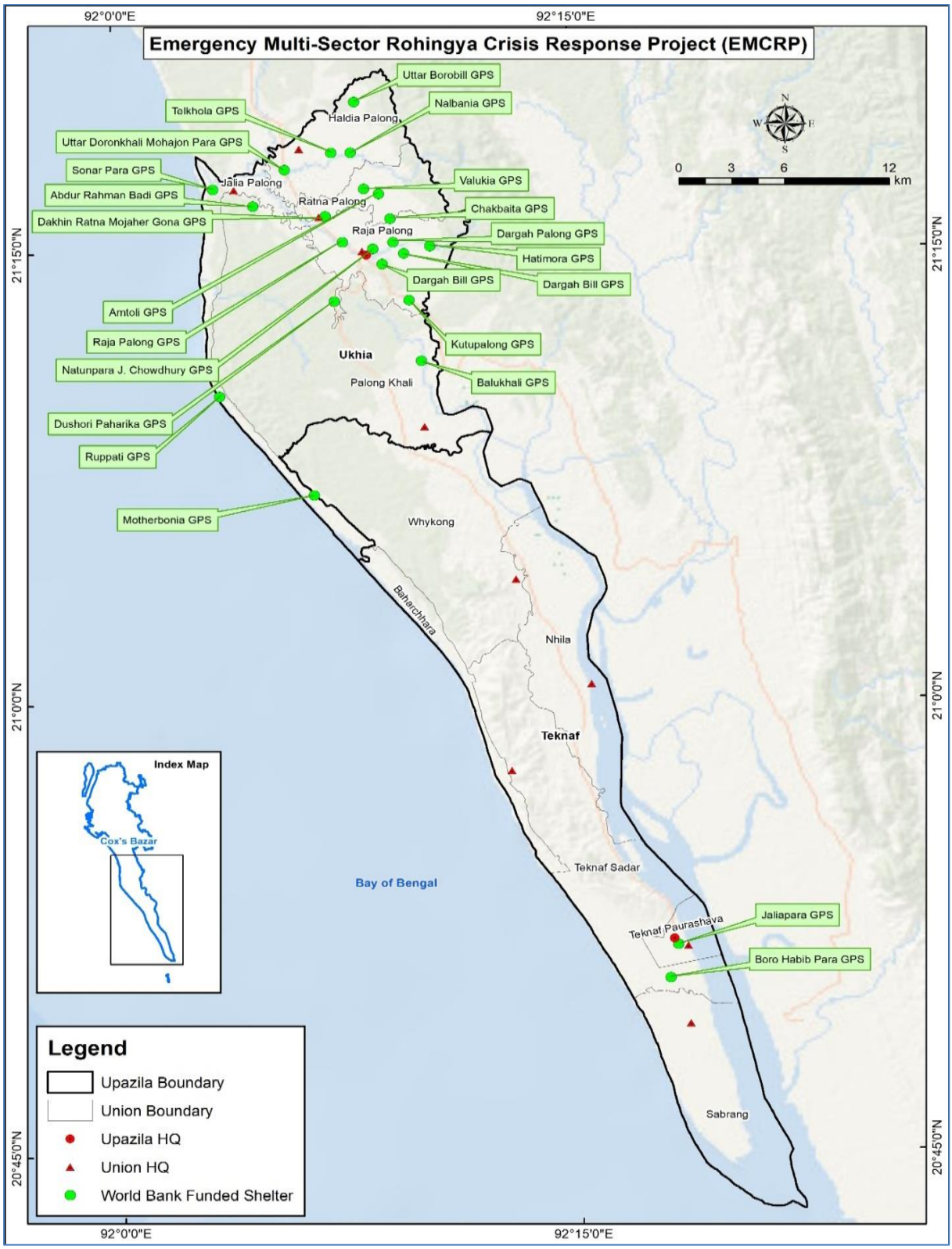


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

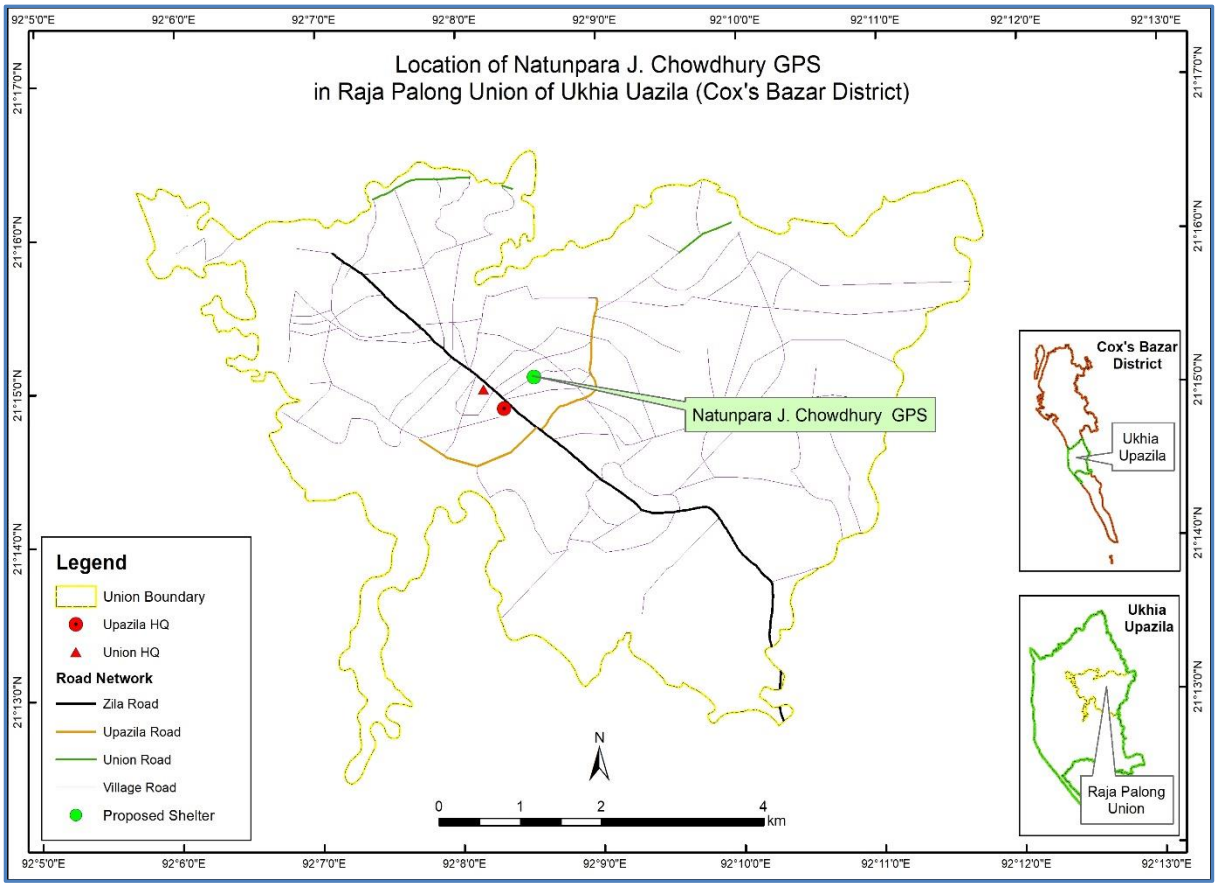


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area and location of construction area has 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	8 nos. of dwelling house (50m), Reju khal (1.5km)
South side	Open field (40m), 8 nos of house (10m), Pond (30m)
East side	Mosque (200m), 5 nos. of dwelling house (10m), Pond (200m), Shikdar bill (1km)
West side	BC road (10m), Graveyard (300m), Bazar (400m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 04 November 2019 in and around the Sub-project 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 12 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-5** for selected photographs of the participatory public consultation held at site of the Natunpara J. Chowdhury GPS and list of attendees in that public consultation meeting, respectively. In addition, 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 free/ 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 disasters such as cyclone, flood etc. So, a disaster shelter is very much necessary to construct in that catchment area.
- Lack of adequate class rooms in the existing school premises.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.

- Lack of adequate spaces for cattle or livestock.
- Possible dust and noise pollution during the construction works.
- Safety of children at the sites during construction works.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 04 November 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. One khal named Rijo is located on the 1.5 km north side of the sub project and another bill named Shikdar bill is situated on 1 km east side of the sub-project area. Some human settlements are found at 50 meter north side of the school building. They are concern about this construction activity. A water body is found at 20m west side of the sub-project. Proper mitigation measure will be taken during construction activities. A bazar is situated at 400m west side of the sub project. A graveyard located at 300m west of the subproject. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 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 effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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, as 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 from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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 ensamble of Cox's Bazar district, the temperature and precipitation are likely to increase with time.

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

And the mass migration will lead to man-made disaster which also can aggravate the climate change impacts in that area.

Intensity of precipitation has been seen to have increased in the past few years. The impact of cyclone has increased as per the report. Salinity and the occurrence of cyclonic storm surge was not reported. Temperature increase was not reported. Thunder storm has been seen create more damage than before and casualty was reported.

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 of the shelters . 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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

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. Further, a pond found on 30m south-east side and some settlements located at 10m south of sub-project area might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come by 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 those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Natunpara J. Chowdhury GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Rajapalong

Name of Community/Local Area: Natunpara J. Chowdhury

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 an existing school boundary. In school boundary a two storied school building is located on north side. A 15 feet BC road is passing on west side and it is connected to Cox's Bazar-Tekhnaf highway. No Important environmental feature is found within the sub-project. Some human settlement is found on south-east side of adjacent the school boundary. An open field is located at south side of the school boundary. The new one will be constructed here.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 among 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 disease 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. These are wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic, human wastes including kitchen wastes might be generated in labor camps.

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 mosque found at 200m east and a graveyard found at 300m west of the subproject area. A bazaar is established in an open field at about 400m from sub-project area 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 found within 10m of the school boundary. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN) Elephant migration routes near about 8 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. 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

Sub-project Location:

The sub-project area is situated in Rajapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21^0 15' 18.50"N and 092^0 08' 32.1''E. The distance from the Upazila headquarter is about 3 km. Nearby major road is Cox's Bazar- Teknaf highway, distance is 3km from the sub-project site. The school code is .412010711

Land ownership
GPS

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 are a two story relatively new building being used for classrooms. An open place located at south east side of the existing school boundary. The new one will be constructed here.

One khal named Rijo is located on the 1.5 km north side of the sub project and another bill named Shikdar bill is situated on 1 km east side of the sub-project area. No disturbance is anticipated due to construction activities. Some human settlements are found on south-east side (10m) of adjacent the school boundary. But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

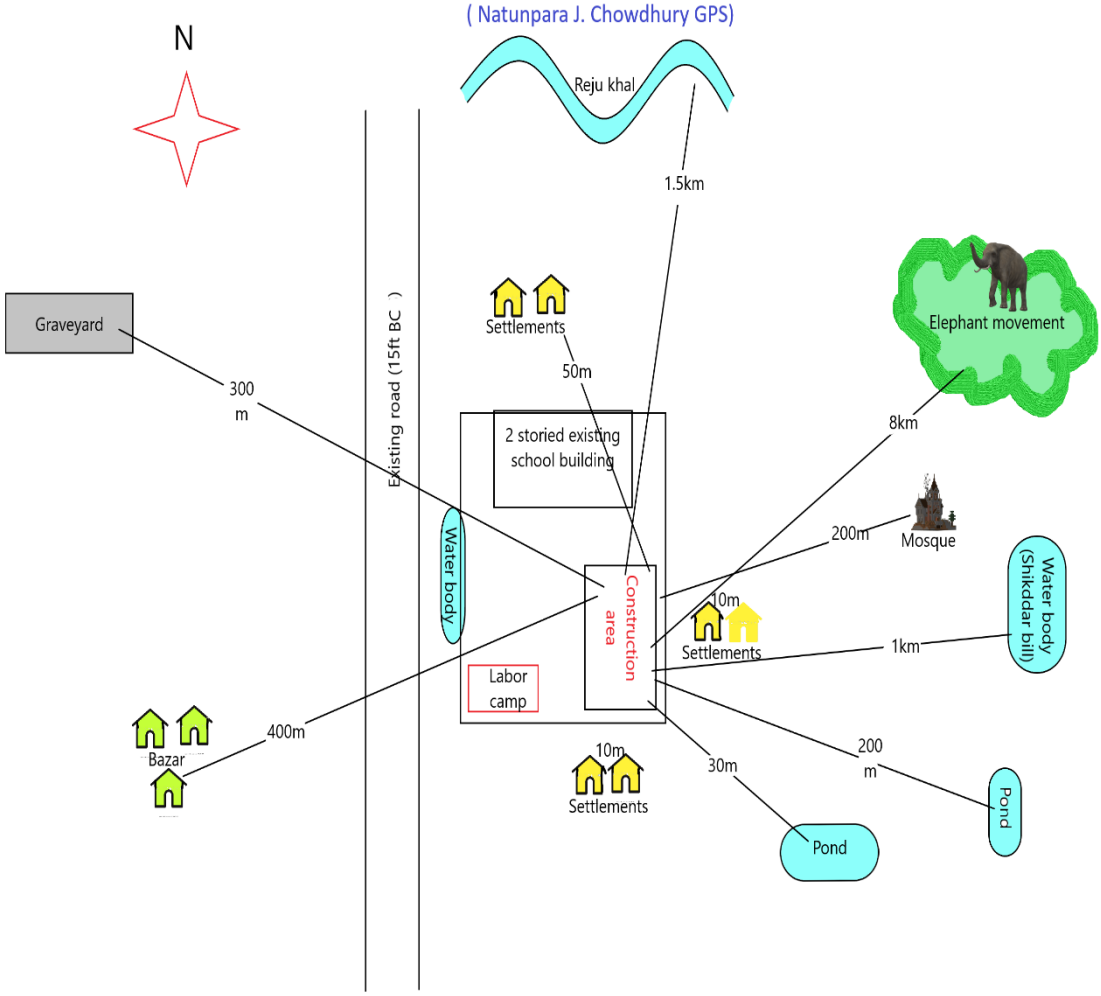
Section B: Environmental Screening
B.1: Environmental feature of sub-project location

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:

A mosque found at 200m east and a graveyard found at 300m west of the subproject area. A bazaar is established in an open field at about 400m from sub-project area but no disturbance will be found by this construction activity. Two ponds are found (30m and 200m) around the sub-project where cultivated fish. But there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. A diagram showing the major features around and apparent distances (in parentheses) from the proposed construction site is given below.

A sketch of the project site and surroundings features in project influence area (Natunpara J. Chowdhury GPS)



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as truck, mini truck, motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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/ preventable by mitigation measures.

Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as truck, mini truck, motor cycle, auto rickshaw, tempo, trolley, tractor 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 in 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 in existing school complex)
Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH): Groundwater is the main source of potable water in the Sub-project area. Deep groundwater is sweet and arsenic free. In the sub-project area, deep groundwater is salty and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use Deep tube-well water for drinking and other domestic purposes. Two ponds (30m and 200m) are found adjacent the sub-project area for fish cultivation but no disturbance or modification is anticipated by the sub-project. 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**
State of forestation: Patches of vegetation containing large and matured trees on the north and eastern side of the proposed construction areas are located within 200m radial distance.
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 15 BC road is passing on west side of adjacent the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials in construction side.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: A deep tube-well and a shallow deep tubewell are found within school boundary. The depth of deep tube well is 800 feet and shallow tubewell is 150 feet. 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 already available into the school boundary. 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 west side within the existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 15ft. wide BC road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the north west side within the existing school boundary. 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.): **Solid waste:** Construction debris and other solid wastes will be generated both during the construction periods. Type: wood, copper wires, concrete, iron, plastic.

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 6 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 6 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.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials 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 an 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 is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.

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 ponds are found outside of the construction area, but 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

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 muddy 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 for 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, except two ponds located at 30m and 2oom east from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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 siteis near to bazar. A BC road connects the sites with main road. The roads are mainly used as pedestrian access and light vehicles like bicycles, three wheelers etc. therefore, during construction works 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 located at 30m southeast and a mosque (200m) located nearby the school boundary so labor camp needs to be set up in such a location that the mosque and pond are 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 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. • 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-	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
			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 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 meter (dB)	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			construction period.			
	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 (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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Workers 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 separately.	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
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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): J 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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	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.	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 washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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 Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding 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. • 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 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:

- 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, 01714980171

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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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35,000Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk for each filter	10,500
13.	**Test (Drinking Water samples)** Out of 5 nos. of Tube well 1-no of tube well **should be install** at the beginning of the construction works so that labor& other site staffs can get drinking water. In addition, **Water samples** to be collected periodically (half yearly) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

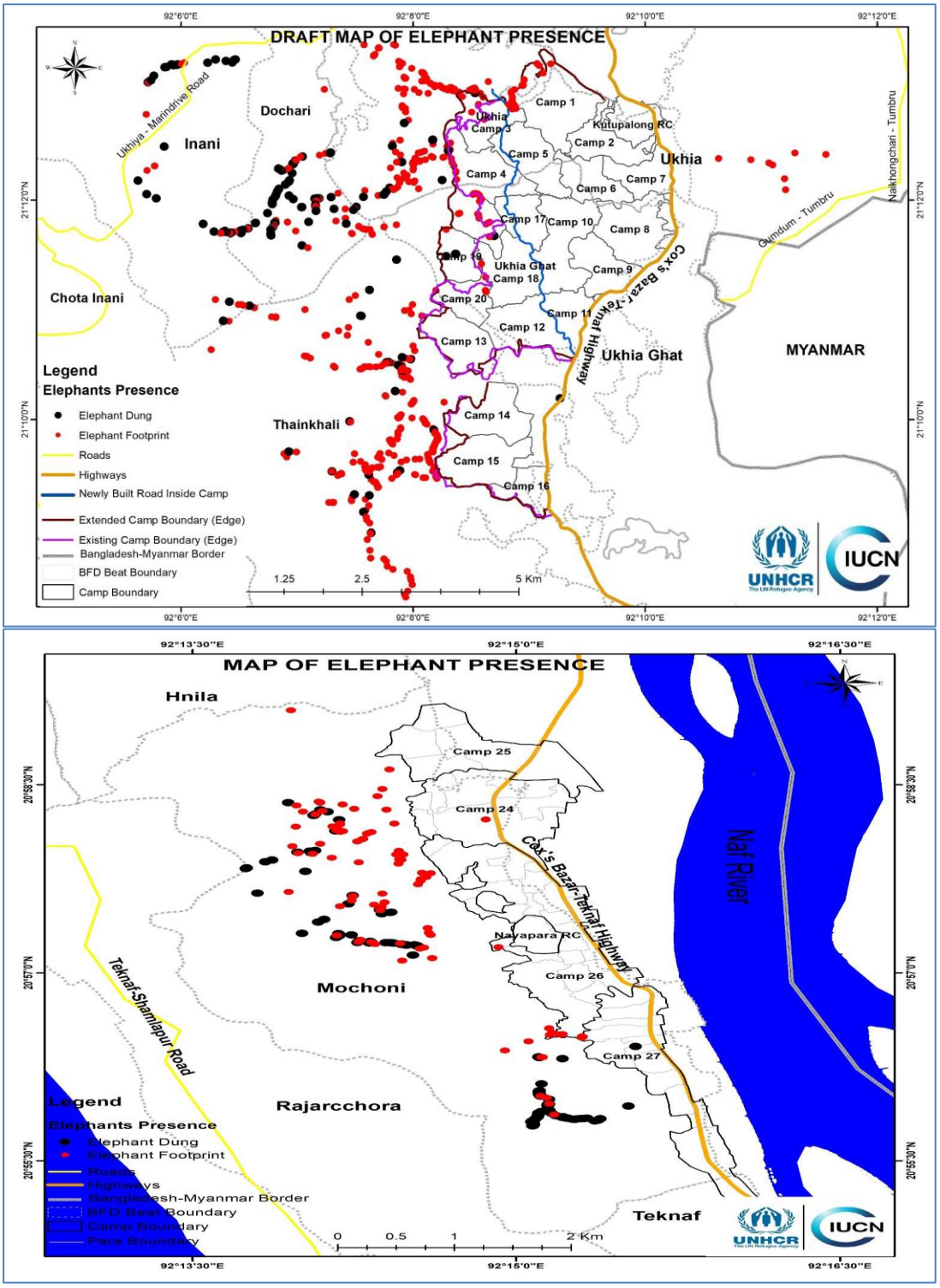
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

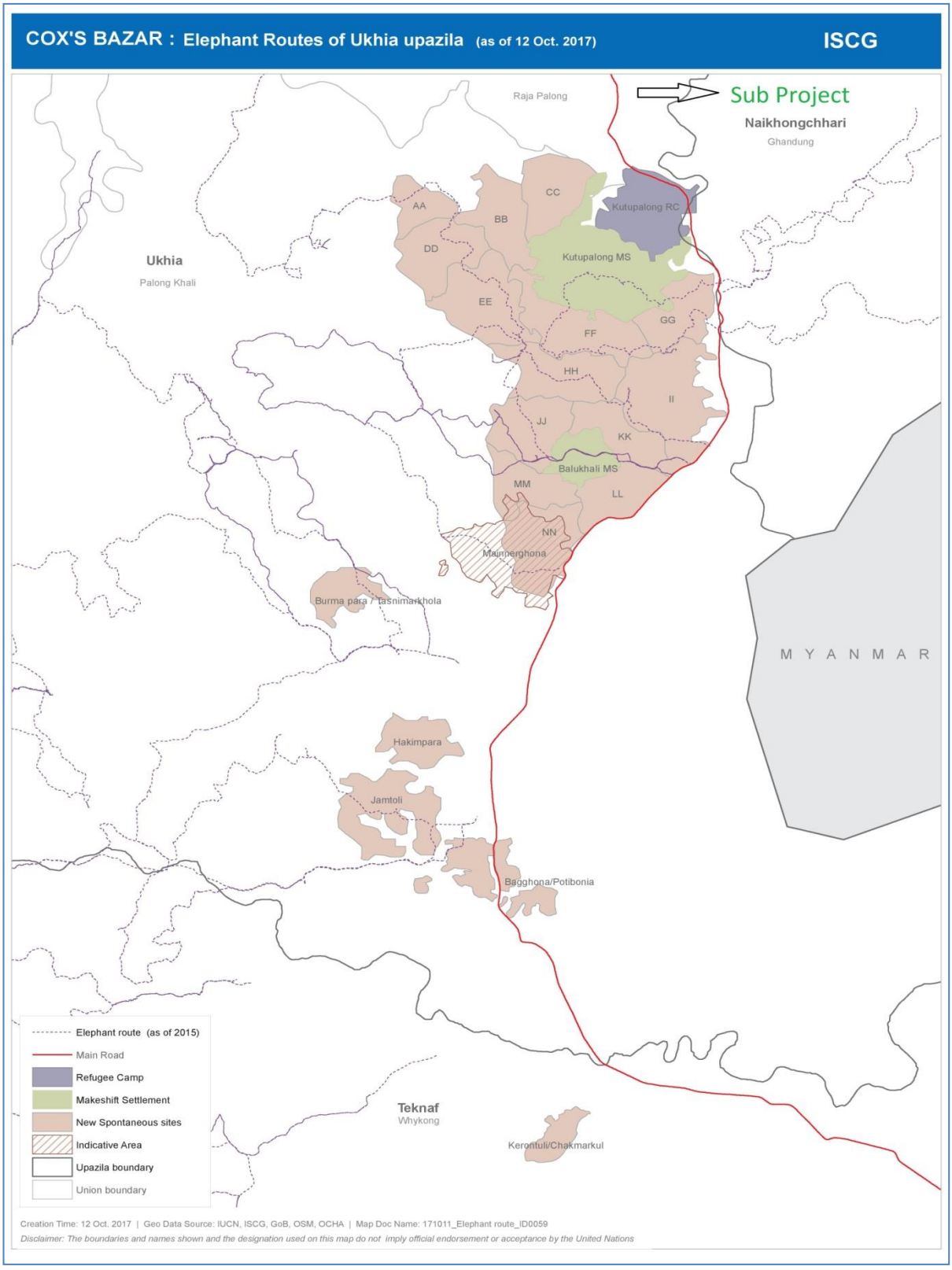
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative placement of the site (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:..2:00 PM..... Date..04.11.19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ Natunpara J. Chowdhury Girls
মত বিনিময়ের তারিখঃ 04.11.19

কোড নংঃ
স্থানঃ
ইউনিয়নঃ Rajarkot
ডাকঘরঃ Ukhiya
উপজেলাঃ Ukiya
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	[illegible]	৫১	পুং	সিকদার বিল	
০২	কৃষ্ণা বড়ুয়া	৪৩	নারী	পাতাবাড়ী	
০৩	সাহেদা বেগম	৫৩	নারী	ছিলাতলী	
০৪	মোহাম্মদ নুরুল আলম	৩১	পুং	সিকদার বিল	Alam
০৫	হাসিনা আক্তার	৩৫	নারী	সিকদার বিল	হাসিনাআক্তার
০৬	কাহিদ উল্লাহ	৩৫	পুং	সিকদার বিল	কাহিদউল্লাহ
০৭	মোঃ সাজাহান আলী	৩৮	পুং	সিকদার বিল	সাজাহানআলী
০৮	মোঃ আবদুস সুকুর	৭১	পুং	সিকদার বিল	মোঃআবদুসসুকুর
০৯	নবী হোসেন	৩৫	পুং	সিকদার বিল	নবী হোসেন
১০	আবুল কালাম	৪২	পুং	সিকদার বিল	আবুলকালাম
১১	কাফাত আলম	৭০	পুং	সিকদার বিল	কাফাত
১২	মোসাম্মৎ নুসরী	৩০	নারী	সিকদার বিল	আছমাউলহোসেনা

Public consultation participant 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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Ruppati Govt. Primary School
Educational Institution ID: 412010109
Village: Ruppati; Union: Jaliapalong; Upazila: Ukhiya;
District: Cox's Bazar
April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Jaliapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Chenchori, Fatuyar tek, Ruppati and Bailkhali. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 405 households, containing 3500 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. 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	Ruppati GPS
Educational Institute ID	412010109
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
Owner of land	GPS
Land available	50 decimal
Catchment household	405
Catchment Population	3500 (Male: 1800, Female: 1700)
Profession	Farmer 55%, day labor 27%, businessman 5% and others 13%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Chenchori, Fatuyar tek, Ruppati, Bailkhali
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road is connected to Cox's Bazar-Teknaf marine drive
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Ruppati 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)	200

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 Ukhiya Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through an 10ft wide HBB road of nearly 200 m in length, which is connected to the Cox's Bazar-Teknaf marine drive. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location map of proposed Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
GPS position	21°10' 13.2"N and 92° 03' 25.7"E
Distance from Upazila HQ	25 km
Nearby major road	Cox's Bazar- Teknaf marine drive
Nearby river/canal	A khal named Chenchori is at 1km north side, A chora named Ruppati is at 1km South side, The Bay of Bengal is at 0.5km west side.
Boundary of the Containing Upazila	Ramu upazila on the North
	Tecna fUpazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

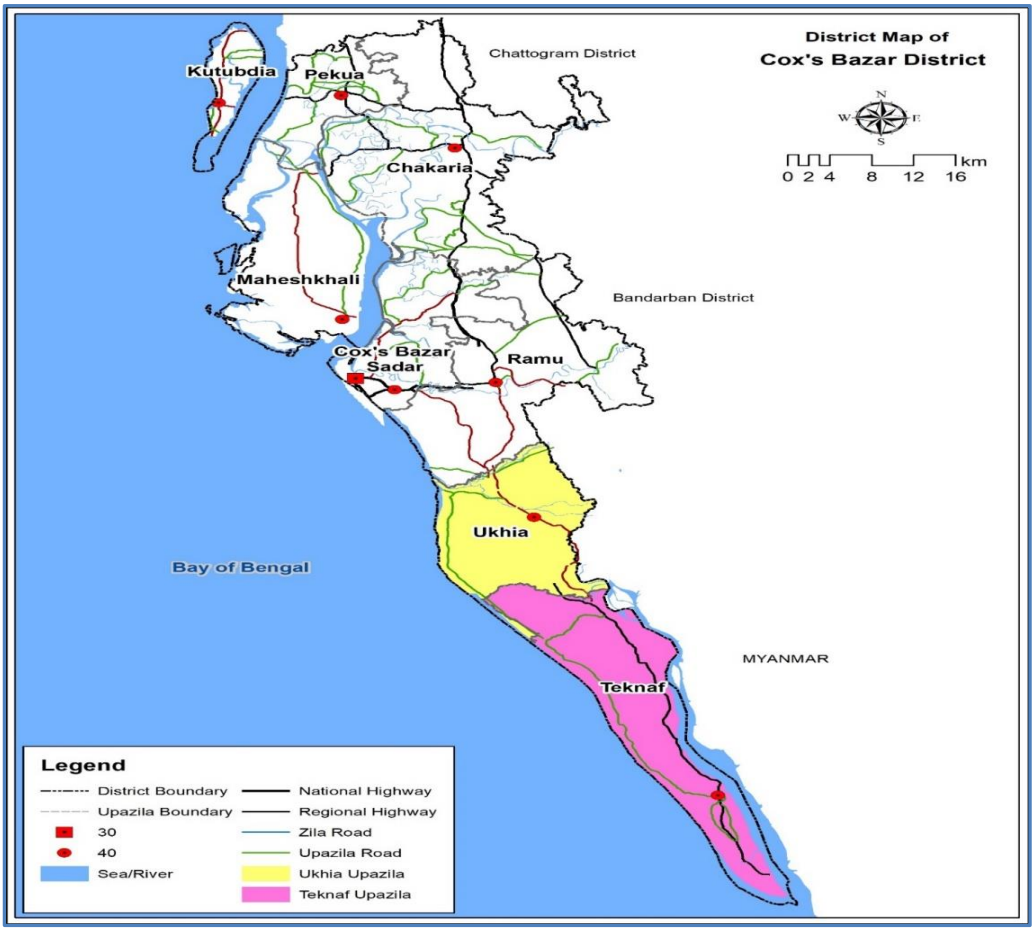


Figure 1.4.1: District Map with project location

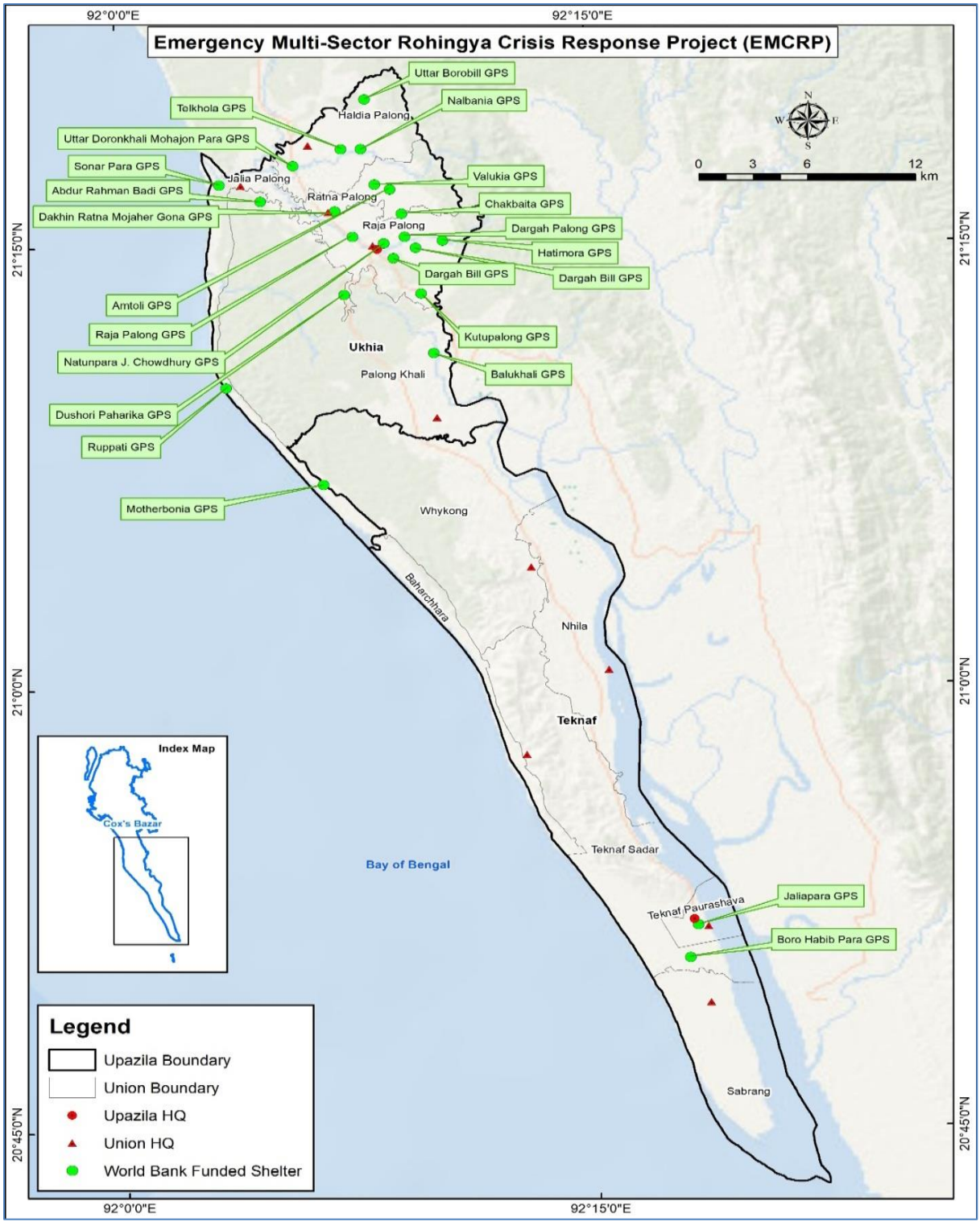


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

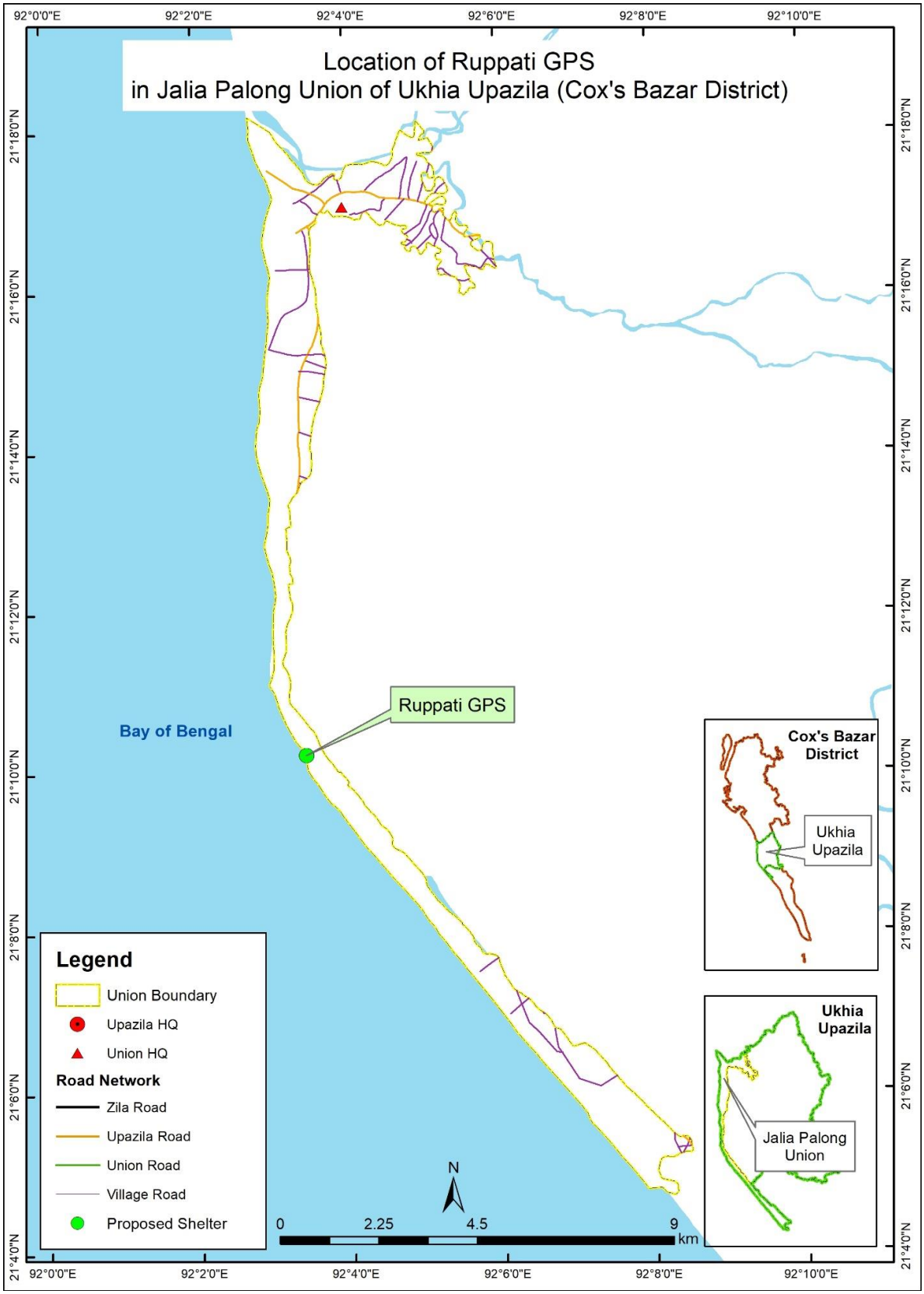


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area 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	Chenchori khal (1km), Paddy land (40m)
South side	Ruppati chora (1km), Baitur Nur Jame Mosque (300m), Open field (30m)
East side	10 nos. of Settlement (50m), graveyard (400m), Mosque (300m), Hill (400m)
West side	Open land (40m), Marine drive (450m), Bay of Bengal (500m), Mosque (within the existing school boundary)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of construction area

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 19 December 2019 in and around the Sub-project 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 18 persons, and local individuals, elites, 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-5** for selected photographs of the participatory public consultation held at site of the Ruppati 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. 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 free/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.
- Lack of adequate class rooms in the existing school premises.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Possible dust and noise pollution during the construction works.
- Lack of adequate space for cattle.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 19 December 2019 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 disaster shelter) 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. 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. A mosque named Baitun Nur Jame Mosque is located on south side within the existing school boundary. Another mosque located at 300m south east side and a graveyard located at 400m east. The Bay of Bengal is situated at 500m west side. A chora named Ruppati chora is located at 1km south and a khal named Chenchori khal is located at 1km north. A pond found at 150m east of the subproject. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 on and around the site, proper fencing around the working area, safe storage of materials, etc. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during construction period. 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 effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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, as 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 from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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 impact of cyclone and precipitation has higher burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone 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 been found in the area, and according to the participants there is a need of excavation during the construction phase as there is no existing drainage channel in the area.

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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and

social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the eastern side. An old school cum cyclone shelter into the school boundary needs to be demolished during the construction period and a mosque named Baitun Nur Jame Mosque is located at south side into the school boundary. Further, a pond found at 150m east side of sub-project area might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & 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 need to be minimized through the management plan.
- The project will create employment for those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Ruppati GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project):
District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Jaliapalong
Name of Community/Local Area: Ruppati
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 an existing school boundary. A one-storied tin shed school building is located on south side of the school boundary. A mosque named Baitun Nur Jame mosque is found on south side within the existing school boundary. The Bay of Bengal is sitiated at 500m west side of the sub-project. A 10 feet HBB road is passing by the west side and it is connected to the Cox's Bazar-Tekhnaf marine drive. Some agricultural land is found on north side, adjacent to the school boundary. A three storied old structure will be demolished during pre-construction period and the new one will be constructed there.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 2 mosques and a graveyard found within 500m of the subproject area. The Bay of Bengal is situated at 500m west side of the school boundary. A chora named Ruppati chora is located at 1km south and a khal named Chenchori khal is located at 1km north. 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. There is no chance to cause significant disturbances due to the sufficient distance in between. A pond located at 150m east side of the sub-project, but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements and patches of vegetation are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 2 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Jaliapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°10' 13.2"N and 92° 03' 25.7"E. The distance from the Upazila headquarter is about 25 km. Nearby major road is Cox's Bazar- Teknaf marine drive, which is connected to the proposed site with a 10 ft. wide HBB road having a distance of nearly 300m from site. The school code is .412010109

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 are a one story relatively tin shed building being used for classrooms, and a three storied old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

The Bay of Bengal is situated on 500m west of the sub project. A hill area is situated at 400m east of the sub-project. A pond is found within the catchment area and distance is about 150-200m of the sub-project. No disturbance is anticipated due to construction activities. Some human settlements and agriculture lands are found at 50m east side of sub-project area but there is no scope to be affected by the construction activities. A graveyard is located at 400m east of the subproject. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

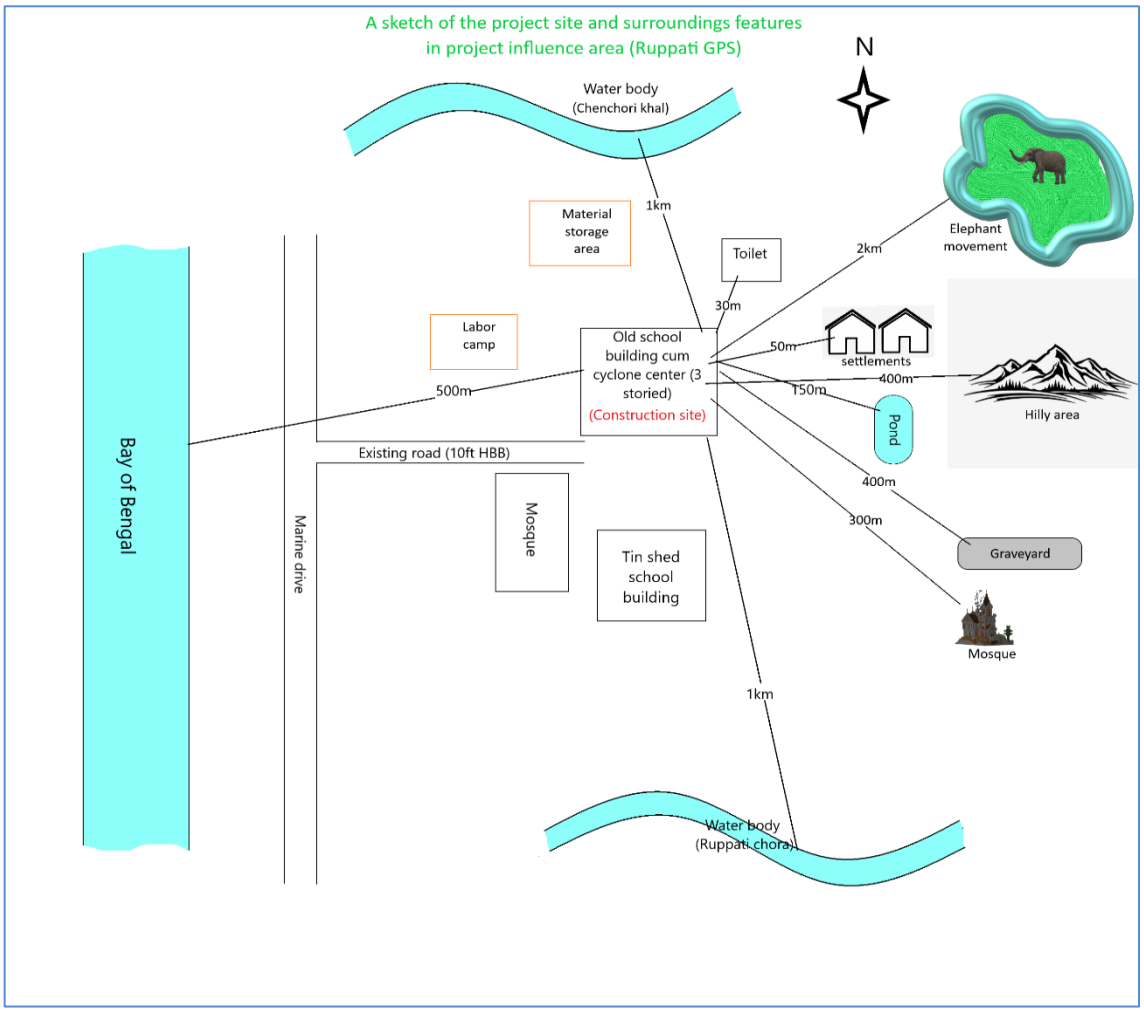
***B.1*: Environmental feature of sub-project location**

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:

A mosque named Baitun Nur Mosque is situated within the school boundary. Another mosque (300m east) and a graveyard (400m) located around the subproject area but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 in 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 shallow tube-well is found within the school boundary. The shallow depth is about 50 feet. In the sub-project area, deep groundwater is salt and arsenic free. Water from the shallower aquifers beneath the Sub-project

area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. A pond (150m) found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project. 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: Patches of vegetation containing large and matured trees on the south and eastern side of the proposed construction areas are located within 200m radial distance.
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 HBB road is passing by the west side of the sub-project. It is connected to Cox's Bazar-Teknaf marine drive. 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 depth is about 50 feet. But the tubewell is not working properly in 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 at the site. 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 west side within the existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 10ft. wide HBB road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to Cox's Bazar – Teknaf marine drive.
Location identification for raw material storage: On the north side within the existing school boundary. 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.): **Solid waste:** An old three storied structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 6 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 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 an 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 land area is required for the sub-project establishment. There is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate

stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 pond is found outside of the construction area, but 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 muddy 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 for 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, except a marshy land located at 150 m east from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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. The road is mainly used as pedestrian access and 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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 within 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 substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	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 to be secure, to minimize the risk of crime and	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
			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, below the ESMP table, to be followed by the contractor.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage
	Setting up of labor camp(Generation of	Under the sub-project	• Construction camp should be located at a site favorable for the workers and proposed by the	Contractor, environmental	Complaints from	Prior to the start

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	intervention the overall score is low.	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.	specialists of PIU and D&SC	community; Regular inspection of waste management activity; Waste disposal record.	of Construction works
	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport	Before and during construction phase

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.		vehicles.	
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 meter (dB)	Weekly
	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	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	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		receptors, Heavy 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
	Workers 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 location;	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.			
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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Ruppati 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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.	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
	permanent hearing loss, heat stress, and dermatitis.	• 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 supervision to ensure that the correct		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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. • 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	from reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

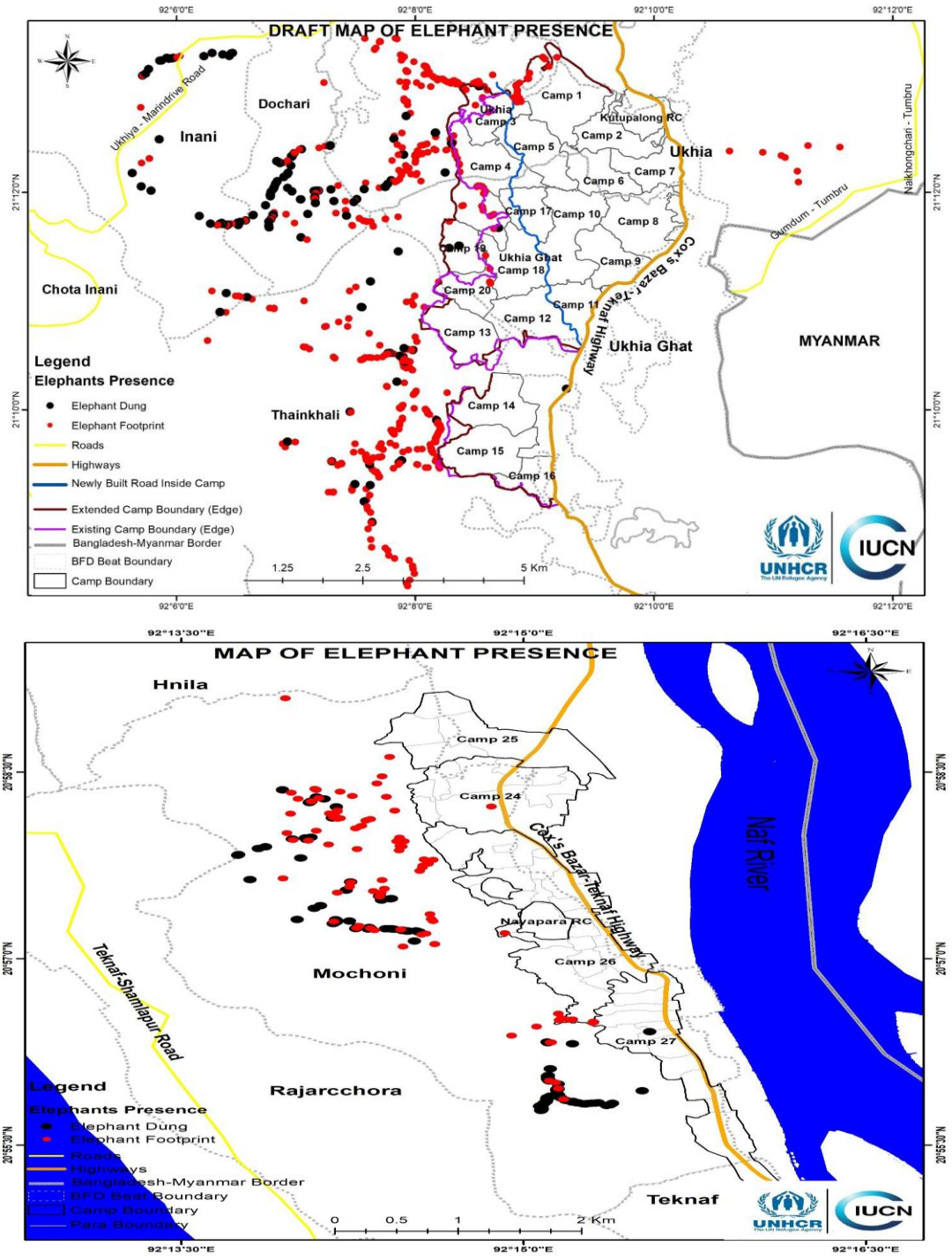
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

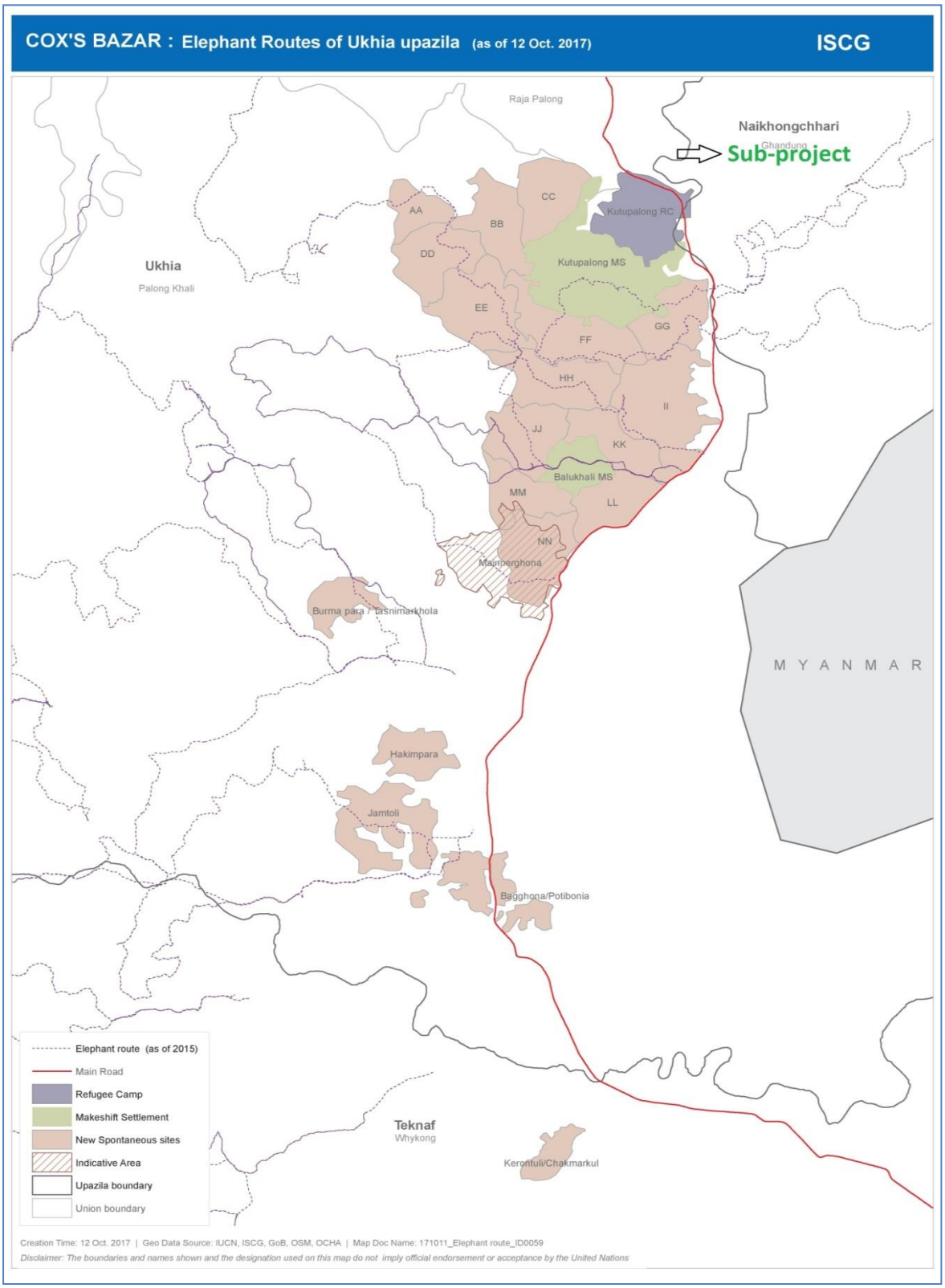
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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	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

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				
	Can for Refill)							
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative placement of the site (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time: 1.00 pm Date: 19.12.19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ Rupapati GPS
মত বিনিময়ের স্থানঃ Rupapati GPS

কোড নং: 412010109
ইউনিয়নঃ Jaliapalong
ডাকঘরঃ Irani
উপজেলাঃ Ukhiya
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১	জনাব জামির উদ্দিন	৫৫	পুরুষ	রূপপাতি	
২	জনাব জাহের হোসেন	৫৫	"	জালিয়া পালং	
৩	মোসাহেদা বেগম	৩৫	মহিলা	মনখালী	
৪	মোঃ আবুস শুকুর	৪৫	পুরুষ	চেংছড়ি	
৫	মোঃ ফুলিম উল্লাহ	৩০	"	"	
৬	আবুল কাশেম	৫০	"	রূপপাতি	
৭	মোহাম্মদ নুরুল হক	৩৫	"	জালিয়া পালং	
৮	ইকবাল মাহমুদ হেলালী	৩৫	"	"	
৯	সৈয়দ আহমদ	৩০	"	রূপপাতি	
১০	খুরশিদা বেগম	৪০	নারী	"	
১১	নুরুচ্ছাফা বেগম	৩৮	"	বাইনাখালী	
১২	সংঘু চাকমা	৩৫	পুরুষ	চেংছড়ি	
১৩	নিলুফার ইয়াছমিন	৩৫	মহিলা	রূপপাতি	
১৪	ছৈয়দ হোছাইন	৩২	পুরুষ	"	
১৫	আতিকুল হক আবির	২৩	"	"	
১৬	ওসিম উদ্দিন	২৩	"	"	
১৭	মরিয়ম বেগম	২৯	নারী	"	
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১৯					

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Sonarpara Govt. Primary School

Educational Institution ID: 412010102

Village: Sonarpara; Union: Jaliapalong; Upazila: Ukhiya;

District: Cox's Bazar

April 2020

Funded by:

THE WORLD BANK
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Government of the People's Republic of Bangladesh

Consultant:

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
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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Jaliapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Sonar para, Mannan para and Sonar Tola. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the fisherman stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 600 households, containing 4000 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. Relevant significant features of the sub-project area and the proposed disaster shelter features 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	Sonarpara GPS
Educational Institute ID	412010102
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
Owner of land	GPS
Land available	43 decimal
Catchment household	600
Catchment Population	4000 (Male: 2100, Female: 1900)
Profession	Farmer 60%, fisherman 25%, businessman 5% and others 10%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1350 persons and 200 livestock
Catchment village	Sonar para, Mannan para, Sonar Tola
Tribal people	No tribal people found in the catchment area
Connecting road	01 BC road is passing by the school boundary
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Sonarpara GPS	
Feature type	**Coverage/Facilities**
Floor area (m^2)	310.73
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)	4
Toilet (Female)	3
Tube well	5
Rainwater collection tank	6
Water filter	Yes
Solar panel	Yes
Water pump	Yes
Hand pump	2
Capacity (persons)	1350
Capacity (livestock)	200

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 Ukhiya Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 20ft wide BCC road is passing by the school boundary. Sonarpara Ahmodiya Sunniya Dakhil Madrasa is situated on north side within the school boundary. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location map of proposed Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
GPS position	21°17' 6.2"N and 92° 03' 17.6"E
Distance from Upazila HQ	14 km
Nearby major road	Inani-Court Bazar road
Nearby river/canal	The Bay of Bengal is located at 1.5km on west and Reju khal is situated at 1km on north
Boundary of the Containing Upazila	Ramu upazila on the North
	Tecna fUpazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

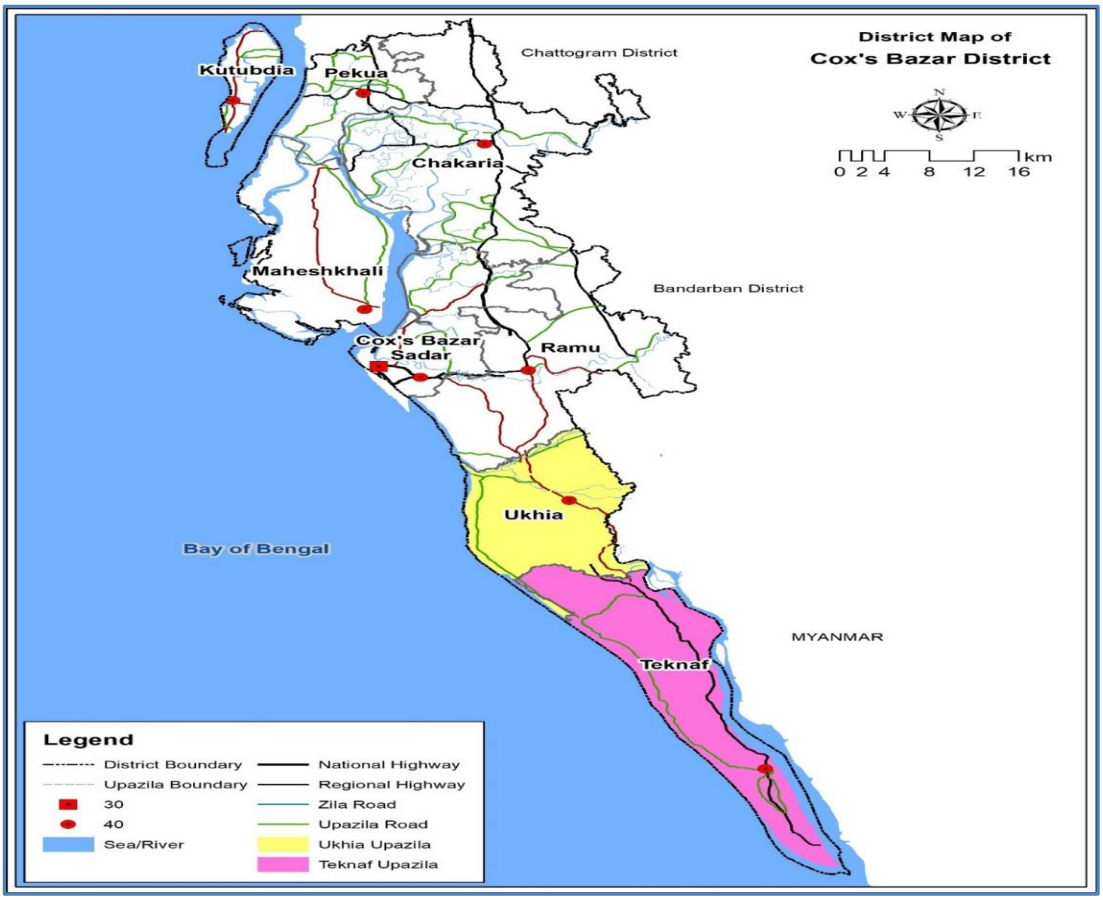


Figure 1.4.1: District Map with project location

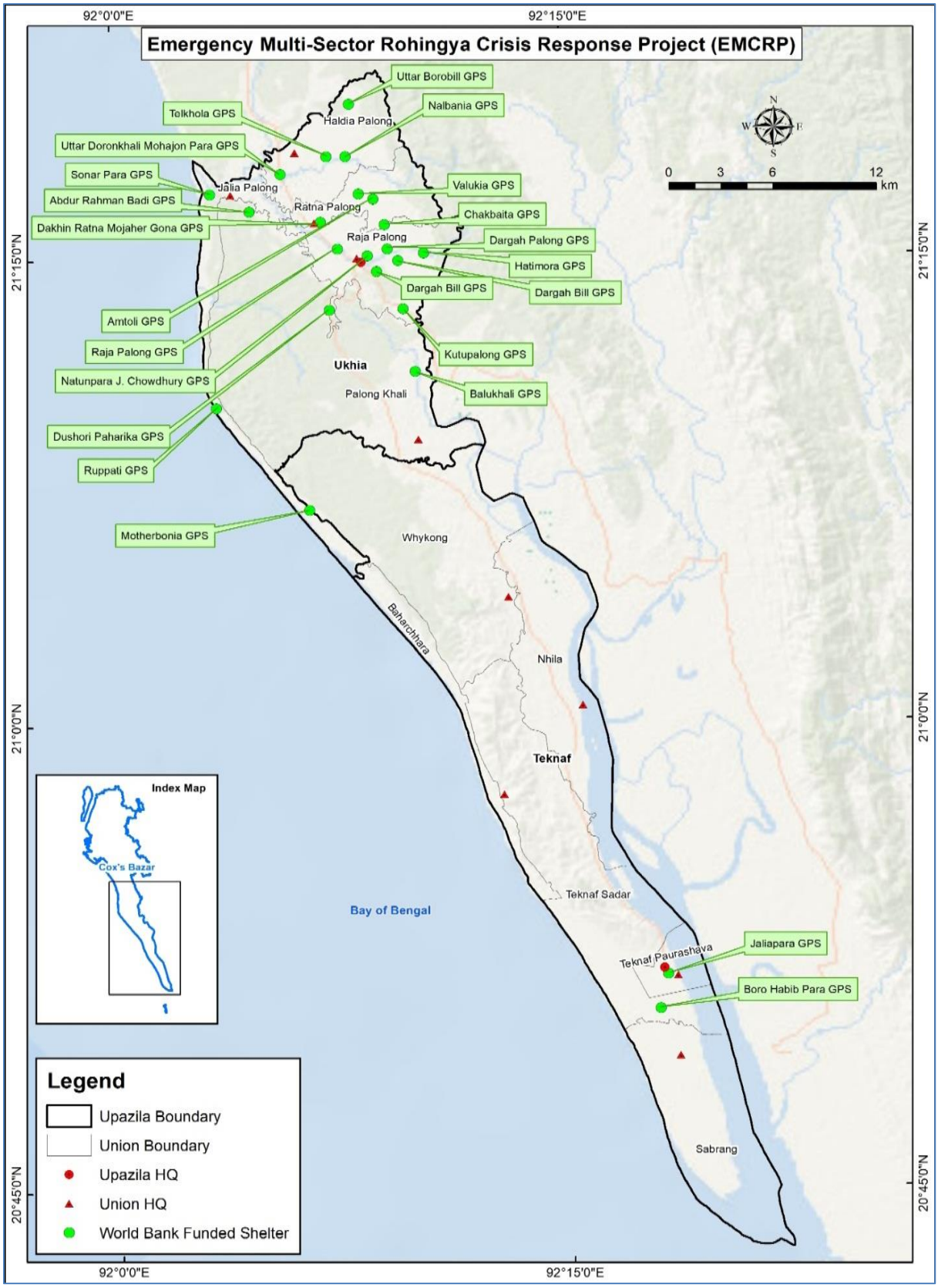


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

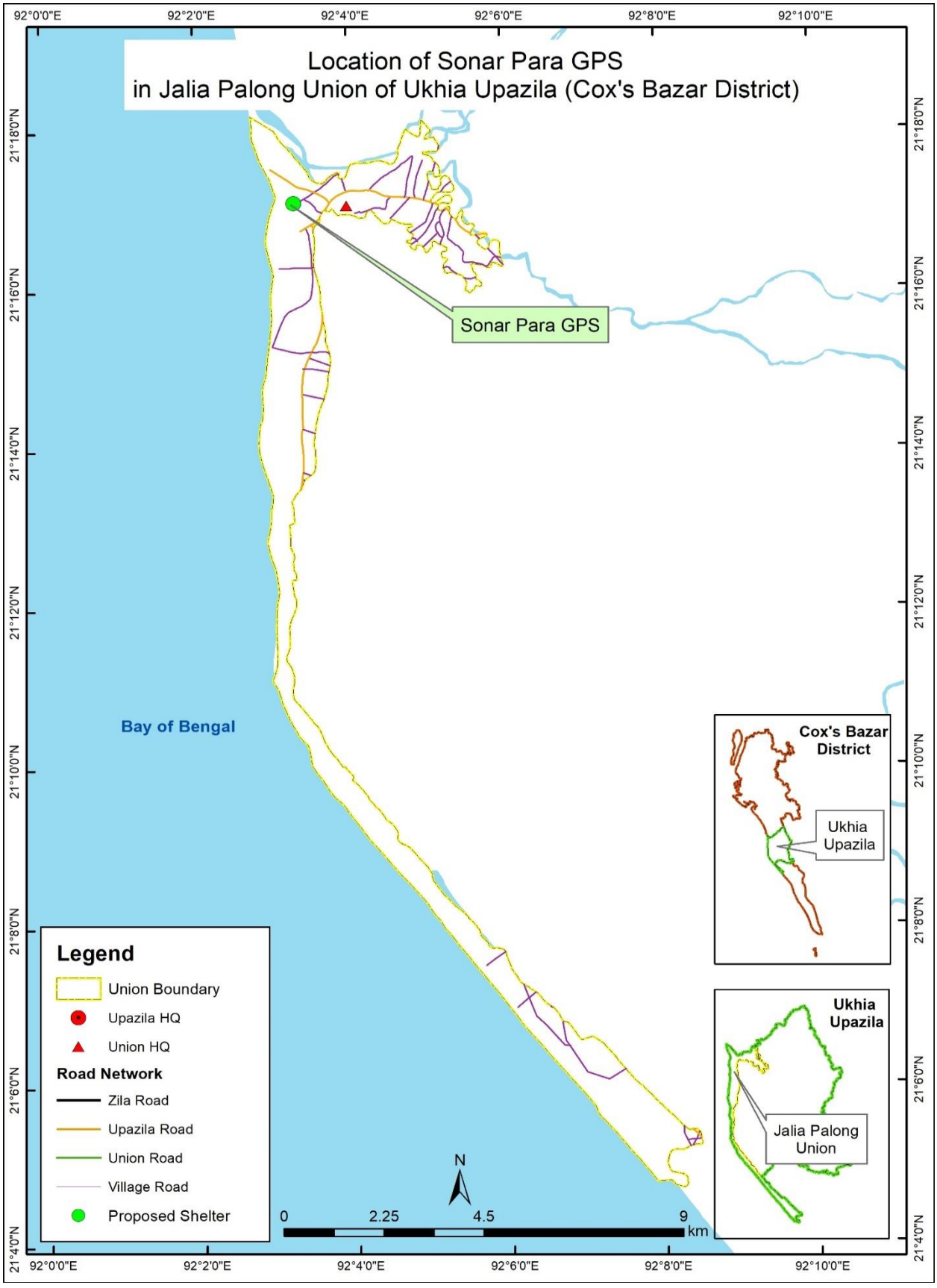


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area and location of construction area have been shown in **Figure 1.5.1** and **1.5.2** respectively.

Table 1.5.1: Important Establishments around the Sub-project site

Direction	Important establishment
North side	Betelnut garden (100m), High school (40m), Madrasa (25m), Reju khal (1km)
South side	Abdul Mannan road (5m), Betelnut garden (100m), Bazar (120m)
East side	Settlements (40m), Bay of Bengal (500m) , Mosque (100m), Graveyard (100m)
West side	Settlements (35m), West Sonarpara Jame mosque (100m), The Bay of Bengal (1.5km)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 19 December 2019 in and around the Sub-project 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 16 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-5 for selected photographs of the participatory public consultation held at site of the Sonarpara 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 free/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.
- Lack of adequate class rooms in the existing school premises.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women. Women can do the same work.
- 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 persist for a 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 19 December 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. Sonarpara high school located at 40m north. A madrasa named Sonarpara Ahmodiya Sunniya Dakhil Madrasa and mosque is situated on north side within the existing school boundary. There is a mosque named West Sonarpara Jame mosque situated at 100m west and another mosque named East Sonarpara jame mosque is situated at 100m east of the sub-project. There is a graveyard at 150m east of the sub-project. The Bay of Bengal is situated at 1.5km west side and Reju khal is situated at 1km north side. About 2 ponds are found within the catchment area and distances are about 60m and 300m from the sub-project. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 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 effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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, as 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 from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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 ensamble 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 impact of cyclone and precipitation has higher burden in this area, intensity of precipitation has been increased according to the participants in consultation meeting and frequency of cyclone 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. Drainage congestion has been found in the area, and according to the participants there is a need of excavation during the construction phase.

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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the northern side. Due to the construction activities of this Sub-project, 2-3nos. 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. Sonarpara high school located at 40m north. A madrasa named Sonarpara Ahmodiya Sunniya Dakhil Madrasa and mosque is situated on north side within the existing school boundary. There is a mosque named West Sonarpara Jame mosque situated at 100m west and another mosque named East Sonarpara jame mosque is situated at 100m east of the sub-project. There is a graveyard at 150m east of the sub-project. These establishments might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 as a result of location, design, construction, and/or operation 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, public health 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 health & 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 need to be minimized through the management plan.
- The project will create employment for those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Sonarpara GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

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

Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.

Estimated construction period duration: 24 months

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

District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Jaliapalong

Name of Community/Local Area: Sonarpara

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 310.73 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 an existing school boundary. A one-storied school building is located on north side and another two storied building is located at west side of the school boundary. Sonarpara high school located at 40m north. A madrasa named Sonarpara Ahmodiya Sunniya Dakhil Madrasa and mosque is situated on north side within the existing school boundary. There is a mosque named West Sonarpara Jame mosque situated at 100m west and another mosque named East Sonarpara jame mosque is situated at 100m east of the sub-project. There is a graveyard at 150m east of the sub-project. A 20 feet BCC road named Inani-Court Bazar road is passing by the west side and south side. An old structure will be demolished during pre-construction period and the new one will be constructed there. No Important environmental features are found within the sub-project.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 20ft wide BCC road named Inani-Court Bazar road is passing near the sub-project area. There is a mosque named West Sonarpara Jame mosque situated at 100m west and another mosque named East Sonarpara jame mosque is situated at 100m east of the sub-project. There is a graveyard at 150m east of the sub-project. 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. The Sonarpara Ahmodiya Sunniya Dakhil Madrasa is situated on north side within the school boundary, but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements, agricultural land and betelnut gardens are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 15 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Jaliapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°17' 6.2"N and 92° 03' 17.6"E. The distance from the Upazila headquarter is about 14 km. Nearby major road is Inani-Court Bazar road, which is connected to the proposed site with a 20 ft. wide BCC road. The school code is 412010102

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 are a one story relatively new building and two story building being used for classrooms, and an old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

The Bay of Bengal is situated at 1.5km west side and Reju khal is situated at 1km north side. About 2

ponds are found within the catchment area and distances are about 60m and 300m from the sub-project. No disturbance will be found due to construction activities. The Sonarpara Ahmodiya Sunniya Dakhil Madrasa cum mosque is situated on north side within the existing school boundary. A mosque named West Sonarpara Jame mosque is situated at 100m west and another mosque named East Sonarpara jame mosque is situated at 100m east of the sub-project. There is a graveyard at 150m east of the sub-project. Some human settlements are found on 200m north side of sub-project area, agriculture land and betelnut gardens are found on 100m east side of school boundary. But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

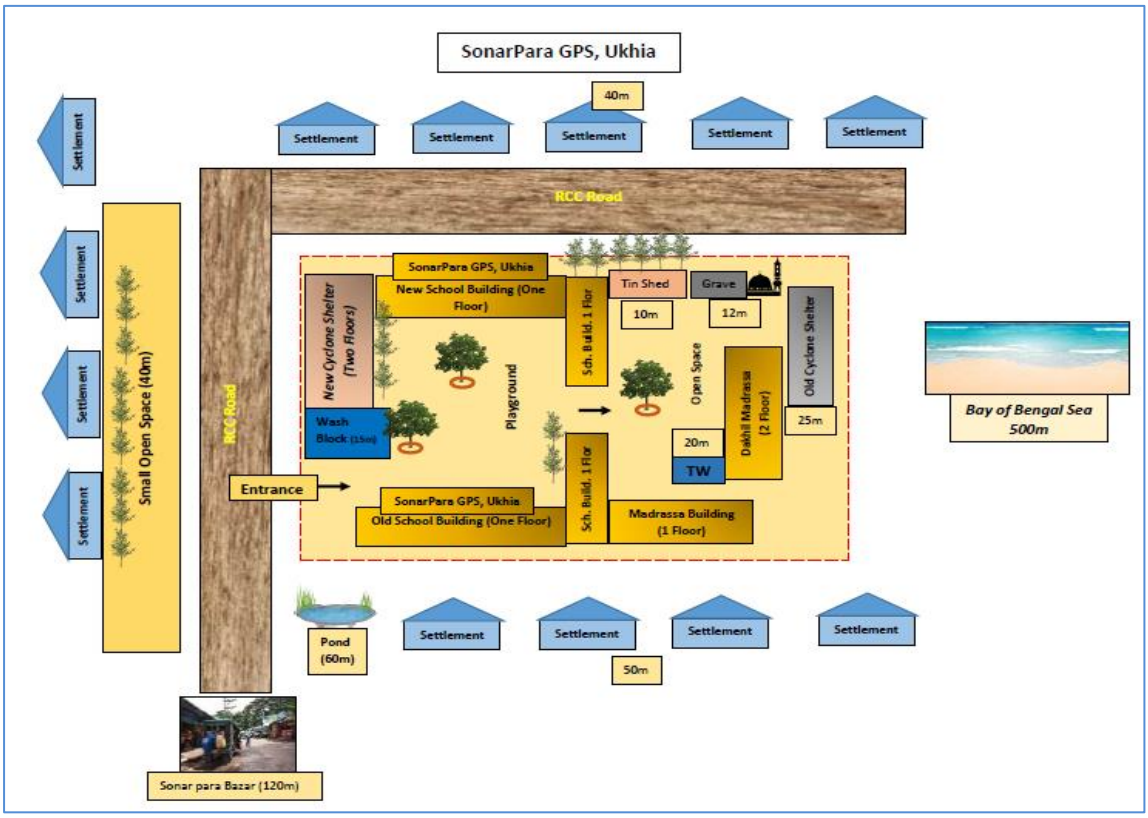
Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

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:
A madrasa named Sonarpara Ahmodiya Sunniya Dakhil Madrasa and mosque is situated on north side within the existing school boundary. There is a mosque named West Sonarpara Jame mosque situated at 100m west and another mosque named East Sonarpara jame mosque is situated at 100m east of the sub-project. There is a graveyard at 150m east of the sub-project but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, mini truck, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as motor cycle, bus, truck, mini truck, 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 in 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 shallow tube-well and a deep tubewell is found within the school boundary. The shallow depth is about 100 feet and deep tubewell depth is 650 feet. In the sub-project area, deep groundwater is salt and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. Two ponds found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project.

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:

Patches of vegetation containing large and matured trees on the north and western side of the proposed construction areas are located within 200m radial distance.

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 BCC road named Inani-Court Bazar 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 tube-well and a deep tubewell is found within the school boundary and depth is about 100 feet and 650 feet. But the tubewells are not working properly in 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 already available at the site. 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 existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 20ft. wide BCC road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to Inani-Court Bazar road.
Location identification for raw material storage: On the west side within the existing school boundary. 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.):

Solid waste: An old structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods.
Type: wood, copper wires, concrete, iron, plastic, tin, etc.
Quantity: Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 6 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 an 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 310.73 sq. meter soil land is required for the sub-project establishment.

There is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.

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 pond is found outside of the construction area, but 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: N/A
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 muddy 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 for 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, except a pond located at 60m from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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 BCC road is passing by the sub-project. During construction works 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 the bad condition of the access road and unsafe driving through it.

A mitigation measure will be provided in ESMP for this unwanted impact.

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 properly so that no chance of spill. • Workers must specify waste dump locations to	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.	Through out the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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. • Sonarpara high school located at 40m north and a mosque cum madrasa is located within the existing school boundary so labor camp needs to be set up in such a location that the establishments are 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 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.			
	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, below the ESMP table, to be followed by the contractor.	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
	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
	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.	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of	Before and during construct

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• 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.		materials transport vehicles.	ion 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 meter (dB)	Weekly
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of	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-	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		complaints from sensitive receptors, Heavy 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
	Workers 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	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
			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.		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
	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 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Sonarpara 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	• 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.	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
	and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• 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 supervision to ensure that the correct methods are being		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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 Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	surrounding 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. • 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	from reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

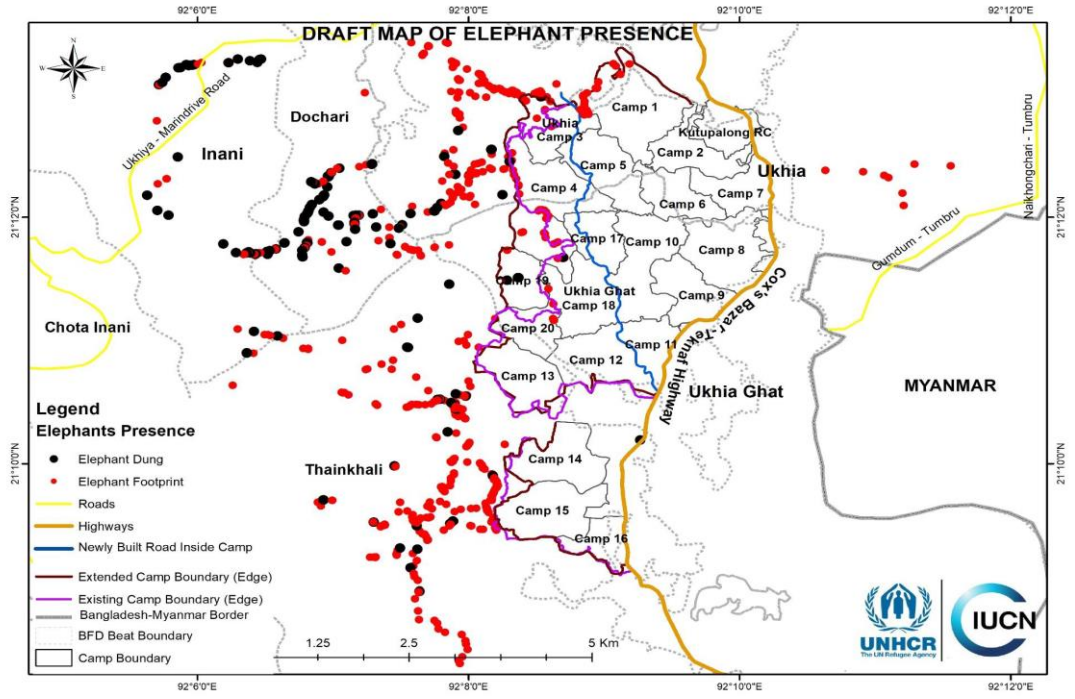
Cost of H&S Measures under COVID 19 Situation

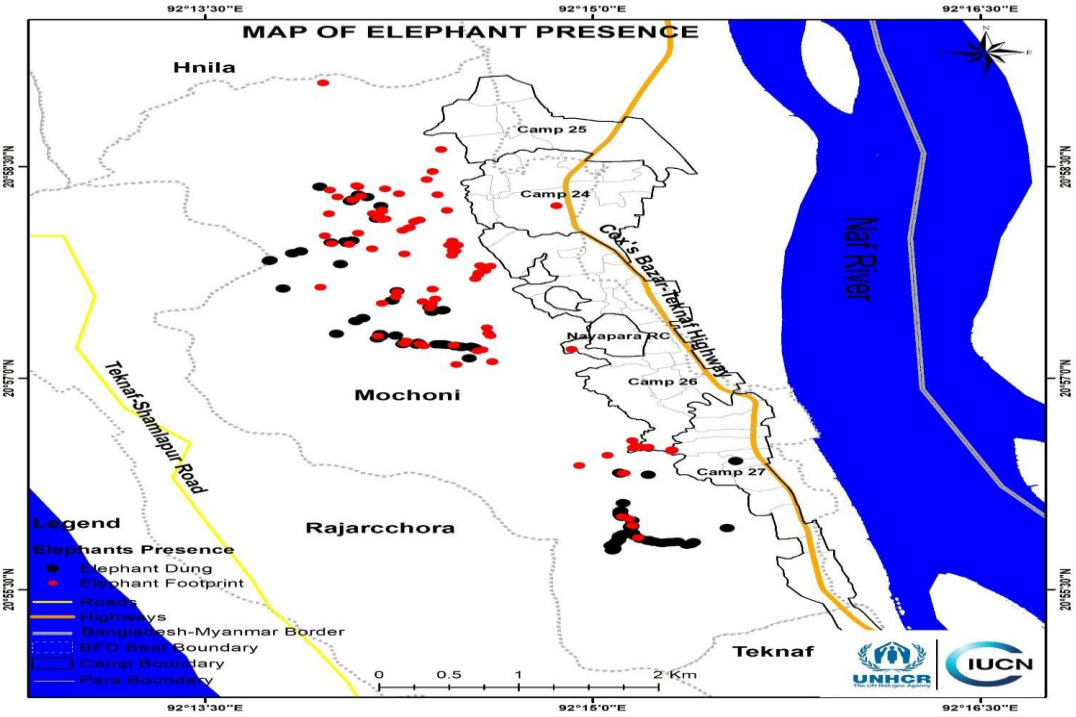
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

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	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

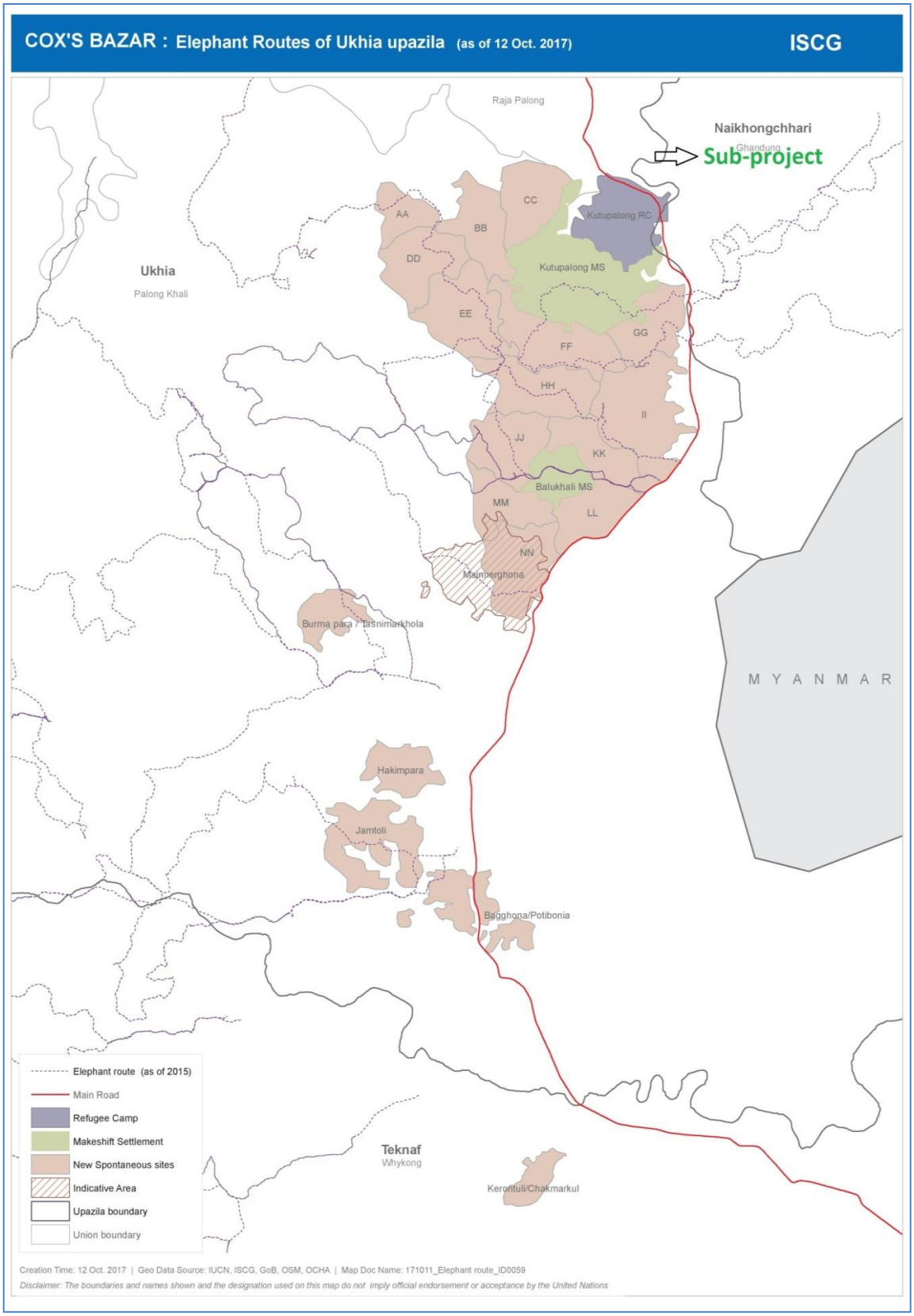
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
	Can for Refill)							
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For 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





Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative placement of the site (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:.....12:00..... Date..12.12.19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ সোনার পাড়া সঃ প্রাঃ বিঃ
মত বিনিময়ের তারিখঃ ১৭/১২/১৯

কোড নংঃ ৪১২০১০১০২
স্থানঃ সোনার পাড়া
ইউনিয়নঃ জালিয়া পালং
ডাকঘরঃ ইনানী
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	জাহানারা বেগম	৪৮	মহিলা	সোনার পাড়া	
০২	আবছার	৪৪	পুরুষ	সোনারপাড়া	
০৩	আবদুল	৫২	পুরুষ	11	
০৪	মোঃ নুর	৪৫	পুরুষ	11	
০৫	মুলে জোন্নাত	৩২	মহিলা	11	
০৬	হাবিবুর আকতার	২৬	নারী	11	
০৭	শাহেদা বেগম	৪০	নারী	11	
০৮	রোজিনা বেগম	৩২	নারী	11	
০৯	ছালেহা বেগম	৩৫	নারী	01818766915	
১০	হাজিয়া	৩৪	নারী		
১১	কামরুল আলম	৪৫	পুরুষ	01816029197	
১২	রহমত উল্লা	৫১	পুরুষ	01815198138	
১৩	[illegible]	৩৩	পুরুষ	01819-333065	
১৪	[illegible]	৪৫	পুরুষ	01719634928	
১৫	[illegible]	৪৩	পুরুষ	01837952507	
১৬	[illegible]	৪৫	নারী	01816421[illegible]	

জাহানারা বেগম
প্রধান শিক্ষক (ভঃ দাঃ)
সোনার পাড়া সরকারি প্রাথমিক বিদ্যালয়
উখিয়া, কক্সবাজার।

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Uttar Borobil Govt. Primary School

Educational Institution ID: 412010305

Village: Uttar Borobil; Union: Holdiapalong; Upazila: Ukhiya;

District: Cox's Bazar

April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school 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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Haldiapalong union of Ukhiya Upazila under Cox's Bazar district. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 650 households, containing 4100 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. 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	Uttar Borobil GPS
Educational Institute ID	412010305
District	Cox's Bazar
Upazila	Ukhiya
Union	Haldiapalong
Owner of land	GPS
Land available	50 decimal
Catchment household	650
Catchment Population	4100 (Male: 2100, Female: 2000)
Profession	Farmer 50%, day labor 30%, businessman 5% and others 15%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 HBB road is passing by the sub-project and named Uttar Borobil-Paglir Bill road
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Uttar Barabil 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)	200

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-East side of Ukhiya Upazila in Cox's Bazar District. The site location is relatively a high plain land, free from any obstruction and easily accessible through a 10ft wide HBB road named Uttar Borobil- Paglir Bill road is passing by the school boundary. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location of Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) map and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Holdiapalong
GPS position	21°19' 57.60"N and 92° 07' 58.50"E
Distance from Upazila HQ	16 km
Nearby major road	Uttar Borobill- Paglir bill road
Nearby river/canal	A khal named Paglir khal is situated at 2km south and another khal named Rejur khal is situated at 2.5km north of the sub-project.
Boundary of the containing Upazila	Ramu upazila on the North,
	Teknaf Upazila on the South,
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

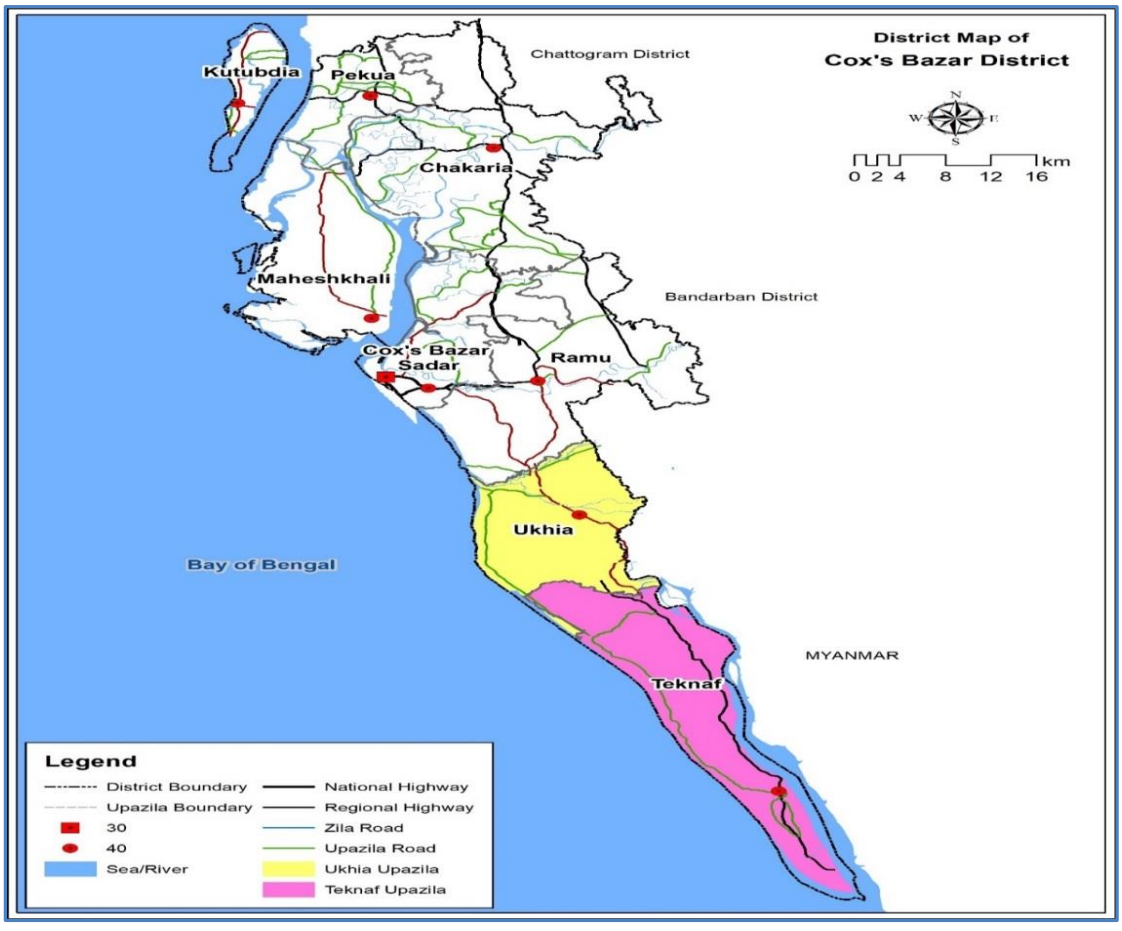


Figure 1.4.1: District Map with project location

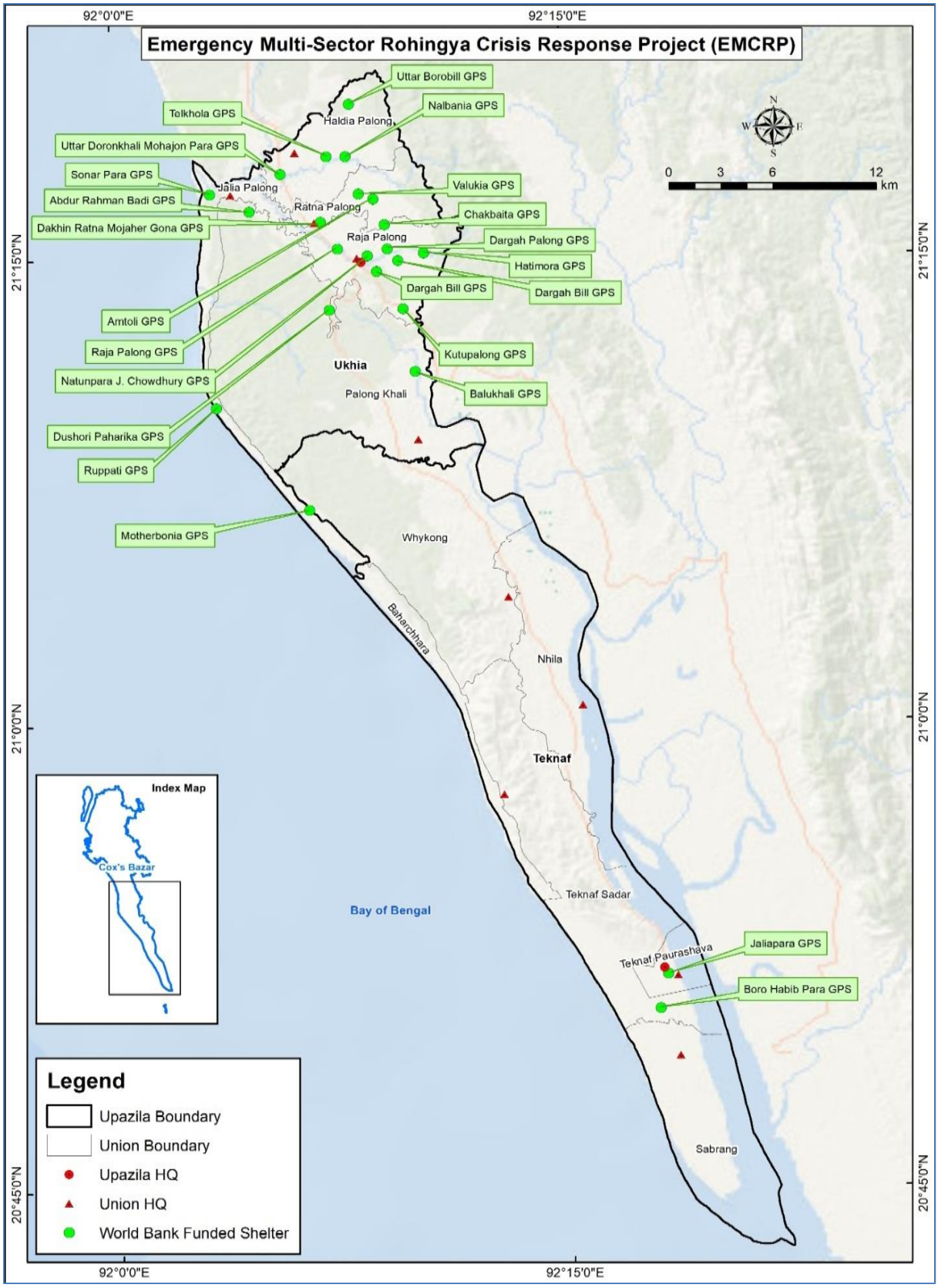


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

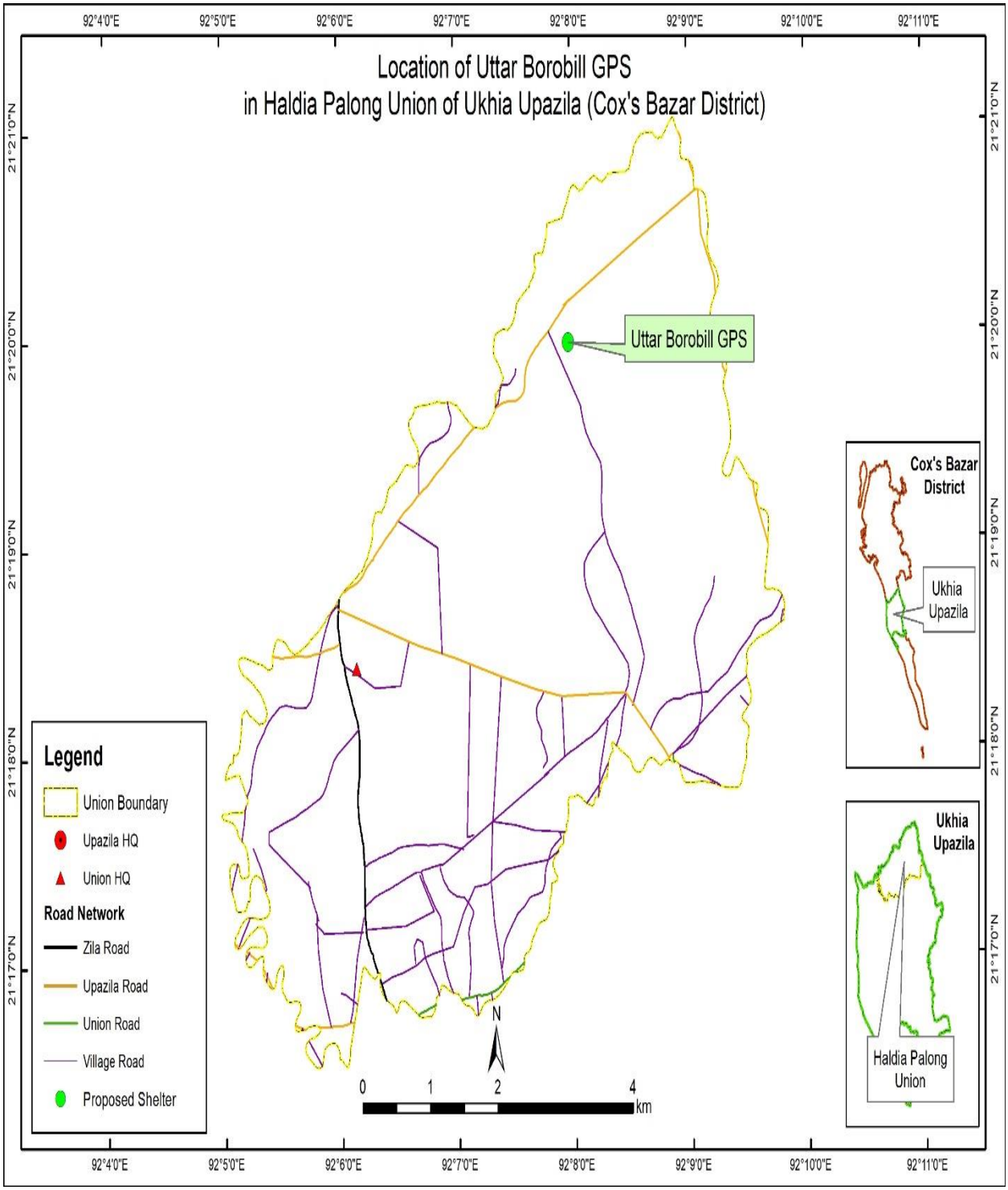


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project and 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 Sub-project area 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	Madrasa and mosque (1.5km), Rejur khal (500m), Agricultural land (130m),
South side	Nurani Madrasa (1.5km), Paglir khal (1km)
East side	Uttar Borobill- Paglir Bill road (35m), Pond (200m), Buddhist temple (1km), 10 nos. of settlements (50m)
West side	Pond (300m), graveyard (500m), mosque (500m), Higher stretches of land (30m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 19 December 2019 in and around the Sub-project 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-5** for selected photographs of the participatory public consultation held at site of the Uttar Borobil 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 free/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.
- Lack of adequate class rooms in the existing school premises, so the cyclone shelter would provide new space for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.
- Possible dust and noise pollution during the construction works.
- Lack of adequate space for cattle.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women.
- 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 persist for a 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 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 19 December 2019 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 disaster shelter) 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. The sub project area is surrounded by small hills. Some earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. A khal named Paglir khal is situated at 1km south and another khal named Rejur khal is situated at 500m north of the sub-project. About 2 ponds are found within 200-300m 0f the catchment area of the sub-project. A relatively higher stretches of land is situated on west side at about 30m from the school boundary. No significant disturbance will be found due to construction activities. One mosque cum madrasa located at 1.5km north and another mosque located at 500m west of the subproject area. There is a Buddhist temple at 1km east of the sub-project. No disturbance to all these establishments/features is anticipated due to construction activities for 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 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 effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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 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, as 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 from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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 thunder storm has been found to have the highest impact in the area, casualties were not reported. Intensity of precipitation has been seen to have increased in the past few years. Salinity was not found in the subproject area and occurrence of cyclonic storm surge was not reported. Temperature was reported to have increased over the past few years.

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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land and it is surrounded by small hills. Due to the construction activities of this Sub-project, 6-8nos. 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. Further, a pond is found a 200m east and some human settlements located at 50m east side of sub-project area might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & 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 need to be minimized through the management plan.
- The project will create employment for those 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Uttar Borobil GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 51,28,69,000 tk
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Holdiapalong
Name of Community/Local Area: Uttar Borobil
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 an existing school boundary. A two-storied school building is located on west side of the school boundary and another one storied building is situated near it. The area is surrounded by small hill. There is a graveyard located within the half km of catchment area. A madrasa named Nurani Madrasa is situated at 1.5km south side and another mosque named Nurani Madrasa and mosque is situated at 1.5km north side of the sub-project. Another mosque located at 500m west of the subproject area. There is a Buddhist temple at 1km east of the sub-project. No Important environmental features are found within the sub-project.

A 10 feet HBB road is passing by the east side and it is connected to the Uttar Borobil-Paglir Bill road. Some agricultural land is found on east side adjacent to the school boundary. A relatively higher stretches of land is situated on west side at about 30m from the school boundary. An old structure will be demolished during pre-construction period and the new one will be constructed there.

Overall Comments

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 for 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

among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 Uttar Borobil- Paglir Bill is passing near the sub-project area. There is a graveyard located within the half km of catchment area. A madrasa named Nurani Madrasa is situated at 1.5km south side and another mosque named Nurani Madrasa and mosque is situated at 1.5km north side of the sub-project. Another mosque located at 500m west of the subproject area. There is a Buddhist temple at 1km east of the sub-project but there is no chance to cause significant disturbances due to the sufficient distance in between. Religious center such as Mosques, temples, educational institutions and local bazar bring cultural values 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 social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 2 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Holdiapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°19' 57.60"N and 92° 07' 58.50"E. The distance from the Upazila headquarter is about 16 km. Nearby major road is Uttar Borobil- Paglir Bill road. The school code is 412010305

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 are a one story relatively new building and another two story building being used for classrooms, and a tin shed old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

A khal named Paglir khal is situated at 1km south and another khal named Rejur khal is situated at 500m north of the sub-project. About 2 ponds are found within 200-300m 0f the catchment area of the sub-project. A relatively higher stretches of land is situated on west side at about 30m from the school boundary. No disturbance is anticipated due to construction activities. One mosque cum madrasa located at 1.5km north and another mosque located at 500m west of the subproject area There is a Buddhist temple at 1km east of the sub-project. But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

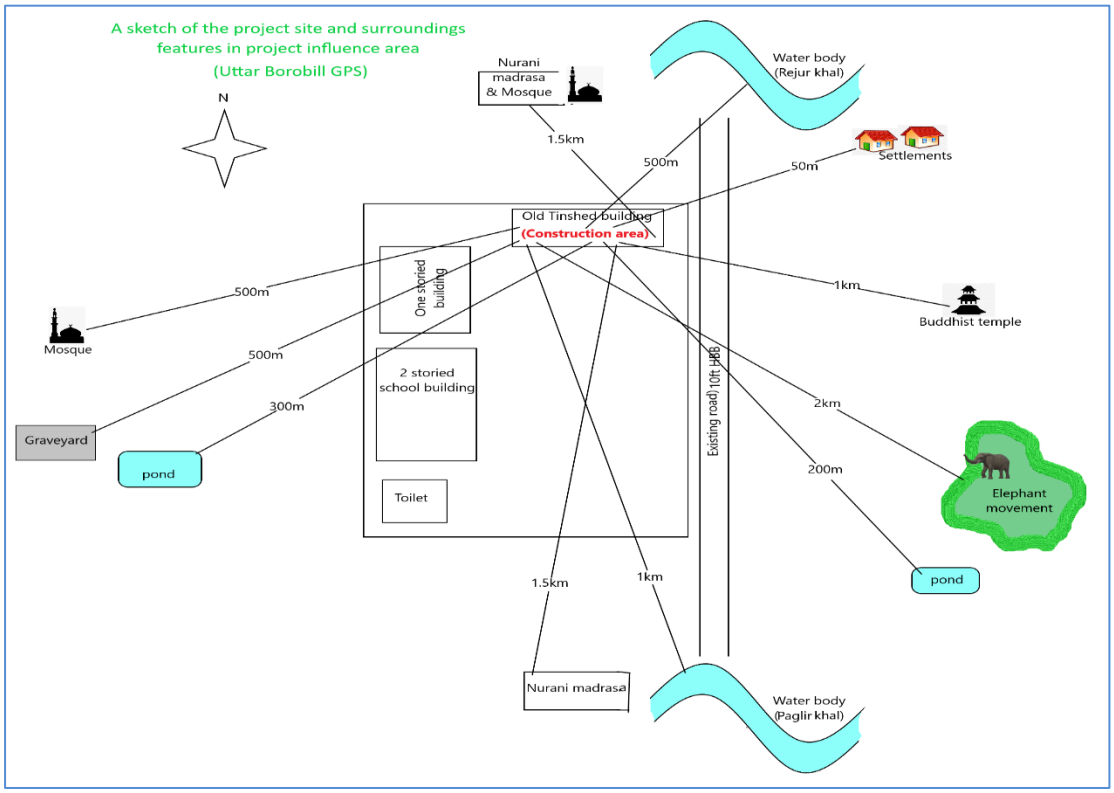
***B.1*: Environmental feature of sub-project location**

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:

There is a graveyard located within the half km of catchment area. One mosque cum madrasa located at 1.5km north and another mosque located at 500m west of the subproject area There is a Buddhist temple at 1km east of the sub-project but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as 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 in 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 shallow tube-well and a deep tubewell are found within the school boundary. The shallow depth is about 150 feet and deep tubewell depth is 600 feet. In the sub-project area, deep groundwater is salt and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. Two ponds are found adjacent

to the sub-project area but no disturbance or modification is anticipated by the sub-project. 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: Patches of vegetation containing large and matured trees on the North and western side of the proposed construction areas are located within 200m radial distance.
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 HBB road is passing by the east side of the sub-project. It is connected to Uttar Borobill-Paglir Bill 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 and a deep tubewell are found within the school boundary and depth is about 250 feet and 600 feet. But the tubewells are not working properly in 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 already available at the site. 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 within the existing school boundary.
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 building material used in construction.

Identification of access road for transportation (Yes/No): About 10ft. wide HBB road is the main way for transportation of raw materials. It is located on east side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the east side within the existing school boundary. 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.): An old structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 6 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 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 an exact figures of construction waste produced on a typical construction site.
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 is relatively dense vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.

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 ponds are found outside of the construction area, but 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 muddy 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 for 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, except two ponds located within 3oom radius from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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. The roads are mainly used as pedestrian access and light vehicles like bicycles, three wheelers etc. therefore, during construction works 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively	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
			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 found at 200m east and some human settlements located at 50m east side of sub-project area so labor camp needs to be set up in such a location that the settlements and pond are 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 substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	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 to be secure, to minimize the risk of crime and	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
			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, below the ESMP table, to be followed by the contractor.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage
	Setting up of labor camp(Generation of sewage waste; solid	Under the sub-project intervention the	• Construction camp should be located at a site favorable for the workers and proposed by the	Contractor, environmental specialists of	Complaints from community;	Prior to the start of

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	overall score is low.	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.	PIU and D&SC	Regular inspection of waste management activity; Waste disposal record.	Construction works
	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport	Before and during construction phase

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.		vehicles.	
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 meter (dB)	Weekly
	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	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	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,	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		Heavy 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
	Workers 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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Uttar Borobil 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.	PIU	Social Development

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Access road shall be well demarcated and accessibly paved.		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 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	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		(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.		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. • 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	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
		kept on site. • Local community must be consulted before any construction work starts.		
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	Preparation of a waste management plan covering the following aspects:	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	handling of hazardous and non-hazardous waste during construction.	• 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 authorized recyclers.		PIU, PSC
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	• 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	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
	and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	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 (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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	• 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
	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. • 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C.		covering 12 shelters i.e.35, 000 Tk.*24 months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000

Sl no.	Description of item	Quantity	Unit price	Total amount
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 around 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.	@3500 tk 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) for one Tube well of this shelter for laboratory analysis of different parameters such as pH, arsenic, iron,	Total 3 nos. of sets of tests need to be conducted	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	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) as desired by E.I.C.	during construction period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

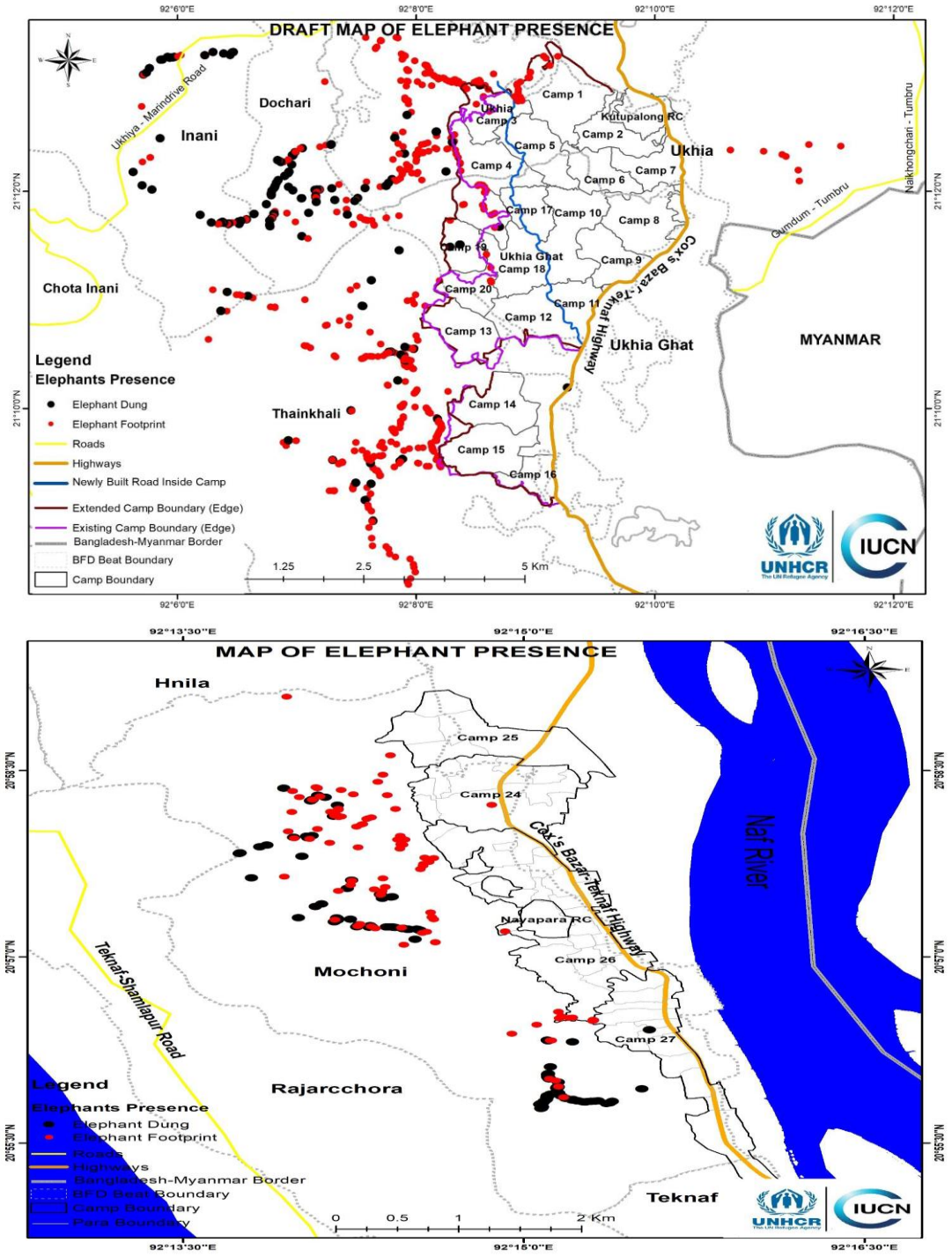
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

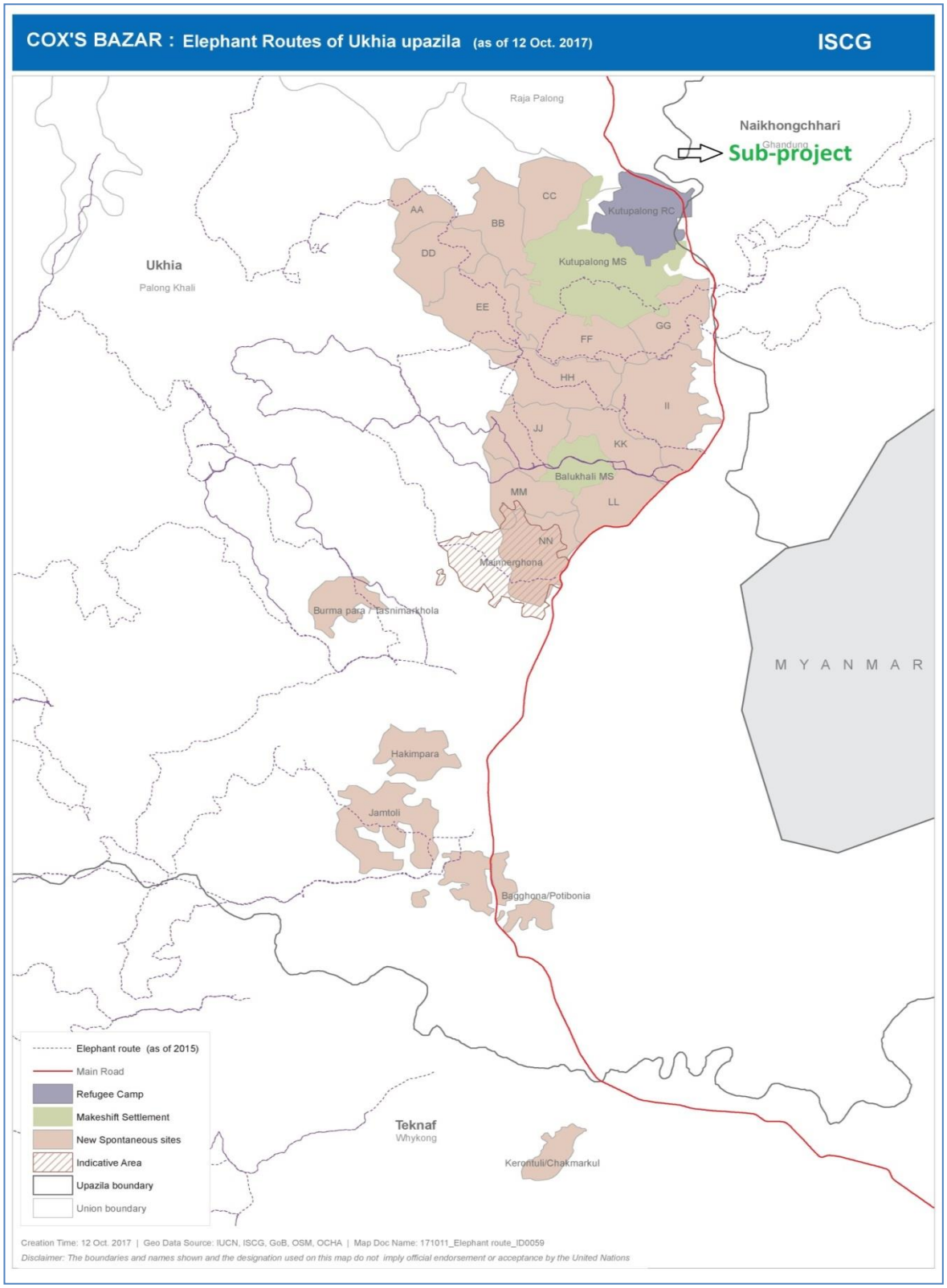
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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.

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				
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



Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...12.45 PM..... Date..19/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ উত্তর বড়বিল সঃ প্রাথ. বিদ্যালয়
মত বিনিময়ের তারিখঃ ১৯/১২/২০১৯

কোড নংঃ ৪২০১০-৬০৫
স্থানঃ উত্তর বড়বিল
ইউনিয়নঃ হলদিয়াপালং
ডাকঘরঃ হরিণ্যাপালং
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	মোঃ কাফিউল হোসাইন	৪৮	পুরুষ	উত্তর বড়বিল	
০২	মতিউর রহমান	৬৫	ঐ	ঐ	মতিউর রহমান
০৩	জাফর আলম	৪৮	ঐ	ঐ	জাফর আলম
০৪	তাহমিদুল ইসলাম	৩২	ঐ	ঐ	
০৫	মোঃ নূরুল হক	৪০	ঐ	দক্ষিণ বড়বিল	
০৬	হাসান মোহাম্মদ	৪৫	ঐ	উত্তর বড়বিল	
০৭	মোহাইমিন মোঃ মোরশেদ	৩০	ঐ	ঐ	
০৮	খালেদ হাসান	২৭	ঐ	ঐ	
০৯	হাসান উদ্দিন	২৫	ঐ	ঐ	
১০	নাহার বেগম	৩৬	নারী	ঐ	
১১	রোমা আক্তার	২২	ঐ	ঐ	
১২	তরিনা বেগম	৫০	ঐ	দক্ষিণ বড়বিল	
১৩	খাদিজা বেগম	৩৬	ঐ	ঐ	
১৪	রোজিনা	৩০	ঐ	উত্তর বড়বিল	
১৫	রোকেয়া না আক্তার	২৫	ঐ	দক্ষিণ বড়বিল	
১৬	হাসিনা বেগম	২৫	ঐ	উত্তর বড়বিল	
১৭	হাসিনা বেগম	২৫	ঐ	ঐ	
১৮	কুলছুমা আক্তার	২৭	ঐ	ঐ	
১৯	হাসিনা বেগম	২৬	ঐ	ঐ	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:…….. Date……

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ
মত বিনিময়ের তারিখঃ

কোড নং:
স্থানঃ
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১৮	আমেনা খাতুন	৩০	নারী	উত্তর বড়বিল	আমেনা খাতুন
১৯	মমতাজ বেগম	৩৫	〃	〃	মমতাজ
২০	হাজেরা বেগম	৪২	〃	〃	হাজেরা
২১	ছেমরারা বেগম	৩৩	〃	〃	ছেমরা
২২	দিলুয়ারা বেগম	৪৫	〃	লেদুরে বিল	দিলুয়ারা
২৩	জেনুয়ারা বেগম	২৮	〃	〃	জেনুয়ারা
২৪	ফোরকিদা বেগম	৩২	〃	উত্তর বড়বিল	ফোরকিদা
২৫	কাহারু	২৫	〃	〃	কাহারু
২৬	নুর আমেনা	৩৫	〃	〃	নুর আমেনা
২৭	বুলবুল আক্তার	২৭	〃	লেদুরে বিল	বুলবুল আক্তার
২৮	ফোরকিদা	২৭	〃	উত্তর বড়বিল	ফোরকিদা

মোঃ শফিকুর রহমান
প্রধান শিক্ষক
উত্তর পশ্চিম সরকারি প্রাথমিক বিদ্যালয়
উখিয়া, কক্সবাজার।

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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Uttar Doromkhali Mohajan Para Govt. Primary School

Educational Institution ID: 412010305

Village: Rumkhapalong; Union: Haldiapalong; Upazila: Ukhiya;

District: Cox's Bazar

April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 and is 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 titled '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 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 upazilas 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 of construction/rehabilitation of 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school

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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Haldiaplong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Ghonarpara, Shilpara, Rumkha Natunpara, South Boruapara, South Shilpara. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 500 households, containing 3300 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. There are also significant chances that all the households in the catchment area may not need to take refuge to the shelter and also the successive interventions would ease the crowd in future. 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	Uttar Doromkhali Mohajan Para GPS
Educational Institute ID	412010305
District	Cox's Bazar
Upazila	Ukhiya
Union	Haldiapalong
Owner of land	GPS
Catchment household	500
Catchment Population	3300 (Male: 1650, Female: 1650)
Profession	Farmer 57%, day labor 27%, businessman 5% and others 11%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Ghonarpara, Shilpara, Rumkha Natunpara, South Boruapara, South Shilpara
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 muddy road is connected to Court Bazar-Valukia road
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Uttar Doromkhali Mohajon Para 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)	200

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 North-East side of Ukhiya 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 muddy road, which is connected to the Court Bazar- Valukia road. A mosque is located at 500m south and another mosque is located at 500m east of the sub-project. There is a temple named Durga Temple located at 500m south side of the sub-project. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location of proposed Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) map and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Haldiapalong
GPS position	21°17' 43.90"N and 92° 05' 39.6"E
Distance from Upazila HQ	10-12 km
Nearby major road	Court Bazar- Valukia road
Nearby river/canal	A chora named Mohajon Para Chora is located on South. No major river or canal is found within the catchment area
Boundary of the Containing Upazila	Ramu upazila on the North
	Tecna fUpazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

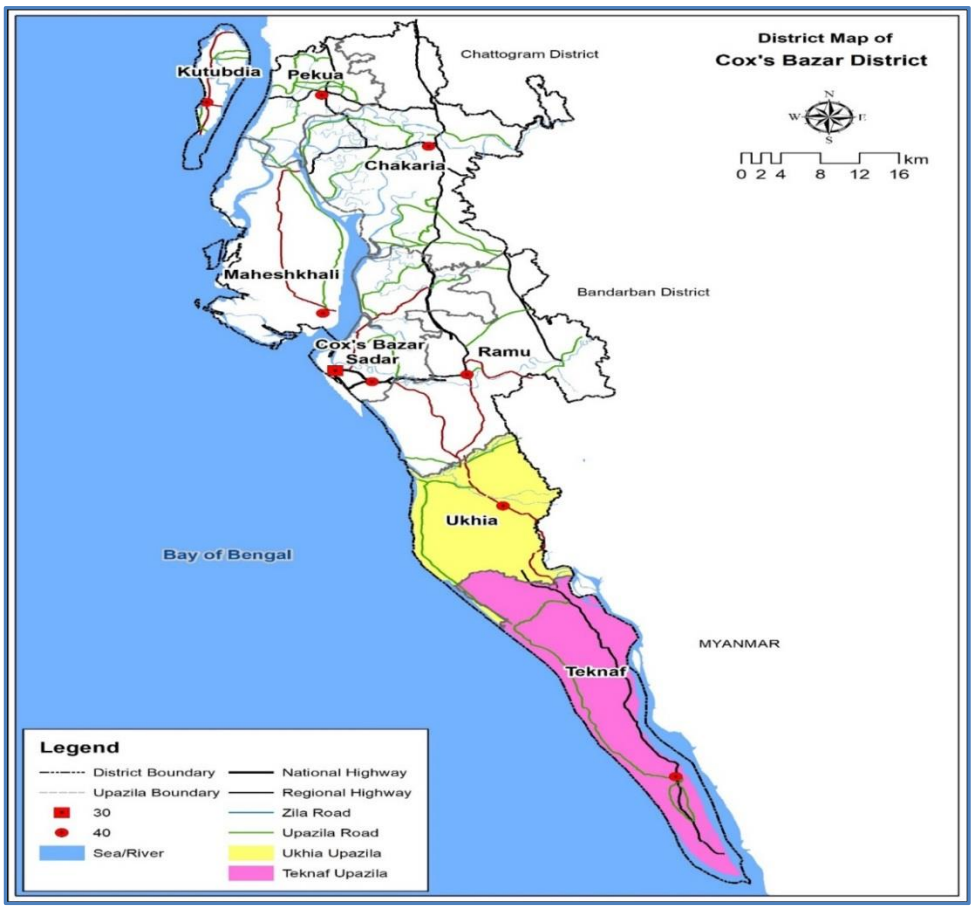


Figure 1.4.1: District Map with project location

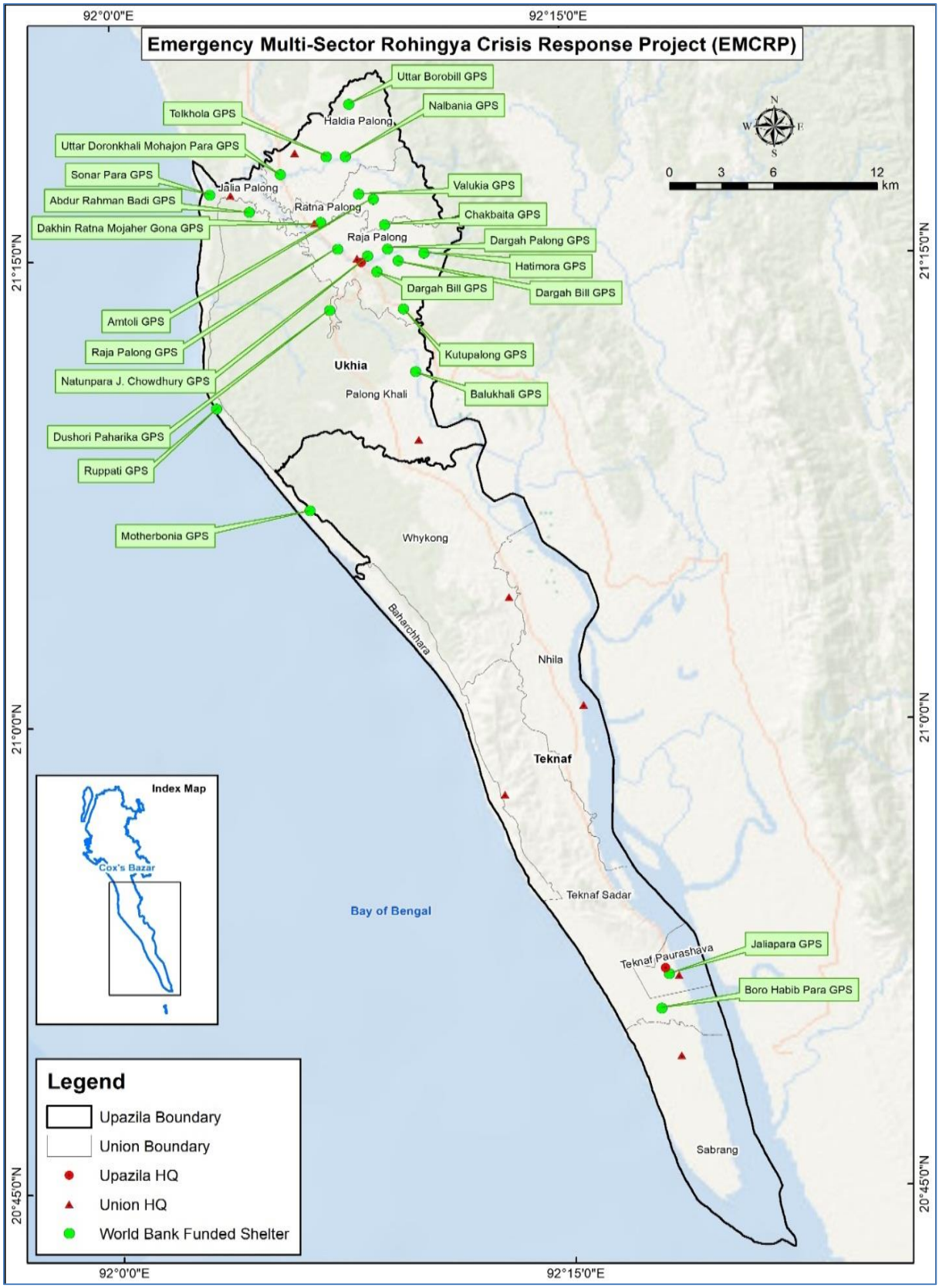


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

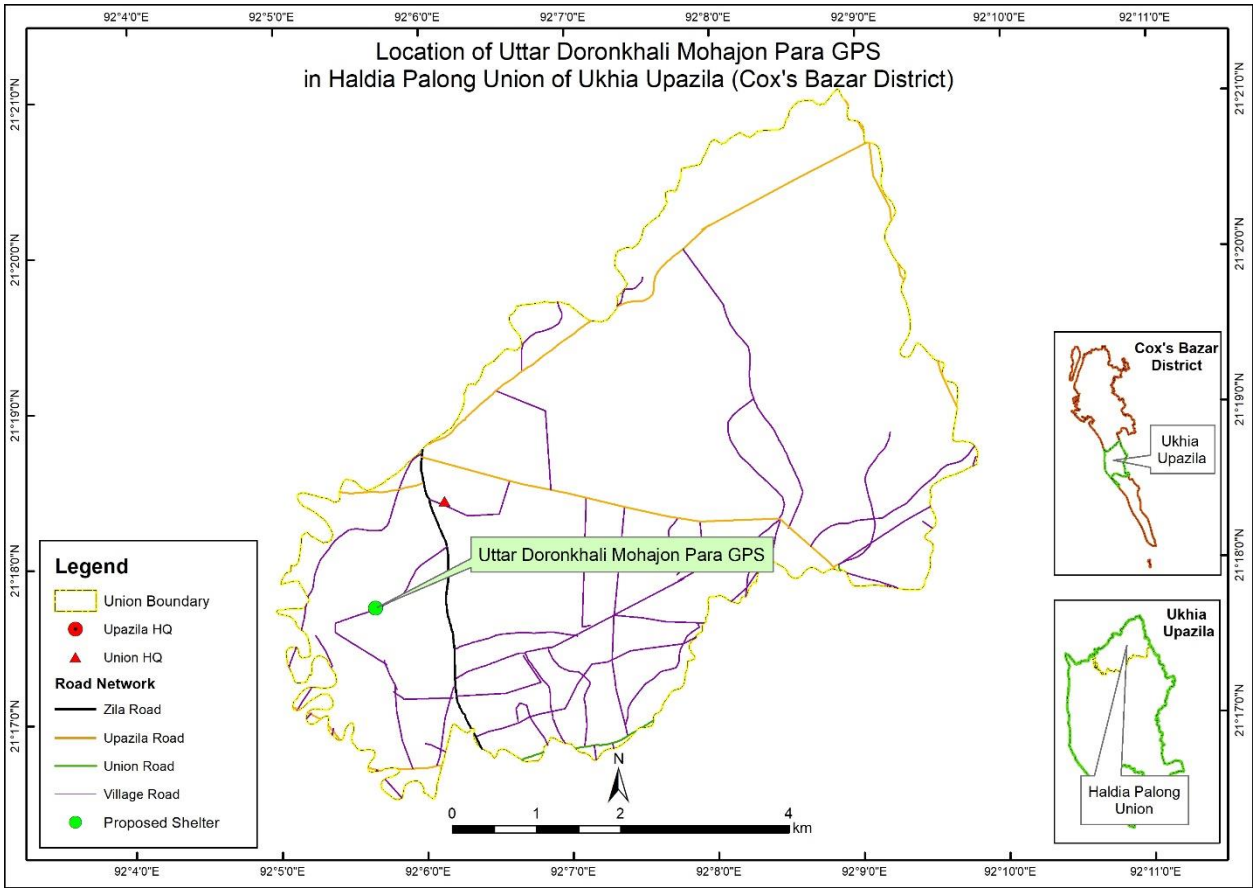


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area 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	Betelnut garden (10m), mondir (200m), 10 nos of settlements (20m)
South side	Mohajon para chora (40m), Rumka mosque (500m), Durga mondir (500m), pond (150m)
East side	Agricultural land (30m), betelnut garden (15m), Mosque (500m), pond (100m)
West side	Loknath mondir (300m), Hori mondir (500m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of construction area

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 19 December 2019 in and around the Sub-project 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-5** for selected photographs of the participatory public consultation held at site of the Uttar Doronkhali Mohajan Para 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. 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 free/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.
- Lack of adequate class rooms in the existing school premises, so the cyclone shelter would provide new space 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women. Women can do the same work.
- 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 persist for a 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 19 December 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. A chora named Mohajen Para chora is located at 40m south of the sub project. There are 2 ponds found within the catchment area and distance is about 100-150m from the sub-project. A mosque named Rumkha mosque is situated at 500m south and another mosque named Mohajenpara mosque is situated at 500m east of the sub-project. A mondir named Hori Mondir is situated at 500m north-west side and another mondir named Durga mondir is situated at 500m south of the sub-project. Another mondir named Sarashati Mondir is located at 200m north of the sub-project. Loknath mondir is found at 300m west of the sub-project. A 10 feet muddy road is passing by the south side and it is connected to the Court Bazar-Valukia highway. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 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 effect generated from pilling and drilling may also trigger 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 may also trigger habitat loss.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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, as 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 from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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 ensamble 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 water stagnation 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 is found to have highest impact in the area. Thunder storm has been seen to have increase. Drainage congestion has not been found in the area.

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

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

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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the northern side. Due to the construction activities of this Sub-project, 2-3 nos. of trees (small and medium size) maybe cut down and as a mitigation measure, 50 nos. of trees will be replanted in the periphery of the school. Mohajon Para Chora is located at 40m south of the sub-project area might get affected during the construction period with the generated 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those workforces 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Uttar Doronkhali Mohajan Para GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)

Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 51,28,69,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15years
District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Haldiapalong
Name of Community/Local Area: Rumkhapalong
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 an existing school boundary. A one-storied school building is located on south side of the school boundary. A chora named Mohajen para chora is located at 40m south of the sub-project. Two mosques, two temples, human settlements, agricultural land and two ponds are found within the 0.5km radius of the sub project area. A 10 feet muddy road is passing by the south side and it is connected to the Court Bazar-Valukia highway. No Important environmental features are found within the sub-project. An old structure will be demolished during pre-construction period and the new one will be constructed there.

Overall Comments
People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 muddy road is passing near the sub-project area. A mosque named Rumkha mosque is situated at 500m south and another mosque named Mohajenpara mosque is situated at 500m east of the sub-project. 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. A mondir named Hori Mondir is situated at 500m north-west side and another mondir named Durga mondir is situated at 500m south of the sub-project. Another mondir named Sarashati Mondir is located at 200m north of the sub-project. Loknath mondir is found at 300m west of the sub-project but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 8 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Haldiapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°17' 43.90"N and 92° 05' 39.6"E. The distance from the Upazila headquarter is about 12 km. Nearby major road is Court Bazar-Valukia road, which is connected to the proposed site with a 10 ft. wide muddy road. The school code is 412010305

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 are a one story building being used for classrooms, and an old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

A chora named Mohajen Para chora is located at 40m south of the sub project. About 2 ponds are found within the catchment area and distance is about 100-150m of the sub-project. No disturbance will be found due to construction activities. A mosque named Rumkha mosque is situated at 500m south and another mosque named Mohajenpara mosque is situated at 500m east of the sub-project. A mondir named Hori Mondir is situated at 500m north-west side and another mondir named Durga mondir is situated at 500m south of the sub-project. Another mondir named Sarashati Mondir is located at 200m north of the sub-project. Loknath mondir is found at 300m west of the sub-project But there is no scope to be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

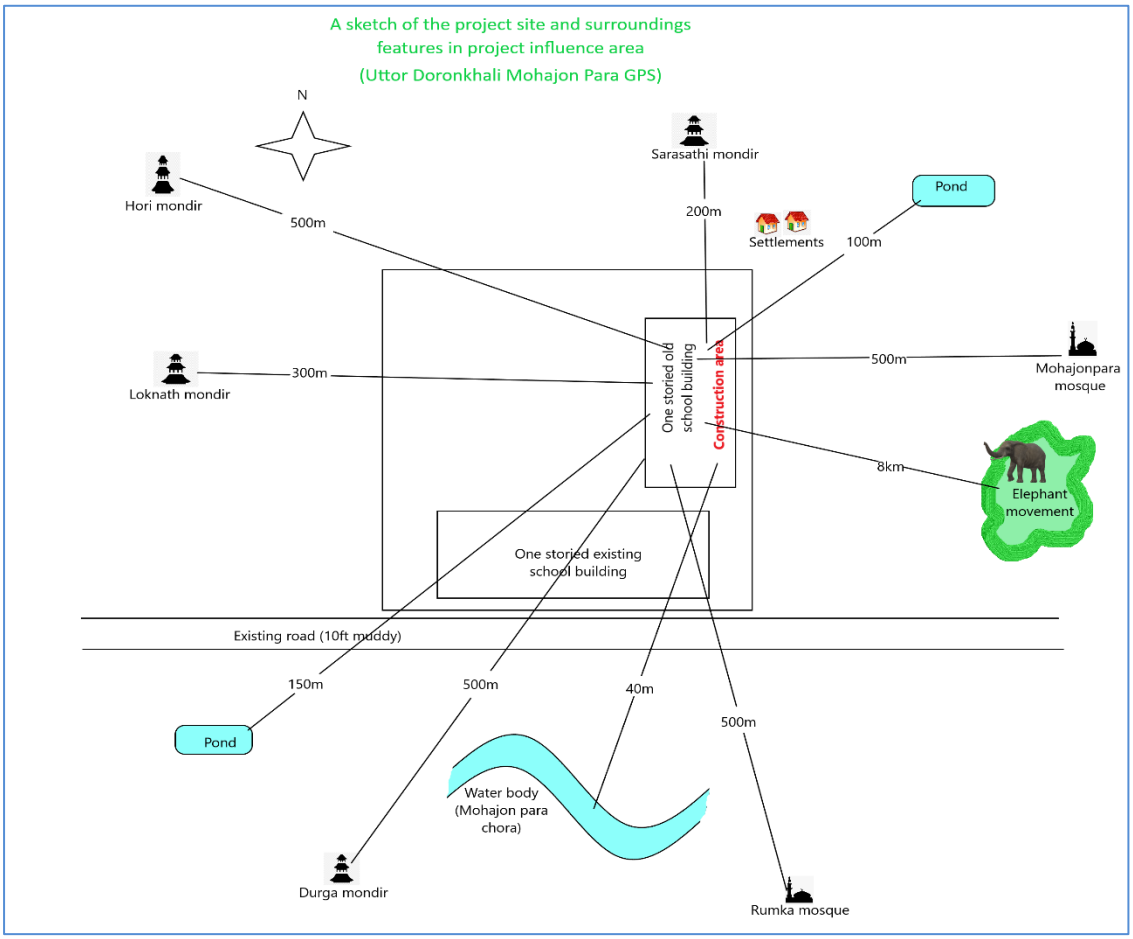
***B.1*: Environmental feature of sub-project location**

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:

There are 2 mosques and 4 temples are found within the half kilometer radius of the school boundary. A mosque named Rumkha mosque is situated at 500m south and another mosque named Mohajenpara mosque is situated at 500m east of the sub-project. A mondir named Hori Mondir is situated at 500m north-west side and another mondir named Durga mondir is situated at 500m south of the sub-project. Another mondir named Sarashati Mondir is located at 200m north of the sub-project. Loknath mondir is found at 300m west of the sub-project. A chora is located at 40m south of the sub-project but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface adjacent 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 in 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 shallow tube-well and a deep tubewell are found within the school boundary. The shallow depth is about 200 feet and deep tubewell depth is 800 feet. In the sub-project area, deep groundwater is salt and arsenic free.

Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. Two ponds are found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project. 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: Patches of vegetation containing large and matured trees on the north and eastern side of the proposed construction areas are located within 200m radial distance.
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 muddy road is passing by the south side of the sub-project. It is connected to Court Bazar-Valukia 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 shallow tube-well and a deep tubewell are found within the school boundary and depth is about 200 feet and 800 feet. But the tubewells are not working properly in 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 already available at the site. 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 existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 10ft. wide muddy road is the main way for transportation of raw materials. It is located on south side of adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On the west side within the existing school boundary. 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.): **Solid waste:** An old structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 6 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 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 an 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 is relatively thick vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 ponds are found outside of the construction area, but 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 muddy 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 for 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, except two ponds are located within 150m radius from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may 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 a locality. A muddy road connects the site with the main road. The muddy road is mainly used for pedestrian access and 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively	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
			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 chora is located at 40m south of the school boundary so labor camp needs to be set up in such a location that the chora 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 substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	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 to be secure, to minimize the risk of crime and to be safe from access by students, children,	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. • 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, below the ESMP table, to be followed by the contractor.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air	Under the sub-project intervention the overall score is	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental	Contractor, environmental specialists of	Complaints from community; Regular	Prior to the start of Constructi

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	& dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	low.	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.	PIU and D&SC	inspection of waste management activity; Waste disposal record.	on works
	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.	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport vehicles.	Before and during construction phase

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Safety & protection gears, first aid box etc. should be available in the site during construction period.			
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 meter (dB)	Weekly
	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	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	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
	and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.		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.		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
	Workers 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,	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
			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 monitored by Consultant 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	Contractor monitored by Consultant and PIU	Worksite is restored to original conditions;	Over the completion of

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			of the bidding document.			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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Uttar Doronkhali Mohajan Para 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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Local community will be trained up about traffic 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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 test and ensure the coherence with the plan. • All people of construction site will be concerned about	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.	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 supervision to ensure that the correct methods are being used.		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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. • 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	from reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

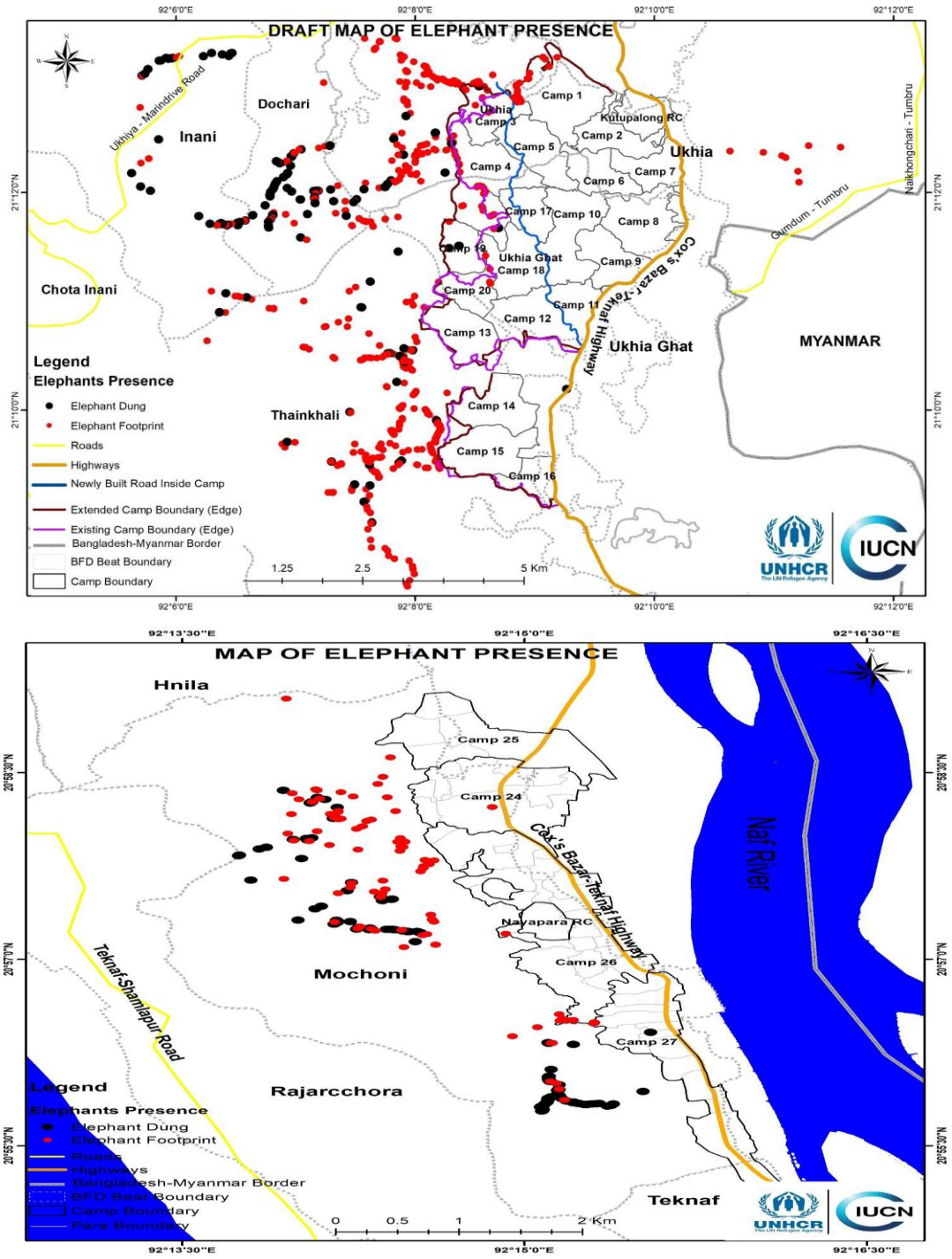
Cost of H&S Measures under COVID 19 Situation

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 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

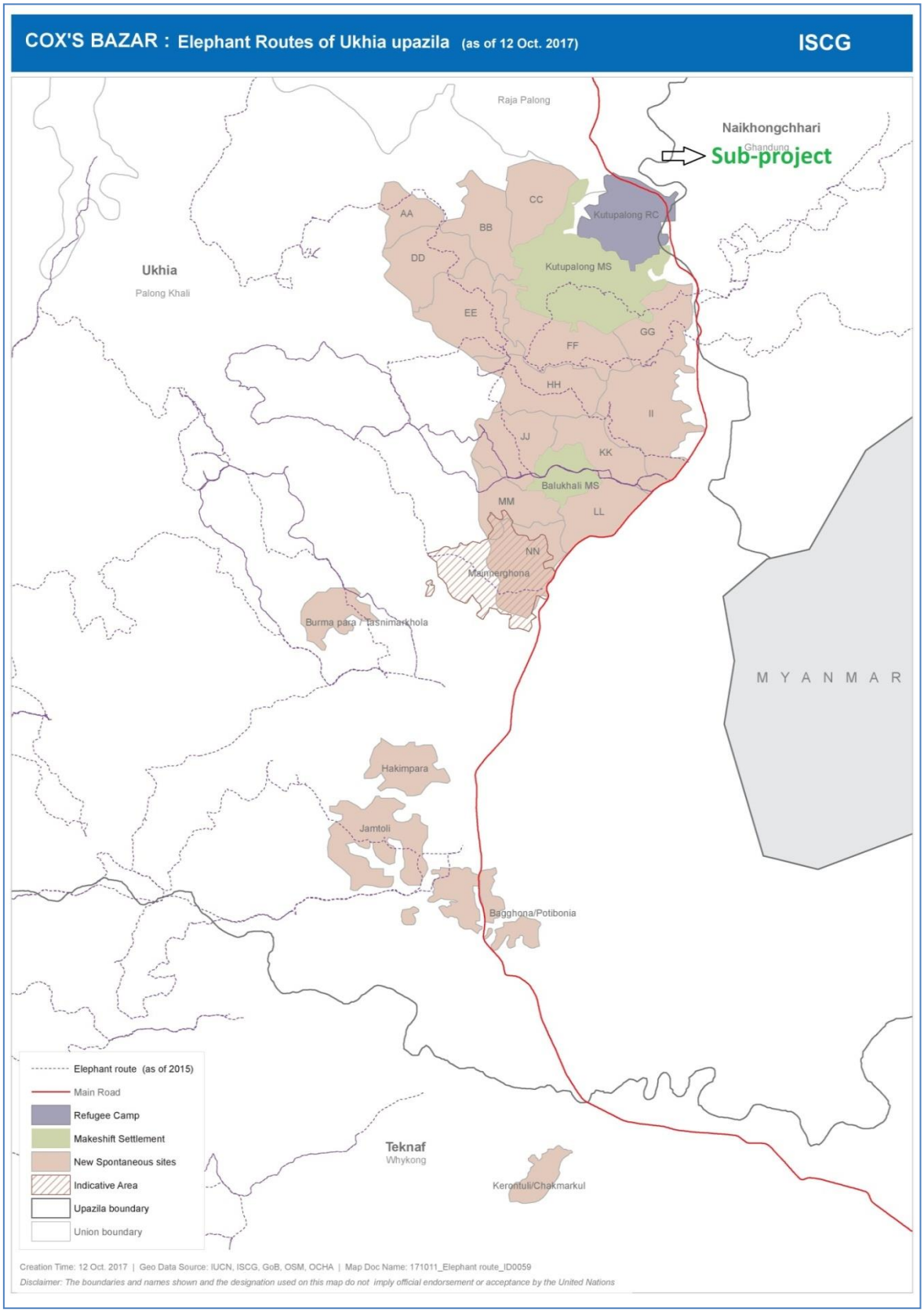
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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.

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				
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

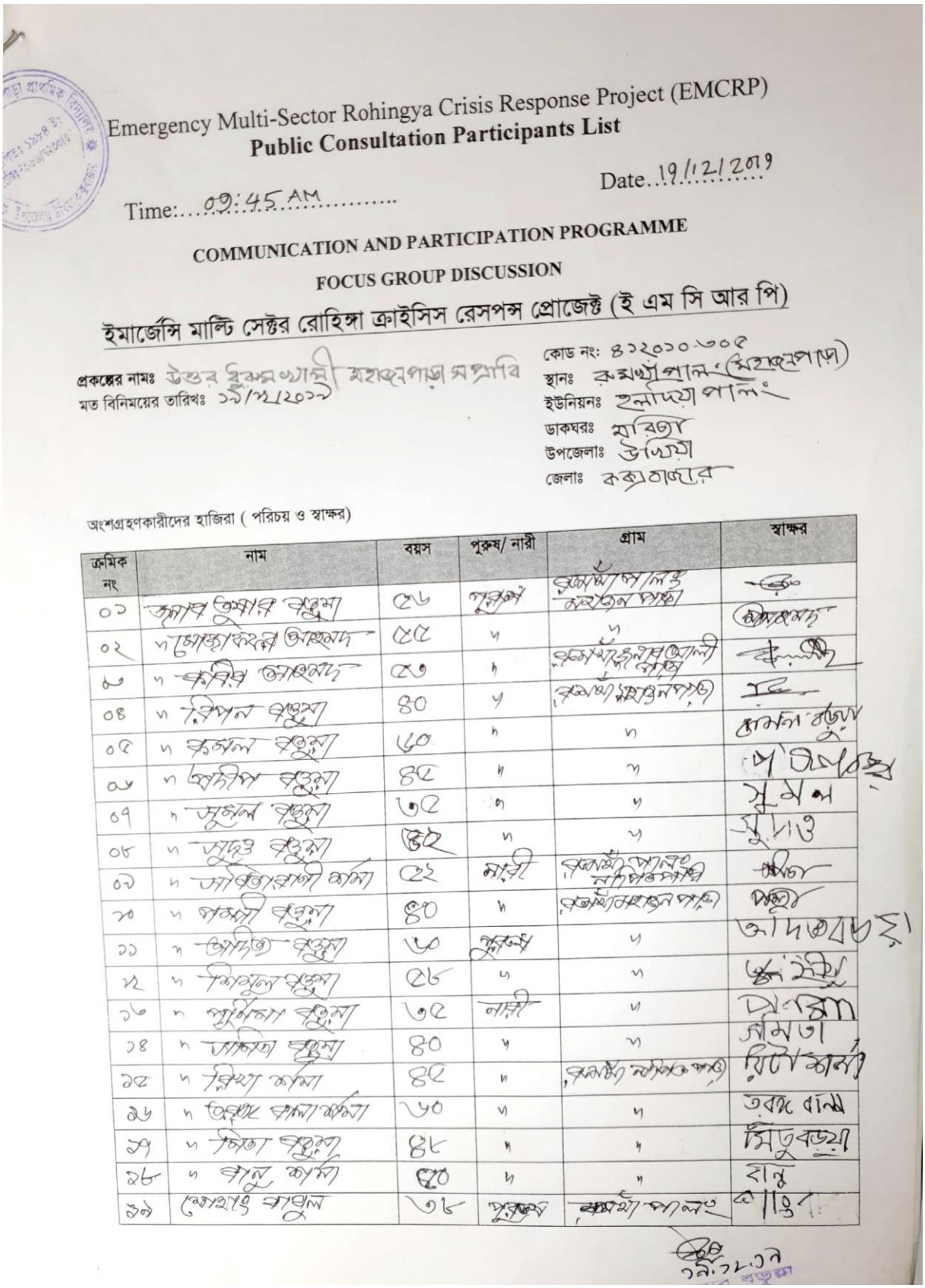


Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5



Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...09:45 AM..... Date..19/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

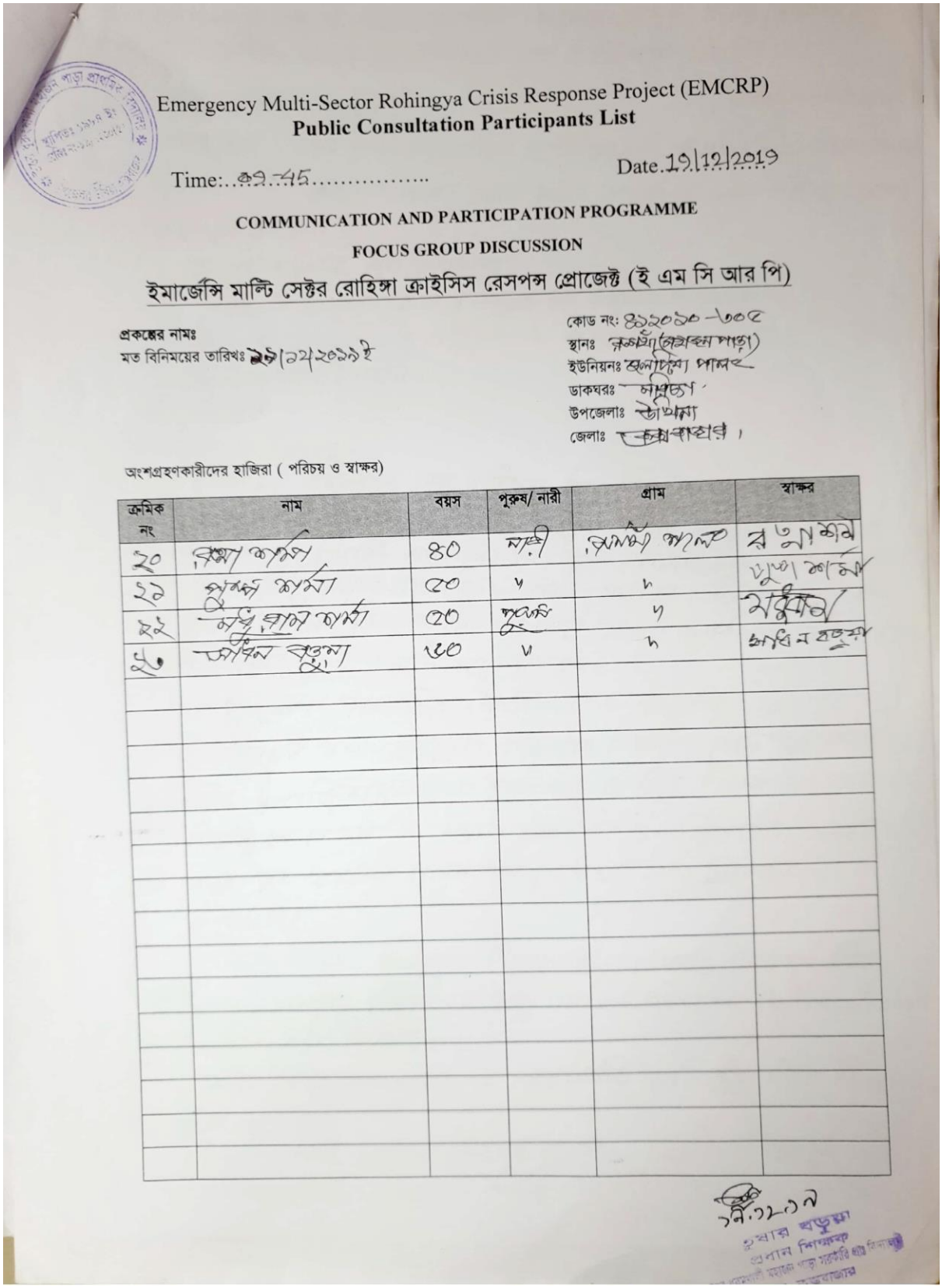
প্রকল্পের নামঃ উত্তর বিজয় খালী মহাজনপাড়া সম্প্রীতি
মত বিনিময়ের তারিখঃ ১৯/১২/২০১৯

কোড নংঃ ৪১২০১০৩০৫
স্থানঃ কক্সবাজার পৌরসভা (মহাজনপাড়া)
ইউনিয়নঃ হলদিয়া পালং
ডাকঘরঃ মরিচ্যা
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	জনাব তৈয়ার বহুমা	৫৬	পুরুষ	হলদিয়া পালং মহাজন পাড়া	
০২	" ছোফা কহর আহমদ	৫৫	"	"	
০৩	" কবির আহমদ	৫৩	"	হলদিয়া মহাজনপাড়া বেড়ি	
০৪	" রিপন বড়ুয়া	৪০	"	হলদিয়া মহাজনপাড়া	
০৫	" কমল বড়ুয়া	৬০	"	"	
০৬	" প্রদীপ বড়ুয়া	৪৫	"	"	
০৭	" সুকুল বড়ুয়া	৩৫	"	"	
০৮	" সুদত্ত বড়ুয়া	৫৫	"	"	
০৯	" সাবিত্রারাণী কর্মা	৫২	নারী	হলদিয়া পালং নাগরকাটা	
১০	" পরমী বড়ুয়া	৪০	"	হলদিয়া মহাজন পাড়া	
১১	" অদিত্য বড়ুয়া	৬০	পুরুষ	"	
১২	" কিরণ বড়ুয়া	৫৬	"	"	
১৩	" পূর্ণিমা বড়ুয়া	৩৫	নারী	"	
১৪	" সাকিতা বড়ুয়া	৪০	"	"	
১৫	" প্রিয়া কর্মা	৪৫	"	হলদিয়া নাগরকাটা	
১৬	" তিন্নে বালা কর্মা	৬০	"	"	
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Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

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COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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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 12 nos. new School cum Disaster shelter buildings in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W10

Component: Valukia Govt. Primary School

Educational Institution ID: 412010203

Village: Valukia; Union: Palongkhali; Upazila: Ukhiya;

District: Cox's Bazar

April 2020

Funded by:

THE WORLD BANK
IBRD • IDA

Government of the People's Republic of Bangladesh

Consultant:

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
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 and is s 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 will follow a sustainable development pathway that is resilient to disaster and climate change.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. 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] ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)
[2] IOM Needs and Population Monitoring round 12 as of October 10, 2018

1.2 Rationale of Site Selection for disaster shelters under the project

LGED developed 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 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 upazilas 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 and host communities. Being a coastal district Cox's Bazar lies at the forefront of different natural disasters and suffers heavily from devastating effects of those calamities. Moreover, 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, disaster shelter cum primary school

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-W10, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Ratnapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Madborpara, Majher para, Kalar para and Hafsarer Baper para. Typical rural settings of the area offer agriculture to be the prime professional engagement, while the daily labor stands 2nd in option. The proposed disaster shelter would have to provide refuge to nearly 507 households, containing 4500 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	Valukia GPS
Educational Institute ID	412010203
District	Cox's Bazar
Upazila	Ukhiya
Union	Ratnapalong
Owner of land	GPS
Land available	40 decimal
Catchment household	507
Catchment Population	4500 (Male: 2500, Female: 2000)
Profession	Farmer 60%, day labor 27%, businessman 08% and others 05%
Structural Design Option	Option 1 (Rectangular Steel Frame 3-storey building (35.427m x 14.20m)
Capacity of Shelter	1300 persons and 180 livestock
Catchment village	Madborpara, Majher para, Kalar para, Hafsarer Baper para
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road is connected to Court bazar-Valukia road
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Valukia 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)	200

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-East side of Ukhiya 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 BCC road, which is connected to the Court Bazar-Valukia road. Valukia High School is situated within 50 m reaches of the proposed site. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, Location of Multipurpose Disaster Steel frame building (Ukhiya & Teknaf) map and Union Map with Sub-project location have been shown in Figure 1.4.1, Figure 1.4.2 and Figure 1.4.3 respectively. The Shelter is designed as a multipurpose functional building that shall accommodate a good number of people during storm/ cyclonic events, while act as a regular primary school for the pupil throughout the entire non-disastrous period.

Table 1.4.1: Location Details of the Sub-project

Division	Chittagong
District	Cox's Bazar
Upazila	Ukhiya
Union	Ratnapalong
GPS position	21°17' 04.6"N and 92° 08' 15.6"E
Distance from Upazila HQ	11 km
Nearby major road	Court Bazar-Valukia road
Nearby river/canal	No river or canal is situated into the catchment area
Boundary of the Containing Upazila	Ramu upazila on the North
	Tecna fUpazila on the South
	Naf river and Naikhyungchori Upazila of Bandarban District on the East
	Bay of Bengal on the West

[Sources of data: Field survey, 2019 & LGED, 2015]

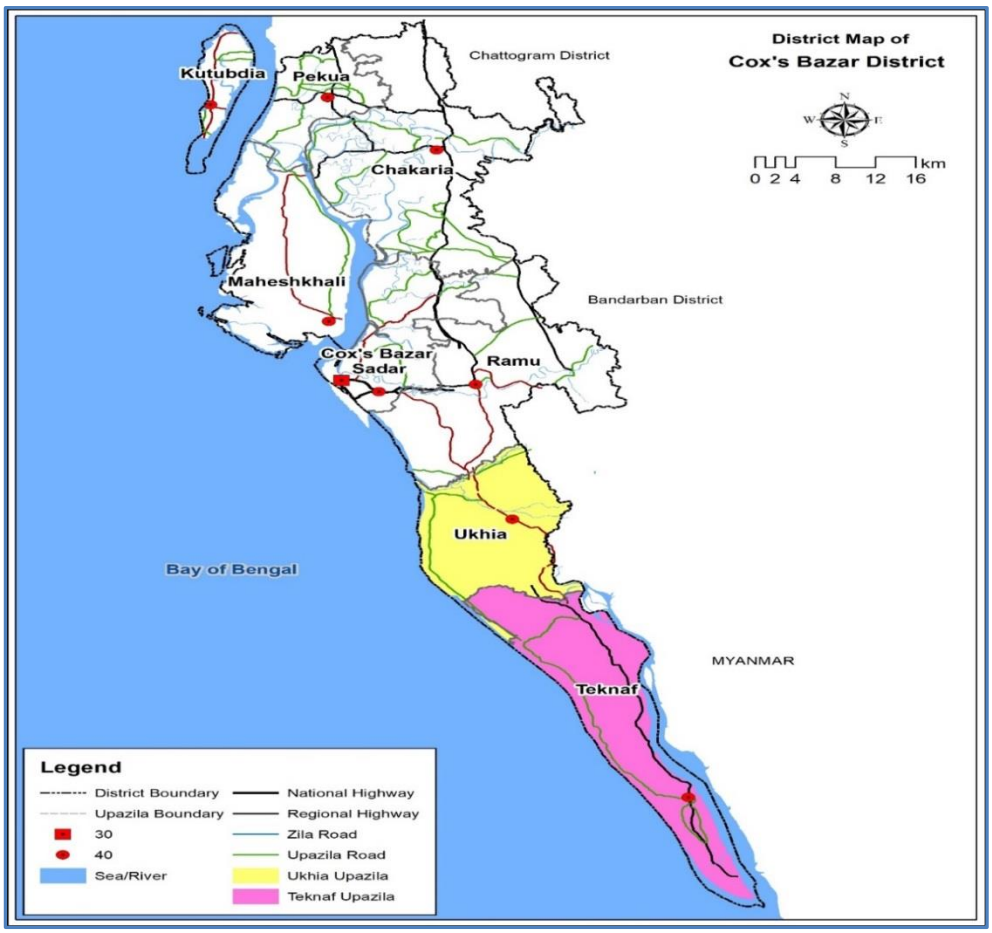


Figure 1.4.1: District Map with project location

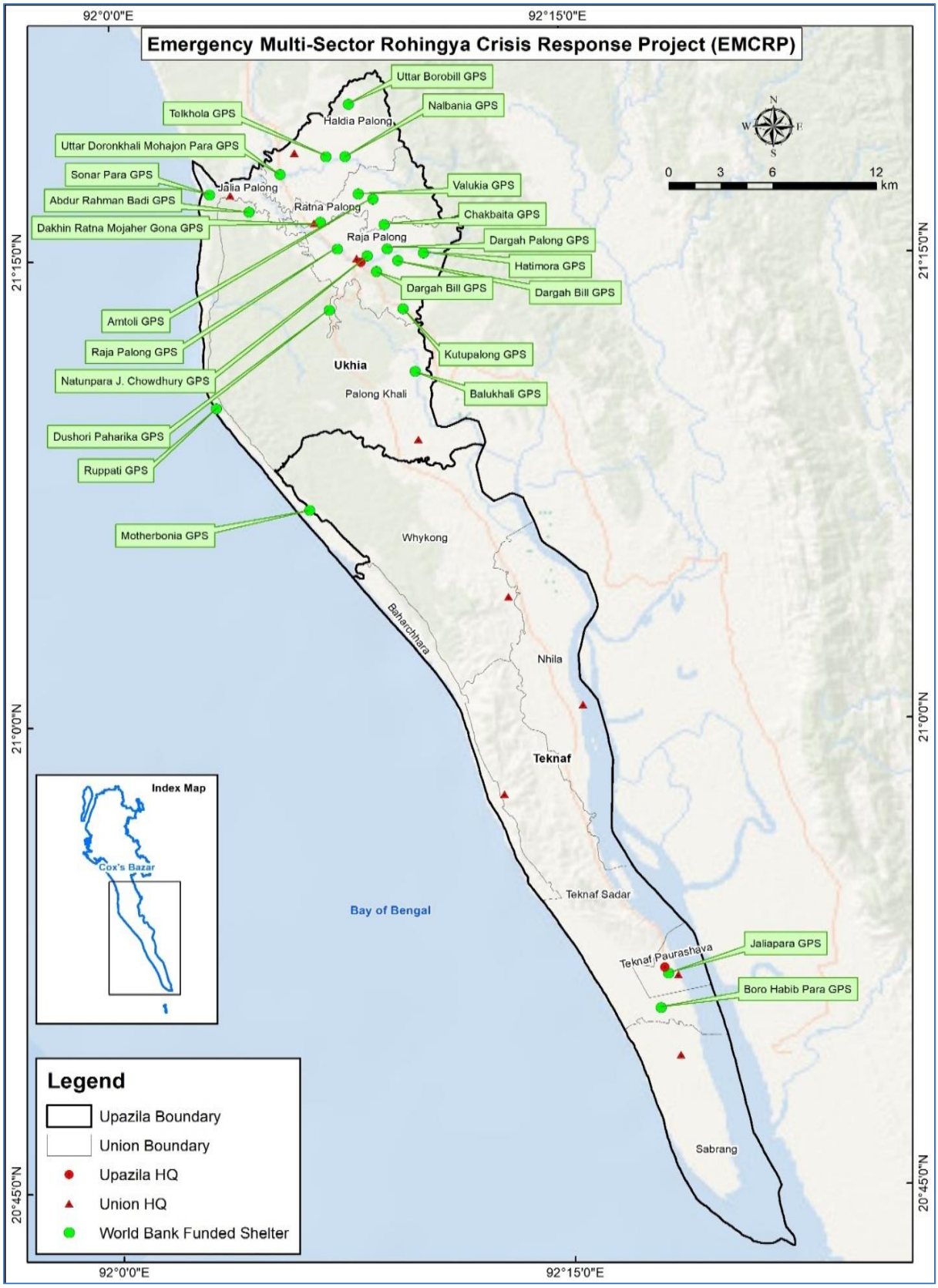


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

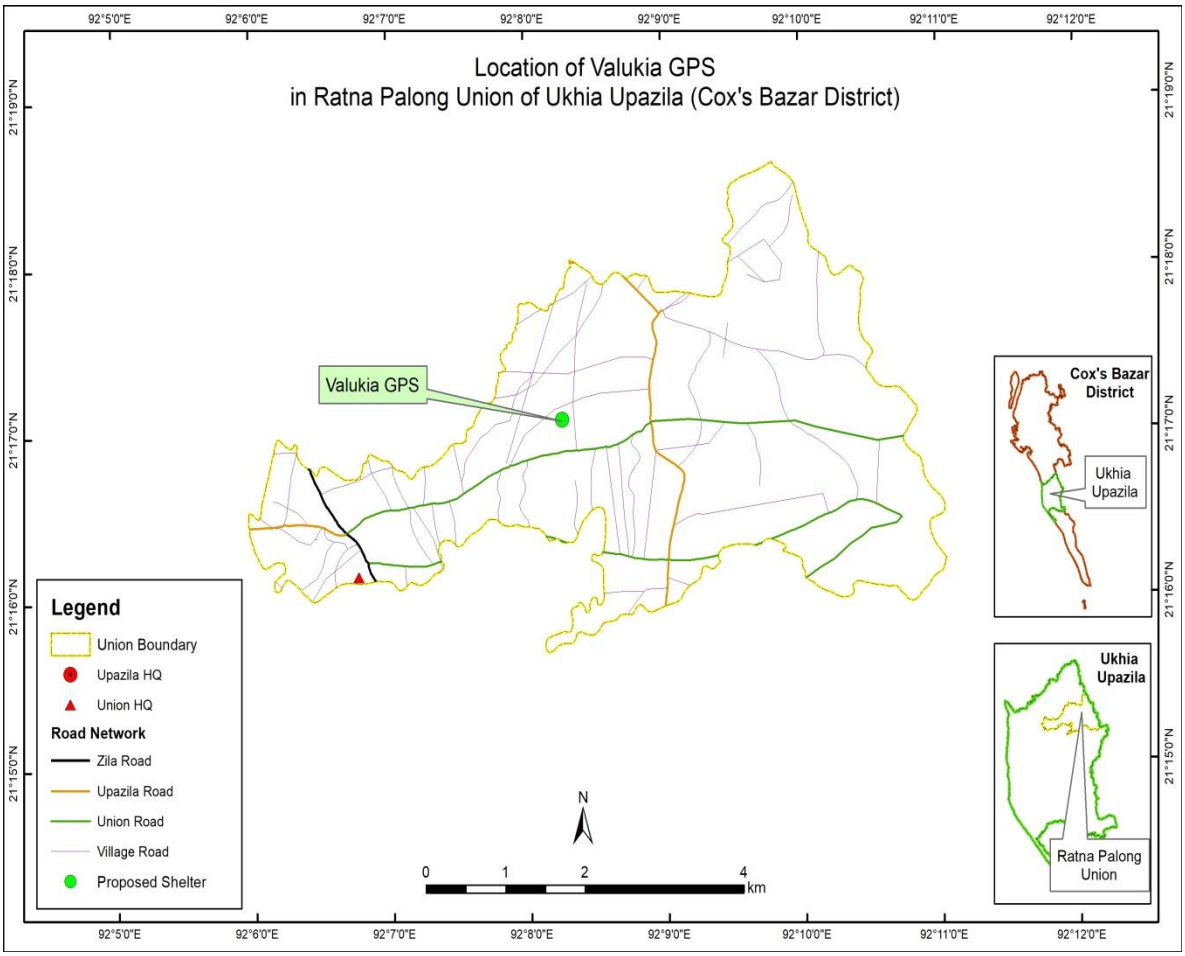


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 Sub-project area and location of construction area has 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	Paddy land (5m), 10 nos. of Settlements (100m), pond (150m)
South side	BCC Road (10m), betel nut garden (16m), 5 nos of houses (50m)
East side	Valukia High School (50m), pond (100m)
West side	Valukia mosque (300m), Mosque (400m)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area



Figure 1.5.2: Location of 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 17 December 2019 in and around the Sub-project 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-5** for selected photographs of the participatory public consultation held at site of the Valukia 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. 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 free/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.
- Lack of adequate class rooms in the existing school premises, so the cyclone shelter would provide new space for additional classrooms.
- Lack of security during the disaster period.
- Lack of power supply during cyclonic event, especially at night.

- Possible dust and noise pollution during the construction works.
- Lack of adequate space for cattle.
- 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 disaster shelter cum school 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 work.
- Water supply and the power supply systems need to run uninterrupted during disaster times.
- Priority for jobs should also consider women. Women can do the same work.
- 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 persist for a 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 17 December 2019 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 disaster shelter) 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 earth excavation work will be involved, so air, noise and dust pollution will be occurred within a small scale during 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. A high school named Valukia High School is located at 50m east side of the sub-project. Some human settlements are found at 100meter north side and 50m south side of the school building. One pond is located at 100m north side and another pond is located at 150m north-east side of the sub-project. There are 2 mosques located within the one km of catchment area. A mosque named Moddho Valukia jame mosque situated at 300m west and another mosque named Moddhom Valukia jame mosque located at 400m west of the subproject area. No significant disturbance to all these establishments/features is anticipated due to construction activities for 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 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. 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 subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, 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). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur.

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, as 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 from about 150 feet below the ground has made water availability 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, rainwater harvesting from every disaster shelters, 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

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

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 water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years but does have medium impact in the area. Salinity and cyclonic storm surge has no impact in the vicinity of the subproject. Temperature has increased and thus has medium impact and Thunder storm is found to have highest impact in the area. Thunder storm has been seen to have increased .Drainage congestion has not been found in the area.

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 and Social Management Plan (ESMP) 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. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

The proposed cyclone shelter will be constructed on a plain land where some vegetation is found on the eastern side. Due to the construction activities of this Sub-project, 2-3nos. 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. Further, the Valukia High School is located at 50m east side and some human settlements located at 100m north side of the sub-project area might get affected during the construction period with the generated 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 has 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, which is nearly four lacs seventy four thousand Bangladeshi taka.

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 Ukhiya and Teknaf 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. 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 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, public health 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 health & education facilities, infrastructure & communication etc.
- The short-term negative impacts that may come in the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those workforces 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 provide 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 Lacs & 74 Thousands BDT** (Bangladeshi Taka) to implement the ESMP. 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 will have large positive impacts to the communities in terms of quality of life, particularly with reduced disaster vulnerability, and improved health & education facilities, infrastructure & communication facilities, etc. 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

Environmental Screening Form

Sub-Project Description Form: (Valukia GPS)

Name of Sub-Project: Construction of 12 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W10)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 51, 28, 69,000 tk
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Ratnapalong
Name of Community/Local Area: Valukia
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 an existing school boundary. A two-storied school building is located on north side of the school boundary. A high school named Valukia Govt. High School is situated at 50m east side of the sub-project. There are 2 mosques located within the one km of catchment area. A mosque named Moddho Valukia jame mosque situated at 300m west and another mosque named Moddhom Valukia jame mosque located at 400m west of the subproject area. Human settlements and two fish ponds (100m, 150m) are found around the sub project area. A 12 feet BCC road is passing by the south side and it is connected to the Court Bazar- Valukia road. No Important environmental features are found within the sub-project. Some agricultural lands are found on north side, adjacent to the school boundary. An old structure will be demolished during pre-construction period and the new one will be constructed there.

Overall Comments
People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee (SMC) attended 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 for 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 among 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 disease 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, human wastes including kitchen wastes might be generated in labor camps.

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 BCC road is passing near the sub-project area. There are 2 mosques found within the catchment area. A mosque named Moddho Valukia jame mosque situated at 300m west and another mosque named Moddhom Valukia jame mosque located at 400m west of the subproject area. 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. A high school named Valukia Govt. High School is situated at 50m east side of the sub-project area, but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements, agricultural land and two ponds are found around the sub-project area. No disturbance is anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN). Elephant migration route is present nearly 3 km away from this site.

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 and flashing over by the potential tidal surge during cyclonic events, 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. The class rooms will be provided with furniture and other teaching tools. Floors will have 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 on 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 Ratnapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°17' 4.6"N and 92° 08' 15.6"E. The distance from the Upazila headquarter is about 12 km. Nearby major road is Coat Bazar-Valukia road. The school code is 412010203

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 are a two story building being used for classrooms, and a tin shed old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

One pond is located at 100m north side and another pond is located at 150m north-east side of the sub-project. No disturbance is anticipated due to construction activities. Some human settlement is found at 100meter north side and 50m south side of the school building, but there is no scope to be affected by the construction activities. An old structure will be demolished during construction period. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco concerned establishment, neither any socio cultural site is located nearby.

Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

Section B: Environmental Screening

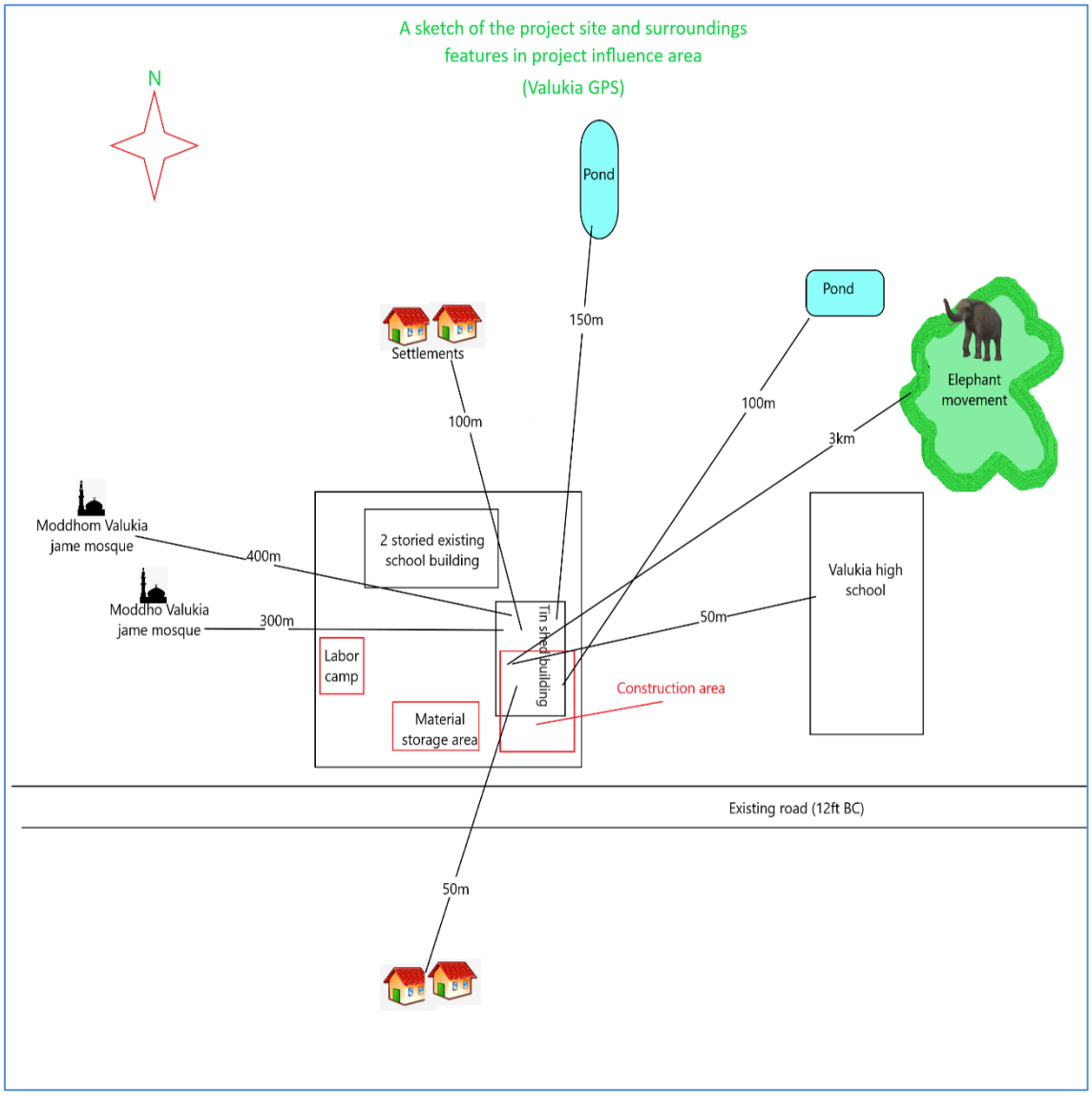
***B.1*: Environmental feature of sub-project location**

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:

There are 2 mosques located within the one km of catchment area. A mosque named Moddho Valukia jame mosque situated at 300m west and another mosque named Moddhom Valukia jame mosque located at 400m west of the subproject area. A high school named Valukia Govt. High School is situated at 50m east side but there is no scope to be affected by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exists within the catchment area of this sub-project. 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 dense and matured vegetation around the site. It 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).

(2) potential impacts on remaining forests in/around camps Yes/No
N/A (This activity will be confined within the existing school boundary)

(3) Other issues:
No more mentionable issues raised.

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

Baseline air quality and noise levels:

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 vehicles such as motor cycle, auto rickshaw, mini truck, tempo, trolley, tractor etc. over the road surface which causes air pollution.

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.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as motor cycle, mini truck, 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 in 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 shallow tube-well is found within the school boundary. The shallow depth is about 100 feet. In the sub-project area, deep groundwater is salty and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. Two ponds are found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project. 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: Patches of vegetation containing large and matured trees on the north and western side of the proposed construction areas are located within 200m radial distance.
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 BCC road is passing by the south side of the sub-project. It is connected to Coat Bazar-Valukia 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 depth is about 100 feet. But the tubewell is not working properly in 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 already available at the site. 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 within the existing school boundary.
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 building material used in construction.
Identification of access road for transportation (Yes/No): About 12ft. wide BCC road is the main way for transportation of raw materials. It is located on south side of adjacent sub-project and connected to Coat Bazar-Valukia road.
Location identification for raw material storage: On the east side within the existing school boundary. 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.): **Solid waste:** An old tin shed structure will be demolished and the new building will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes including demolition materials will be produced.

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 6 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 6 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 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 an 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 land area is required for the sub-project establishment. There is relatively light vegetation around the sup-project area. The vegetation will not be affected by construction work. The open area inside the school boundary is clearly enough to accommodate stack/equipment yards, temporary waste dumping sites, as well as the target construction plots.
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 ponds are found outside of the construction area, but 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 muddy 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 for 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, except two ponds located within 150m radius from the site boundary which will not be affected by any activities within the school premises. In fact, there is none of the activities usually taken place in a school site during the operation phase which may potentially destruct or damage any terrestrial or aquatic ecosystems or so.
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 muddy 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.
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 BCC road connects the sites with main road. The roads are mainly used for pedestrian access and 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 the bad condition of the access road 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 properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively	Contractor, environmental specialists of PIU and D&SC	Visual monitoring 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
			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. • The Valukia High School is located at 50m east side and some human settlements located at 100m north side of the school boundary so labor camp needs to be set up in such a location that the school and settlements are 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 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.			
	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, below the ESMP table, to be followed by the contractor.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	During Design Stage
	Setting up of labor camp(Generation of	Under the sub-project	• Construction camp should be located at a site	Contractor, environmental	Complaints from	Prior to the start

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	intervention the overall score is low.	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.	specialists of PIU and D&SC	community; Regular inspection of waste management activity; Waste disposal record.	of Constructi on works
	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of materials transport	Before and during constructi on phase

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			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.		vehicles.	
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 meter (dB)	Weekly
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related	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	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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.		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.		receptors, Heavy 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
	Workers 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 monitored by Consultant 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 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 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W10): Valukia 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
				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 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	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		carrying in vehicles to the site. • 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.	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	• 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.	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
	permanent hearing loss, heat stress, and dermatitis.	• 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 supervision to ensure that the correct		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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
Decommissioning 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/DRPs	• Provision to proper measure of mitigation and monitoring to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase. • Third party monitoring of air quality as well as on receiving land and water bodies, may be undertaken, if the condition of those compartments seems to be significantly worse.	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. • 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:

- 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.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	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 of the 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	1 person	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 12 shelters i.e.35, 000 Tk.*24	70000

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		months*(1/12 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	5000
6.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand 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)	40000
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 Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
9.	**Tree plantation**	10 nos.	@ Tk. 1000 for each	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 around the periphery of the proposed site at an interval of 10 feet.		tree.	
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.	@3500 tk 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) for one Tube well of this shelter 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	Total 3 nos. of sets of tests need to be conducted during construction	@13,800tk for each set	41,400

Sl no.	Description of item	Quantity	Unit price	Total amount
	from reputed laboratory and report) as desired by E.I.C.	period @Tk. 13,800.00 each set of tests (Lump Sum)		
	Subtotal Bill: Environmental facilities			474,420

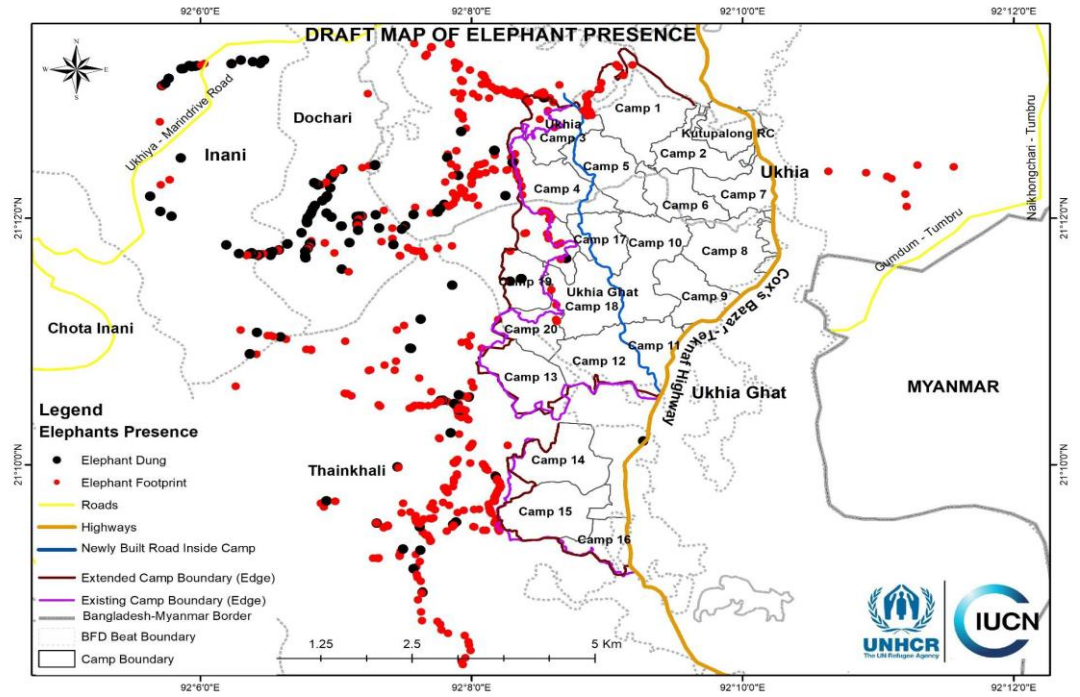
Cost of H&S Measures under COVID 19 Situation

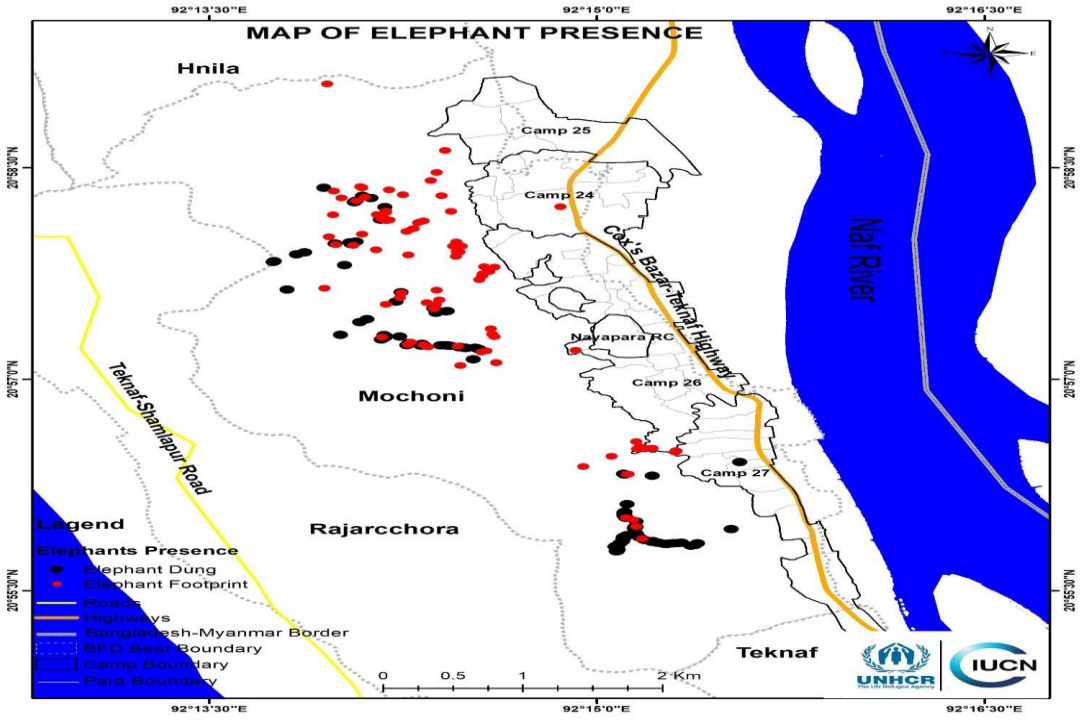
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-10).

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.

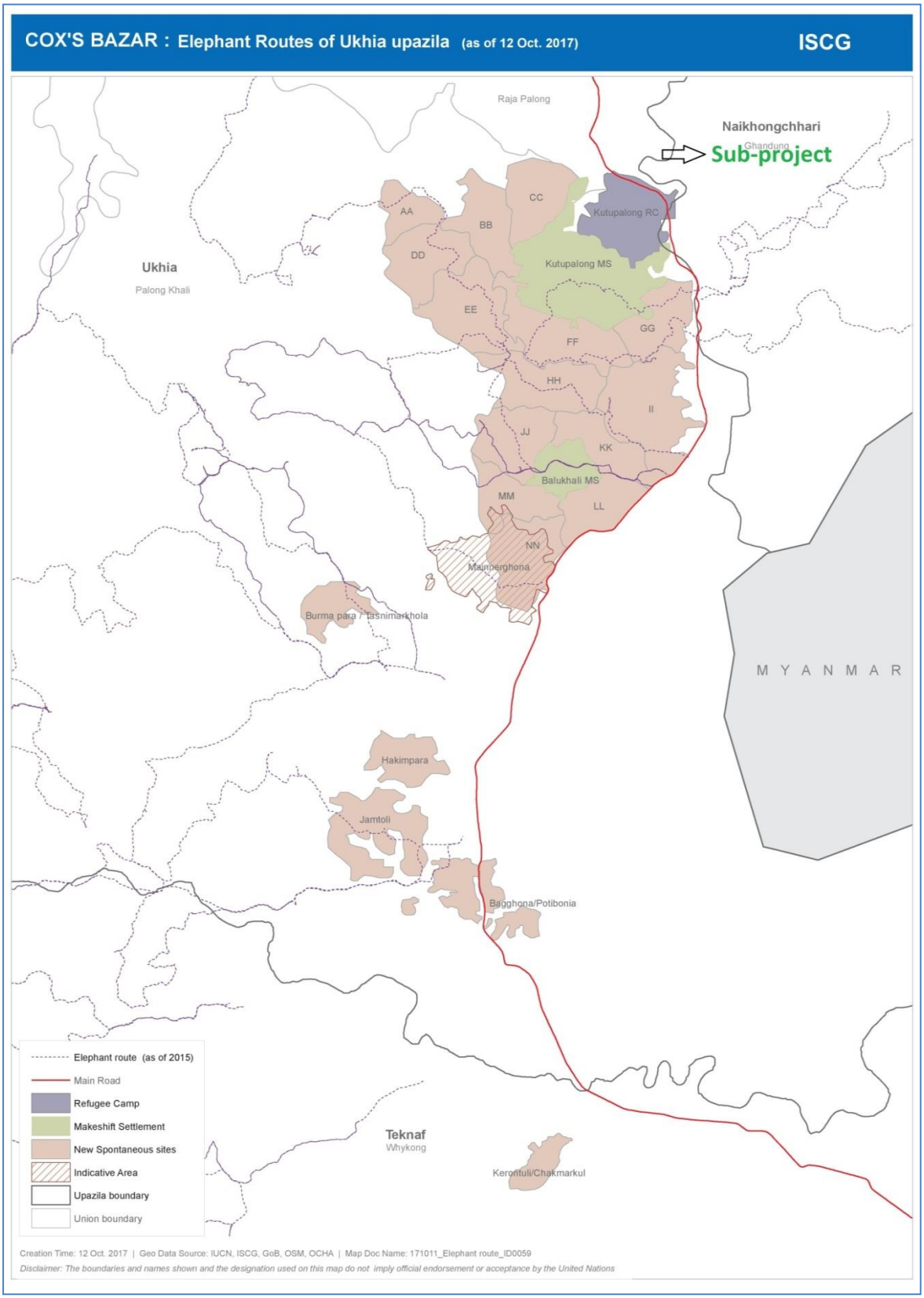
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	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



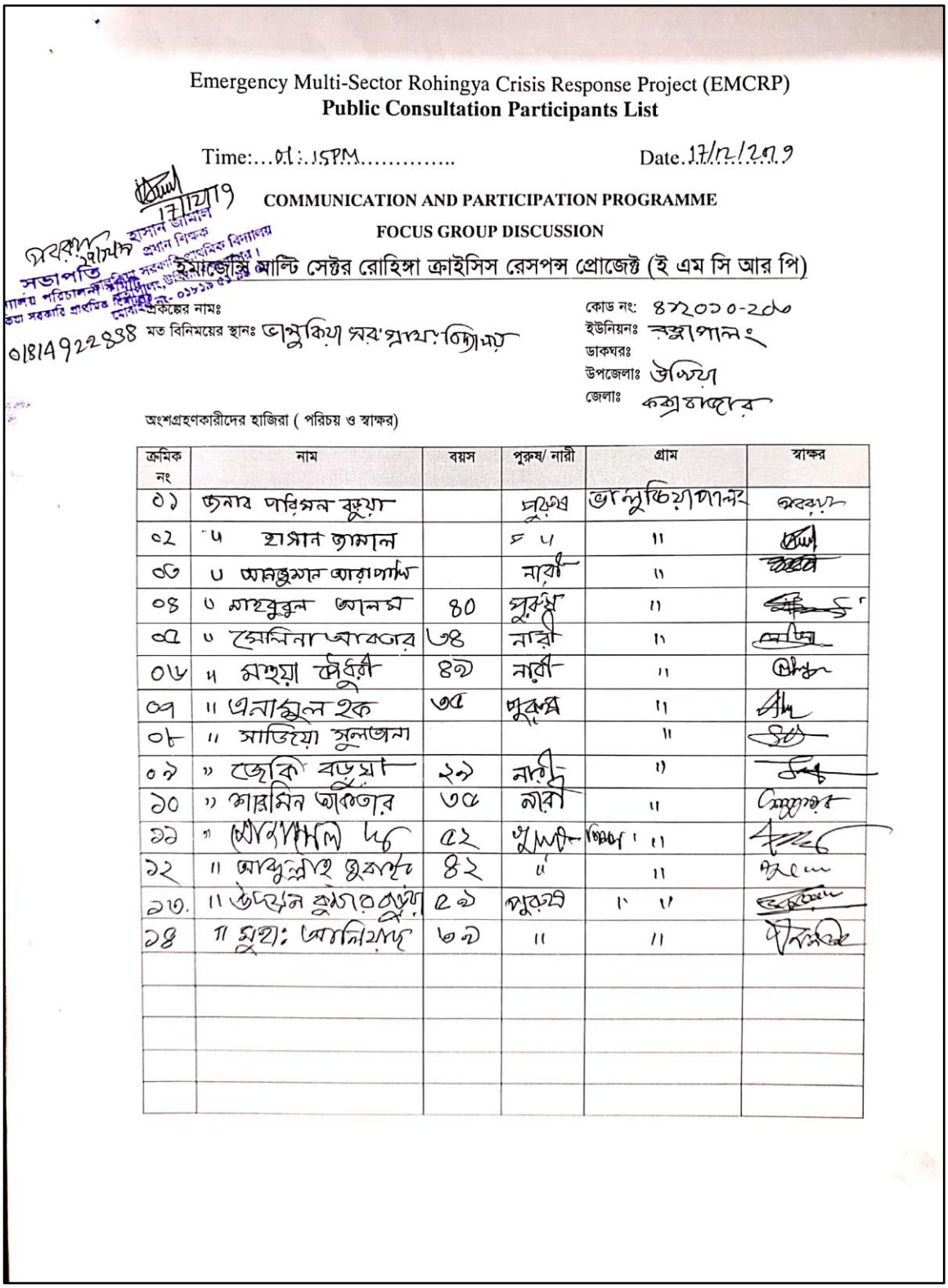


Elephant presence map (latest information published on 24 May 2018)



Elephant routes of Ukhiya Upazila and an indicative direction of site placement (Published on 12 October 2017)

Appendix-5



Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...01:15PM..... Date.17/12/2019

17/12/19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

সভাপতি হাসান জামাল প্রধান শিক্ষক সরকারি প্রাথমিক বিদ্যালয়

প্রকল্প এলাকা

কোড নং: ৪৭২০১০-২০৬

ইউনিয়নঃ বড়্গাপালং

ডাকঘরঃ

উপজেলাঃ উখিয়া

জেলাঃ কক্সবাজার

০১৮১৭৭২২৪৩৪ মত বিনিময়ের স্থানঃ ভালুকিয়া সরকারি প্রাথমিক বিদ্যালয়

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	জনাব পরিমল বড়ুয়া		পুরুষ	ভালুকিয়াপালং	
০২	" হাসান জামাল		"	"	
০৩	" আনজুমান আরা পাখি		নারী	"	
০৪	" লাইবুরুন আলম	৪০	পুরুষ	"	
০৫	" মোসিনা আকতার	৩৪	নারী	"	
০৬	" মহুয়া চৌধুরী	৪৩	নারী	"	
০৭	" এনামুল হক	৩৫	পুরুষ	"	
০৮	" সাজিয়া সুলতানা			"	
০৯	" জেকি বড়ুয়া	২৯	নারী	"	
১০	" শারমিন আক্তার	৩৫	নারী	"	
১১	" [illegible]	৫২	পুরুষ	"	
১২	" আবুল্লাহ ছুবহান	৪২	"	"	
১৩.	" উদয়ন কুমার বড়ুয়া	৫৩	পুরুষ	"	
১৪	" মুহাঃ আমিয়াদ	৩৩	"	"	

Public Consultation Participants' List