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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Balukhali Govt. Primary School

Educational Institution ID: 412010501

Village: Balukhali; Union: Palongkhali; 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-W11, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Palongkhali union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Balukhali, Taingkali and Jamtoli. 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 704 households, containing 4215 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	Balukhali GPS
Educational Institute ID	412010501
District	Cox's Bazar
Upazila	Ukhiya
Union	Palongkhali
Owner of land	GPS
Land available	1 acre
Catchment household	704
Catchment Population	4215 (Male: 2200, Female: 2015)
Profession	Farmer 45%, day labor 25%, businessman 15% 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	Balukhali, Taingkali, Jamtoli
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

Balukhali 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 an 8ft wide HBB road of nearly 300 m in length, which is connected to the Cox's Bazar-Teknaf Highway. Balukhali Govt. High School 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 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 any 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	Palongkhali
GPS position	21°15' 18.50"N and 92° 07' 32.10"E
Distance from Upazila HQ	4.00-5.00 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	Naf river is located on 1 km east of the sub project
Boundary of the containing Upazila	Ramu upazila on the North
	Teknaf Upazila on 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]

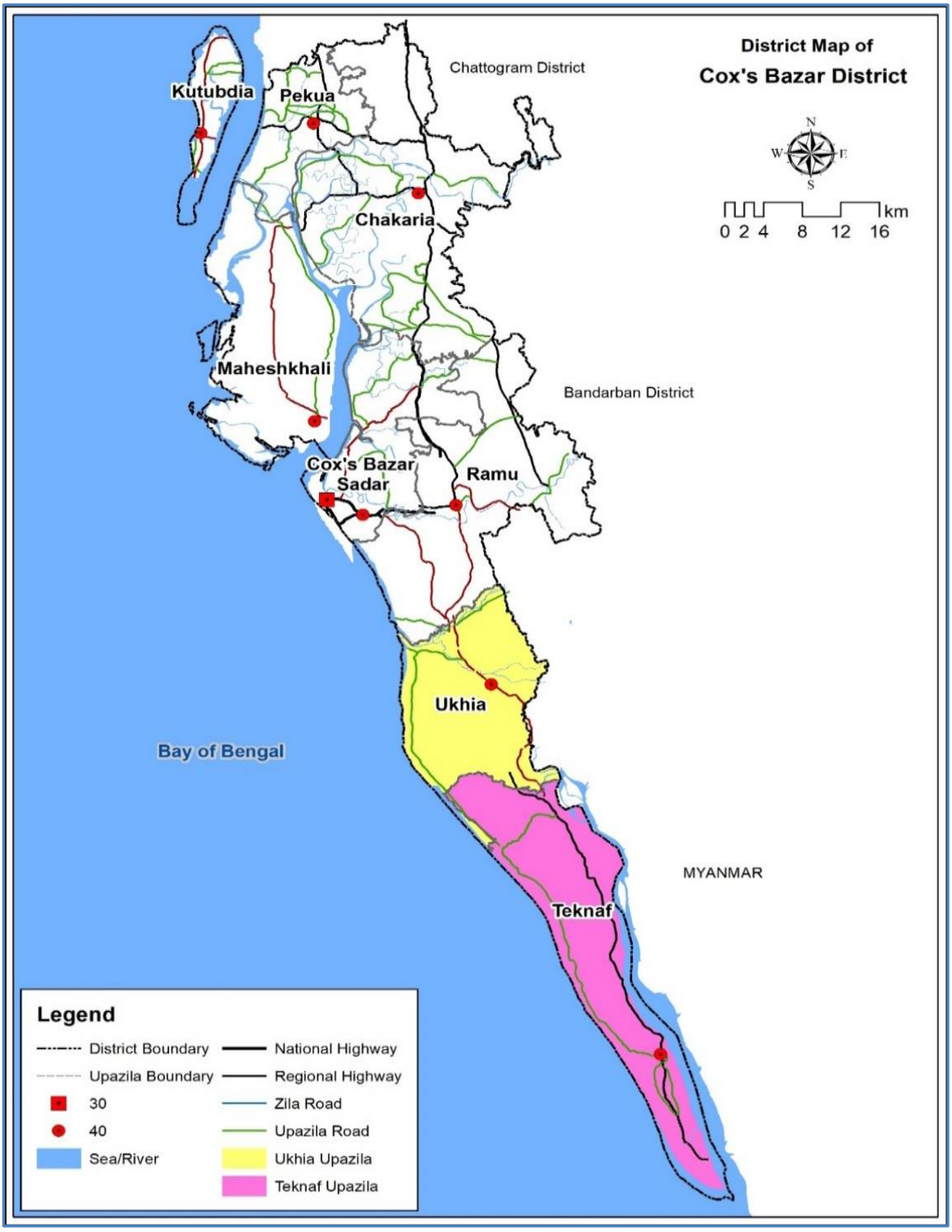


Figure 1.4.1: District Map with project location

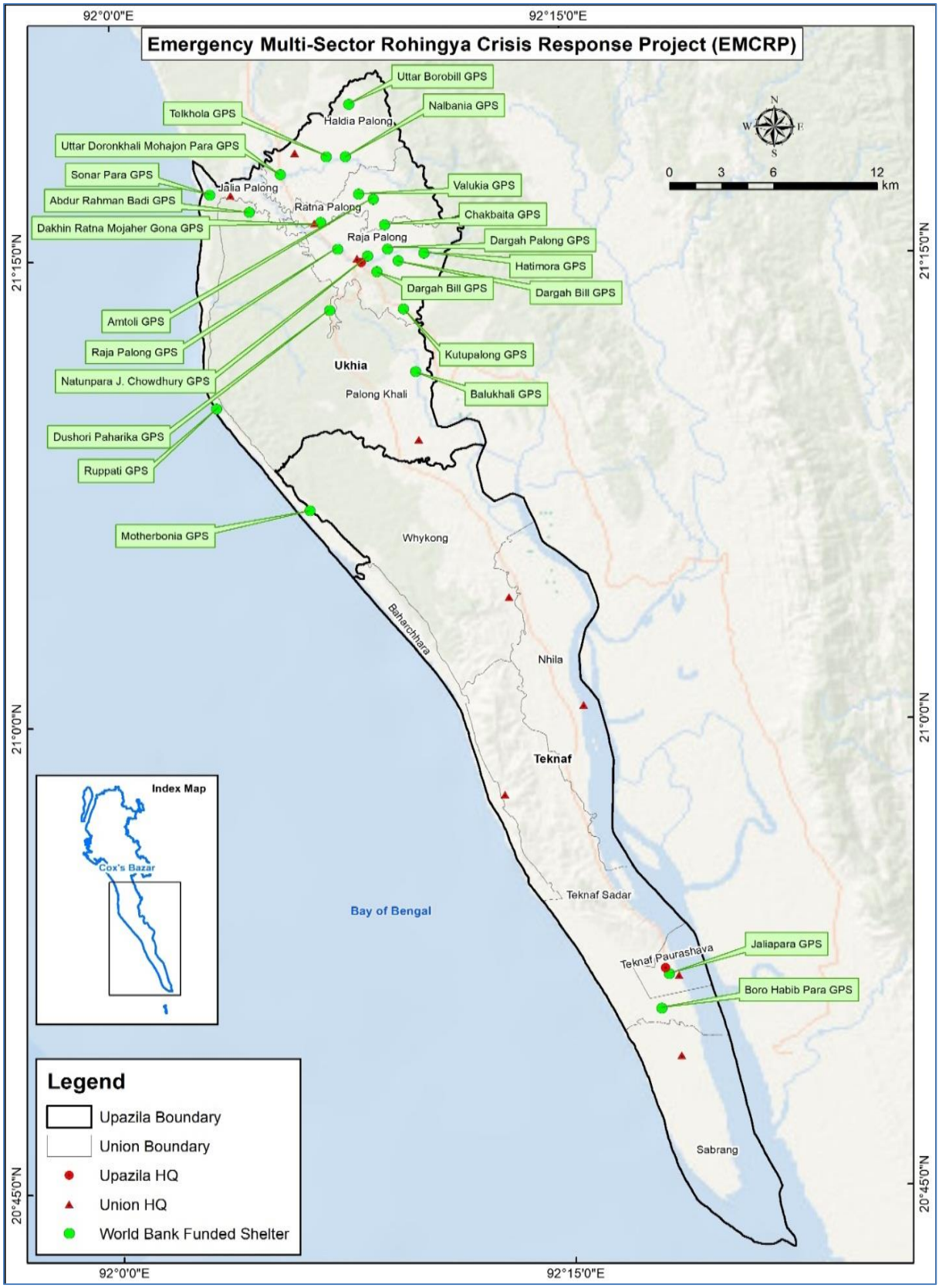


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

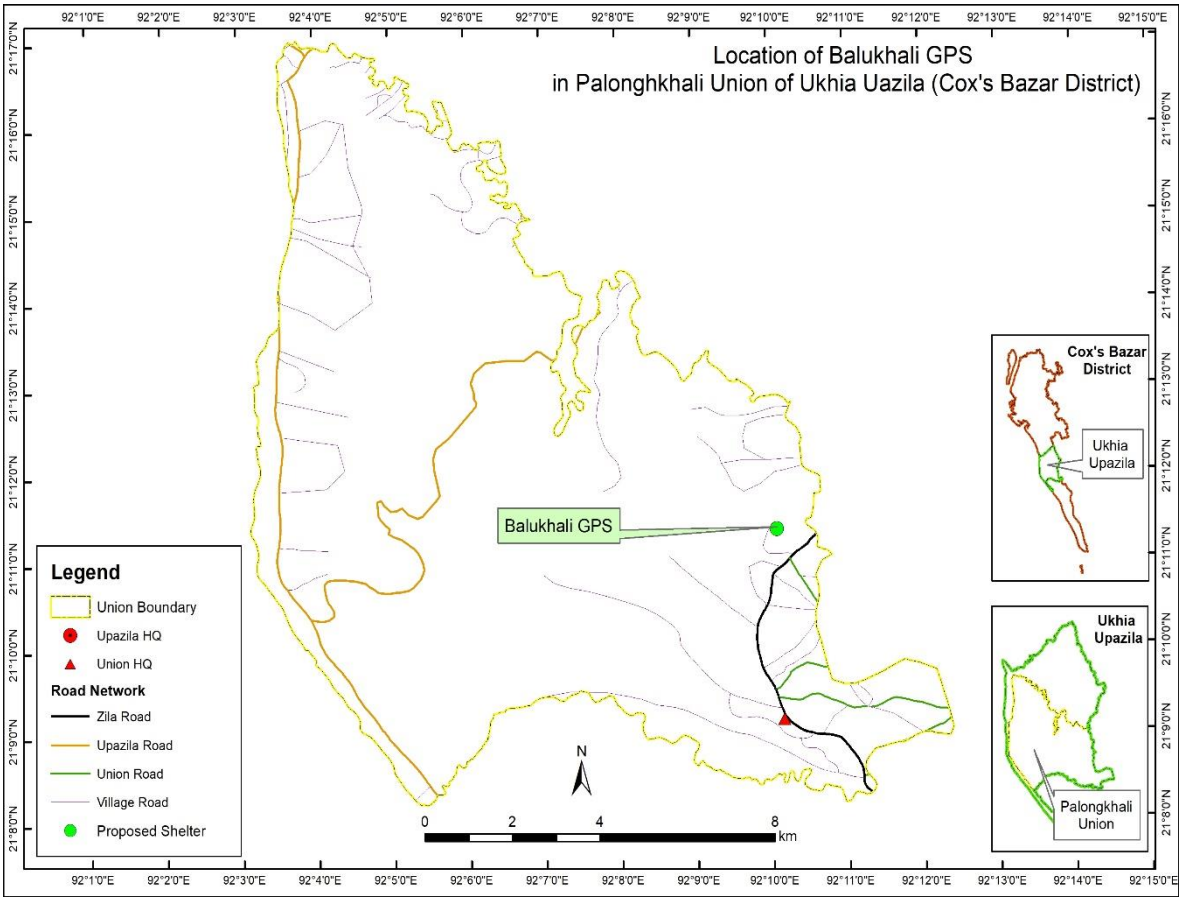


Figure 1.4.3: Union Map with Sub-project location

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	Progression of a govt. owned high land and Balukhali Govt. High School (100m), 10 nos of settlements (120m), Mosque (200m)
West side	Mosque (250m), Cox's Bazar- Teknaf Highway (350m), Mosque (350m)
East side	Fish project (100m), 8-10 nos. of Settlements (100m), Chora (220m), Naf river (1km)
South side	Graveyard(300m), Pond(50m), Mosque(250m)

[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 06 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 15 persons, and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-5** for selected photographs of the participatory public consultation held at site of the Balukhali 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 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 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 space 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.
- 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 06 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 disaster shelter will be constructed within an existing school boundary so no agricultural land/ activities 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 the construction period. Top soil in agricultural land will be avoided without any failure in earthwork and that productive part of the soil will be conserved and replaced, if underneath soil is taken from any agricultural land. A highway is passing near the sub-project area. Some human settlement is found within 120 meter north and 100m east side of the school building. The sub-project location is surrounded by patches of trees. There are 3 mosques found within the catchment area (distances are 200 m north, 250m south and 350m west). A graveyard (300m south) is located within half a km reaches from the site. A high school named Balukhali Govt. High School is situated at 100m north side of the sub-project area. Hence, 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. No significant disturbance to all the said establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc. A pond is located at 50 m north and there is a fish project nearly 100 m away from the proposed site. The pond will not receive any major disturbance due to the existing old school building being located between the construction site and the pond; whereas, to minimize the potential effects on the fish project, measures delineated into the ESMP has to be followed strictly. The 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.

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 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 impact of cyclone and precipitation has higher impact in this area, Intensity of precipitation has been increased according to the participants in consultation meeting and

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

frequency of cyclone has been observed 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, tube-well 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 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 high land where some 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 replanted in the periphery of the school. Soil from the high land may need to be leveled up for the construction need. Further, the fish project found on 100m east side and Balukhali High School located at 100m north 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 waste 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 are to 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 wishes 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 around five lacs fifty seven 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 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 give the places a more natural and aesthetic appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.
- The tentative cost has been estimated around **05 Lacs & 57 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: (Balukhali GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 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: Balukhali

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 east side of the school boundary. A high school named Balukhali Govt. High School is situated on north side of the sub-project. Three mosques, a graveyard, human settlements, agricultural land, pond and fish projects are found within 400m from the sub project boundary. An 8 feet HBB road is passing by the west side and it is connected to the Cox's Bazar- Tekhnaf highway. No Important environmental features which might be affected significantly by the project works are found within the sub-project area. Agricultural land found on north-west side is adjacent to the school boundary, and may receive little effects from the site, if guided measures are not followed in the field. A relatively higher stretches of land is situated on west side within the school boundary and the new cyclone shelter 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 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 Shelter 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 due to the construction of the sub projects; nearby agricultural land/ activities or fish farming might get affected a bit, but easily fended off by following the ESMP. As the building construction work is restricted to within the school boundary, no outside disturbing activities 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 highway is passing near the sub-project area. There are 3 mosques found within the catchment area (distances are 200 m north, 250m south and 350m west). 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 Balukhali Govt. High School is situated at 100m north 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, agricultural land and several fish projects are found around the sub-project area. Construction activities will follow strict protective and conservative measures coupled with good site and engineering practices & management procedures, so all sorts of effects and disturbances are expected to be reduced to the least level. 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 Rajapalong Union under Ukhiya Upazila of Cox's Bazar district. The sub-project area is located at 21°11' 20.30"N and 92° 100' 4.70"E. The distance from the Upazila headquarter is about 5 km. Nearby major road is Cox's Bazar- Teknaf highway, which is connected to the proposed site with an 8 ft. wide HBB road having a distance of nearly 300m from the site. The school code is. 412010501

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.

Within the influence area of the subproject no historical sites were identified. This school is situated within a populous area. A highway is passing near the sub-project area. There are 3 mosques found within the catchment area (distances are 200 m north, 250m south and 350m west). A graveyard (300m south) is located within the half km of catchment area. Religious center such as Mosques, temples, educational institutions and local bazar bring cultural values to the community people. A high school named Balukhali Govt. High School is situated at 100m north side of the sub-project area, but there is no chance to cause significant disturbances due to the sufficient distance in between and strict implementation of ESMP measures.

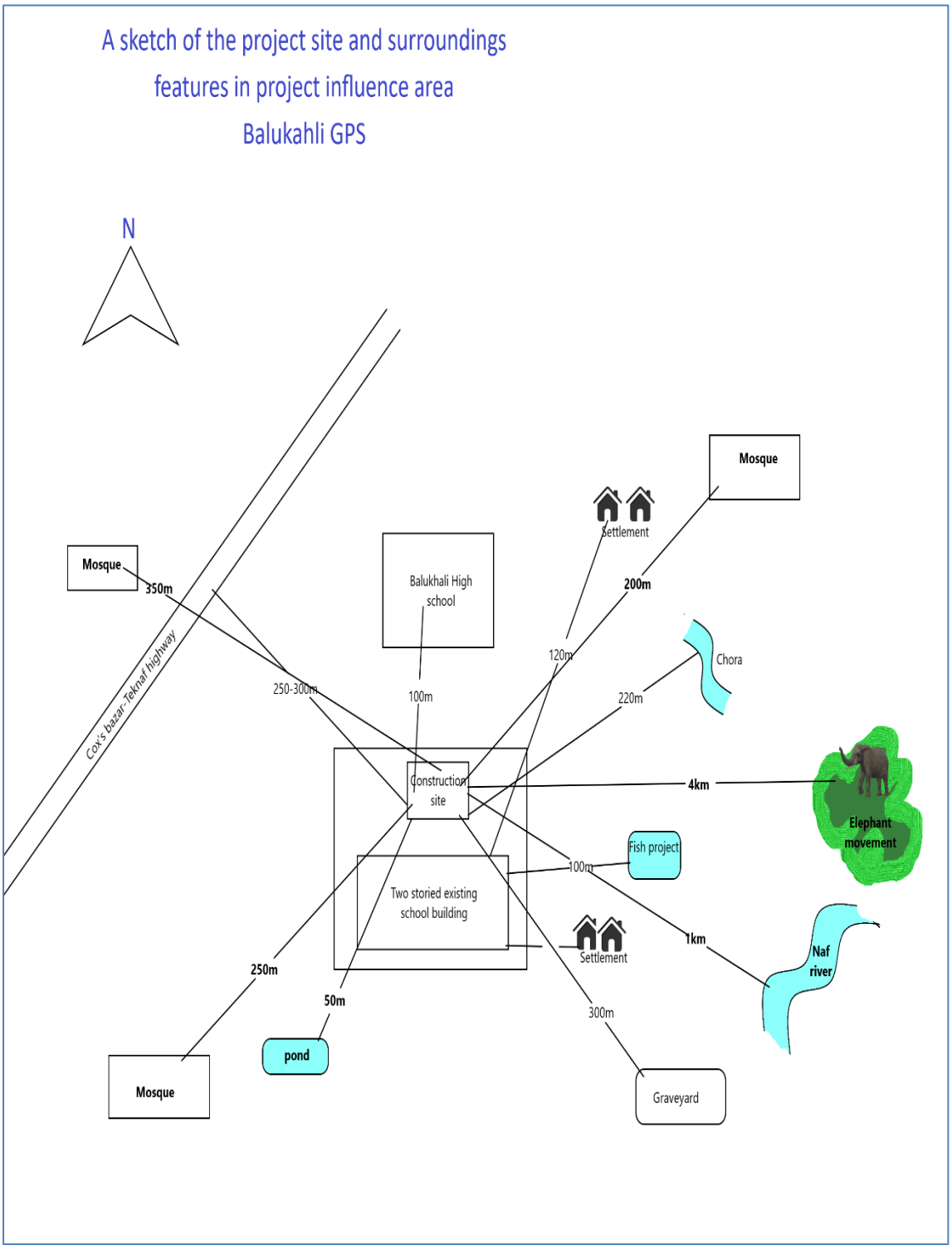
Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

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 ((distances are 200 m north, 250m south and 350m west) and a graveyard (300m south) is located within the half km of catchment area. A high school named Balukhali Govt. High School is situated on 100m north 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 ensured in host community and within 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 motor cycle, bus, truck, mini truck, tempo, auto rickshaw, tractor, trailer, etc. moving 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 200 feet and deep

tubewell depth is 800 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 fish pond is found adjacent to the sub-project area. Local drain is located near the road side 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 highway. It is possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One 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 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 west side within 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 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:** Solid wastes will be generated 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 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 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. 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.
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 related to 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 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 be 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 50 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 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.	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
			• All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 fish project found on 50m east side and Balukhali High School located at 100m north side of sub-project so labor camp needs to be set up in such a location that these 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	Under the sub-project intervention the	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals)	Contractor, environmental specialists of	List of selected sites; Identified sources and	During Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	overall score is low.	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, 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.	PIU and D&SC	storage place of materials.	
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility.	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal	Prior to the start of Constructi on works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• 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.		record.	
	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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
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 and work near the sites.	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
	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.	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
			• 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.		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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Balukhali 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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 kept on site.	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
		• 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 handling of hazardous and non-hazardous waste during	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	construction.	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.		
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 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 surrounding water bodies,	• 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
	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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person 5 shelters, i.e.	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		35,000Tk.*24 months*2 persons (1/11 for 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			557,148

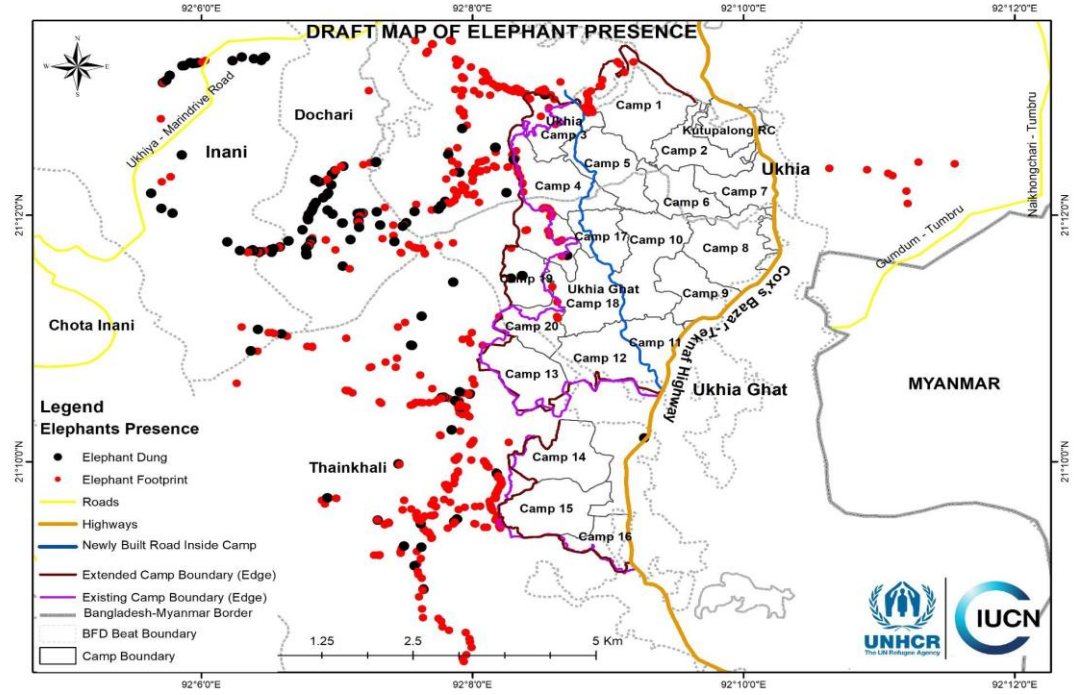
Cost of H&S Measures under COVID 19 Situations

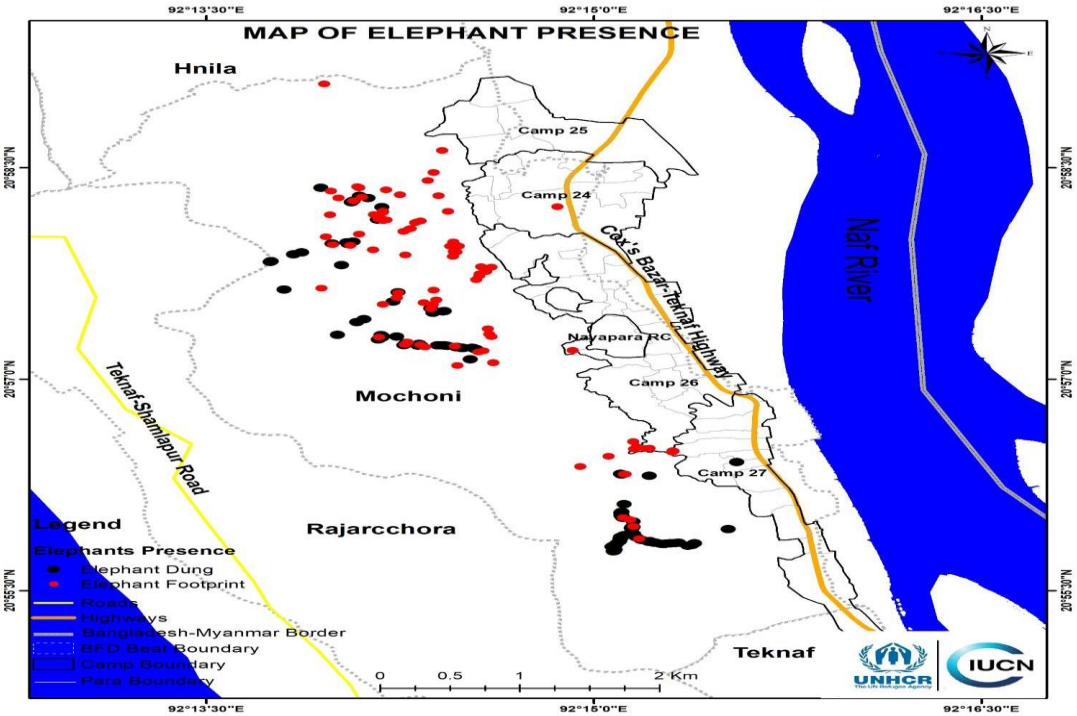
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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.

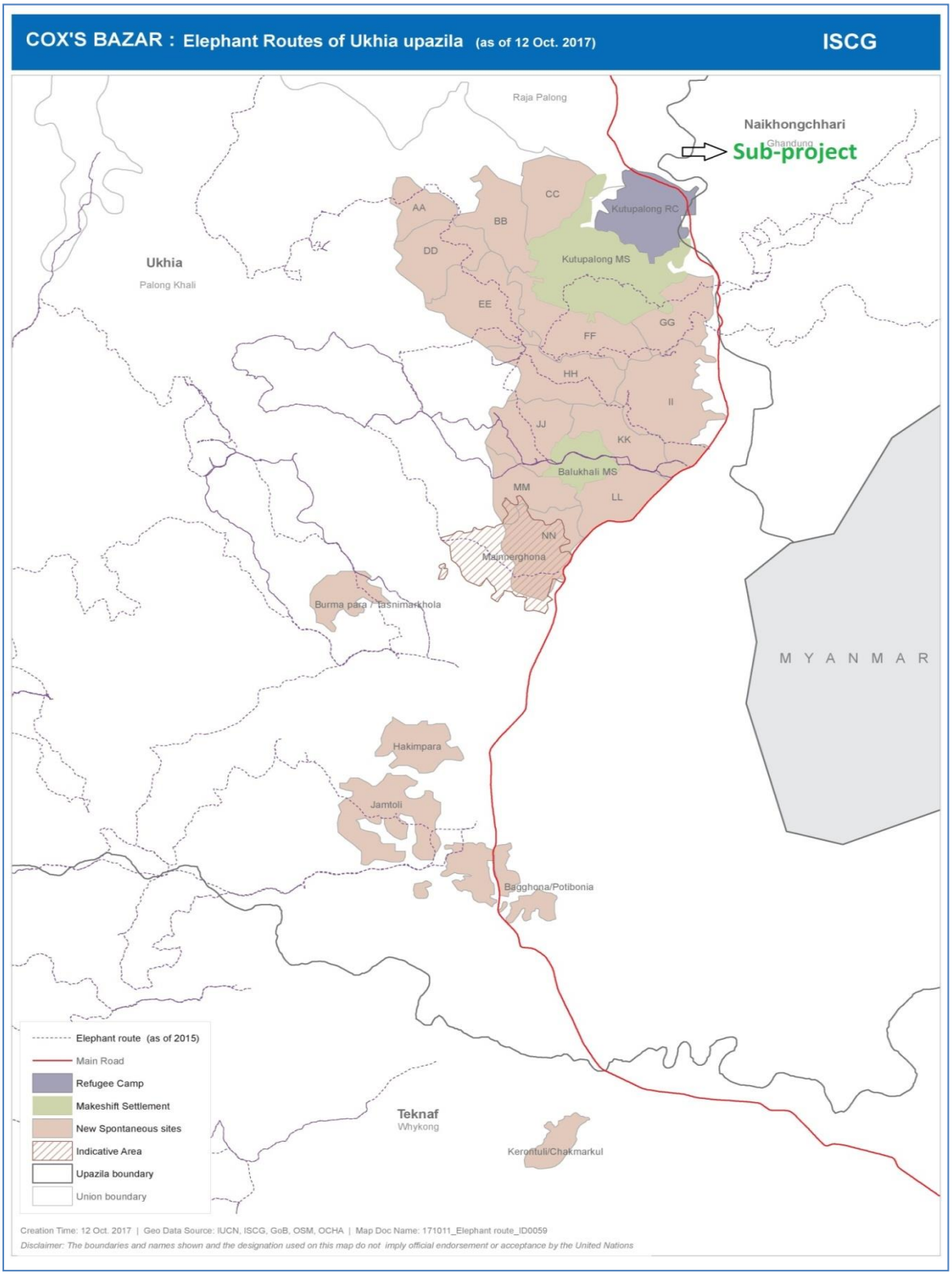
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00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



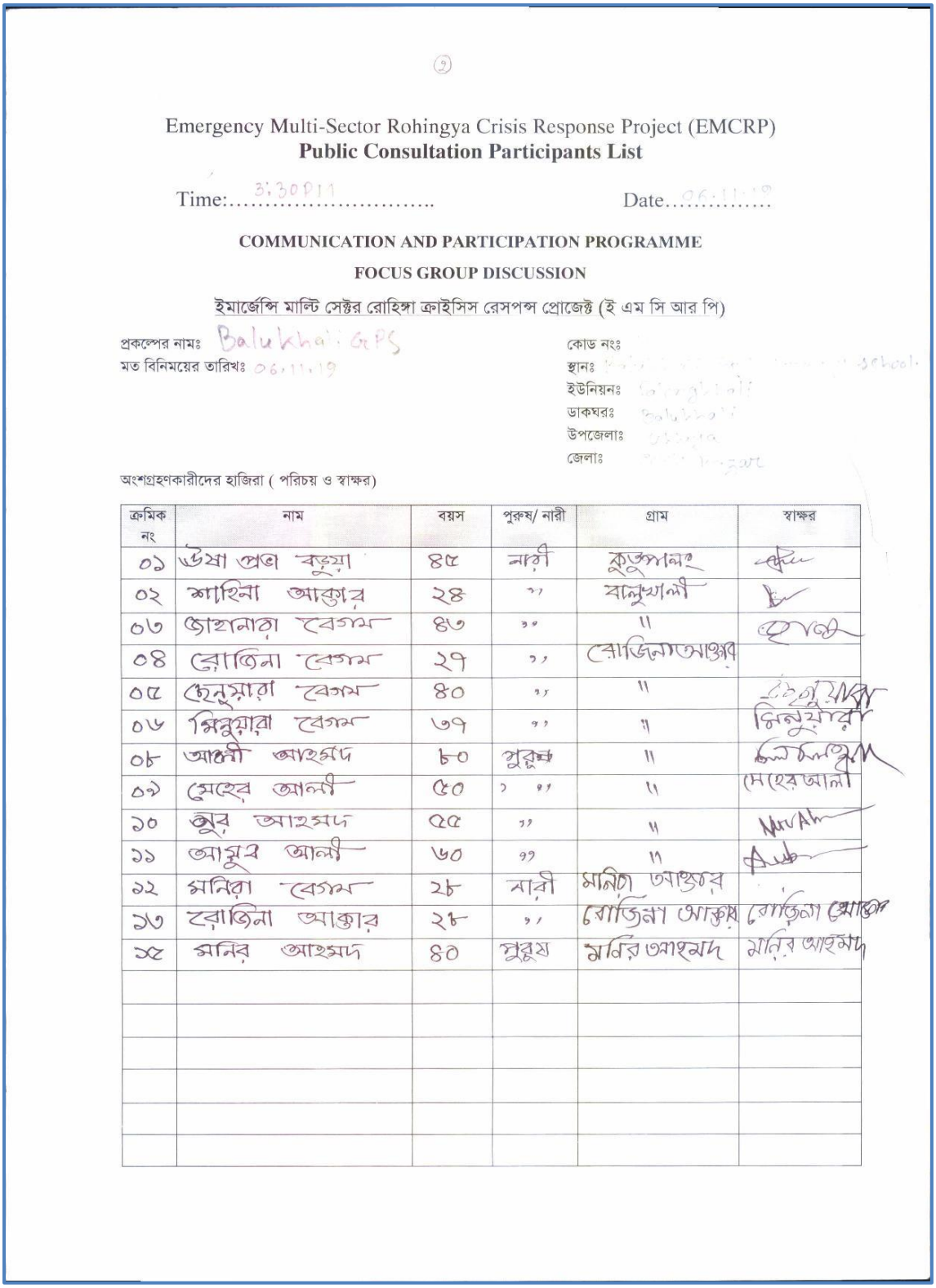


Elephant presence map (latest information published on 24 May 2018)



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: 3:30 PM Date: 06.11.19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ Balukhali GPS
মত বিনিময়ের তারিখঃ 06.11.19

কোড নংঃ
স্থানঃ
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	উষা প্রভা বড়ুয়া	৪৫	নারী	কুতুপালং	
০২	শাহিনা আক্তার	২৪	,,	বালুখালী	
০৩	জাহানারা বেগম	৪৩	,,	,,	
০৪	রোজিনা বেগম	২৭	,,	রোজিনাআক্তার	
০৫	হেনুয়ারা বেগম	৪০	,,	,,	
০৬	মিনুয়ারা বেগম	৩৭	,,	,,	
০৮	আক্তী আহমদ	৮০	পুরুষ	,,	
০৯	মেহের আলী	৫০	,,	,,	
১০	নুর আহমদ	৫৫	,,	,,	
১১	আনুর আলী	৬০	,,	,,	
১২	মনিরা বেগম	২৮	নারী	মনিরা আক্তার	
১৩	রোজিনা আক্তার	২৮	,,	রোজিনা আক্তার	
১৫	মনির আহমদ	৪০	পুরুষ	মনির আহমদ	

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 11 Multipurpose Disaster Shelter Steel Frame Building in Teknaf Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Boro Habibpara Govt. Primary School

Educational Institution ID: 412060502

Village: Boro Habibpara; Union: Teknaf Sadar; Upazila: Teknaf;

District: Cox's Bazar

December 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 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 have 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 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 cyclones 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-W11, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Teknag Sadar union of Teknaf Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Boro Habib Para, Najir Para and Choto Habib 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 provide refuge to nearly 400 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 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 subproject	Boro Habib Para GPS
Educational Institute ID	412060502
District	Cox's Bazar
Upazila	Teknaf
Union	Teknaf Sadar
Owner of land	GPS
Land available	40 decimal
Catchment household	400
Catchment Population	3000 (Male: 1500, Female: 1500)
Profession	Farmer 45%, day labor 25%, businessman 5% and others 25%
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	Boro Habib Para, Najir Para, Choto Habib Para
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road named Shah Porir Dip 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

Boro Habib 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 with respect to the planned interventions on the site and also suggest with site and activities specific management plan including appropriate mitigation options.

1.4 Location of Sub-Project

The Sub-project is located on the South-West side of Teknaf Upazila in Cox's Bazar District. The site location is relatively a plain land, free from any obstruction and easily accessible through a 12ft wide BC road, which is connected to the Cox's Bazar-Teknaf Highway. Nurani Madrasa is situated within 40 m reaches of the proposed site. The Bay of Bengal is situated at 1.5km west and Naf River is situated at 1.5km east 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 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	Teknaf
Union	Teknaf Sadar
GPS position	20.846066°N and 92.299537°E
Nearby river/canal	Naf river is located on 1.5 km east and the Bay of Bengal is situated at 1.5km west of the subproject

Boundary of the containing Upazila	Ukhiya Upazila on the North
	The Bay of Bengal on the South
	Arakan State of Myanmar on the East
	The Bay of Bengal on the West

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

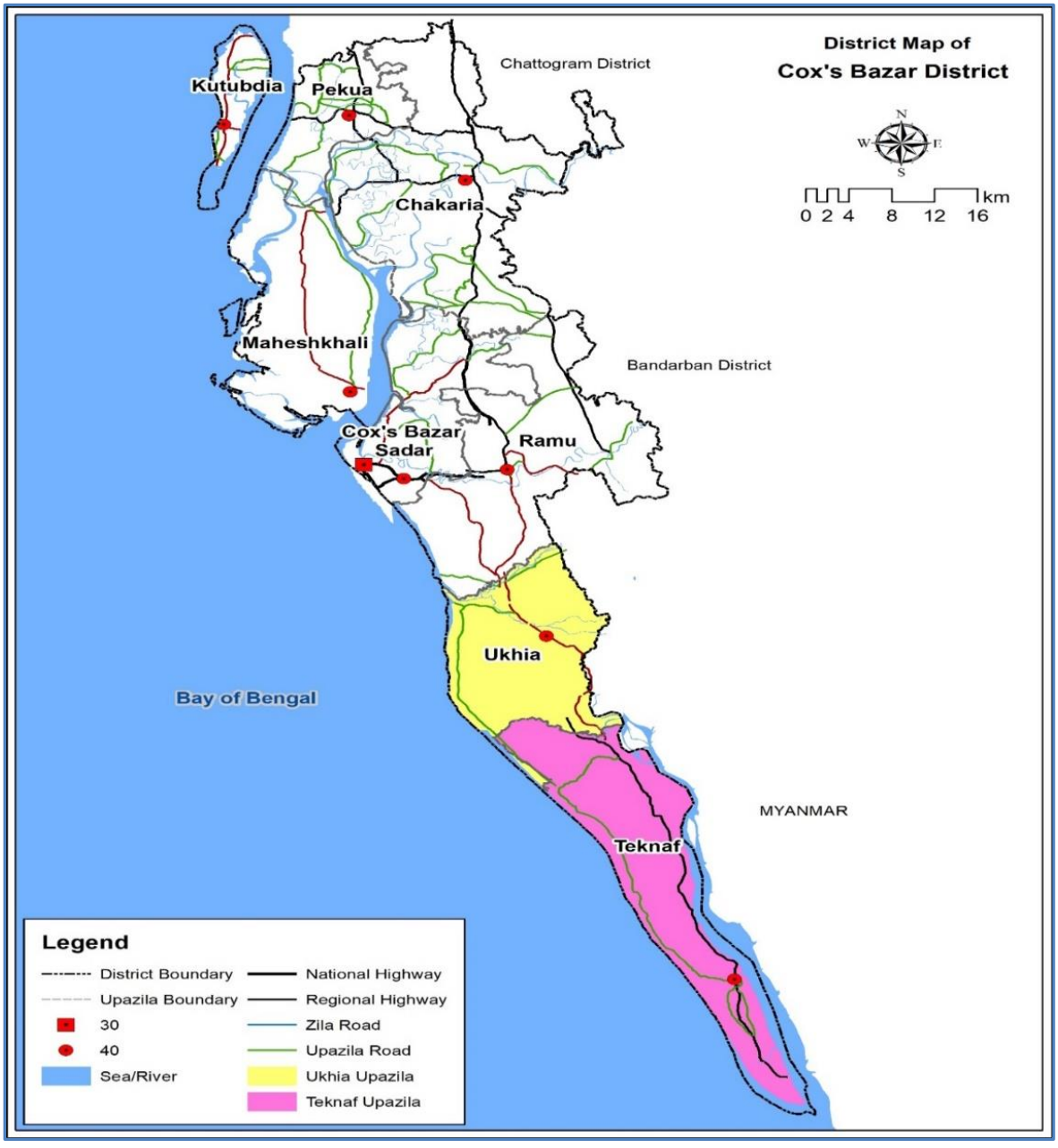


Figure 1.4.1: District Map with project location

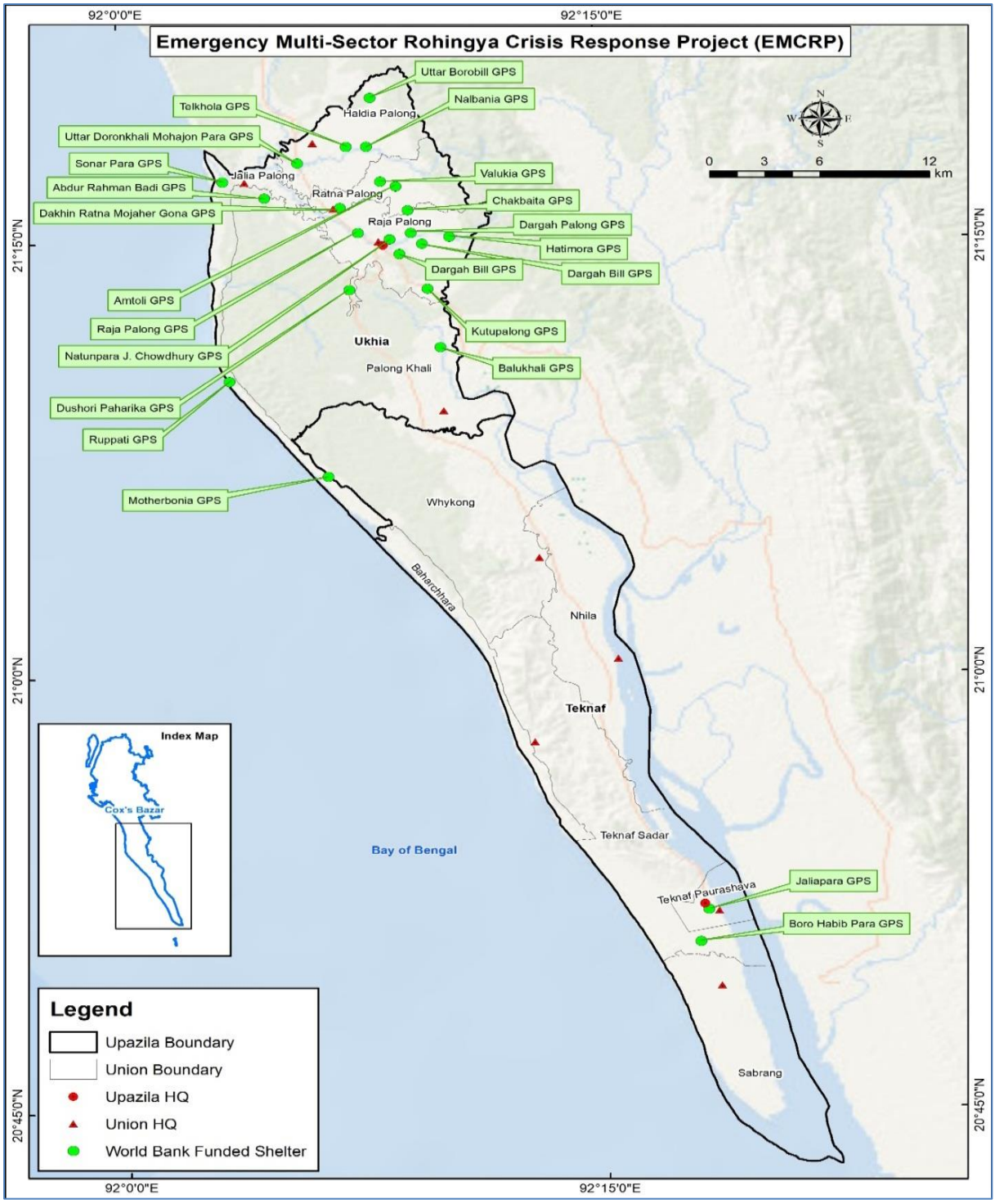


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

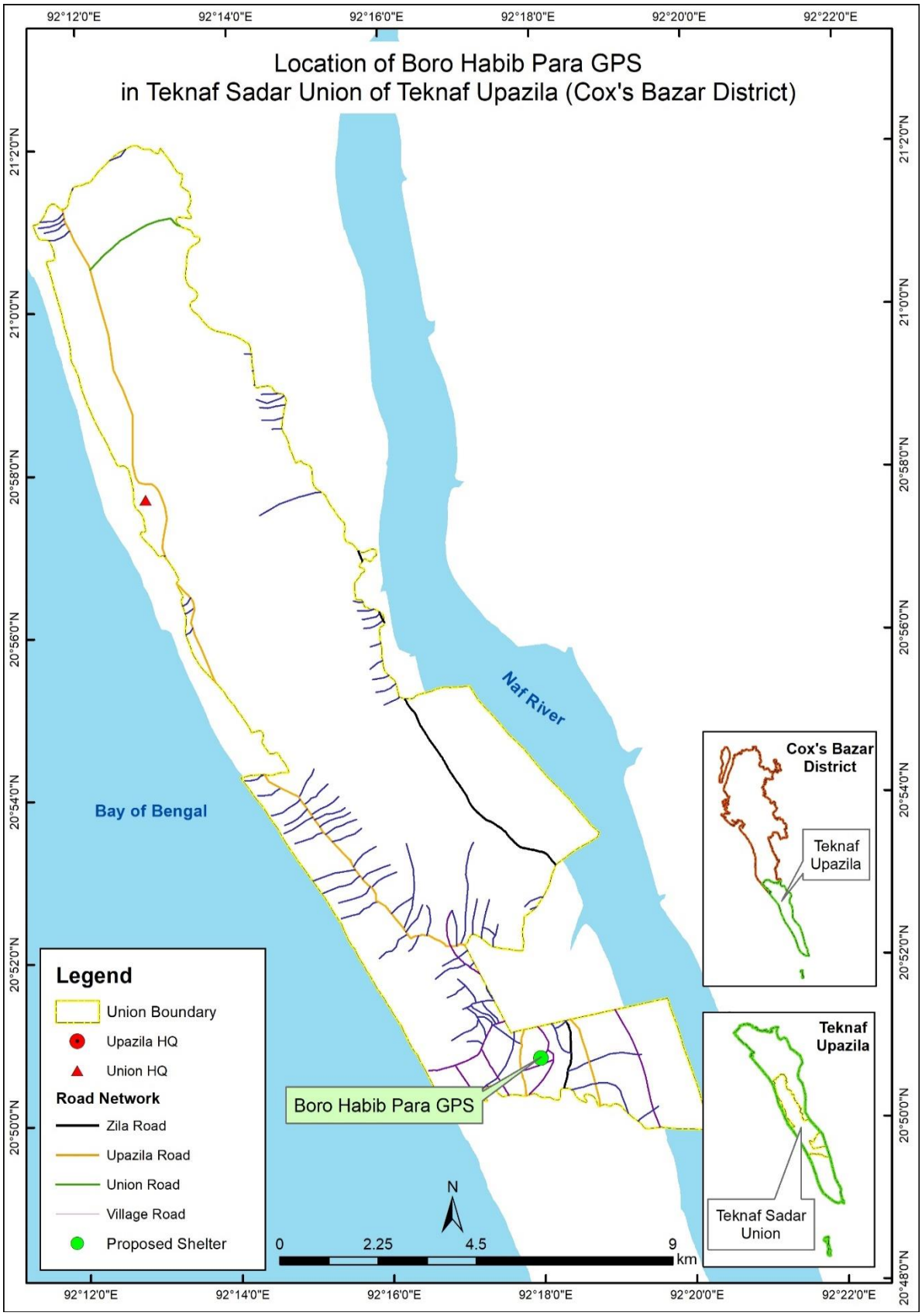


Figure 1.4.3: Union Map with Sub-project location

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 the present condition of the Sub-project area have been presented in **Figure 1.5.1**.

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

Direction	Important features/ establishment (approx. distance from the proposed site)
Northside	Settlement, mosque (100ft/30m NW), madrassa (40m NW), pond (600ft/183m NW), Graveyard (100 ft/30m)
Southside	10-12 nos. of settlements (50m), Open field (30m), Pond (700ft/213m), Mosque(700ft/213m SW)
Eastside	Shah porir dwip Road (20m), Naf river (1.5km)
Westside	Road(100ft/30m), Bay of Bengal (1.5 km)

[Sources of data: Field survey, 2019]



Figure 1.5.1: Present condition of the Sub-project area

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation have been taken up as an integral part of the environmental assessment process of the project. Field visit has been carried out on 24 December 2019 in and around the Sub-project site. As part of the impact assessment, a 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, 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. The local individuals, teachers, chairman and/or member of Union Parishad and school management committee participated in that consultation meeting.

Refer to **Figure 2.1.1 and Appendix-5** for selected photographs of the participatory public consultation held at site of the Boro Habibpara 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 a disaster such as cyclone, flood etc. So a shelter is very much necessary to construct in that catchment area.
- Lack of adequate classrooms 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 events, especially at night.
- Lack of adequate space 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 educational purposes.
- 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.
- 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 24 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 Madrasa named Nurani Madrasa is situated at 40m northwest side. There is a mosque found at 700ft southwest side and another mosque found at 100ft northwest side of the subproject. A graveyard is located at 100ft northwest side of the subproject. A 12ft BC road name Shah Porir Dwip Road is passing by the east side and another 10ft BC road is passing by the subproject on west side. Naf River is located at 1.5 km east of the sub project and the Bay of Bengal is situated at 1.5km west of the subproject. There are 2 ponds found within 700ft and 600ft distance from the school boundary. Some human settlements are found on 50m South of sub-project 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 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.

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 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.

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

The thunder storm has been found to have the highest impact in the area, casualties were 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. Ramp for cattle and physically challenged people, separate toilets for male and female, tube-well 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 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 along the school premises.

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. Due to the construction activities of this Sub-project, 4-5nos. 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 Madrasa named Nurani Madrasa is situated on 40m northwest side. There is a mosque found at 100ft northwest side of the subproject. A graveyard is located at 100ft northwest side of the subproject. Further, a pond found at 700ft south-west side and another pond found at 600ft south east side 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 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 wishes 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 around five lacs fifty seven 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 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 **05 Lacs & 57 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: (Boro Habibpara GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox's Bazar **Sub-District**: Teknaf **Union**: Teknaf sadar
Name of Community/Local Area: Boro Habib Para
Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): One Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary.

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

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.: Proposed Multipurpose Disaster Shelter Steel Frame Building will be constructed within an existing school boundary. A one-storied school building is located on north side of the school boundary. A Madrasa named Nurani Madrasa is situated at 40m northwest side. There is a mosque found at 700ft southwest side and another mosque found at 100ft northwest side of the subproject. A graveyard is located at 100ft northwest side of the subproject. A 12ft BC road name Shah Porir Dwip Road is passing on east side and another 10ft BC road is passing by the subproject on west side. The Bay of Bengal is situated at 1.5km west side of the subproject. No Important environmental features are found within the sub-project. An open field is found on North West side of the school boundary. The new cyclone shelter 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 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 BC road name Shah Porir Dip Road is passing on east side and another 10ft BC road is passing by the subproject on west side. A Madrasa named Nurani Madrasa is situated on 40m northwest side. There is a mosque found at 600ft southeast side and another mosque found at 100ft northwest 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 graveyard is located at 100ft northwest side of the subproject, 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 environmental components. In this sub-project area, no elephant migration routes exists (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance, 1st floor usually being kept open but bounded with wall for shelter of cattle and the 2nd floor is designed to be used for class rooms, teacher's room and separate male and female toilets with spaces for

pregnant women and other facilities. These spaces are used as shelter during cyclonic storm events. Safe water supply will be ensured, water treatment for wastewater (mainly rainwater) is included and solar panels will be provided. 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 Teknaf Sadar Union under Teknaf Upazila of Cox's Bazar district. The sub-project area is located at 20.846066°N and 92.299537°E. The distance from the Upazila headquarter is about 8 km. Nearby major road is Shah Porir Dwip road. The school code is 412060502.

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. Within the influence area of the subproject no historical sites were identified. A one-storied school building is located on north side of the school boundary. An open field is found on North West side of the school boundary. The new cyclone shelter will be constructed there.

One river named Naf river is located on 1.5 km east of the sub project. The Bay of Bengal is situated at 1.5km west of the subproject. There are 2 ponds found within 213m (700ft) and 183m (600ft) distance from the school boundary. No disturbance is anticipated due to the construction activities. Some human settlements are found at 50m south 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 or no socio-culturally important site is identified in or around the site.

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

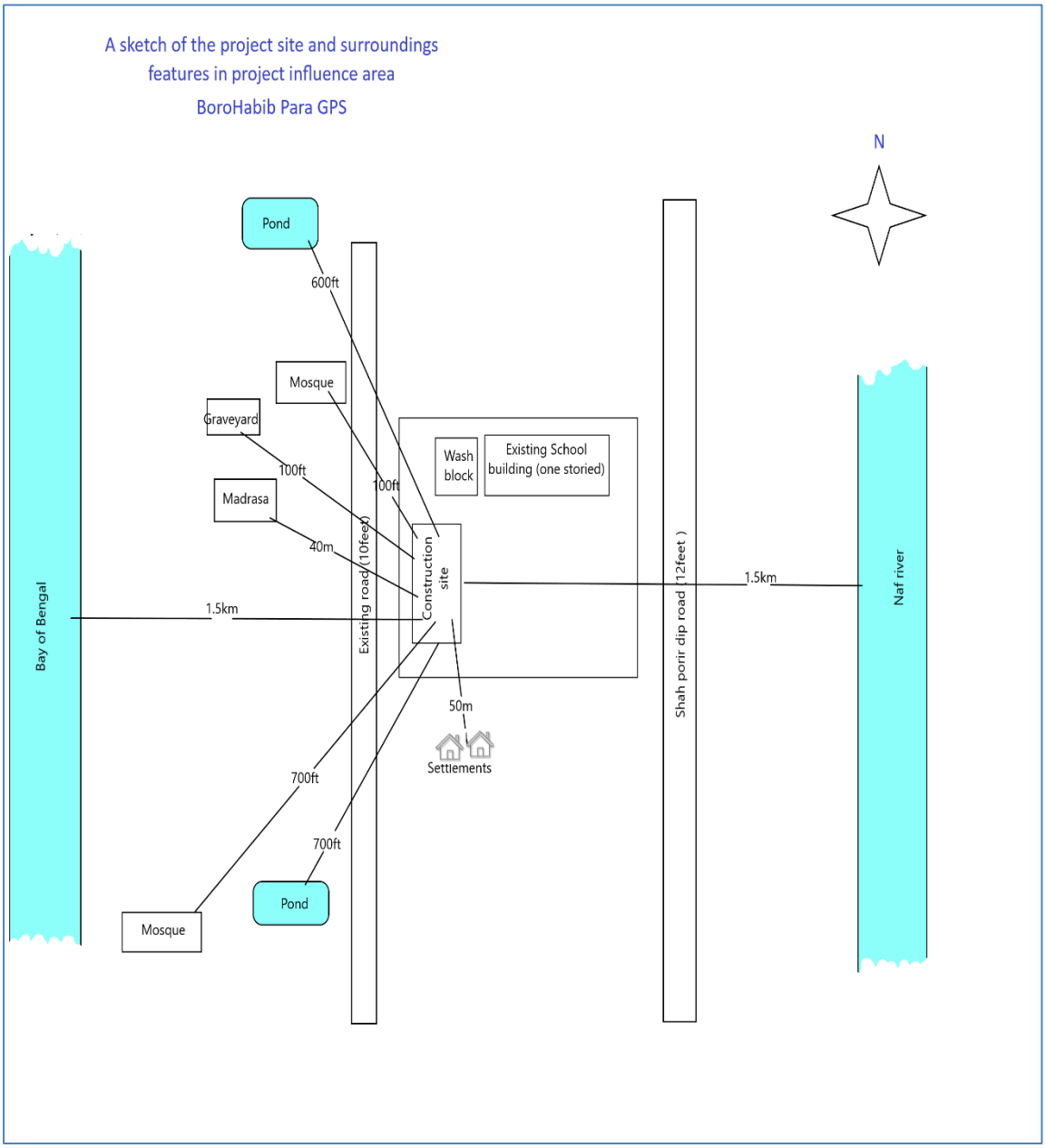
Section B: Environmental Screening

***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 Nurani Madrasa is situated on 40m northwest side. There are two mosques found at 700ft southwest side and 100ft northwest side of the subproject. A graveyard is located at 100ft northwest side of the subproject, 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 ensured in host community and within 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 in 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/ 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 motor cycle, tempo, auto rickshaw, tractor, trailer, etc. moving 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 200 feet. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Local people usually use

tube-well water for drinking and other domestic purposes. Two fish ponds are found within the catchment area of the sub-project but no disturbance or modification is anticipated by the sub-project construction works. 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 western side of the proposed construction areas are located within 300m 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 possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow tube-well is found within the school boundary and depth is about 200 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 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 BC road is the main way for transportation of raw materials. It is located on east side of adjacent sub-project.
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**: Construction debris and other solid wastes will be generated during the construction period. **Type:** wood, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 4 metric ton of solid wastes 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 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 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. Due to construction activities of this Sub-project, 4-5 numbers of trees will be cut down.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito

breeding and other disease vectors: (High/Medium/Low with explanation) **Low**: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre-existing drainage channel is found. Though 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 related to 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. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A BC road connects the sites with main road. During operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 named Nurani Madrasa is situated at 40m northwest side. There is a mosque found at 600ft southeast side and another mosque found at 100ft northwest side of the subproject. A graveyard is located at 100ft northwest side of the subproject. So labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste	Prior to the start of Constructi on works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	pollution; health hazard of workers due to poor quality drinking water)		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.		management activity; Waste disposal record.	
	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	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.		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.	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints	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.		• 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.		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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor& waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor 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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Boro Habib 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		for 5 shelters, i.e.35, 000 Tk.*24 months* 2 persons (1/11 for 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			557,148

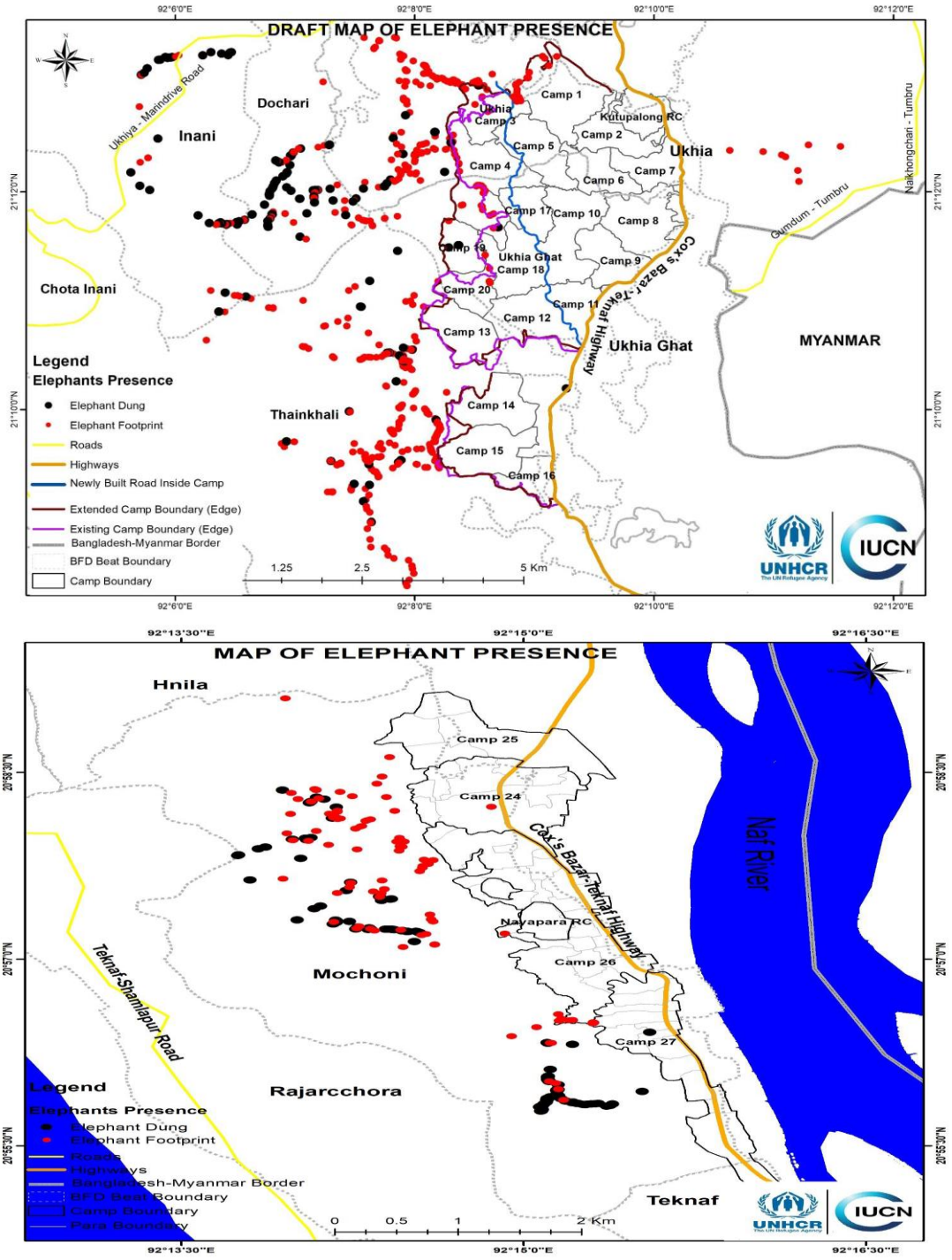
Cost of H&S Measures under COVID 19 Situation

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-11).

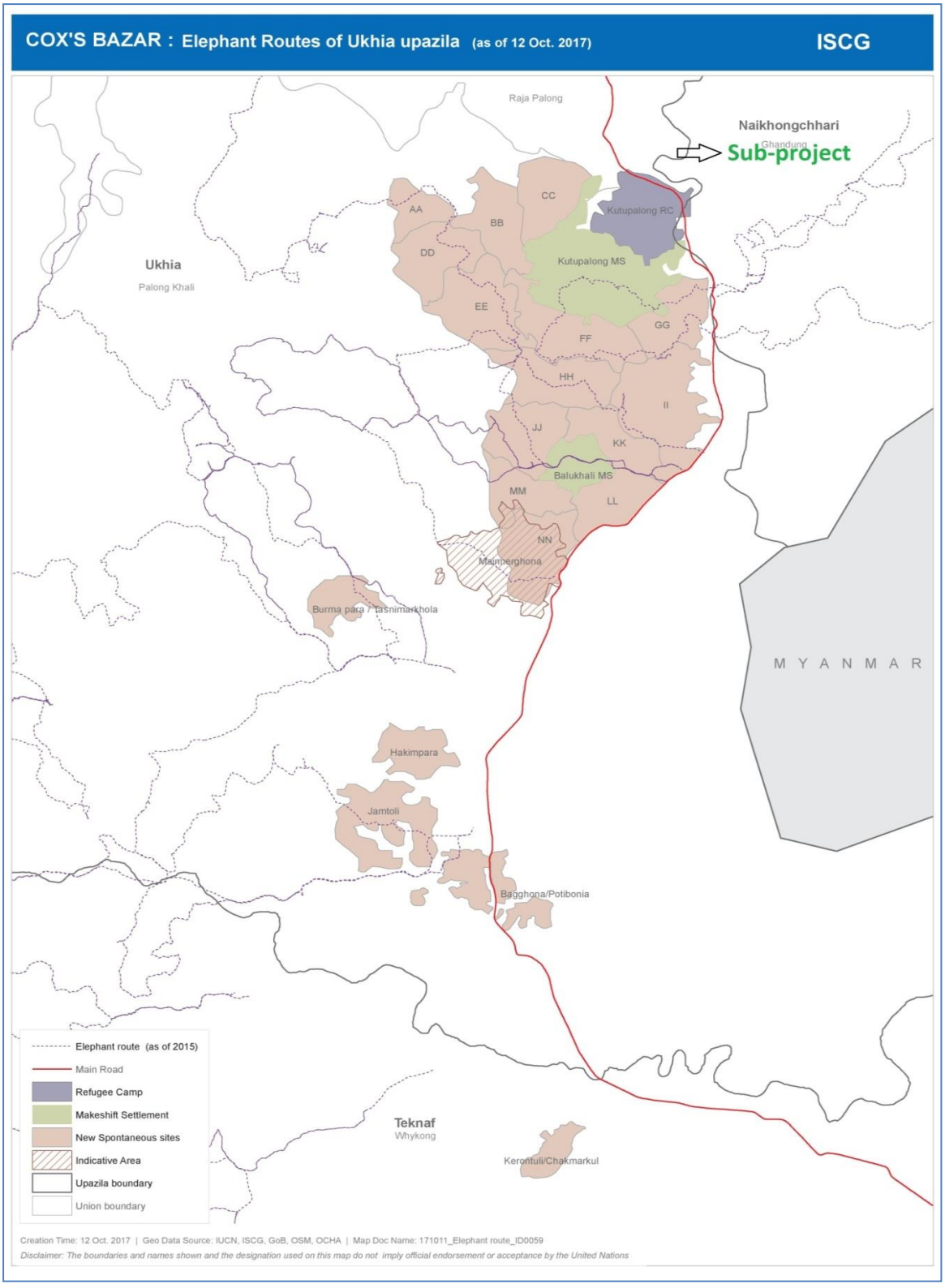
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a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

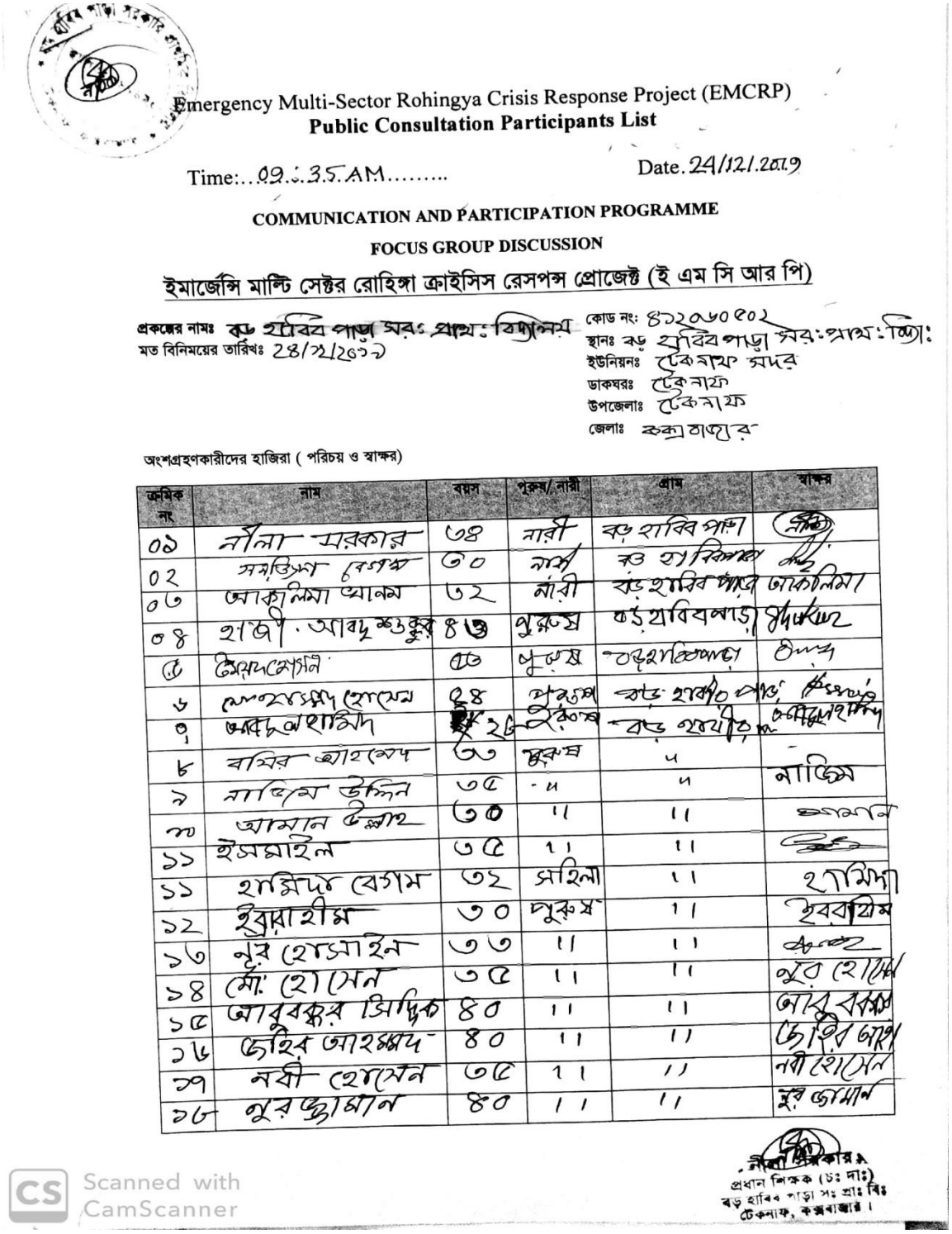


Elephant presence map (latest information published on 24 May 2018)



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:...09.:.35.AM..... Date. 24/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ বড় হাবিব পাড়া সরঃ প্রাথঃ বিদ্যালয়
মত বিনিময়ের তারিখঃ 24/12/2019

কোড নংঃ ৪১২০৬০৫০২
স্থানঃ বড় হাবিব পাড়া সরঃপ্রাথঃবিঃ
ইউনিয়নঃ টেকনাফ সদর
ডাকঘরঃ টেকনাফ
উপজেলাঃ টেকনাফ
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	নীলা সরকার	৩৪	নারী	বড় হাবিব পাড়া	
০২	সমতিসা বেগম	৩০	নারী	বড় হাবিবপাড়া	
০৩	আকলিমা আক্তার	৩২	নারী	বড় হাবিব পাড়া	আকলিমা
০৪	হাজী আবদুশ শুকুর	৪৩	পুরুষ	বড় হাবিবপাড়া	
০৫	মৈমুনেসা	৫৩	পুরুষ	বড় হাবিবপাড়া	
০৬	মোহাম্মদ হোসেন	৫৪	পুরুষ	বড় হাবিব পাড়া	
০৭	আবদুল হামিদ	২৫	পুরুষ	বড় হাবিবপাড়া	আবদুল হামিদ
০৮	বসির আহমেদ	৩৩	পুরুষ	ঐ	
০৯	নাছির উদ্দিন	৩৫	ঐ	ঐ	নাজিম
১০	আমান উল্লাহ	৩০	ঐ	ঐ	
১১	ইসমাইল	৩৫	ঐ	ঐ	
১১	হামিদা বেগম	৩২	মহিলা	ঐ	হামিদা
১২	ইব্রাহীম	৩০	পুরুষ	ঐ	ইব্রাহিম
১৩	নূর হোসাইন	৩৩	ঐ	ঐ	
১৪	মোঃ হোসেন	৩৫	ঐ	ঐ	নুর হোসেন
১৫	আবুবক্কর সিদ্দিক	৪০	ঐ	ঐ	আবু বক্কর
১৬	জেহির আহম্মদ	৪০	ঐ	ঐ	জেহির আহা
১৭	নবী হোসেন	৩৫	ঐ	ঐ	নবী হোসেন
১৮	নুর জামান	৪০	ঐ	ঐ	নুর জামান

নীলা সরকার
প্রধান শিক্ষক (চঃ দাঃ)
বড় হাবিব পাড়া সঃ প্রাঃ বিঃ
টেকনাফ, কক্সবাজার।

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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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Chakbaita Govt. Primary School
Educational Institution ID: 412010403
Village: Chakbaita; Union: Rajapalong; Upazila: Ukhiya;
District: Cox's Bazar
December 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 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-W11, 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 Chakbaita, east Digholia, West Digholia. 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 704 households, containing 4215 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	Chakbaita GPS
Educational Institute ID	412010403
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land Available	1 acres
Catchment household	550
Catchment population	3030 (Male 1530, Female 1500)
Profession	Farmer 50%, day labor 20%, businessman 15% 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	Chakbaita, east Digholia, West Digholia
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

Chakbaita 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 8ft wide HBB road of nearly 5km in length, which is connected to the Cox's Bazar-Teknaf Highway. Chakbaita High School 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 map 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	Rajapalong
GPS position	$21^0$16'04.30"N and $092^0$09'6.9''E
Distance from Upazila HQ	5 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	Hijolia Khal is located on 0.5 km west and a big pond is found on north-east side.

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]

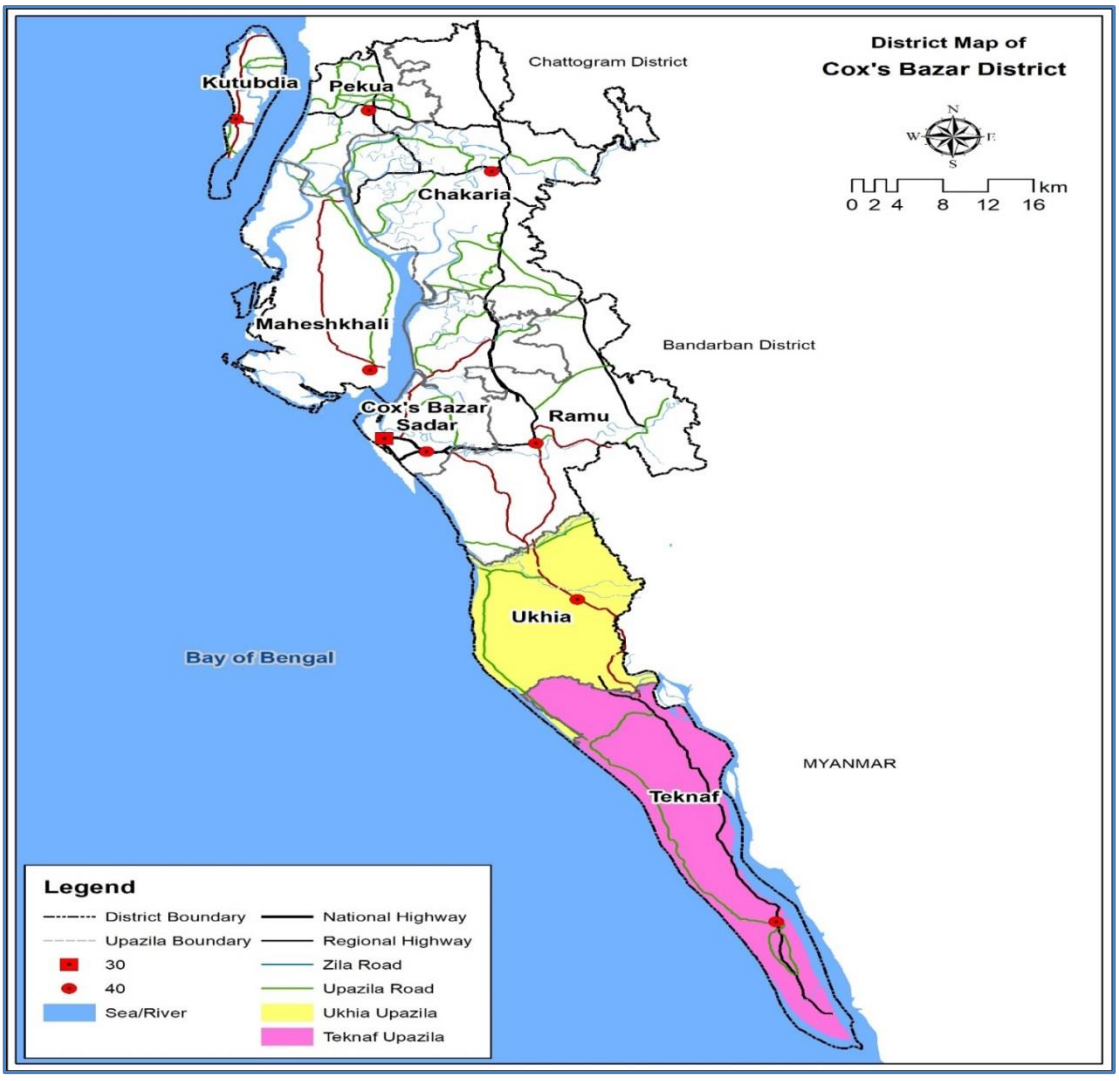


Figure 1.4.1: District Map with project location

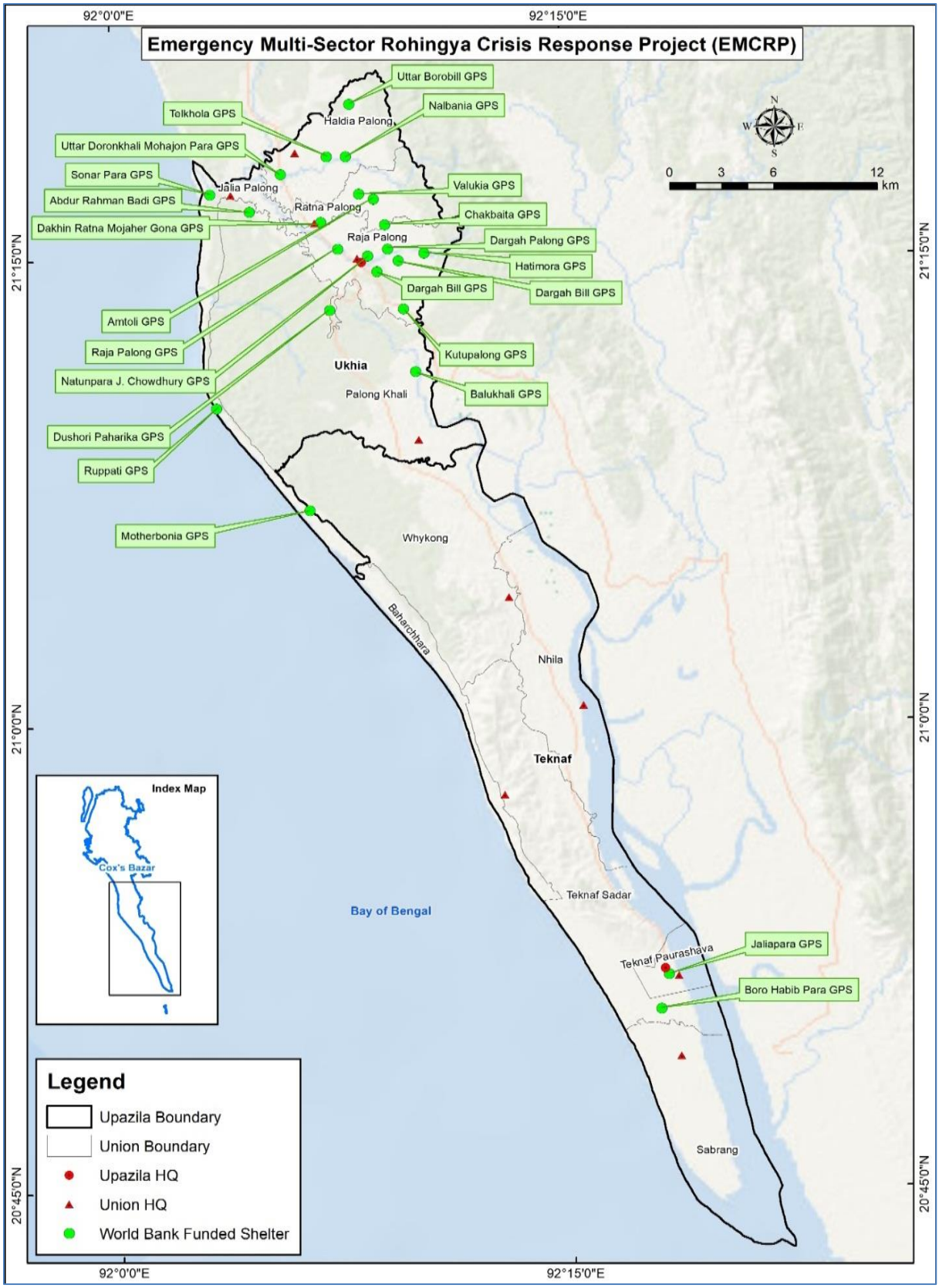


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

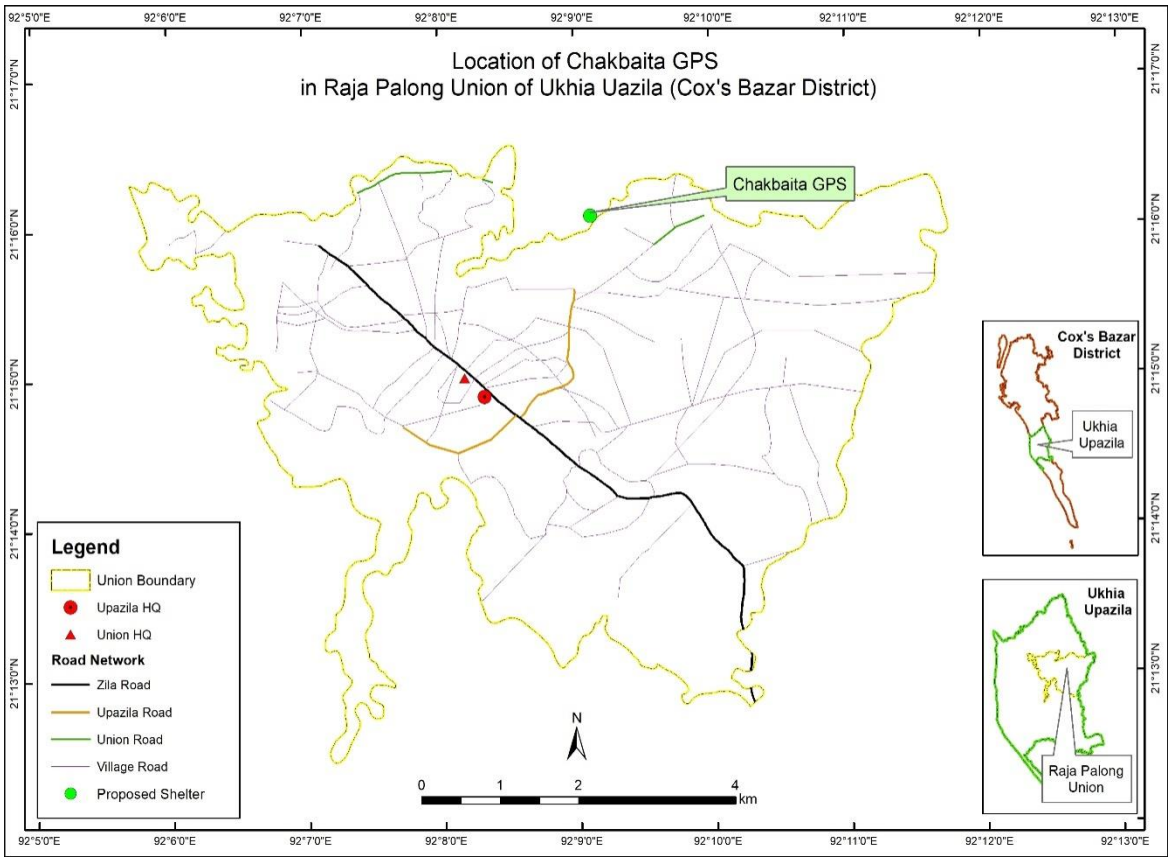


Figure 1.4.3: Union Map with Sub-project location

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 site 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	West Chakbaita Jame mosque (50m), 10-12 nos of settlement (200m)
South side	Settlements (200m), road (10m)
East side	Chakbaita high school (100m), Pond(50m)
West side	5-7nos of Settlements, Khal (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 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 15 persons, and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-5** for selected photographs of the participatory public consultation held at site of the Chakbaita 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 disaster 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 space 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.
- 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 directly 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. There is a high school named Chakbaita High School is situated on east side (100m) and a mosque named west Chakbaita Jame Mosque is found on north side (50m). One khal named Hijolia Khal is located on 0.5 km west of the sub project and a big pond is found at 50m north-east side of the sub-project area. Some human settlements are found at 200m south side of adjacent school boundary. 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 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.

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 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 from 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

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

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 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. Drainage channel 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, tube-well 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 shelter. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly along the school premises. Also construction of storm water drainage system is suggested.

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 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. 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. There is a high school named Chakbaita High School is situated on east side (100m) and a mosque named west Chakbaita Jame Mosque is found on north side (50m). A big pond is found at 50m north-east side of the sub-project area. 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 wishes 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 around five lacs sixty two 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 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 **05 Lacs & 62 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 reducing disaster vulnerability, and improving 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: (Chakbaita GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)

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

Estimated total cost of sub-project (in Taka): 47,02,20,000 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: Chakbaita

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 high school named Chakbaita High School is situated on east side (100m) of the sub-project. A mosque (50m), human settlements (200m), agricultural land and several fish projects are found around the sub project area. An 8 feet HBB road is passing by the south 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-west side, adjacent to 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 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 demolishing an old building and construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic. 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. Chakbaita High School is situated on east side (100m) and a mosque named west Chakbaita Jame Mosque found on north side (50m) but there is no chance to disturbance due to this construction activities. No other community based institutions including religious centers like Mosques, temples; and different forms of educational/cultural institutions that bring cultural values and social cohesion to the community people, is not available around the site.

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 exist (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, 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$16'04.30"N and 092^0 09'6.9''E. The distance from the Upazila headquarters 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 .412010403

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:

The proposed Sub-project is located within the existing Govt. Primary School boundary. There is a two-storied relatively new building being used for classrooms, another building located at west side of the school boundary and a small tin shed old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

One khal named Hijolia Khal is located on 0.5 km west of the sub project and a big pond is found at 50m north-east side of the sub-project area. Some human settlements are found at 200m south side of adjacent school boundary. No mentionable eco-concerned establishment or socio cultural sites are available in the vicinity. In the north side a mosque named West Chakbaita jame mosque is situated (50m).

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**

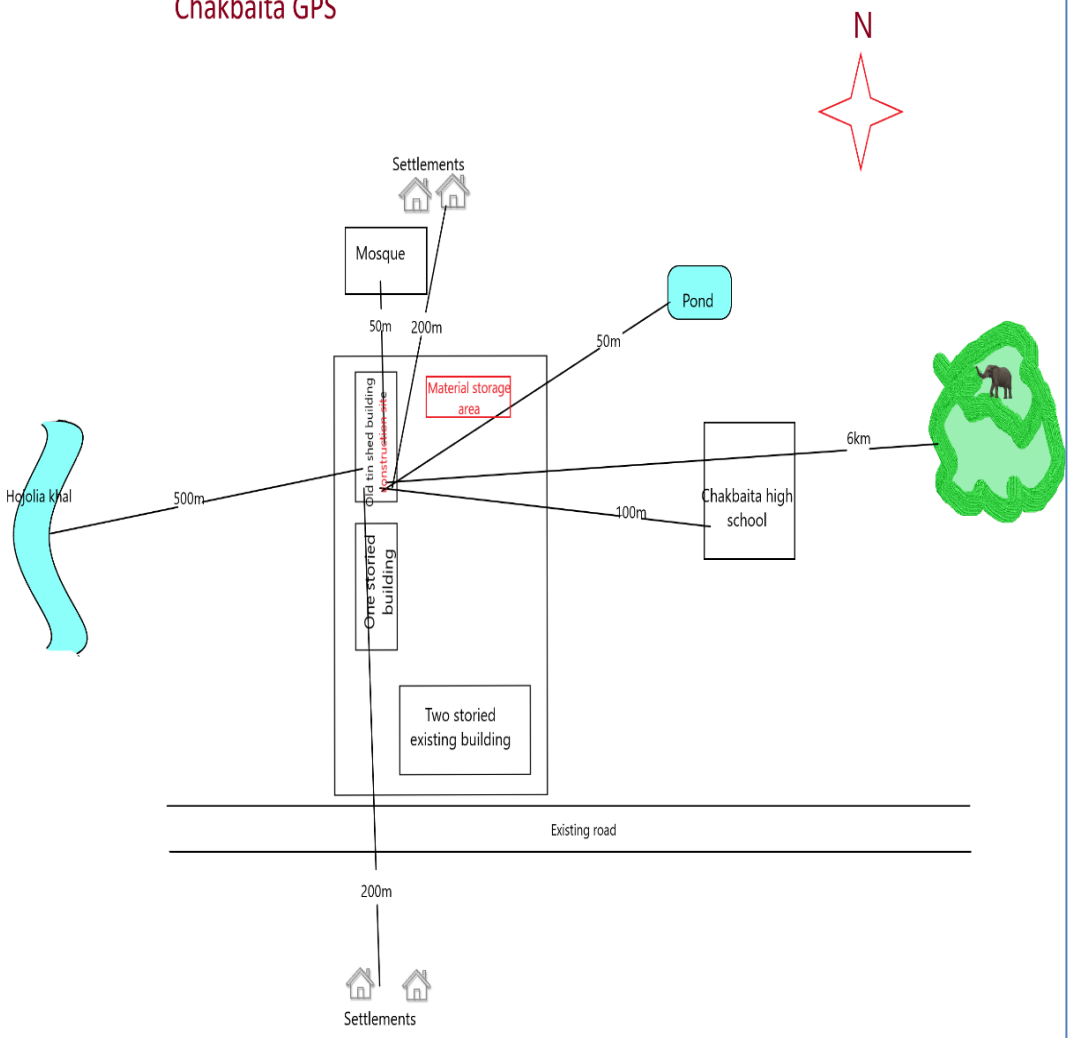
Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
There is a mosque found at 50m north side of the subproject. A high school named Chakbaita High School is situated on east side (100m) but there is no scope to be affected by the construction

activities as proper protective and conservative measures along with good practice construction works and site management procedures (sketched out in ESMP) will be adopted.

There is no sensitive environmental, cultural, archaeological sites exist 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

Chakbaita 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 ensured in host community and within 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 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 is found within the school boundary. The shallow depth is about 200 feet and deep tubewell depth is 750 feet. But the shallow tube well is not working properly. Students are suffering due to the lack of water. In the sub-project area, deep groundwater is 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. One pond is found adjacent to the sub-project area for fish cultivation. Local drain is located near the road side, 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 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, adjacent to the sub-project, is passing by the south side. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow tube-well and a deep tubewell is found within the school boundary and depth is about 200 feet and 750 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 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 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) Bamboo & wood from mobilized

materials and other electro-mechanical equipment.
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 adjacent sub-project and connected to Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On north side of school field. 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 demolishing before starting the construction activities and the new one 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. **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 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 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 related to 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. In fact, none of the usual activities taken place in a school site during the operation phase is likely to potentially destruct or damage any terrestrial or aquatic ecosystems or so.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: **N/A**
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) **N/A**
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: The proposed site is located inside the locality. A HBB road connects the site with the 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 bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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. • There is a high school named Chakbaita High School is situated on east side (100m) and a mosque named west Chakbaita Jame Mosque found on north side (50m). A big pond is found at 50m north-east side of the sub-project area. So labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	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;	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
			• 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.			
	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.	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 Constructi on works

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor& waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor 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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Chakbaita 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		for five shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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's and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	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 15 nos. of trees need to be planted around the periphery of the proposed site at an interval of 10 feet.	15 nos.	@ Tk. 1000 for each tree.	15,000
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 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,	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
	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			562,148

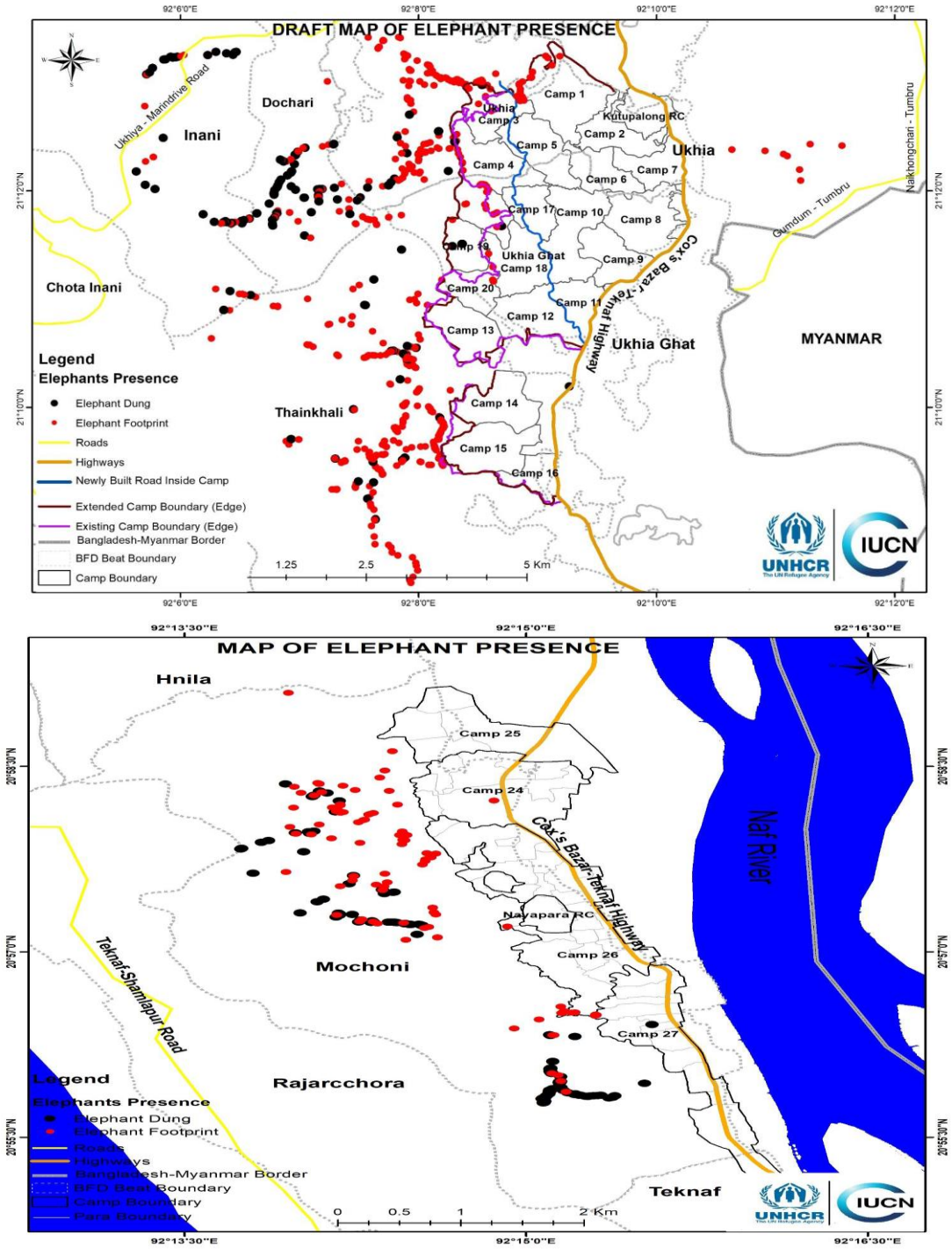
Cost of H&S Measures under COVID 19 Situation

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-11).

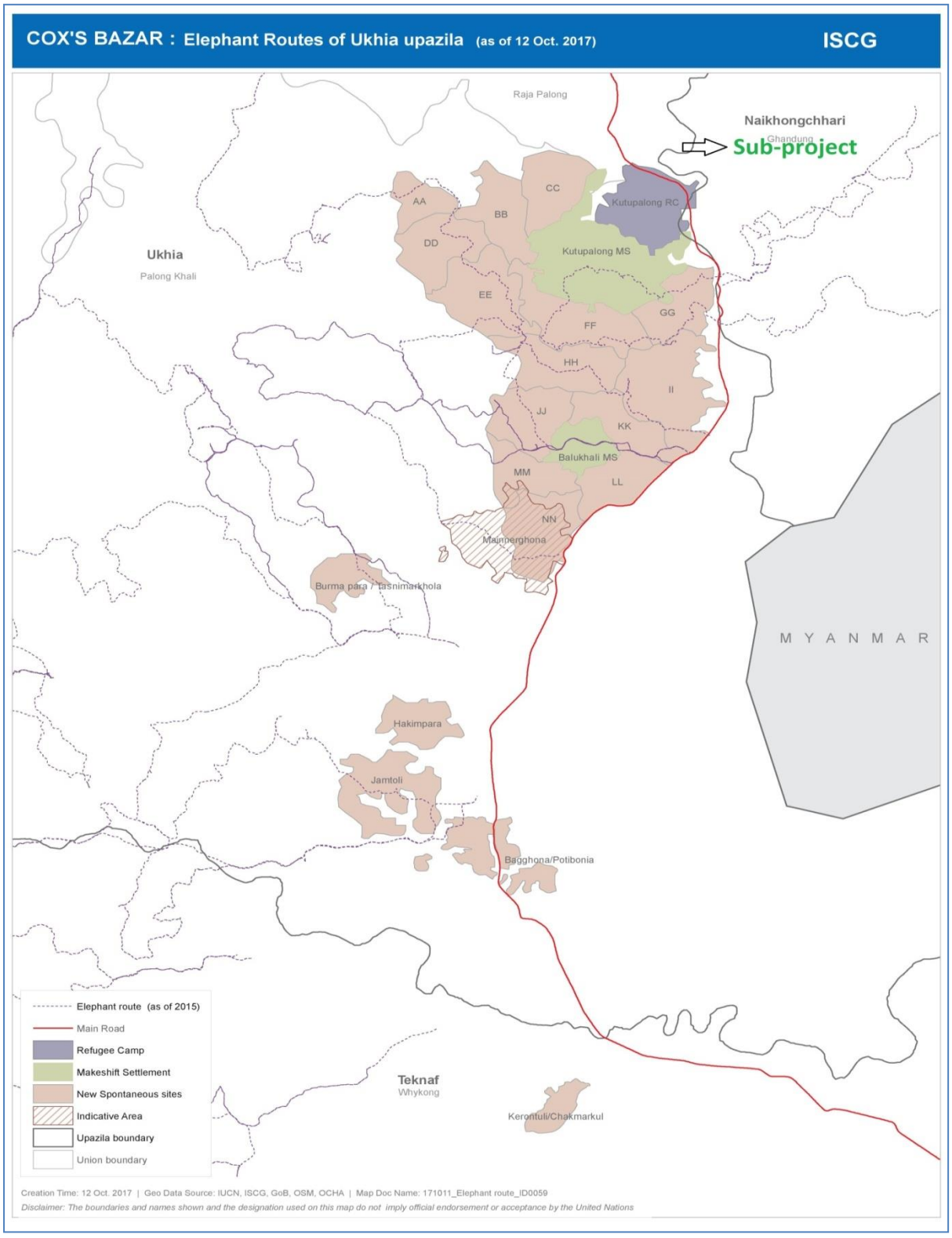
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a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

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ Chakbaita GPS
মত বিনিময়ের তারিখঃ

কোড নংঃ
স্থানঃ
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১.	Palash Barua	31	M	Kutupalong	
2.	Hasina Akter	33	F	Chakboyta	
3.	Nasrin Jahan	29	F	Ukhiya Sadar	
4	Nasima Akter	34	F	Shikderbil	
5.	Rozina Akhter	35	F	Ukhiya Sadar	
6.	Jannatul Ferdus	39	F	digoliya	
7.	Shamsun naher	29	F	Shikderbil	
8	Jannat Ara	40	F	Digoliya	
9	Meher Khatun	35	F	"	
10	Salaha Begum	45	F	Chakboyta	
11	Mohidul Alam	40	M	"	
12	Nurul Alam	38	M	"	
13	Amir Kashem	30	M	"	
14	Oli Ahmed	35	M	"	
15	Md. Rashid	36	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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Dakhin Ratna Mojhar Gona Govt. Primary School
Educational Institution ID: 412010203
Village: Telipara; Union: Ratnapalong; Upazila: Ukhiya;
District: Cox's Bazar
December 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 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 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 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-W11, 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 Telipara, ratnapalong and Uttar Pukuria. 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 550 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 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	Dakhin Ratna Mojahar Gona GPS
Educational Institute ID	412010203
District	Cox's Bazar
Upazila	Ukhiya
Union	Ratnapalong
Owner of land	GPS
Land available	40 decimal
Catchment household	550
Catchment Population	3300 (Male: 1700, Female: 1600)
Profession	Farmer 67%, day labor 24%, businessman 5% and others 4%
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	Telipara, ratnapalong, Uttar Pukuria
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 HBB 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 area and the Sub-project

Dakhin Ratna Mojahar Gona 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 HBB road named Mojahar Ghona road of nearly 8 km in length, which is connected to the Cox's Bazar-Teknaf Highway. The location has the geographical position-21°16' 10.06"N and 92° 06' 58.9"E, and is nearly 9 km away from the Upazila HQ. 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	Ratnapalong
GPS position	21°16' 10.06"N and 92° 06' 58.9"E
Distance from Upazila HQ	8-10 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	One khal named Hijolia khal is located at 1.5km north

	side and another chora named Jambunia chora is located at 500m 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]

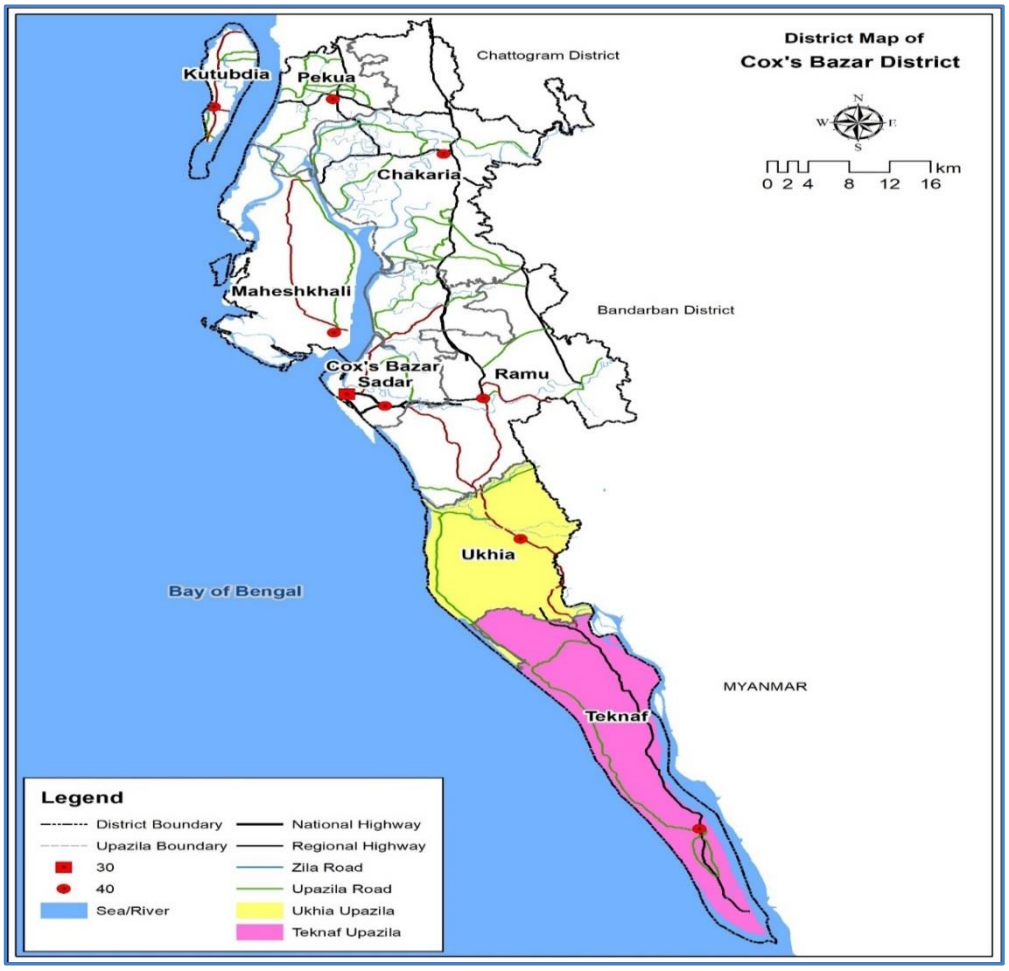


Figure 1.4.1: District Map with project location

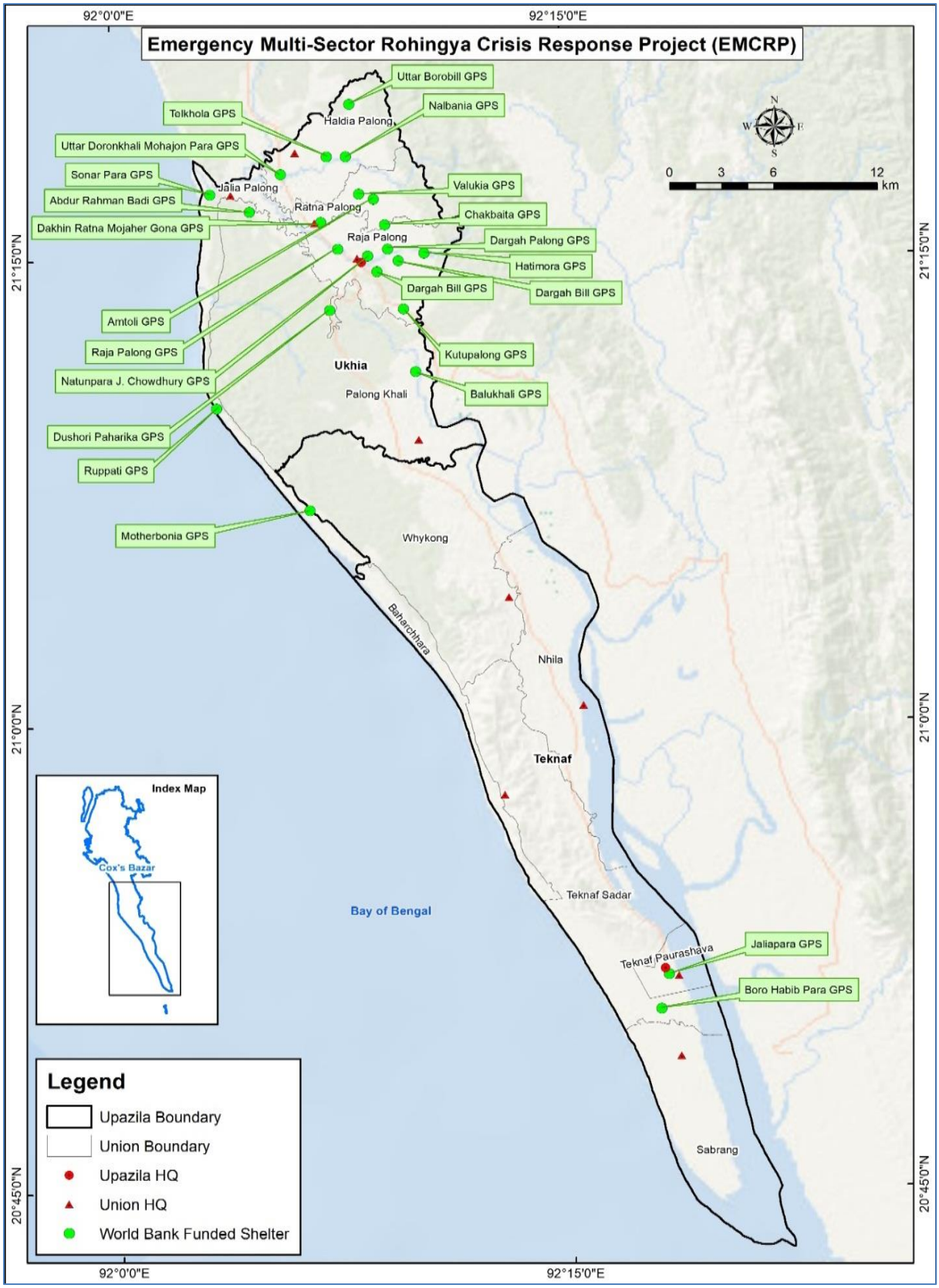


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

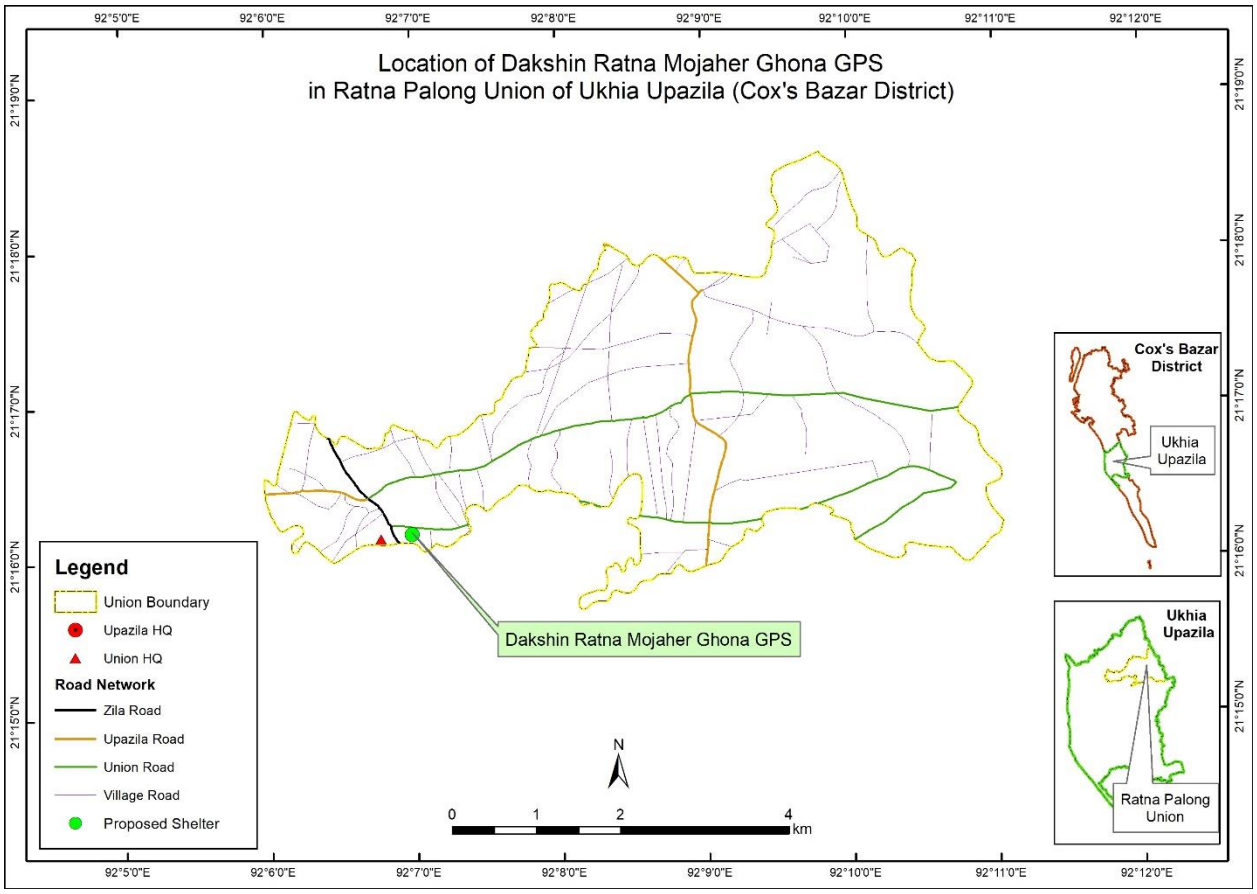


Figure 1.4.3: Union Map with Sub-project location

1.5 Boundary of the Sub-Project Site

The important features or establishments around the Sub-project 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 site 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	5-7 nos. of Settlements(30m), Mosque (400m NW)
South side	Betel nut garden(50m), paddy land (50m), Zambunia chora (500m), Khal(1.5km)
East side	Mojahar Ghona Road (10 feet HBB), 10 nos. of Settlements (30m), Mosque(250m)
West side	5 nos. of Settlements(20m)

[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 18 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 21 persons, and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore,

the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-5** for selected photographs of the participatory public consultation held at site of the **Dakhin Ratna Mojahar Gona 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 disaster 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 space 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.
- 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. This shelter will be constructed within an existing school boundary so no agricultural land/ activities or fish farming will directly be disturbed due to the construction of the sub project. Some human settlements are found at 30 meter north side, 20 meter west side and 30 meter east side of the school building. There are 2 mosques found within the catchment area (nearly 400meter and 250 meter distance). A khal named Hijolia khal is located on 1.5 km south side of the sub project and Jambunia chora is located at 500 meter south side of the proposed sub-project area. No significant disturbances 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. 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. 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 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.

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 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 from 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.

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. Drainage channel 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, tube-well in the school building, solar power as energy sources are suggested as part of the construction 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 north east side. Due to the construction activities of this Sub-project, 2-3nos. of trees (small and medium size) and 10-15nos. of betel nut trees will be cut down and as a mitigation measure, 50 nos. of trees will be replanted in the periphery of the school. Some human settlements are found at 30 meter north side, 20 meter west side and 30 meter east side of the sub-project. A betel nut garden is found at 50 meter south side of school building. The nearby mosque is located at 250m distance from the sub-project boundary. 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 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 wishes 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 situations

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 around five lacs fifty seven 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 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 **05 Lacs & 57 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 reducing disaster vulnerability, and improving 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: (Dakhin Ratna Mojahar Gona GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 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: Telipara

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 and another one storied building is located on west side within the school boundary. These two buildings are used for class rooms. A tin shed building is situated on north side which will be demolished during construction period and a new one will be constructed there. Some human settlements are found at 30 meter north side, 20 meter west side and 30 meter east side of the sub-project. A betel nut garden is found at 20 meter south side of school building. Two mosques are located within the catchment area which are nearly 400meter and 250 meter distance from the sub-project site. A 10 feet HBB 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.

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. 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 demolition and 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 found within the catchment area (nearly at 400meter and 250 meter distance). Community based institutions including religious center such as Mosques, temples, educational institutions and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people, but there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements and agricultural land are found around the sub-project area. No significant disturbance is anticipated to those socio-environmental components due to construction activities. 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 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 Ratnapalong Union under Ukhiya Upazila of Cox's Bazar district, with a geographical position at 21°16' 10.06"N and 92° 06' 58.9"E. The distance from the Upazila headquarter is about 9 km. Nearby major road is Cox's Bazar- Teknaf highway, which is connected to the proposed site with a 10 ft. wide HBB road having a distance of nearly 8km from the site. 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:

Sub-project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is a one story relatively new building being used for classrooms, another school building is located at west side of the school boundary, and a small tin shed old structure on the north side will be replaced by the proposed new multipurpose school building within the same boundary.

A khal named Hijolia khal is located on 1.5 km south and a chora named Jambunia chora is located at 500 meter south of the proposed sub-project area. No disturbance is anticipated to these water bodies due to construction activities. Some human settlements are found at 30 meter north side, 20 meter west side and 30 meter east side of the sub-project area. An agricultural patches is located on the south, will not be affected by the construction activities. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco-concerned establishment and no socio cultural site are found in the vicinity. A betel nut garden is found on south side. 15-20 nos. of betel nut tree will be cut down during construction period for the construction of labor camp.

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

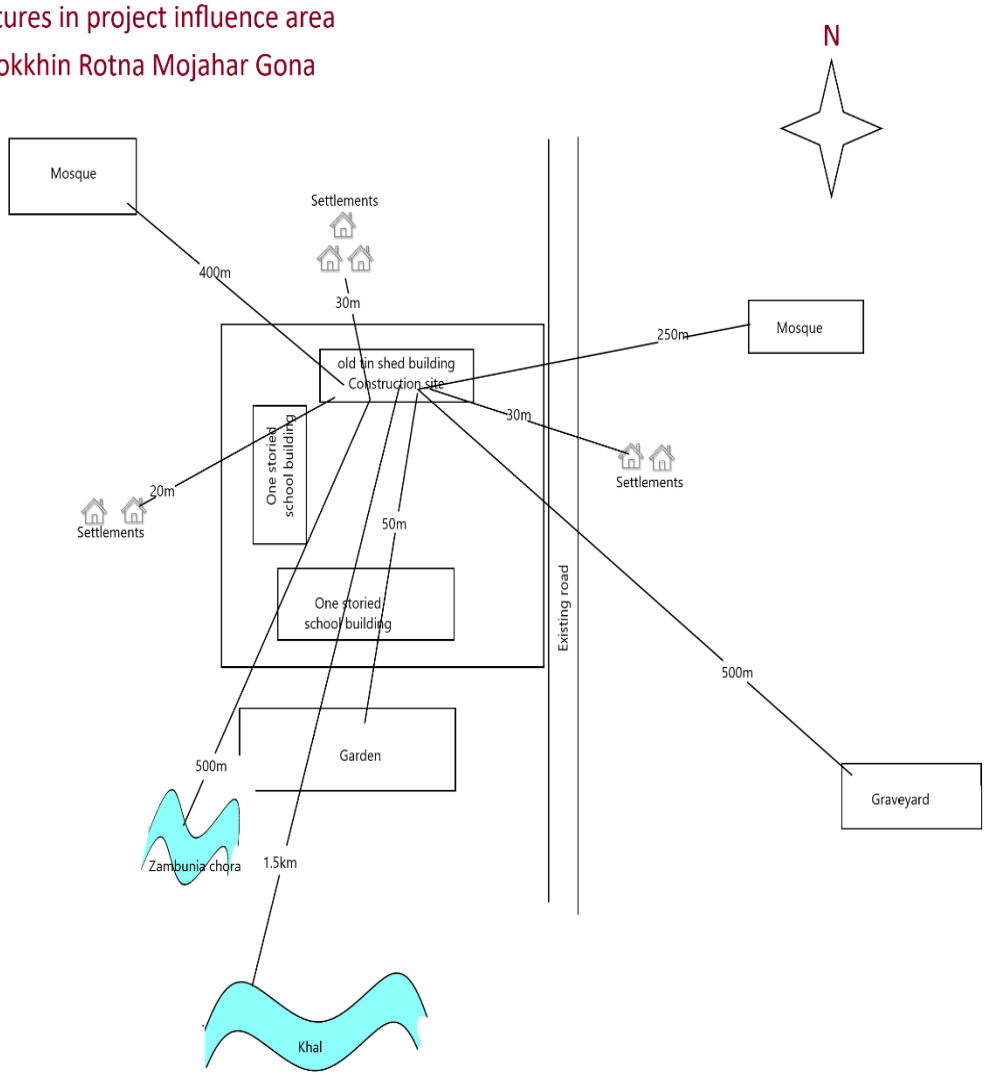
***B.1*: Environmental feature of sub-project location**

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 (nearly 400meter and 250 meter distance) and a graveyard (500m) located within the half km of catchment area but there is no scope to be affected by the construction activities.

There is no other sensitive environmental, cultural, archaeological sites exist 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
Dokkhin Rotna Mojahar Gona



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 ensured in host community and within 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 motor cycle, tempo, auto rickshaw, tractor, trailer etc. moving 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 80 feet and deep tubewell depth is 750 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. 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 HBB 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 over 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 80 feet and 750 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 south side within the existing the 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) Bamboo & wood from mobilized materials and other electro-mechanical equipment.
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 south side within the 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 during both 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 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 viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and ix) 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.
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 related to 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. 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 loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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. • Some human settlements are found at 30 meter north side, 20 meter west side and 30 meter east side of the sub-project. A betel nut garden found at 20 meter south side of school building. So labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	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	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
			• 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.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	within a relatively small area and reversible by mitigation measures.		sites to maximum of 20 km/h. • Regular monitoring of air quality.		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.

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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Dakhin Ratna Mojaher Gona 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of right to access	• In case of unavoidable circumstances, alternative access will be provided. • Access road shall be well demarcated and accessibly paved.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction 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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Dust	• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, particulate matter (SPM, PM2.5, PM 10) and Hydrocarbons. • Provision of using water sprinklers to dust control. • Construction materials should be covered properly while carrying in vehicles to the site. • Vehicle movement will be controlled on haul roads/access roads for limiting dust generation.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry to the site area is completely prohibited and the site will be properly fenced with a single entry, for this purpose. • 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	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
		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.		
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	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		consultation.		
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Ring slab septic tank will be installed before starting construction works in order to provide a better sanitation facility to the workers and staffs. • Working areas are kept clean and tidy at all times. • Construction site is to be checked for spills of substances i.e. chemical, oil, paint, etc. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site. • Hazardous waste viz. waste oil etc. will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.	Contractor	Environmental Consultant of 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	• 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	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
	shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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.	SMC	UNO, Upazila Chairman of Upazila Parishad

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.		
Operation & Maintenance	Odours and pollution caused by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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, D&SC, 01714980171

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

Appendix-3

Cost of Environmental Mitigation and Enhancement Works in BOQ

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

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**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**	1 person	Monthly basis @Tk. 35,000.00 for 24	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	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 the E.I.C.		months. One person covering 6 shelters and another person for 5 shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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**	20 sets	@ Tk. 5,000 for each	100,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	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.		set	
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

Sl no.	Description of item	Quantity	Unit price	Total amount
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 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			557,148

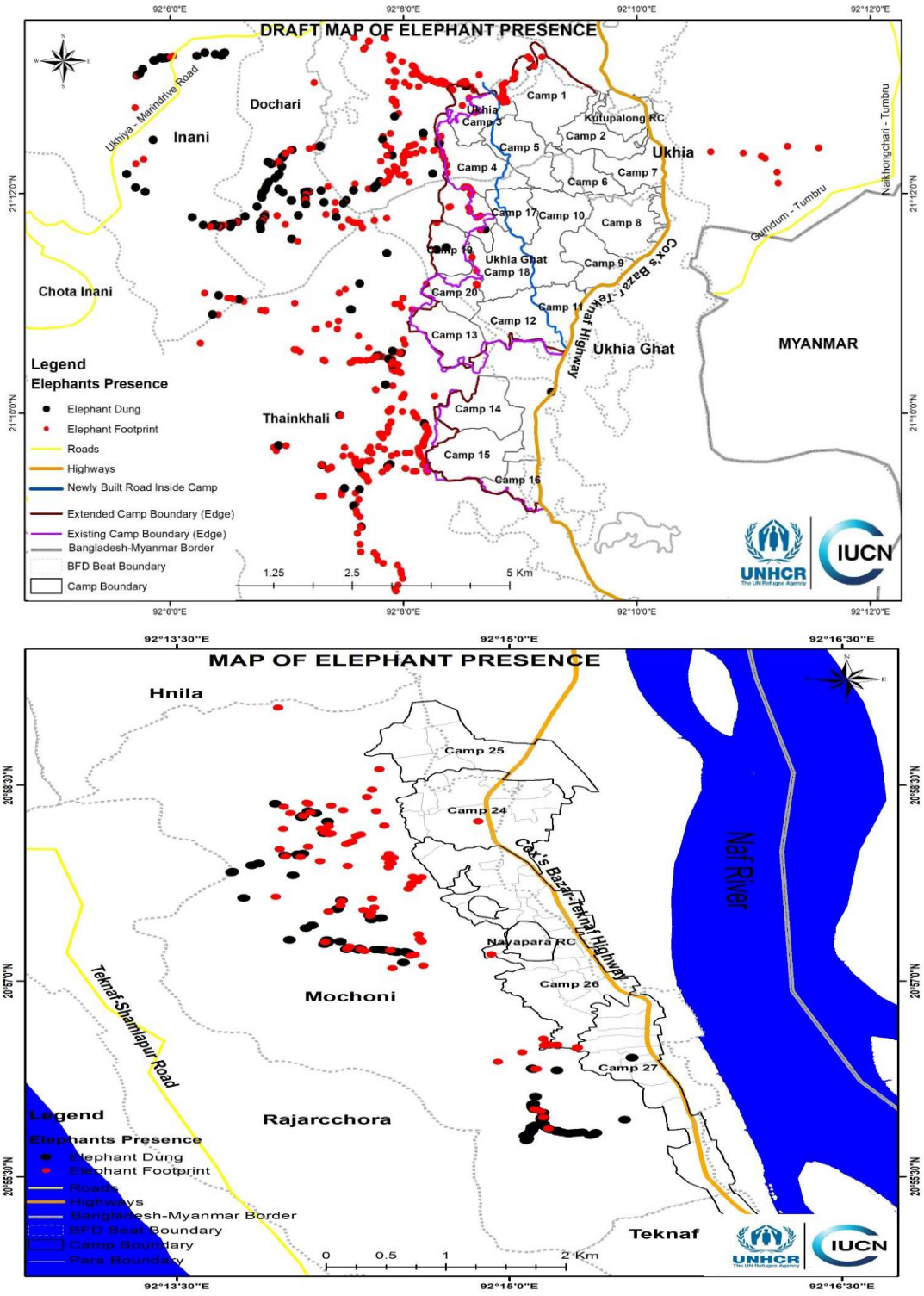
Cost of H&S Measures under COVID 19 Situation

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-11).

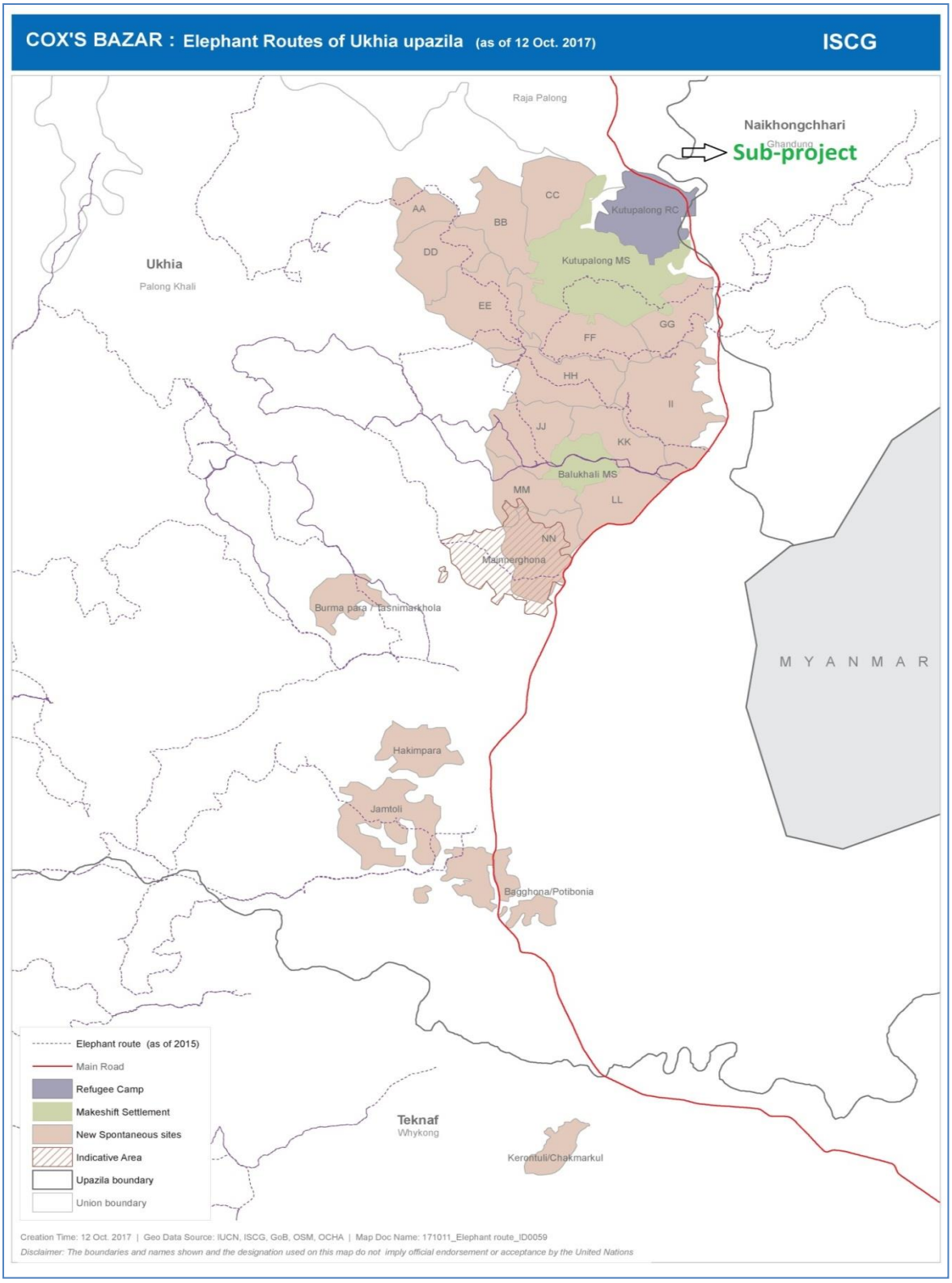
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a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

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				
4.	Bar Soaps (150 gm each)	108		135	50.00	243	12,150.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site
7.	One time Mask (Disposable) for Contractors' Staffs	10 nos. each day in each site		N/A	12.00	5400	64,800.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8.	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	720	25,200.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	2 Can	250.00	3.5	875.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	18	7,200.00	To be used for washing clothes, masks and tools & equipment, etc.
11.	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
	Grand Total						**165,125.00**	

Appendix-4



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:.05 AM..... Date.16/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ দঃ রত্না মোহাম্মদ মোনা সম্পাবি
মত বিনিময়ের তারিখঃ ১৮/১২/২০১৯

কোড নংঃ ৪১২০১০১০৪
স্থানঃ ঘোলিপাড়া
ইউনিয়নঃ রত্নাপালং
ডাকঘরঃ রত্নাপালং
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	রাজিয়া বেগম	৪৫	মহিলা	মোসলেহ মেম্বার	রাজিয়া বেগম
০২	আকতার কামাল চৌধুরী	৫৮		মোসলেহ মেম্বার	
০৩	বশির আহাম্মদ	৪৮		মোসলেহ মেম্বার	
০৪	শাহনাজ বেগম	৪৪		উত্তর পালং	
০৫	রোখছেনা বেগম	৪৩		উত্তর পালং	
০৬	শাহীন আকতার	৩৪		মোসলেহ মেম্বার	
০৭	মো: সেলিম	৪০		রত্নাপালং ১ নং	
০৮	জাফর আলম	৫২		তেলিয়ারছড়া	
০৯	সৌলতী ইছহাক আহমদ	৫৯		তেলিয়ারছড়া	
১০	আববাস উদ্দিন	৫১		তেলিয়ারছড়া	ABBAS UDDIN
১১	নুরুল আলম	৫৮		আমতলী তেলিয়ারছড়া	
১২	জাফর আলম	৪৫		উত্তর তেলিয়ারছড়া	
১৩	রোমেনা বেগম	৩৫		তেলিয়ারছড়া	
১৪	সৌলতী তৈয়ব উল্লাহ	৪৫		আমতলী তেলিয়ারছড়া	
১৫	মকবুল আহাং	৬৫		তেলিয়ারছড়া মাঝিপাড়া	
১৬	ছৈয়দ আলম	৪০		আমতলী তেলিয়ারছড়া	
১৭	মো: তাসিন	২০		মোসলেহ মেম্বার	
১৮	সেলিনা আকতার	২৬		উত্তর পুরি পাড়া	
১৯	ফয়সিম উদ্দিন	৩৮		আমতলী তেলিয়ারছড়া	

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)

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মত বিনিময়ের তারিখঃ

কোড নংঃ ৪৯২০১০৯০৪
স্থানঃ তেলিপাড়া
ইউনিয়নঃ রত্নাপালং
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ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	রফিক উদ্দিন	৪৫		তেলীপাড়া	রফিক উদ্দিন
২১	মো: মিজান	১৭			মিজান

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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Hatimora Govt. Primary School

Educational Institution ID: 422020401

Village: East Dargahbill; Union: Rajapalong; Upazila: Ukhiya;

District: Cox's Bazar

December 2019

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 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-W11, 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 East Dargahbill, Hatimora. 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 700 households, containing 4015 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	Hatimora GPS
Educational Institute ID	422020401
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land Available	1 acres
Catchment household	700
Catchment population	4015 (Male 2020, Female 1995)
Profession	Farmer 70%, day labor 25%, businessman 3% and others 2%
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, Hatimora
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

Hatimora 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 HBB road, which is connected to the Cox's Bazar-Teknaf Highway. Upazila headquarter is at a distance of nearly 7km from the 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 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°15' 8.90"N and 92° 10' 24.80"E
Distance from upazila HQ	7 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	One khal named Rijo Khal is located on 300m east
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]

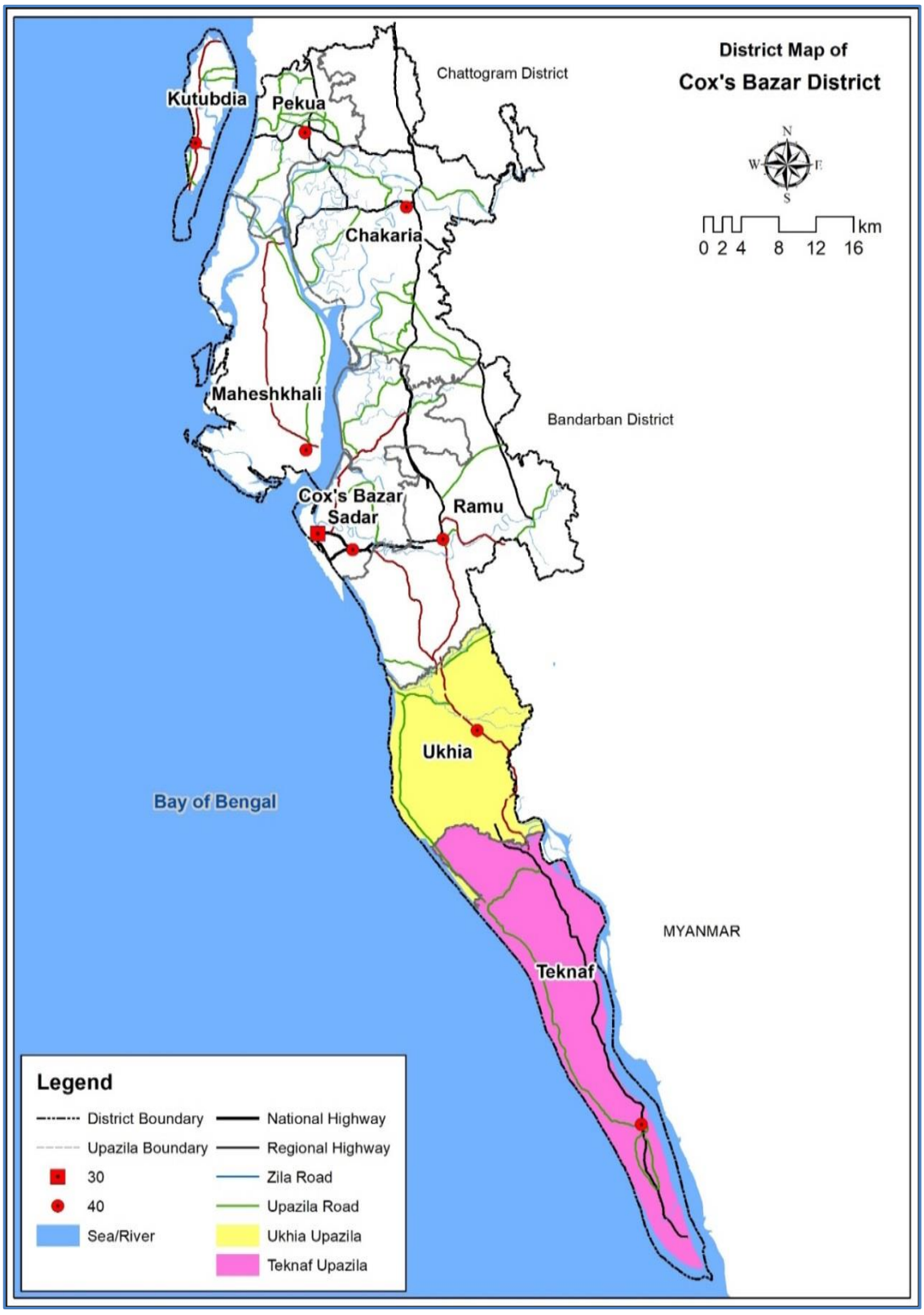


Figure 1.4.1: District Map with project location

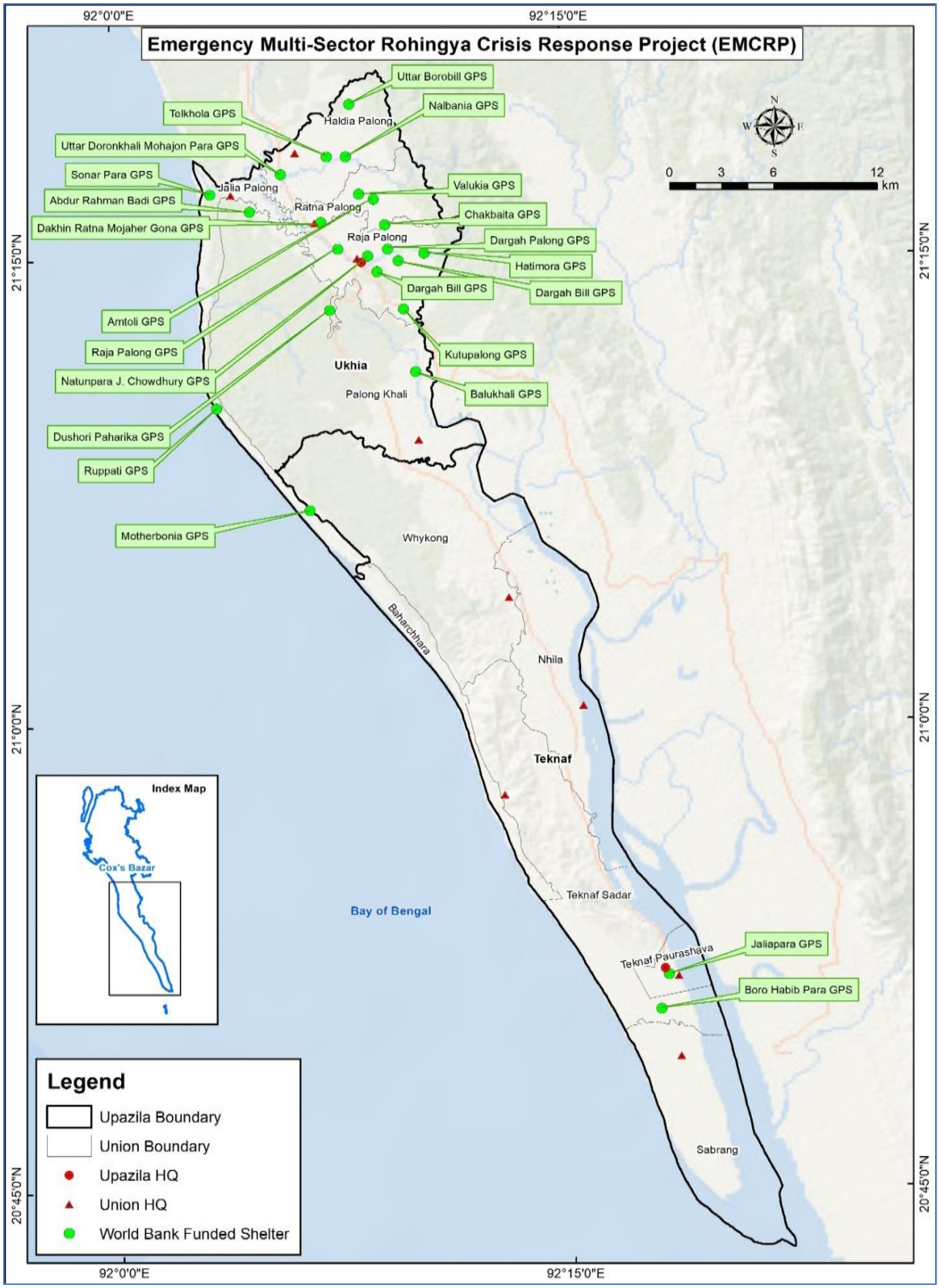


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

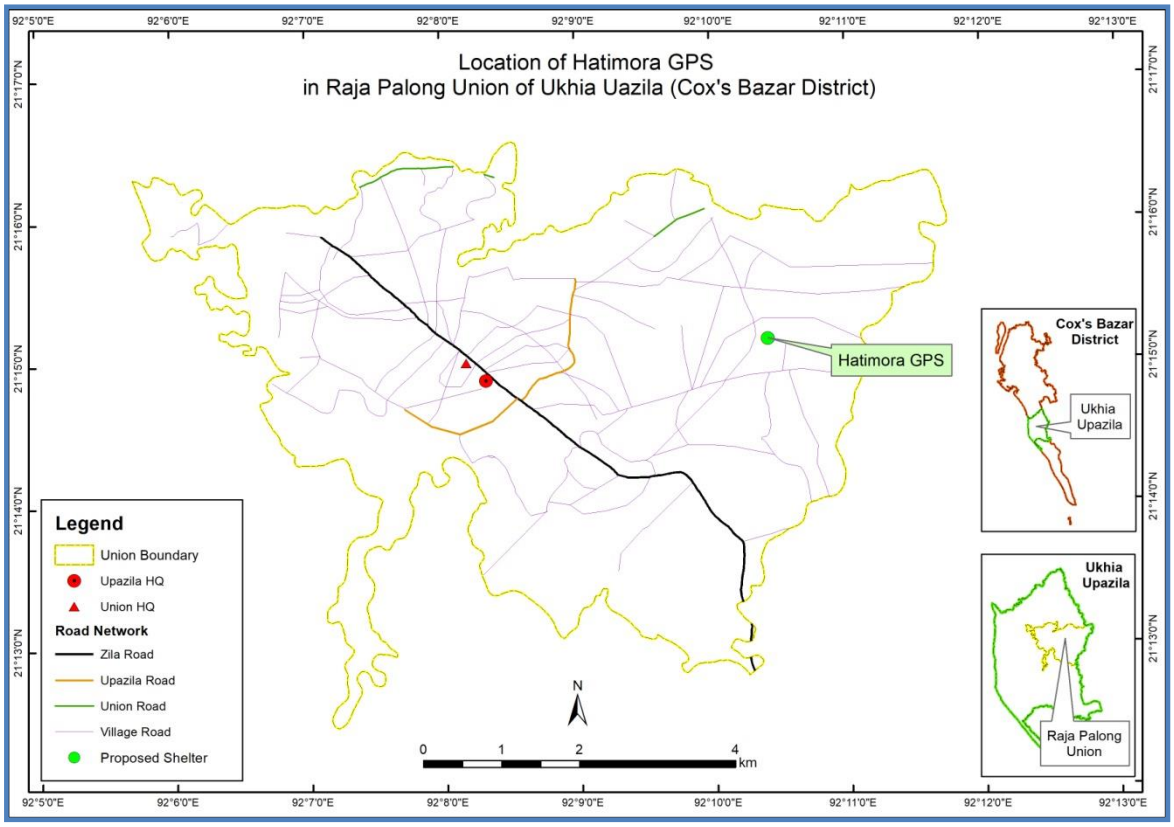


Figure 1.4.3: Union Map with Sub-project location

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 site 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	Hatimora community clinic (100m), Mosque(200m NW), Pond(300m NE)
South side	Open field(30m), 8-10 nos. of settlements(300m), Graveyard(500m)
East side	7 nos. of Settlements(200m), Rejokhal (200m), Pond(50m)
West side	Shop (50m), Hatimora west station (200m)

[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

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 19 persons, and local individuals, teachers, chairman and/or member of Union Parishad and school management committee were among the attendees in that meeting. The participants were selected from different cohorts of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases.

Refer to **Figure 2.1.1 and Appendix-5** for selected photographs of the participatory public consultation held at site of the Hatimora 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 disaster 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 space 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.
- 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. This shelter will be constructed within an existing school boundary, so no agricultural land/ activities or fish farming will directly be disturbed due to the construction of the sub project. A clinic named Hatimora clinic is situated on north side (100m) of the sub-project area. Some settlements (300m south and 200m east) are found around the sub-project area. A khal named Rejo khal is situated 200m east on the sub-project area and West Hatimora Station of forest department is situated on the west side (200m). There are a mosque located at 200m northwest side and a graveyard at 500 south side 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 on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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 from 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 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 has not been found in the vicinity of the subproject. Cyclonic storm surge has low 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.

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, tube-well 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 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. 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, 15 nos. of trees will be replanted in the periphery of the school. Further, a pond found at 50m east side of the sub-project and a clinic named Hatimora community clinic situated at 100m north side of the subproject might get affected during the construction period with the generated noise and dust, though for the time being. Contractor must adhere to the best practice dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

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

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 around five lacs fifty nine 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 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 **05 Lacs & 59 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 reducing disaster vulnerability, and improving 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: (Hatimora GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project):
District: Cox'sBazar **Sub-District**: Ukhiya **Union**: Rajapalong
Name of Community/Local Area: East 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. Within the school boundary a one-storied school building is located on the south side and another one-storied building is found on the north side. A clinic named Hatimora community clinic is located on north side (100m) of the sub-project area. Some settlements and agricultural lands are found around the sub-project area. A khal named Rejo khal is flowing at 200m east from the sub-project area. West Hatimora Station is situated on the west side (200m). The area is surrounded by small vegetation. An 8 feet HBB road is passing by the south-west side and it is connected to Cox's Bazar- Teknaf highway. No Important environmental feature is found in or near the sub-project site.

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. 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. A clinic named Hatimora community clinic is situated on north side (100m) and a mosque is located on north-west side (200m) but there is no chance to disturbance during this construction activities. Community based institutions including religious center such as Mosques, temples, educational institutions and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people, 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 also anticipated due to construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exist (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 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, with a geographical position at *21°15' 8.90"N and 92° 10' 24.80"E*. The distance from the Upazila headquarter is about 7 km. Nearby major road is Cox's Bazar- Teknaf highway, distance is 5km from the sub-project site. The school code is *422020401*

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:

Sub-project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. There is a one-storied school building located on south side and another one- storied building found on the north side within the school boundary. An open place is located at east side of the sub project area and the proposed new multipurpose school building will be constructed at this place within the same boundary.

One khal named Rijo Khal is located on 200m east of the sub project area. No disturbance is anticipated due to construction activities. Some human settlements are found on east (200m) and south side (300m) 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 and no socio cultural site are found in the vicinity. In the north side a clinic named Hatimora community clinic is situated (100m), but will not be affected significantly.

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).

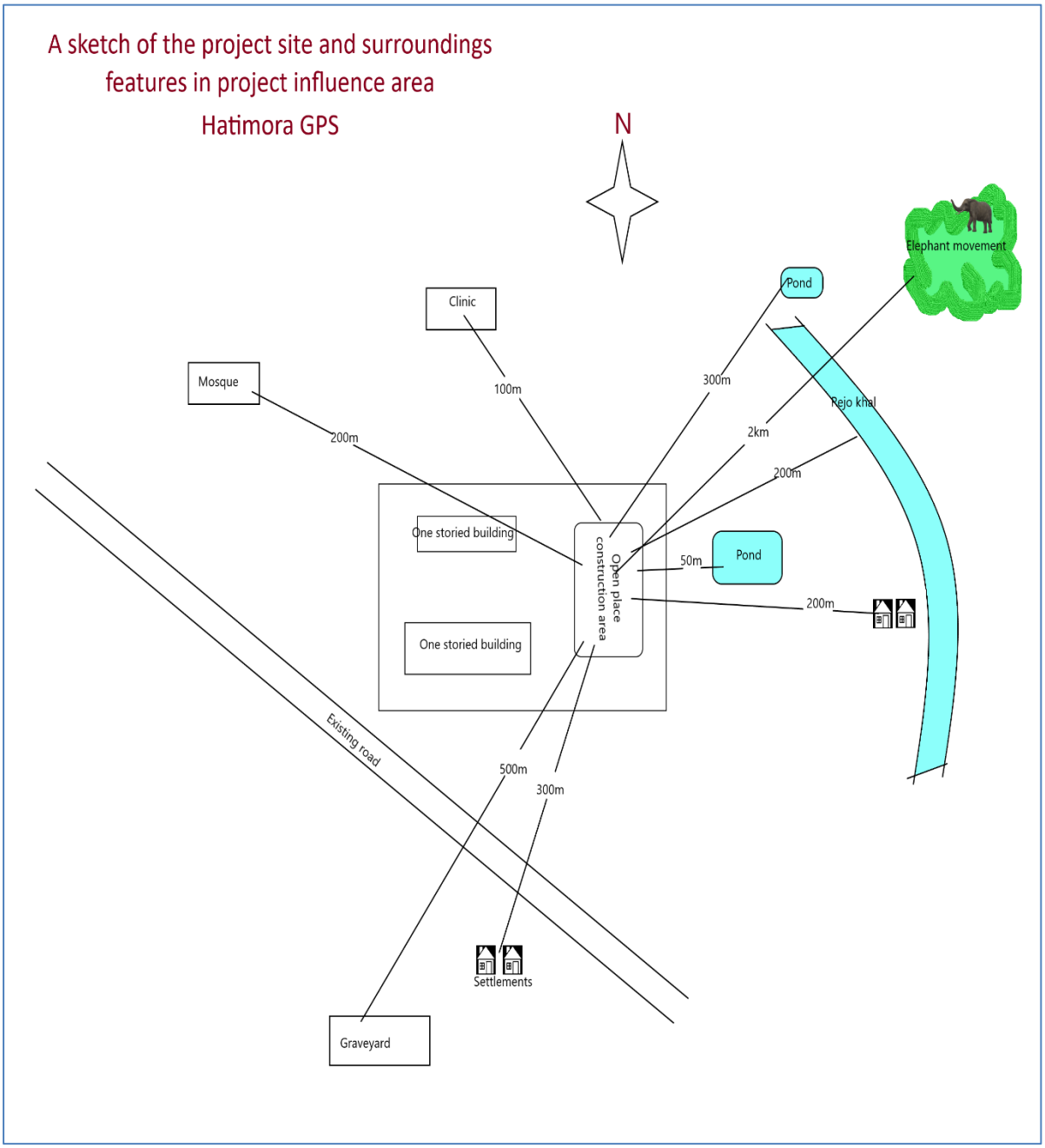
Section B: Environmental Screening

***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 a mosque located at 200m north west side and a graveyard found at 500 south side of the subproject, 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 motor cycle, tempo, auto rickshaw, tractor, trailer, etc. moving 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 200 feet but the shallow tube well is not working properly in dry season. Students are suffering problem due to lack of water during the dry season. Water from the shallower aquifers beneath the Sub-project area contains high

concentration of iron. Deep groundwater table (drinkable) in the vicinity 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 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 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 HBB road is passing by the south-east side and adjacent to the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials over the road to the 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 depth is about 200 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 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) 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. wide HBB road is the main way for transportation of raw materials. It is located on south-east side and adjacent to the sub-project site, and is connected to Cox's Bazar-Teknaf highway.
Location identification for raw material storage: On north-west side of the school field. 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 during the construction period. **Type**: wood, copper wires, concrete, iron, plastic, tin etc. **Quantity:** Nearly 2 metric ton of solid wastes 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 4 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 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 viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and ix) 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. Due to construction activities of this Sub-project, 2 trees will be cut down.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

Low: No borrow pit or quarries will be required to dig out during the construction period in or around/ adjacent to the sub-project area. During construction period one or two water reservoir may be constructed due to construction activities. But all those will completely be demolished and cleared out, once the construction period is over.

Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)

No pre - existing drainage channel is found.

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 related to 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) The sub-project will be constructed within a school boundary. No existing drainage channels or surface water bodies present within the sub-project boundary area.
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. 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 loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 found at 50m east side of sub-project and a clinic named Hatimora community clinic is situated at 100m north side of the subproject so labor camp needs to be set up in such a location that the pond and clinic 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste	Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	pollution; health hazard of workers due to poor quality drinking water)		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.		management activity; Waste disposal record.	
	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	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.	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints	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.		• 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.		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,	Contractor, environmental specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• 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.		placed at project location;	
4. **Post-Construction Phase**	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; • All affected structures rehabilitated/compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document; • The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory, camp has been restored to pre project conditions.	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor& waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor 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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Hatimora GPS

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

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

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

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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Activity		underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.		Consultant of PIU/D&SC, PSC
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
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,	SMC	UNO, Upazila Chairman of Upazila Parishad

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

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

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

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

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**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 6 shelters	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		and another person for 5 shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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	20 sets	@ Tk. 5,000 for each set	100,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.			
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 12 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	12 nos.	@ Tk. 1000 for each tree.	12,000
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

Sl no.	Description of item	Quantity	Unit price	Total amount
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 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 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			559,148

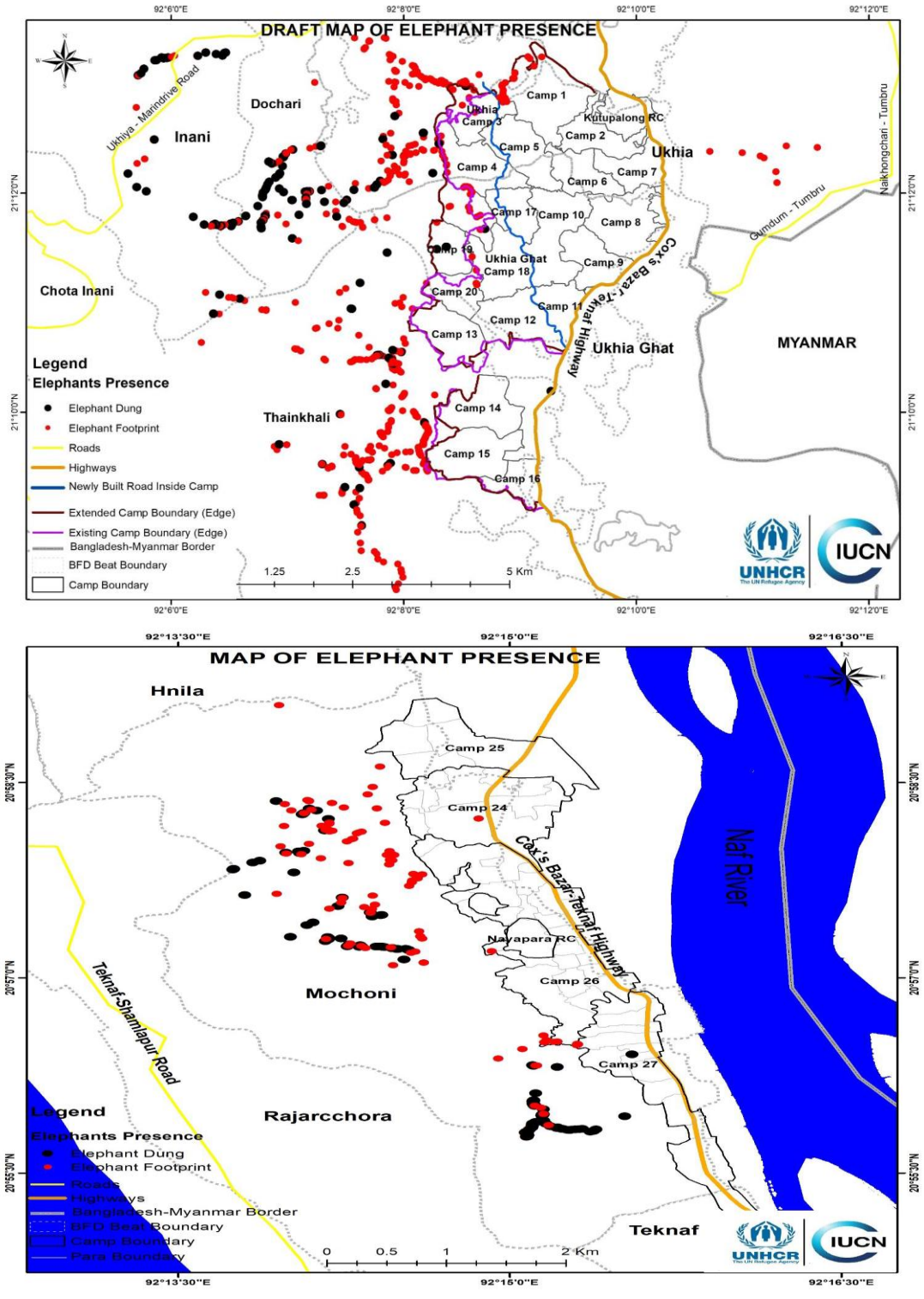
Cost of H&S Measures under COVID 19 Situation

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-11).

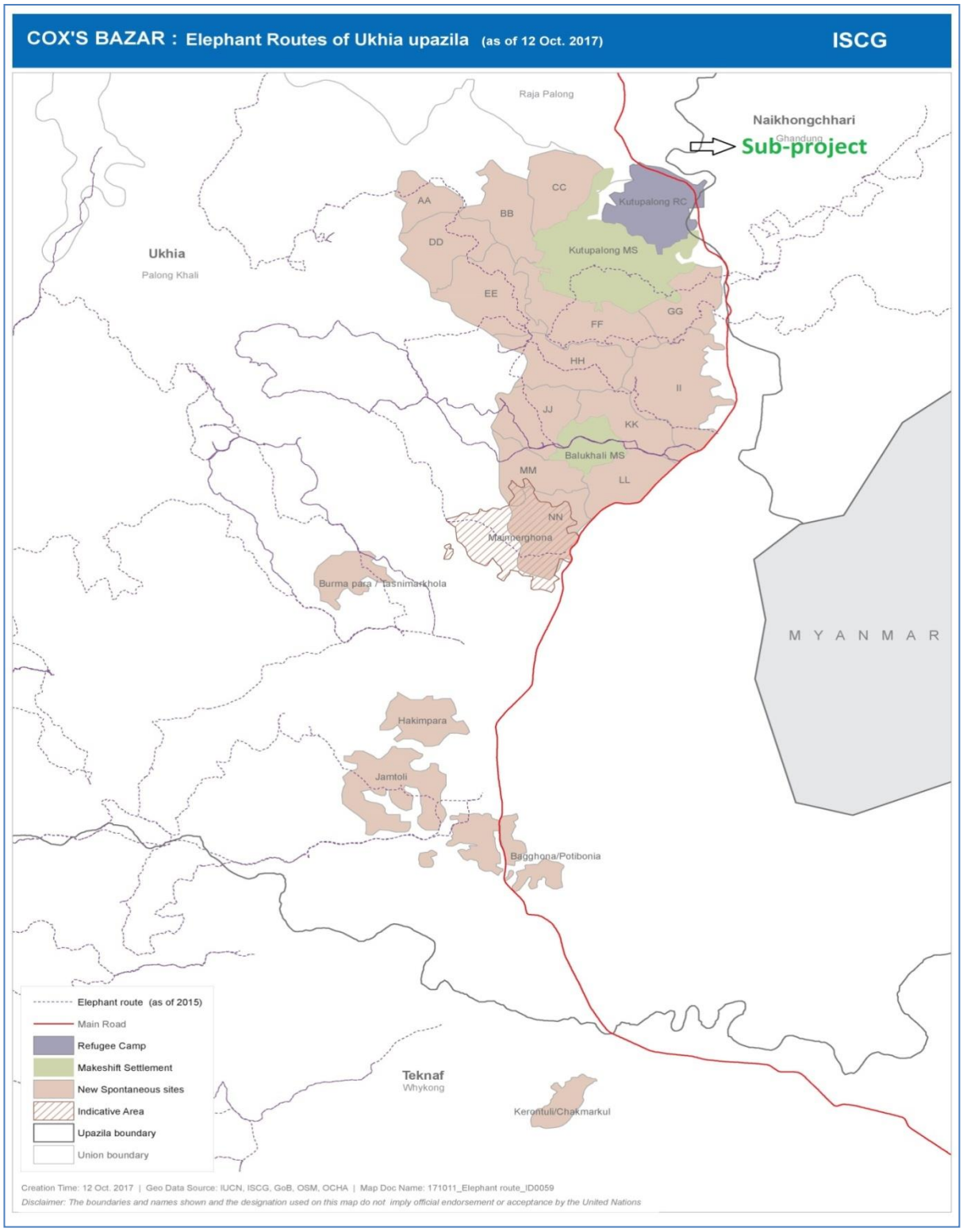
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1.	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a 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:.....12.00..... Date.....05.11.19.....

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ Hatimara GPS
মত বিনিময়ের তারিখঃ 05.11.19

কোড নংঃ
স্থানঃ Hatimara
ইউনিয়নঃ Palongkhali
ডাকঘরঃ Ukhiya
উপজেলাঃ Ukhiya
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১	জালাল আহমদ	৫১	পুরুষ	হাতিমারা	
২	জালাল আহমদ	৫২	"	"	
৩	আমু বিবি	৬০	"	ডিলাখালী	আমু বিবি
৪	মোহাঃ ইসলাম	৫৩	"	হাতিমারা	মোহাঃ ইসলাম
৫	নুঃ আহমদ	৫০	"	"	নুর আলম
৬	হোছন আলী	৫৫	"	পূর্বপালংখালী	৫২৮৬
৭	আবু তাহার	২৮	"	হাতিমারা	Abul
৮	ছৈয়দা বিবি	৬৬	"	পূঃপালংখালী	ছৈয়দা বিবি
৯	নুঃ আহমদ	৫০	"	আমারমনি	নুরুল আমিন
১০	ছৈয়দ আলম	৬০	"	"	ছৈয়দ আনোয়ার
১১	মোহঃ আলী	৬২	"	"	মোহাঃ আলী
১২	মোহাঃ ইসলাম	৫০	"	হাতিমারা	মোহাঃ ইসলাম
১৩	কলিম সর্দার	২৮	"	হাতিমারা	কলিম উল্লাহ
১৪	আনোয়ারুল ইসলাম	৪২	"	পূঃপালংখালী	আনোয়ার
১৫	মাহমুদুল আলম	২৭	"	পূর্বপালংখালী	মাহমুদুল আলম
১৬	নাছিমা আক্তার	২৯	মহিলা	পূর্বপালংখালী	
১৭	জুমুরা বেগম	২৯	"	হাতিমারা	Jomora
১৮	ফেরদৌস আক্তার	৩০	"	হাতিমারা	

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 11 Multipurpose Disaster Shelter Steel Frame Building in Teknaf Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Jaliapara Govt. Primary School

Educational Institution ID: 412060306

Village: Jaliapara; Ward no: 08; Pourashava: Teknaf; Upazila: Teknaf;

District: Cox's Bazar

December 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 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 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-W11, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Teknaf Pourahava of Teknaf Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of South Jaliapara, Kularpara, North Jaliapara, Bazarpara and Hungerpara. 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 3200 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	Jaliapara GPS
Educational Institute ID	412060306
District	Cox's Bazar
Upazila	Teknaf
Pourashava	Teknaf
Owner of land	GPS
Land available	132 decimal
Catchment household	450
Catchment Population	3200 (Male: 1600, Female: 1600)
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	South Jaliapara, Kularpara, North Jaliapara, Bazarpara, Hungerpara
Tribal people	No tribal people found in the catchment area of the Sub-project
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

Jaliapara 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 South West side of Teknaf 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 BCC, which is connected to the Cox's Bazar-Teknaf Highway. Upazila headquarter is at a distance of nearly 15 km from the site. Dara Sunnat Al-Jamia Madrasa and mosque 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 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	Teknaf
Pourashava	Teknaf
GPS position	20.864603°N and 92.304032°E
Distance from Upazila HQ	15km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	One river named Naf river is located at 150m east of the sub project

Boundary of the containing Upazila	Ukhiya Upazila on the North
	The Bay of Bengal on the South
	Arakan State of Mayanmar on the East
	The Bay of Bengal on the West

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

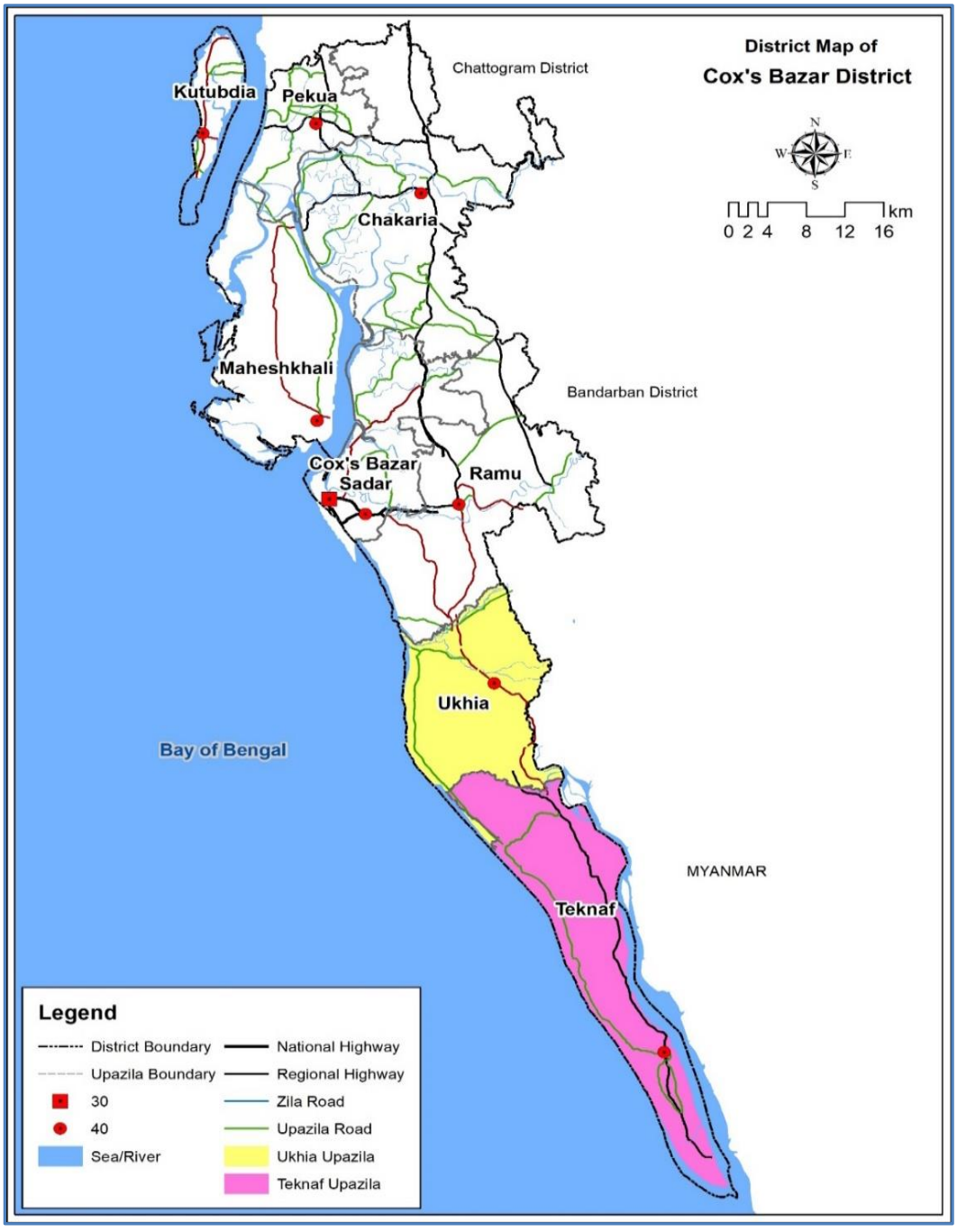


Figure 1.4.1: District Map with project location

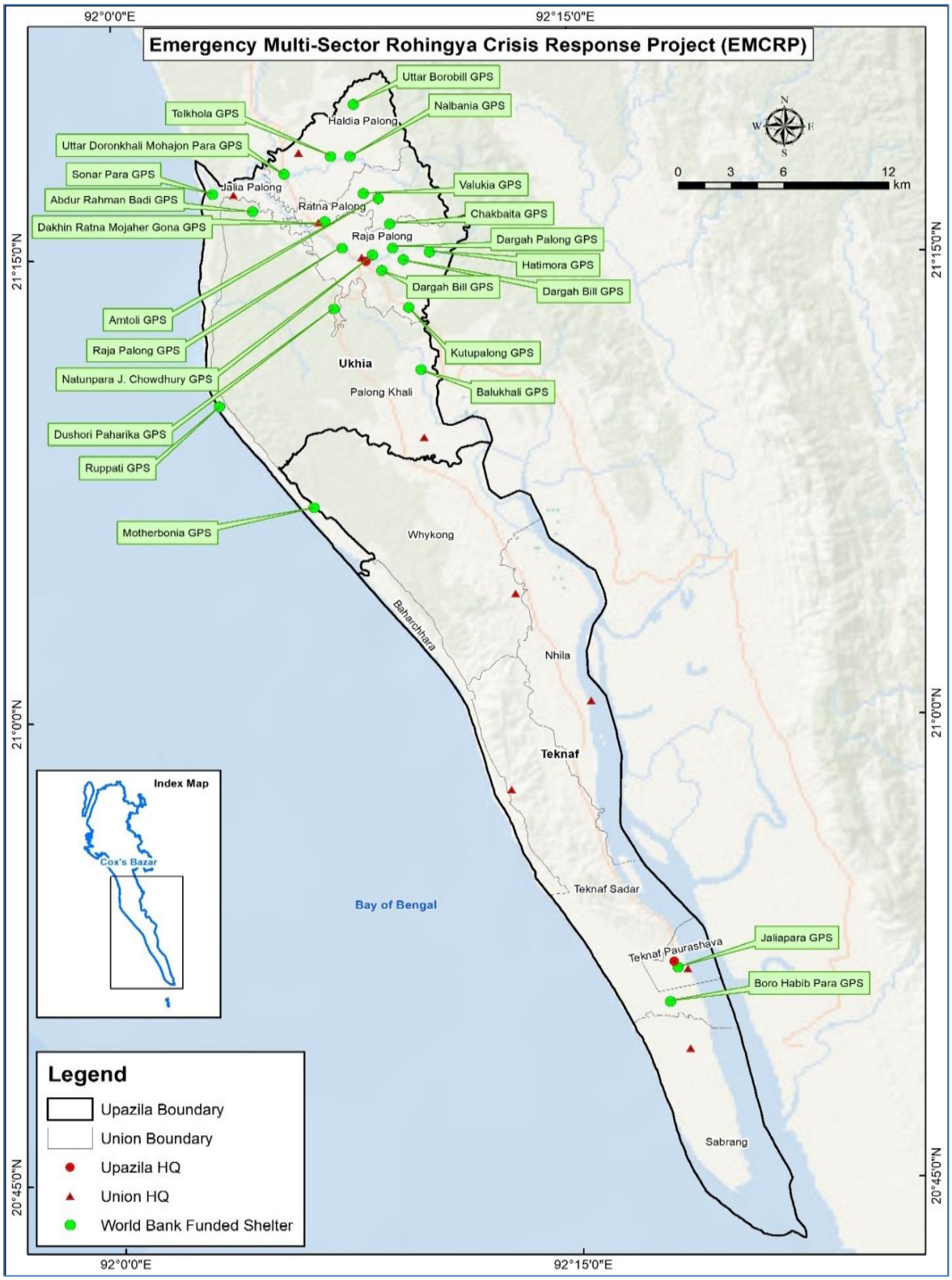


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

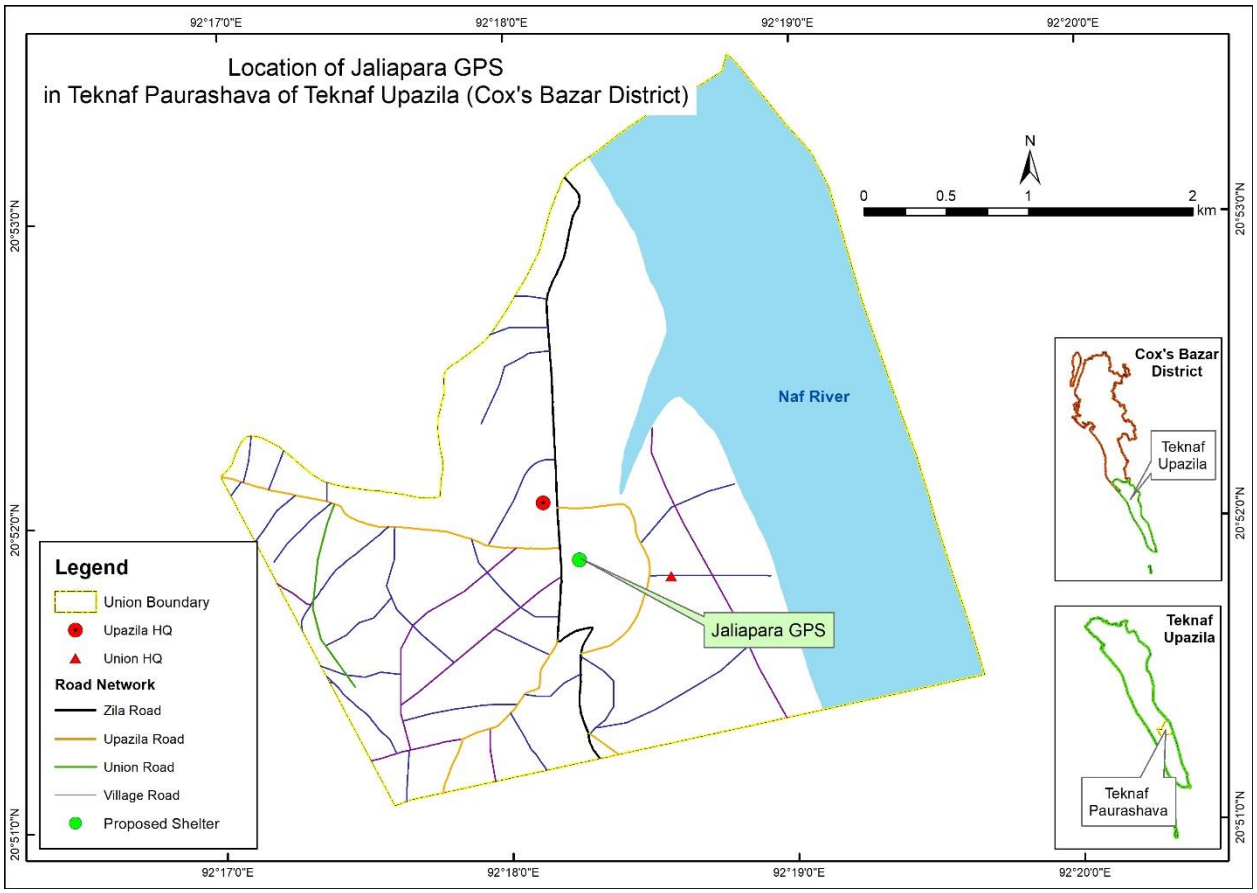


Figure 1.4.3: Union Map with Sub-project location

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 1.4.1: Important features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Wash Block(10m), Mosque (400m), Madrasa (50m), 10 nos. of settlements (50m)
South side	South Jalia para (100m), Open Space(50m)
East side	Salt cultivation field (350m), Naf river (650m)
West side	Settlements (100m), Graveyard (80m), pond (150m), 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 24 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 Jaliapara 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 disaster 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 space 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.
- 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 24 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. This 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 human settlement is found at 50 meter north side of the school building and the Naf River is situated at 650m east of the sub-project. A madrasa named Darul Ulum Madrasa and mosque is located at 50m north-west side of the sub-project. Two other mosques are located within the catchment area at a distance of nearly 400m, but on two different sides. A pond is found within the catchment area at a distance of about 150m from the sub-project site. No significant disturbance to all these establishments/features is anticipated due to the 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 on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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 from 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 shelter, 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 have been increased according to the participants in the consultation meeting and

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

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 low 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.

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, tube-well 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 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 western side. No trees will be cut down due to the construction activities of this Sub-project. All the socio-economic and environmental features and establishments locating within close proximity (within 100m) might get affected during the construction period with the generated debris, dust and noise, though for the time being, and if respective protective/mitigation measures are not followed seriously in the field. As part of the standard site management practices, Contractor must adhere to the best practice wastes, dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effect to the least level. Human and construction wastes and debris should be stored in designated areas or dustbins, and be transported outside for eventual management. Moreover, contractor should engage one or two persons in the site to control traffics, especially when the construction vehicles require entering/exiting the sites; if the traffic becomes congested frequently due to the passage of construction vehicles, traffic authorities (police) should be consulted to take necessary measures. Further construction related activities which may result in adverse impacts in the surrounding

environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. As part of efficient site management, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

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

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

4.2 Health and Safety Measures under COVID situations

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 around five lacs sixty two 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 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 **05 Lacs & 62 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 reducing disaster vulnerability, and improving 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: (Jaliapara GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project):
District: Cox's Bazar **Sub-District**: Teknaf **Pourashava**: Teknaf
Name of Community/Local Area: Jaliapara
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 east side of the school boundary. Another L shape building is found near to it. The Naf River is situated at 650m east of the sub-project. Further, a madrasa named Darul Sunnat Al-Jamia Madrasa is found at 50m North West side of the sub-project. There is a graveyard found at 80m west of the school boundary. A 10 feet BCC road is passing by the west side and it is connected to the Cox's Bazar-Tekhnaf highway. No Important environmental feature is found within the sub-project site or boundary. A relatively open field is situated on west 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 10ft BCC road is passing near the sub-project area. A madrasa named Darul Ulum Madrasa and mosque is located at 50m north-west side of the sub-project. Two other mosques are located within the catchment area at a distance of nearly 400m from the site, but on two different sides. There is a graveyard found at 80m west of the school boundary and the Naf River is situated at 650m east 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 exist (ref. IUCN).

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

A Multipurpose Disaster Shelter Steel Frame Building will be constructed within the boundary of an existing educational institution, which typically be used as primary school and will follow the structural design Option 1 LGED Proto type for Multipurpose Cyclone Shelter. Usually this option follows the construction of a 3- story building with ground floor being open for entrance 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 Teknaf Pourashava under Teknaf Upazila of Cox's Bazar district, with a geographic position at 20.864603°N and 92.304032°E. The distance from the Upazila headquarter is about 15 km. Nearby major road is Cox's Bazar- Teknaf highway. The school code is 412060306

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:

Sub-Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. A two-storied school building is located on east side of the school boundary. Another L shape building is found within the boundary.

The Naf river is located on 650m east of the sub project. A pond is found within the catchment area and distance is about 150m from the sub-project. No disturbance is anticipated due to construction activities. Some human settlements are found at 50m north 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 and no socio cultural site are found in the vicinity.

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).

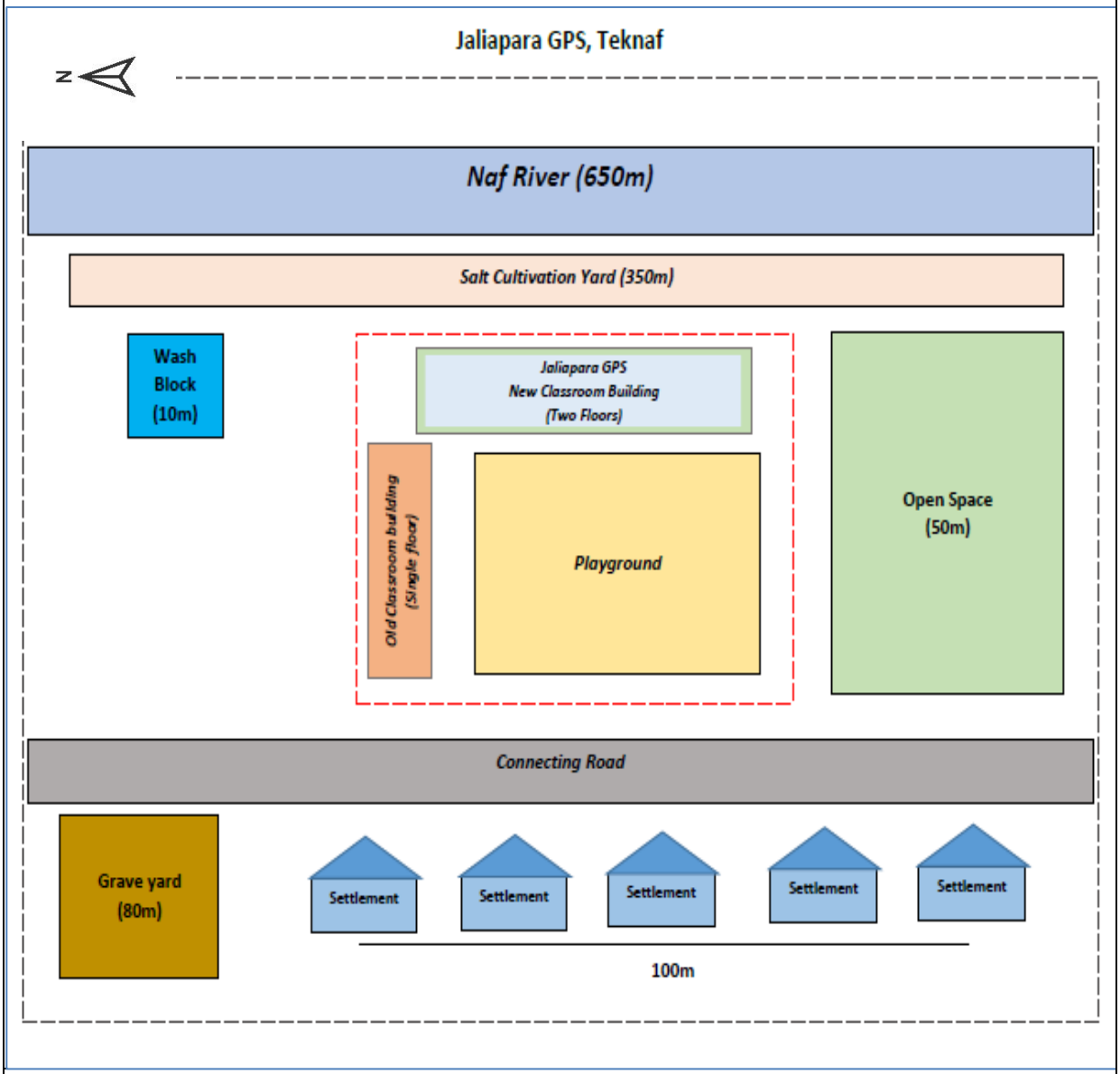
Section B: Environmental Screening

***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:
One mosque is located at 400m west and another mosque is located at 500m south of the sub project. A madrasa named Darul Sunnat Al Jamia Madrasa is situated on 50m north side but there is no scope to be affected by the construction activities. There is a graveyard found at 80m west of the

school boundary.

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 / 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. moving 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 150 feet. In the vicinity of 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. The Naf river is situated at 650m east side 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 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 west side of the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow tube-well is found within the school boundary and depth is about 150 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 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) 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 BCC 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 west side of 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 during the construction periods. **Type**: wood, copper wires, concrete, iron, plastic 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 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 viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and ix) 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 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.
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 related to 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 BCC 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. 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 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 bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 named Darul Sunnat Al-Jamia Madrasa and Mosque is situated at 50m North West side of the sub-project area. There is a graveyard found at 80m west of the school boundary and some human settlements located at 50m north side of the subproject so labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental	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	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste	Prior to the start of Constructi on works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	pollution; health hazard of workers due to poor quality drinking water)		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.		management activity; Waste disposal record.	
	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	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.		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.	Contractor, environmental specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints	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.		• 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.		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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Odor& waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor 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-W11): Jaliapara 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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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Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, PIU, +8801913442006

Appendix-3

Cost of Environmental Mitigation and Enhancement Works in BOQ

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

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		for 5 shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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 15 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	15 nos.	@ Tk. 1000 for each tree.	15,000
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

Sl no.	Description of item	Quantity	Unit price	Total amount
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 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			562,148

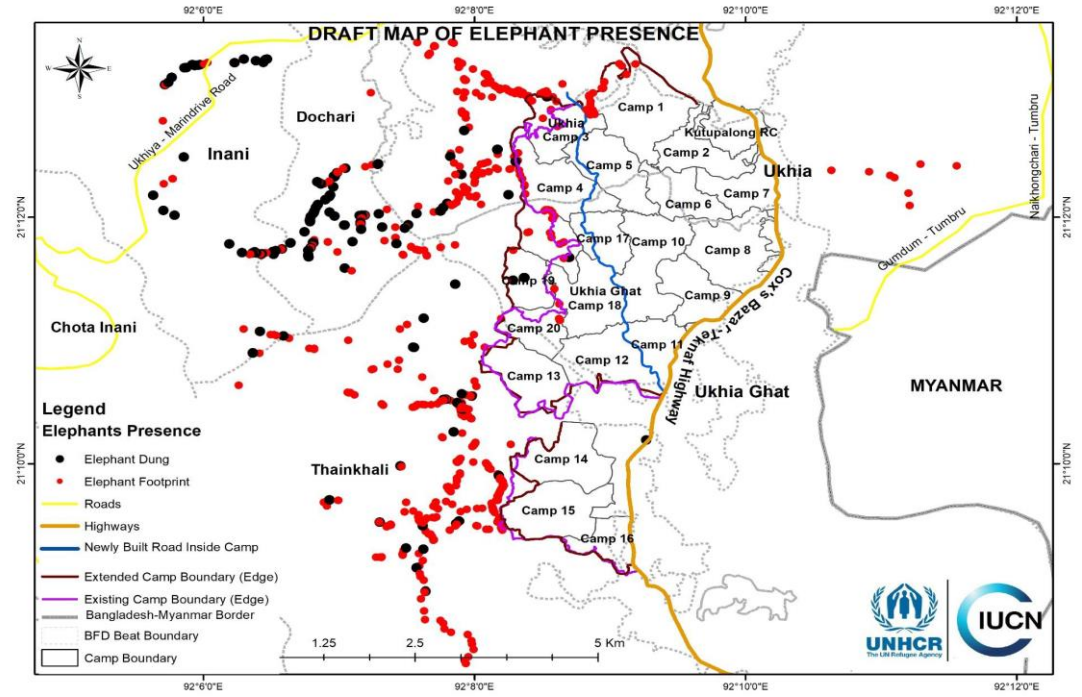
Cost of H&S Measures under COVID 19 Situations

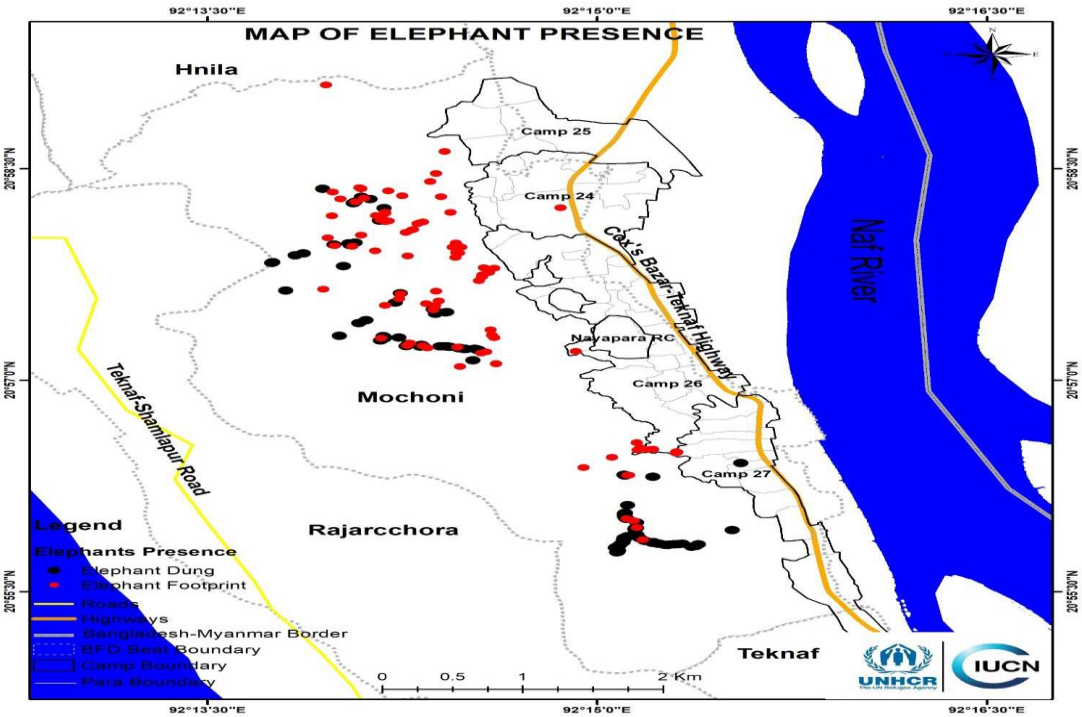
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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.

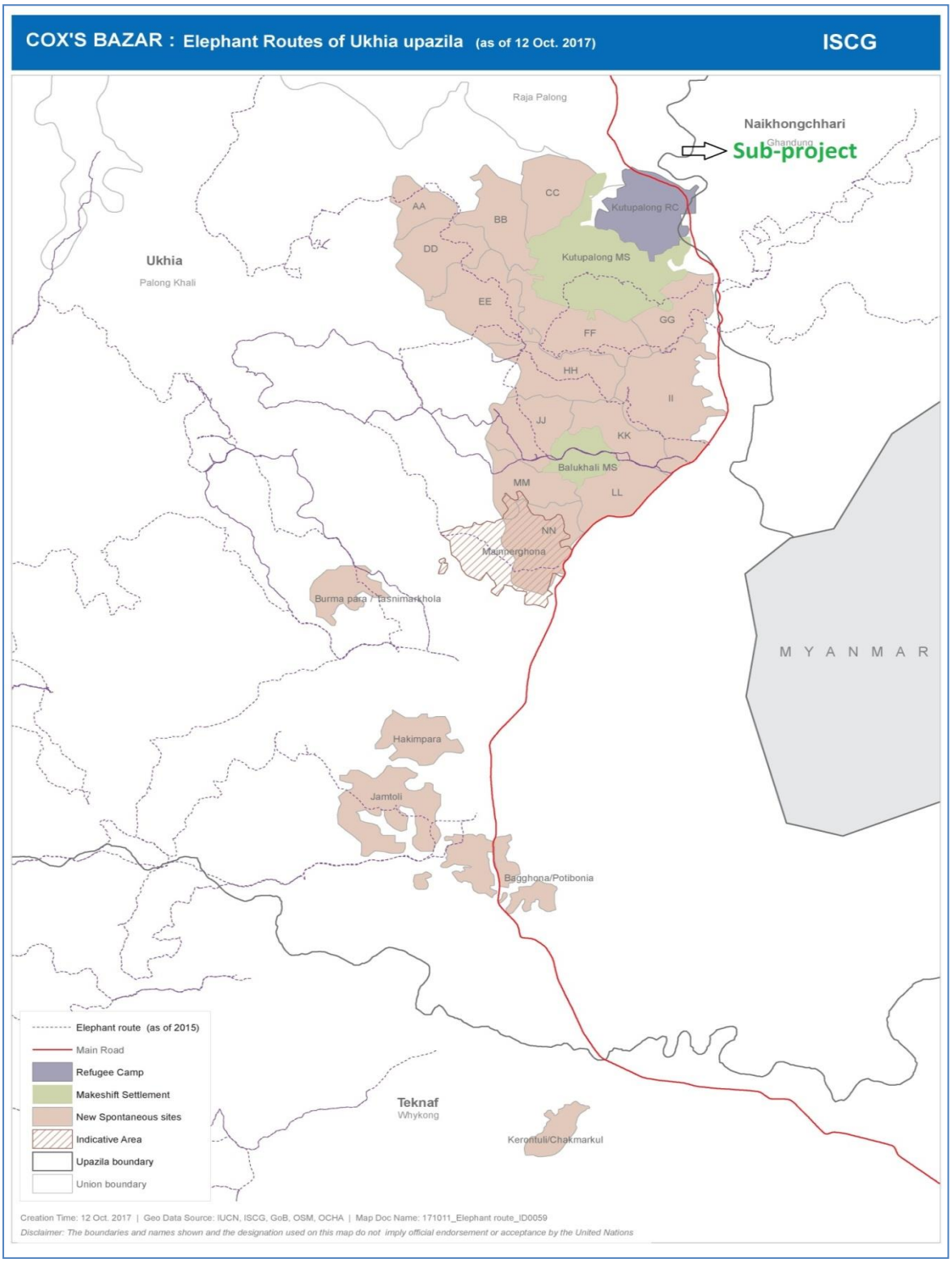
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	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: ০২:৪০ pm ..... Date 28/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ জোনিয়াপাড়া সরকারী প্রাঃ বিদ্যালয়
মত বিনিময়ের তারিখঃ ২৪/১২/২০১৯

কোড নংঃ 412060306
স্থানঃ জোনিয়াপাড়া
ইউনিয়নঃ - টেকনাফ পৌরসভা
ডাকঘরঃ টেকনাফ
উপজেলাঃ টেকনাফ
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর
০১	আবদুল গফুর	৬০	পুঃ	দক্ষিণ জোনিয়াপাড়া	আবদুল গফুর
০২	আলি আহমদ	৬১	পুঃ	,,	আলি আহমদ
০৩	মৌঃ হোছন	৭০	পুঃ	,,	মৌঃ হোছন
০৪	আবদুল গনি	৭৭	পুঃ	,,	আবদুল গনি
০৫	কুলসুমা বেগম	৪৫	মঃ	,,	কুলসুমা
০৬	নুরুল হুদা	২৩	পুঃ	,,	নুরুল হুদা
০৭	সামী আবেদ	২০	পুঃ	,,	সামী
০৮	নুরুল আবছার	২৫	পুঃ	,,	নুরুল আবছার
০৯	আবদুল জলিল	২৮	পুঃ	,,	Abdul Jalil
১০	ওমর ফারুক	২৯	পুঃ	,,	ওমর ফারুক
১১.	হেলোয়ার হোসেন	২১	পুঃ	,,	Helowar
১২.	মোঃ হেলাল উদ্দিন	২৮	পুঃ	,,	হেলাল উদ্দিন
১৩.	বেজাউল করিম	১৯	পুঃ	,,	বেজাউল
১৪.	তরুন বিকাশ দত্ত	৫২	পুঃ	,,	তরুন
১৫.	উম্মে কুলসুম	৪৮	মঃ	,,	উম্মে
১৬.	পিয়ারা বেগম	৫০	মঃ	,,	পিয়ারা

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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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Kutupalong Govt. Primary School
Educational Institution ID: 412010406
Village: Kutupalong; Union: Rajapalong; Upazila: Ukhiya;
District: Cox's Bazar
December 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 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 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 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-W11, 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 Doillaguna, Lombashiya, South Kutupalong and West Kutupalong. 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 700 households, containing 5200 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	Kutupalong GPS
Educational Institute ID	412010406
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land available	45 decimal
Catchment household	700
Catchment Population	5200 (Male: 2700, Female: 2500)
Profession	Farmer 45%, day labor 25%, businessman 15% 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	Doillaguna, Lombashiya, South Kutupalong, West Kutupalong
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 BC road named Ukhiya-Teknaf highway 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

Kutupalong 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 South-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 30ft wide BCC road named Ukhiya-Teknaf highway which is passing by the school boundary. The geographical position of the site is 21°13' 21.60"N and 92° 09' 42.20"E, which is nearly 12km away from the Upazila Headquarters. Kutupalong Govt. High School is situated within 50 m reaches of the proposed site and Kutupalong Loknath Temple is situated at 500m south-west side. 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°13’ 21.60”N and 92° 09’ 42.20”E
Distance from Upazila HQ	12 km
Nearby major road	Cox’s Bazar- Teknaf highway
Nearby river/canal	No river or canal is located 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]

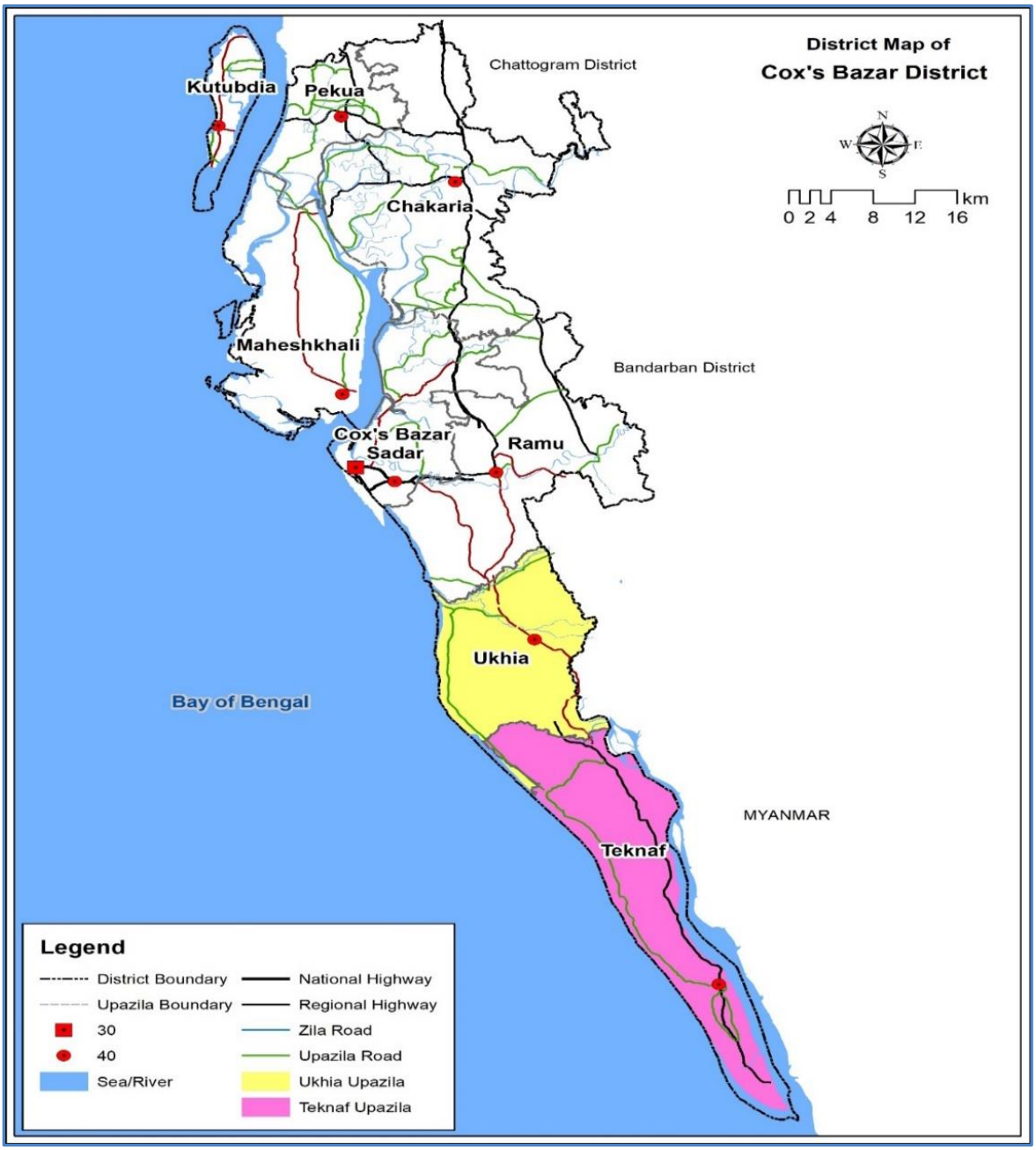


Figure 1.4.1: District Map with project location

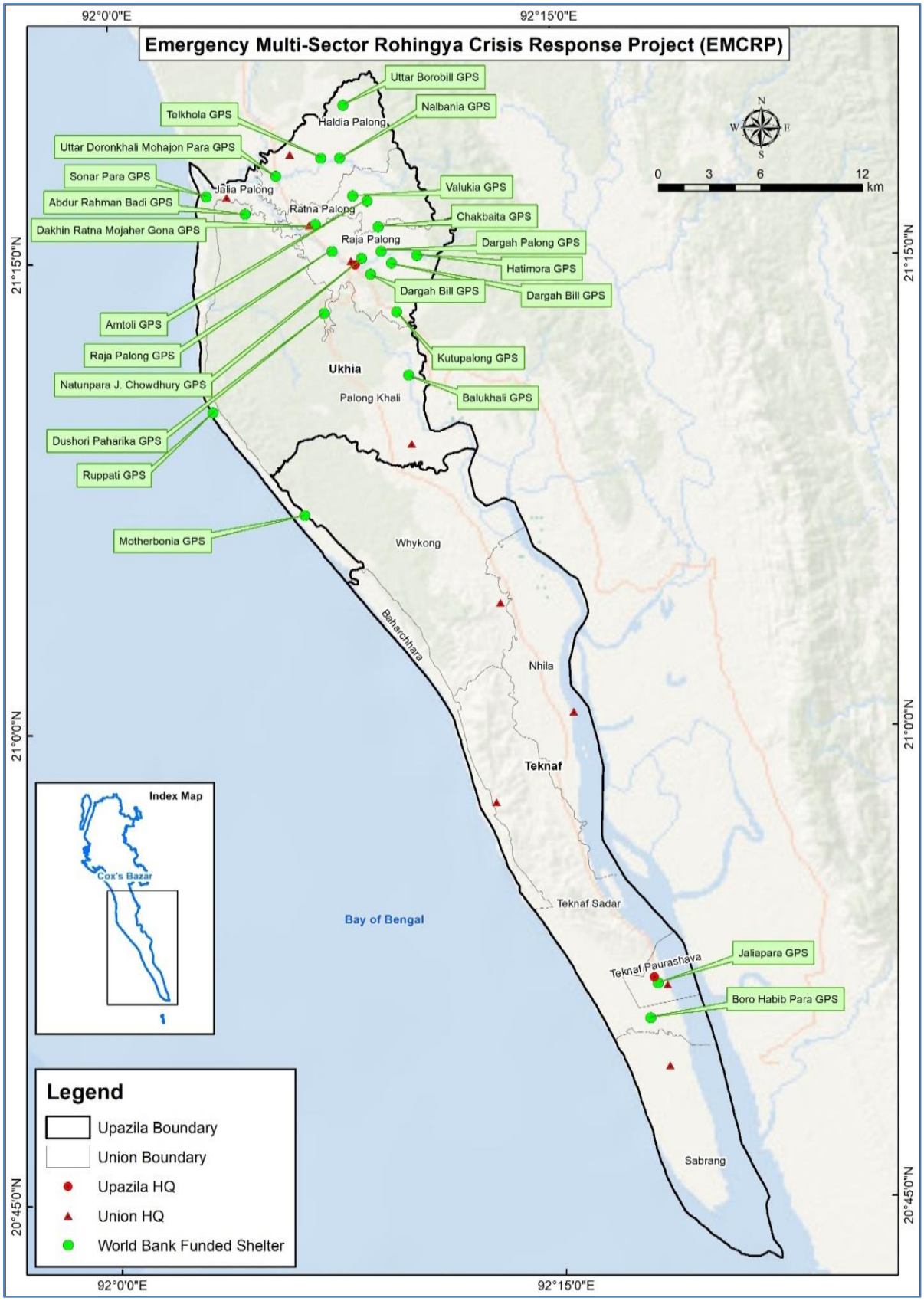


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

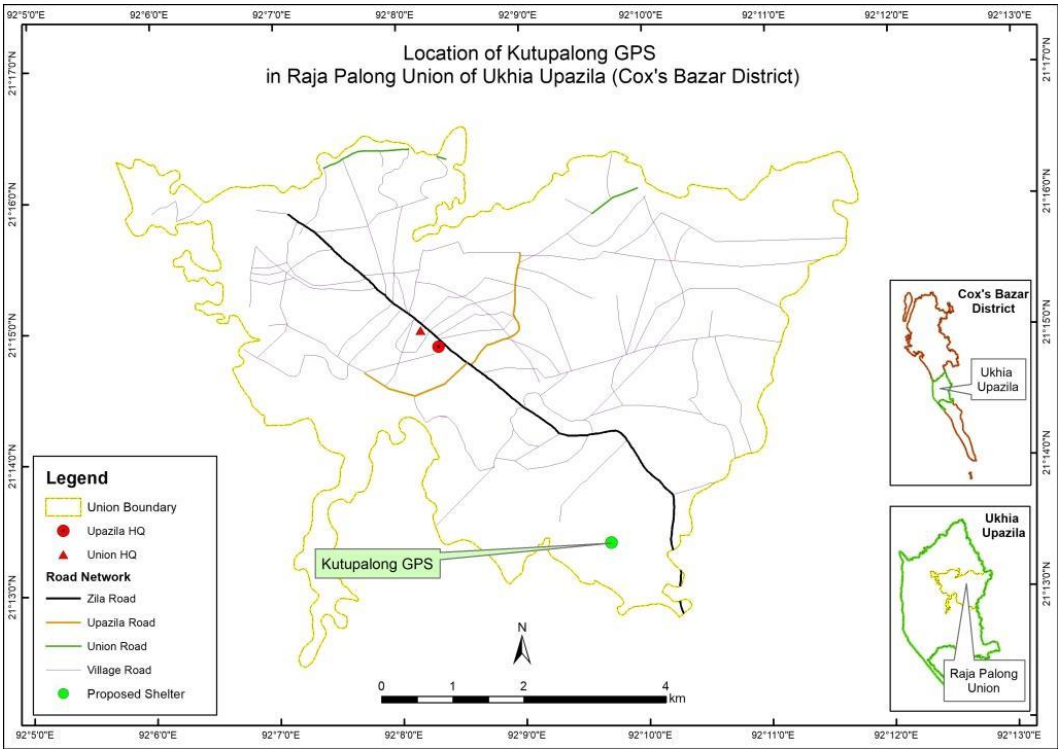


Figure 1.4.3: Union Map with Sub-project location

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 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	Kutupalong High school (50m), Mosque(500m), Pond(300m NE)
South side	12 nos. of Settlements (100m), Kutupalong Bazar (300m), Mosque(50m), Kutupalong Loknath Temple(500m)
East side	Ukhiya-Teknaf main road (10m), 6 nos. of settlements(200m), Pond (300m)
West side	Kutupalong west para (400m), Pond(350m)

[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 18 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 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 Kutupalong 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 disaster 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 space 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.
- 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. This 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. Kutupalong High school is situated at 50m north side of the sub-project. There are two clusters of human settlement- at 100 m south and 200m east side of the proposed site, and a relatively dense cluster is located at 400 m away from the site on west side in Kutupalong west para. Three religious institutions are located in the vicinity- Kutupalong Loknath temple situated at 500m south west, one mosque at 500m north, and another mosque at 50m south from the sub-project boundary. Two ponds (located at 300m east and 350m west) and Kutupalong Bazar (at 300m south) is also located within the catchment area. A highway is passing by the school boundary on east side. No significant disturbance to all these establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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 from 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 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

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

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. Existing drainage channel is found outside the school building.

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, tube-well 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 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. Also construction of storm water drainage system is suggested.

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, 3-4nos. 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. A mosque located at 50m south and Kutupalong High school found at 50m north side of sub-project area might get affected during the construction period with the generated noise and dust, though for the time being and if respective protective/mitigation measures are not followed seriously in the field. As part of the standard site management practices, Contractor must adhere to the best practice wastes, dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effect to the least level. Human and construction wastes 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 wishes 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 situations

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 around five lacs fifty seven 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 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 **05 Lacs & 57 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: (Kutupalong GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 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: Kutupalong
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 stretch of relatively high land is situated at south-east side within the school boundary. A tin shed one-storied building is located at north-west side which will be demolished during the pre-construction period and a new one will be constructed there.

A high school named Kutupalong Govt. High School is situated on north side of the sub-project at a distance of 50m from the site. A mosque is located at 500m north and another one located at 50m south. Kutupalong Loknath temple is situated at 500m south and Kutupalong bazar is at 300m south. A 30 feet BCC road named Ukhiya-Teknaf highway is passing by the east side of the school boundary. No Important environmental features are found within the sub-project site. Hindu Rohingya camp is situated at 500m north of 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 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 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. Three religious institutions are located in the vicinity- Kutupalong Loknath temple situated at 500m south west, one mosque at 500m north, and another mosque at 50m south from the sub-project boundary. Two ponds (located at 300m east and 350m west) and Kutupalong Bazar (at 300m south) is also located within the catchment area. Community based institutions including religious center such as 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 to these features due to the sufficient distance in between.

Some human settlements and agricultural land is located 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 exist (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.

An existing old dilapidated tin shed one-storied building located at north-west side within the boundary will be demolished at pre-construction stage and the proposed one will be constructed on the same piece of land.

Sub-project Location:

The sub-project area is situated in Rajapalong Union under Ukhiya Upazila of Cox's Bazar district, with a geographic position at 21°13' 21.60"N and 92° 09' 42.20"E. The distance from the Upazila headquarter is about 12 km. Nearby major road is Cox's Bazar- Teknaf highway. The school code is 412010406

Land ownership

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

Expected construction period: 24 (Twenty four months)

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

Project intervention area will be confined within the school boundary, but influence area should consider nearly half a kilometer radius around the proposed site. A two-storied school building is located on south side of the school boundary and an old school building structure will be replaced by the proposed new multipurpose school building within the same boundary. A small garden and a wash block are also located within the boundary.

There are 2 ponds found within the catchment area. One is 300m east and another is 350m west. No disturbance is anticipated due to the construction activities. Some human settlements are found at 200m east side of sub-project area, agriculture lands are found at 150m east side near the school boundary. Kutupalong High school is situated at 50m north side 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 and no socio cultural site are found in the vicinity.

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

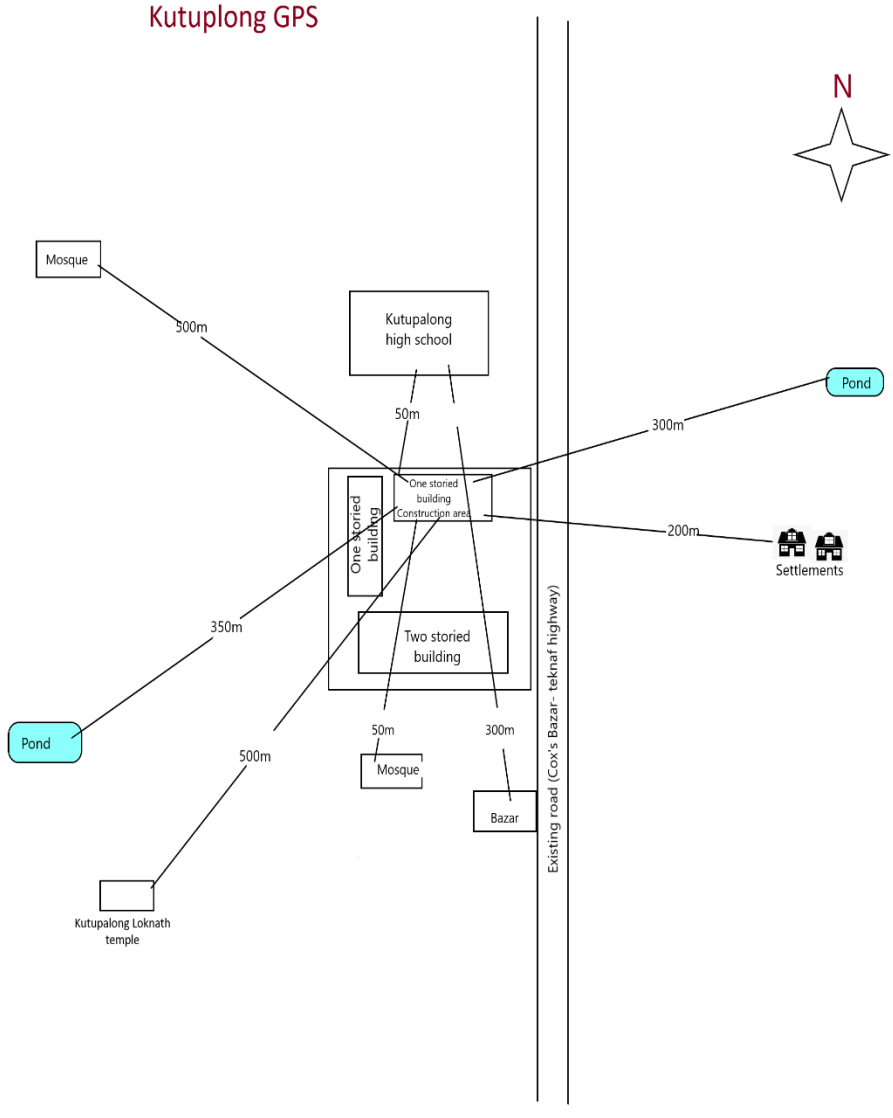
***B.1*: Environmental feature of sub-project location**

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:

Three religious institutions are located in the vicinity- Kutupalong Loknath temple situated at 500m south west, one mosque at 500m north, and another mosque at 50m south from the sub-project boundary. Kutupalong bazar is located at 300m south and Kutupalong High School is situated at 50m north from the proposed site.

There is no sensitive environmental, cultural, archaeological sites exist 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
Kutuplong 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 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 motor cycle, bus, truck, mini truck, tempo, auto rickshaw, tractor, trailer etc. moving 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 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. Two ponds are found at 300 m distance from the sub-project site 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 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 (30 feet) named Ukhiya-Teknaf highway is passing by the east side of the sub-project. It is possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One shallow tube-well and a deep tubewell are found within the school boundary and depths are about 150 feet and 700 feet below the ground. 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 at pre-construction stage 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 north-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) 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 30ft. wide BCC road named Ukhiya-Teknaf highway is the main way for transportation of raw materials. It is located on west side of adjacent sub-project.
Location identification for raw material storage: On north-west side of 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 during both the demolition and construction periods. **Type**: wood, copper wires, concrete, iron, plastic 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 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 viii) Bamboo & wood from mobilized materials by other electro-mechanical equipment and ix) 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 thinner vegetation around the sup-project area. The vegetation will not be affected by the construction works. 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 related to 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. 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 situated near to a locality. A BCC road is passing by the sub-project site and heavy vehicles ply this road throughout the day. During the operation period, the number and frequency of traffic movements will be the same as was before. This development works will not increase usual traffic during the normal operational period. However, traffic movement bound to this particular site will be increased during and immediately after the occurrence of any natural disasters due to the extensive relief and rehabilitation works. 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 is more likely to take place.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 at 50m south and a high school named Kutupalong High School is situated at 50m north so labor camp needs to be set up in such a location that the school and mosque 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	Under the sub-project intervention the overall score is	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place	During Design Stage

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

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	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	Contractor, environmental specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			separately.			
4. **Post-Construction Phase**	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; • All affected structures rehabilitated/compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document; • The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory, camp has been restored to pre project conditions.	After the completion of Works
	Odor& waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor 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	Contractor monitored by Consultant and	Worksite is restored to original	Over the completion of

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the re-vegetation specification that forms part of the bidding document.	PIU	conditions;	Works

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

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

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

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

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

Appendix-2

Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for* Construction of 12 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Kutupalong 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person for 5 shelters, i.e.	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		35,000 Tk.*24 months* 2 Persons (1/11 for 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	10 nos.	@ Tk. 1000 for each tree.	10,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted 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			557,148

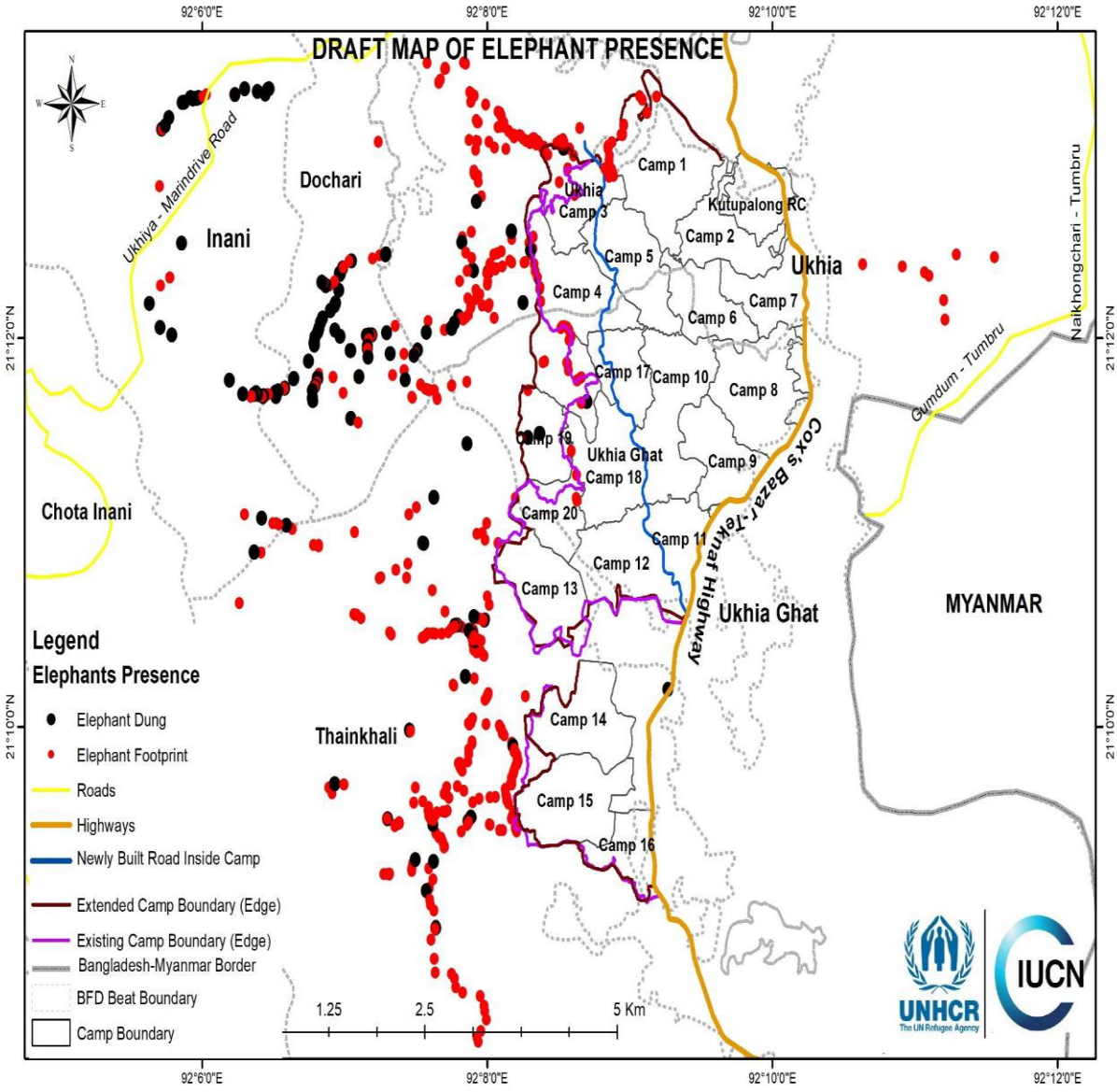
Cost of H&S Measures under COVID 19 Situations

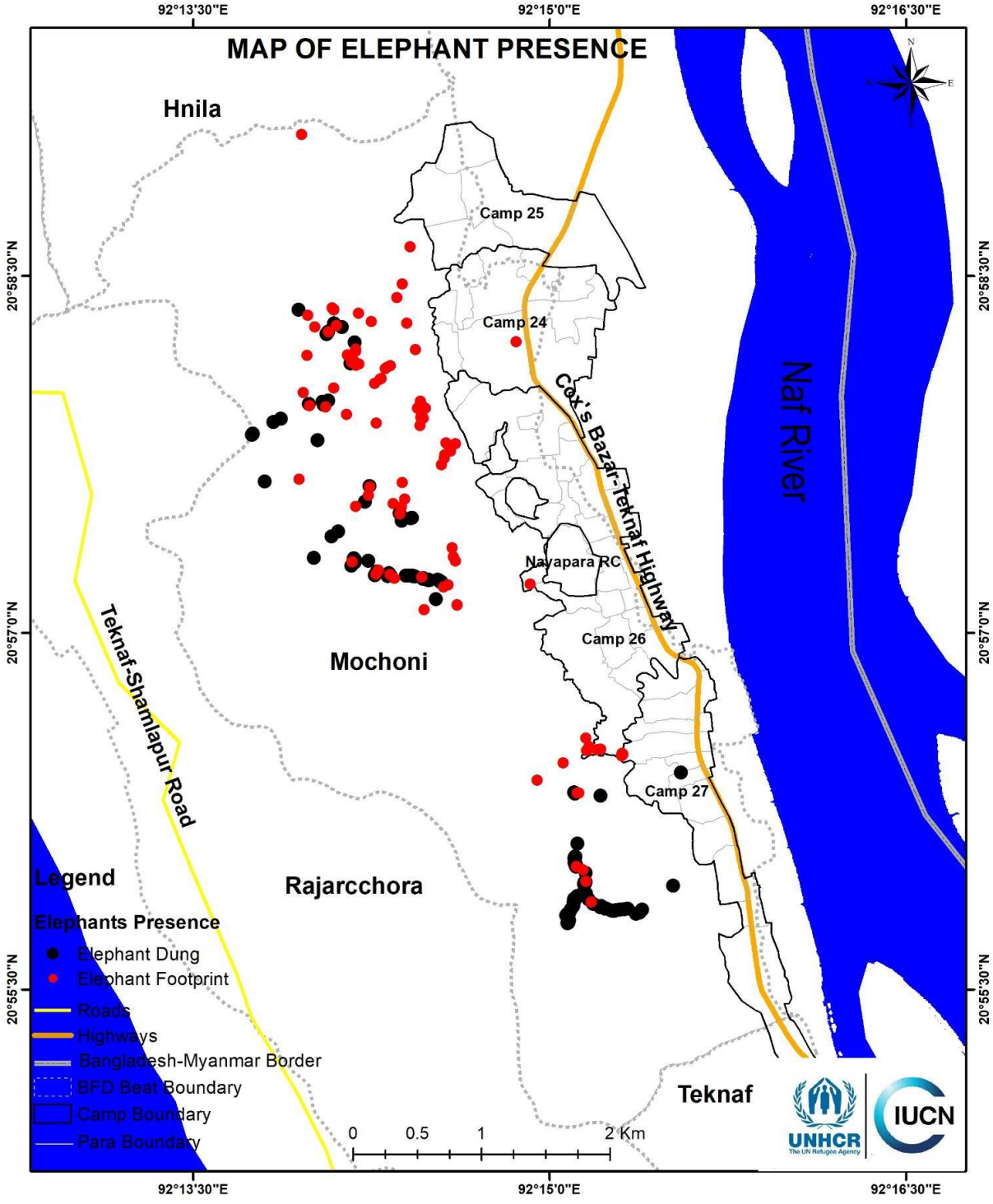
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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.

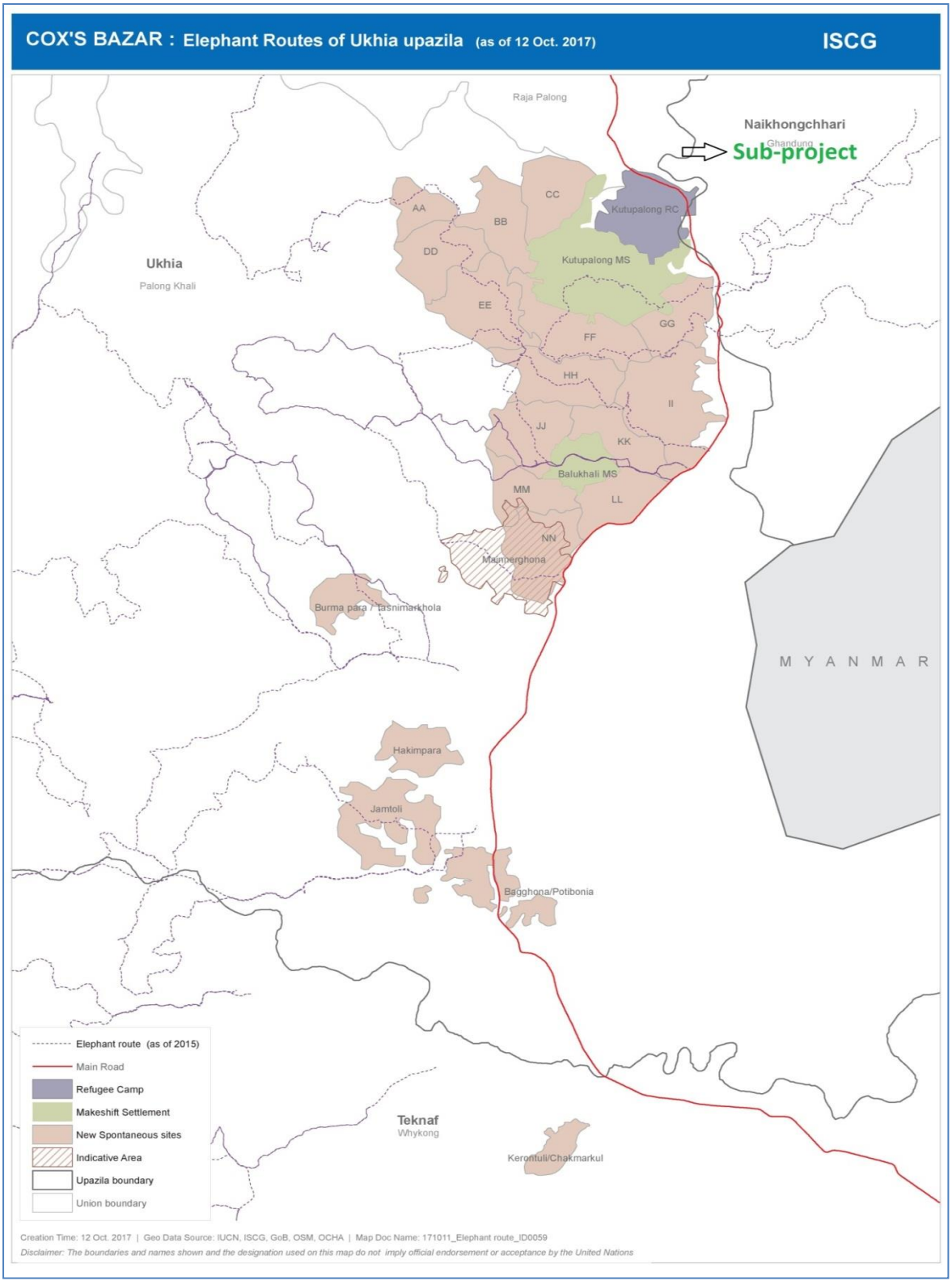
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00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


DRAFT MAP OF ELEPHANT PRESENCE
92°6'0"E
92°8'0"E
92°10'0"E
92°12'0"E
21°12'0"N
21°10'0"N
Ukhiya - Marindrive Road
Dochari
Inani
Chota Inani
Thainkhali
Ukhia
Kutupalong RC
Ukhia Ghat
MYANMAR
Nakhongchari - Tumbru
Gumdum - Tumbru
Cox's Bazar-Teknaf Highway
Camp 1
Camp 2
Camp 3
Camp 4
Camp 5
Camp 6
Camp 7
Camp 8
Camp 9
Camp 10
Camp 11
Camp 12
Camp 13
Camp 14
Camp 15
Camp 16
Camp 17
Camp 18
Camp 19
Camp 20
Legend
Elephants Presence
Elephant Dung
Elephant Footprint
Roads
Highways
Newly Built Road Inside Camp
Extended Camp Boundary (Edge)
Existing Camp Boundary (Edge)
Bangladesh-Myanmar Border
BFD Beat Boundary
Camp Boundary
1.25
2.5
5 Km
UNHCR
The UN Refugee Agency
IUCN



Elephant presence map (latest information published by 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:...02:45.P.M..... Date.18.12.2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ
মত বিনিময়ের স্থানঃ কুতুপালং বর: প্রাথ: বিদ্যালয়

কোড নং: ৪৭২০১০৪০৬
ইউনিয়নঃ বালুখালী ২
ডাকঘরঃ উখিয়া
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	হেলাল উদ্দিন	২৭	পুরুষ	কুতুপালং	
০২	মো: হাবিবুর রহমান	৫১	পুরুষ		
০৩	মো: বাদশা মিয়া চৌধুরী	৬১	ঐ	কুতুপালং	
০৪	সালমুল আলম	৫১	ঐ	ঐ	
০৫	নাইরিন বড়ুয়া	৩৫	মহিলা	কুতুপালং	
০৬	মিনা প্রভা বড়ুয়া	২৮	ঐ	ঐ	
০৭	অরুণা বড়ুয়া	৫১	ঐ	ঐ	
০৮	স্নিগ্ধা বড়ুয়া	২৭	ঐ	ঐ	
০৯	মুন্নি বড়ুয়া	২৮	ঐ	ঐ	
১০	সুব্রত বড়ুয়া	৩৭	পুরুষ	ঐ	
১১	কামাল উদ্দিন	২৯	ঐ	ঐ	
১২	হারুনুর রশিদ	২৩	ঐ	ঐ	

Scanned with CamScanner

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 11 Multipurpose Disaster Shelter Steel Frame Building **in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11**

Component: Nalbania Govt. Primary School

Educational Institution ID: 412010302

Village: Nalbania; Union: Holdiapalong; Upazila: Ukhiya;

District: Cox's Bazar

December 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 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-W11, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Holdiapalong union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject comprises the surrounding villages of Nalbunia, Patabari, Botatoli, Moddhom Holdia and Holudbunia. 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 650 households, containing 4400 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	Nalbania GPS
Educational Institute ID	412010302
District	Cox's Bazar
Upazila	Ukhiya
Union	Holdiapalong
Owner of land	GPS
Land available	1 acre
Catchment household	650
Catchment Population	4400 (Male: 2300, Female: 2100)
Profession	Farmer 57%, day labor 25%, businessman 05% 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	Nalbunia, Patabari, Botatoli, Moddhom Holdia, Holudbunia
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	A 10ft wide HBB road of nearly 300 m in length, which is connected to the Morichha-Nalbania-Ukhiya road
Land acquisition	Not required

[D&SC and Field survey, 2019]

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

Nalbunia 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 10ft wide HBB road of nearly 300 m in length, which is connected to the Moriccha-Nalbunia-Ukhiya road. The geographical position of the site is 21°18' 16.8"N and 92° 07' 50.3"E, which is nearly 14km away from the Upazila Headquarters. 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	Holdiapalong
GPS position	21°18' 16.8"N and 92° 07' 50.3"E
Distance from Upazila HQ	14 km
Nearby major road	Ukhiya- Nalbunia road
Nearby river/canal	One bill named Nalbania Bill is located at 40m north and

	another bill named Haldia bill is located at 80m south 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

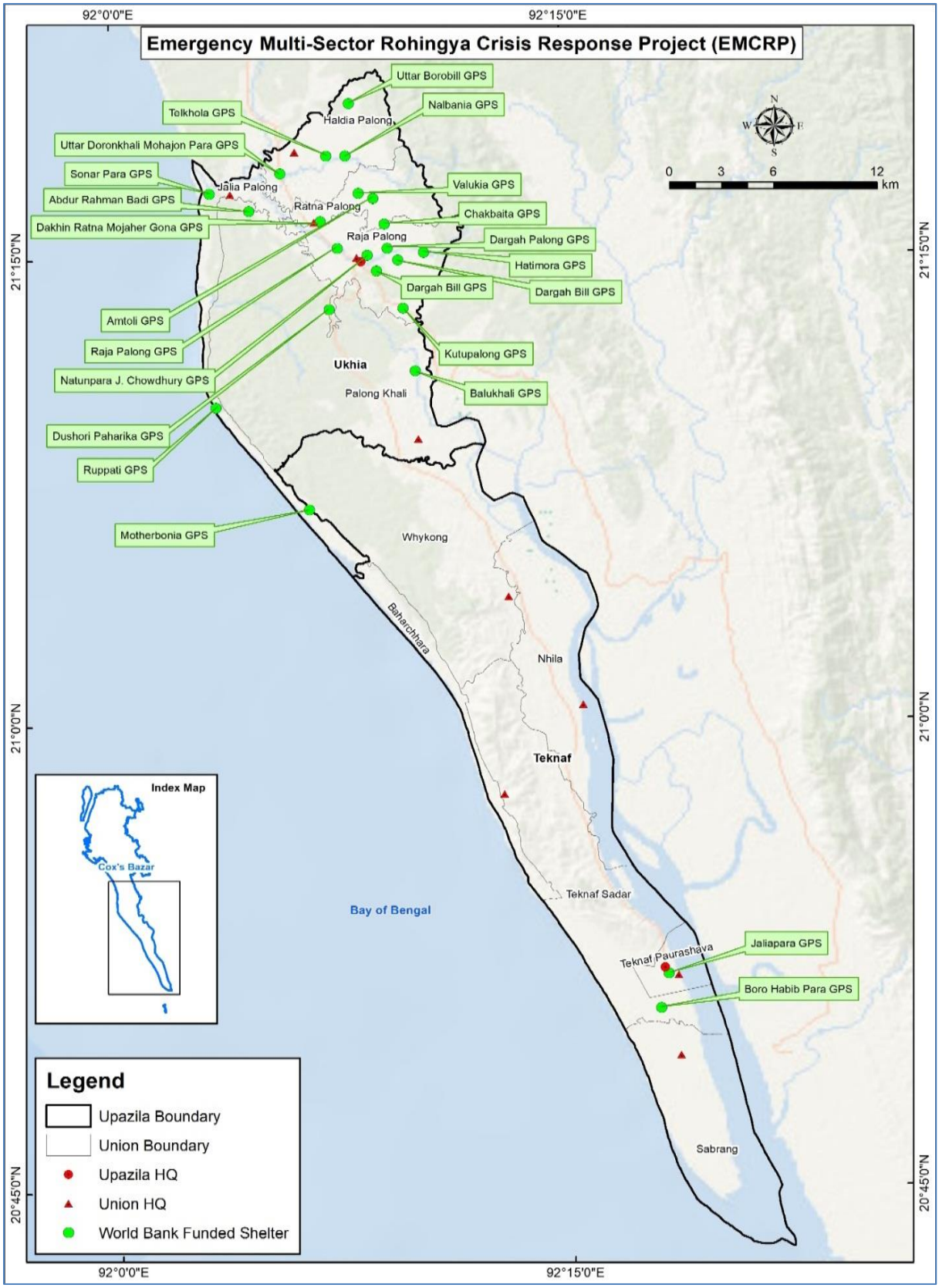


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

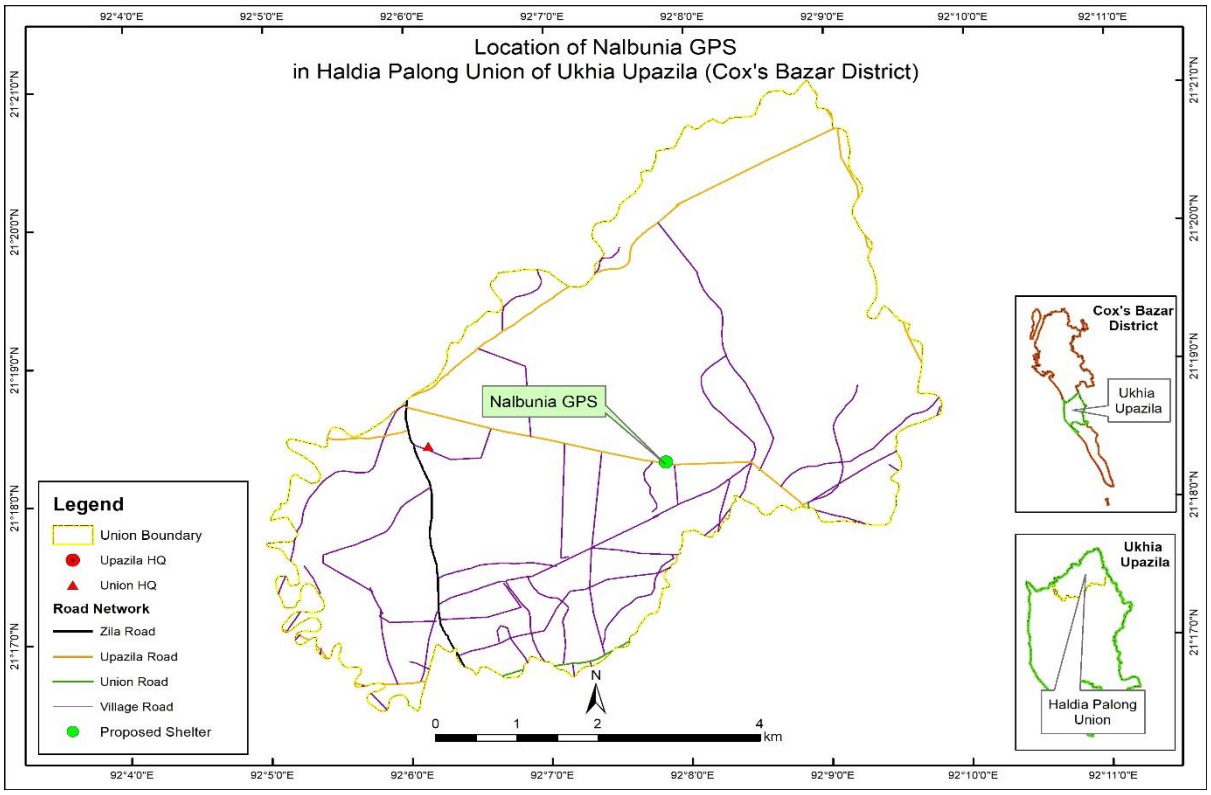


Figure 1.4.3: Union Map with Sub-project location

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 features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Mosque (500m), road (50m), 15 nos. of settlement (100m), Nalbunia Beel (40m)
South side	10 nos. of Settlement (25m), Holdia khal (400m), Pond(60m SE)
East side	7 nos. of Settlement (30m)
West side	Pond(50m)

[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 29 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 Nalbania 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 disaster 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 space 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.
- 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.
- 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 significantly be disturbed due to the construction of the sub project. Within the close proximity (100m) to the sub-project site, a fish project is found at 50m North West, a pond at 60 m south east, Nalbunia Beel at 40m north, and two clusters of settlement at 25m south and 30m east from the site boundary. A 10ft wide HBB road of nearly 300m in length is connected to the Morichha-Nalbunia-Ukhiya road. Some agricultural land is found at 50m on north-west, adjacent to the school boundary. Another human settlement is found at 100m north from the site. There is a chora located at 400m south of the subproject flowing through the Holdia Khal. One mosque is located at 500m north of the sub-project. No significant disturbance to all these establishments/features is anticipated due to construction activities for having the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day in and around the site, proper fencing around the working area, safe storage of materials, etc.

Construction related activities and setting up of labor camps along with associated facilities and their management issues will be accounted for impacts on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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 from 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 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

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

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 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 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, tube-well 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 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 along the school premises. Also construction of storm water drainage system is suggested.

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 and 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 planted in the periphery of the school. Some important socio-environmental features, such as the Nalbunia beel located at 40m north, two human settlements at 25m south and 30m east, another settlement at 100m north, and two ponds –at 60m south east and 50m north-west from the proposed site might get affected during the construction period with the generated noise, debris and dust, though for the time being. As part of the standard mitigation measures and site management practices, Contractor must adhere to the best practice wastes, dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effects to the least level. Human and construction wastes 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 situations

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 around five lacs fifty seven 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 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 **05 Lacs & 57 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: (Nalbania GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project):
District: Cox's Bazar **Sub-District**: Ukhiya **Union**: Holdiapalong
Name of Community/Local Area: Nalbania
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 relatively plain land is on the west side within the school boundary where an old school building is situated. It will be demolished and the new one will be constructed there.
Within the close proximity (100m) to the sub-project site, a fish project is found at 50m North West, a pond at 60 m south east, Nalbunia Beel at 40m north, and two clusters of settlement at 25m south and 30m east from the site boundary. A 10ft wide HBB road of nearly 300m in length is connected to the Morichha-Nalbunia-Ukhiya road. Some agricultural land is found at 50m on north-west, adjacent to the school boundary. Another human settlement is found at 100m north from the site.

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 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 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. Among the sensitive features near to the site, a fish project is found at 50m North West, a pond at 60 m south east, Nalbunia Beel at 40m north, and two clusters of settlement at 25m south and 30m east from the site boundary. Some agricultural land is found at 50m on north-west, adjacent to the school boundary. Another human settlement is found at 100m north from the site. There is a chora located at 400m south of the subproject flowing through the Holdia Khal. One mosque is located at 500m north from the sub-project site.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration route is present 30km 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.

An existing old dilapidated school building located on the west side within the boundary will be demolished at pre-construction stage and the proposed one will be constructed on the same piece of land.

Sub-project Location:

The sub-project area is situated in Holdiapalong Union under Ukhiya Upazila of Cox's Bazar district, with a geographic position at 21°18' 16.8"N and 92° 07' 50.3"E. The distance from the Upazila headquarter is about 15 km. Nearby major road is Moriccha-Nalbunia-Ukhiya road, 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 .412010302

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

Within the project influence area, a fish project is found at 50m North West, a pond at 60 m south east, Nalbunia Beel at 40m north, and two clusters of settlement at 25m south and 30m east from the site boundary. A 10ft wide HBB road of nearly 300m in length is connected to the Morichha-Nalbunia-Ukhiya road. Some agricultural land is found at 50m on north-west, adjacent to the school boundary. Another human settlement is found at 100m north from the site. There is a chora located at 400m south of the subproject flowing through the Holdia Khal. One mosque is located at 500m north of the sub-project. No disturbance is anticipated to these sites/areas, if all measures in ESMP are followed strictly. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco-concerned establishment is found in the vicinity.

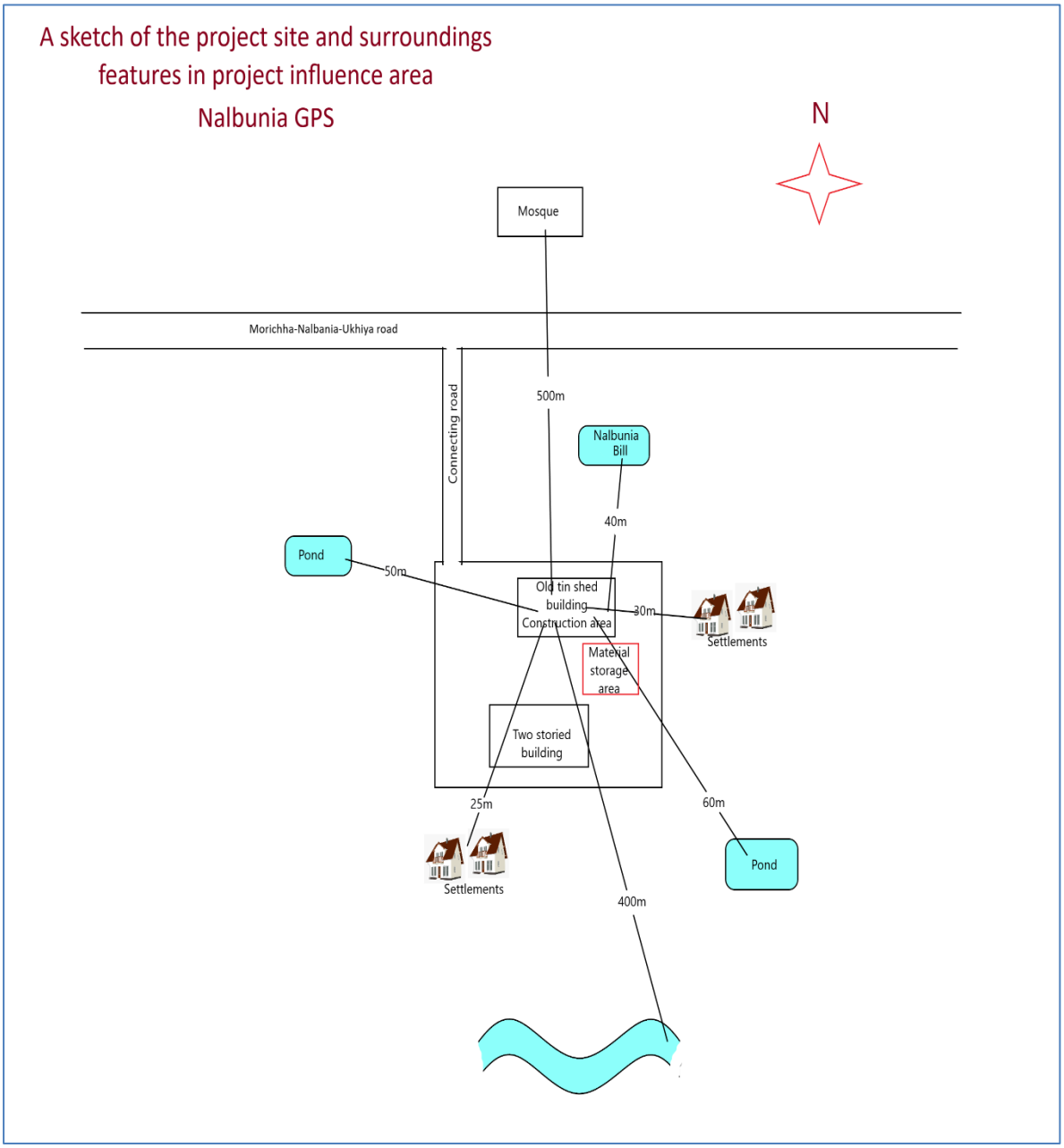
Within the influence area of the subproject no historical sites were identified. There is no evidence of presence of elephants in the subproject influence area (checked with local IUCN representative).

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 fish project is found at 50m North West, a pond at 60 m south east, and Nalbunia Beel at 40m north from the proposed site. A mosque is located at 500m north of the subproject area. But there is very less likely effect to these sites generated by the construction activities.

There is no sensitive environmental, cultural, archaeological sites exist 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 quantities 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 motor cycle, bus, truck, mini truck, tempo, auto rickshaw, tractor, trailer, etc. moving 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. Two deep tubewells are found within the school boundary. The depth is about 850 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 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 north side of the sub-project. It is connected to Moriccha- Nalbunia-Ukhiya road. It is possible to carry the construction materials over the road to the construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Two deep tubewells are found within the school boundary and depth is about 800-850 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 at pre-construction stage 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 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) 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 north side of adjacent sub-project and connected to Moriccha- Nalbania- Ukhiya road.
Location identification for raw material storage: On east side of 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 and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time. **Liquid waste**: During construction period fecal sludge will be generated from labor camp.
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 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 the construction works. 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 reservoirs 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, these will not be affected because of having a fair distance from the construction site and the adoption of proper construction site management practices.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

Low: The site is free from any aquatic ecosystems or habitats of endangered species. There are some terrestrial flora species around the project site, which will not be affected by the works. Life cycle or movement of some terrestrial living species (fauna) (i.e. Insects - ant, bees, earthworm, reptiles, birds etc.) might be disturbed for the time being, but with very less impact indeed. So, overall potential effect is very low or absent for this specific sub project.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: The soil in the proposed site is already compacted and developed and the area is largely flat, so there is almost no chance to trigger the landslide or any type of mass movement of soil for the said construction works.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) N/A
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact related to 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 sub-project site. 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 situated near to a locality. A HBB road connects the sites with the main road. The roads are mainly used for pedestrian access and by light vehicles like bicycles, three wheelers etc. therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred, primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	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
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 bill named Nalbania bill is located at 40m north side of the sub-project. A pond is located at 60m South East side of the school boundary. Some human settlements found at 30m eat and 25m south. Further, a fish project found at 50m North West side of the school boundary so labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	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	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
			• 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.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	within a relatively small area and reversible by mitigation measures.		sites to maximum of 20 km/h. • Regular monitoring of air quality.		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.

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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Nalbunia 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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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Ms. Sadia Azad, Disaster and Climate Change Specialist, PIU.
Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, PIU, +8801913442006

Appendix-3

Cost of Environmental Mitigation and Enhancement Works in BOQ

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

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		for 5 shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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			557,148

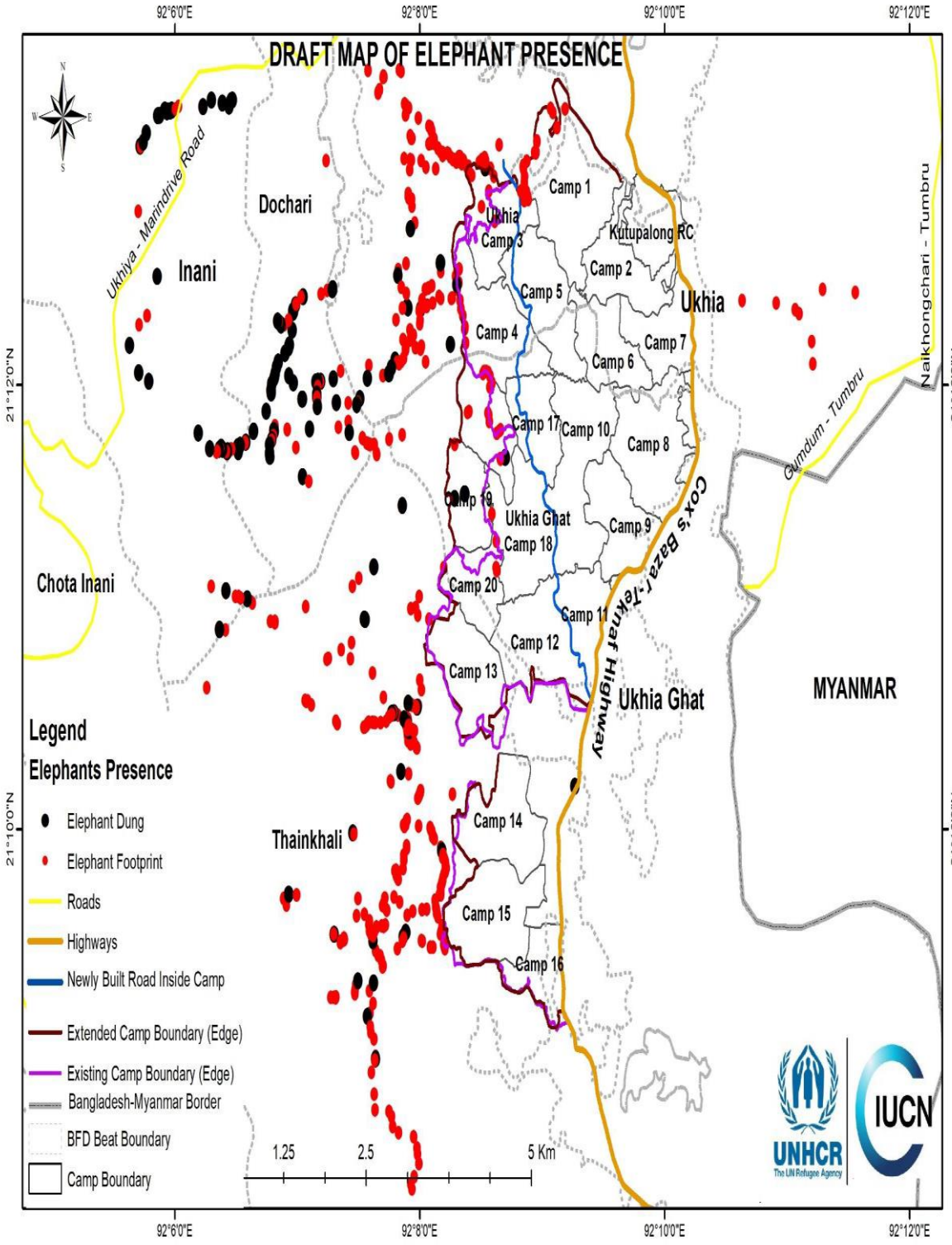
Cost of H&S Measures under COVID 19 Situation

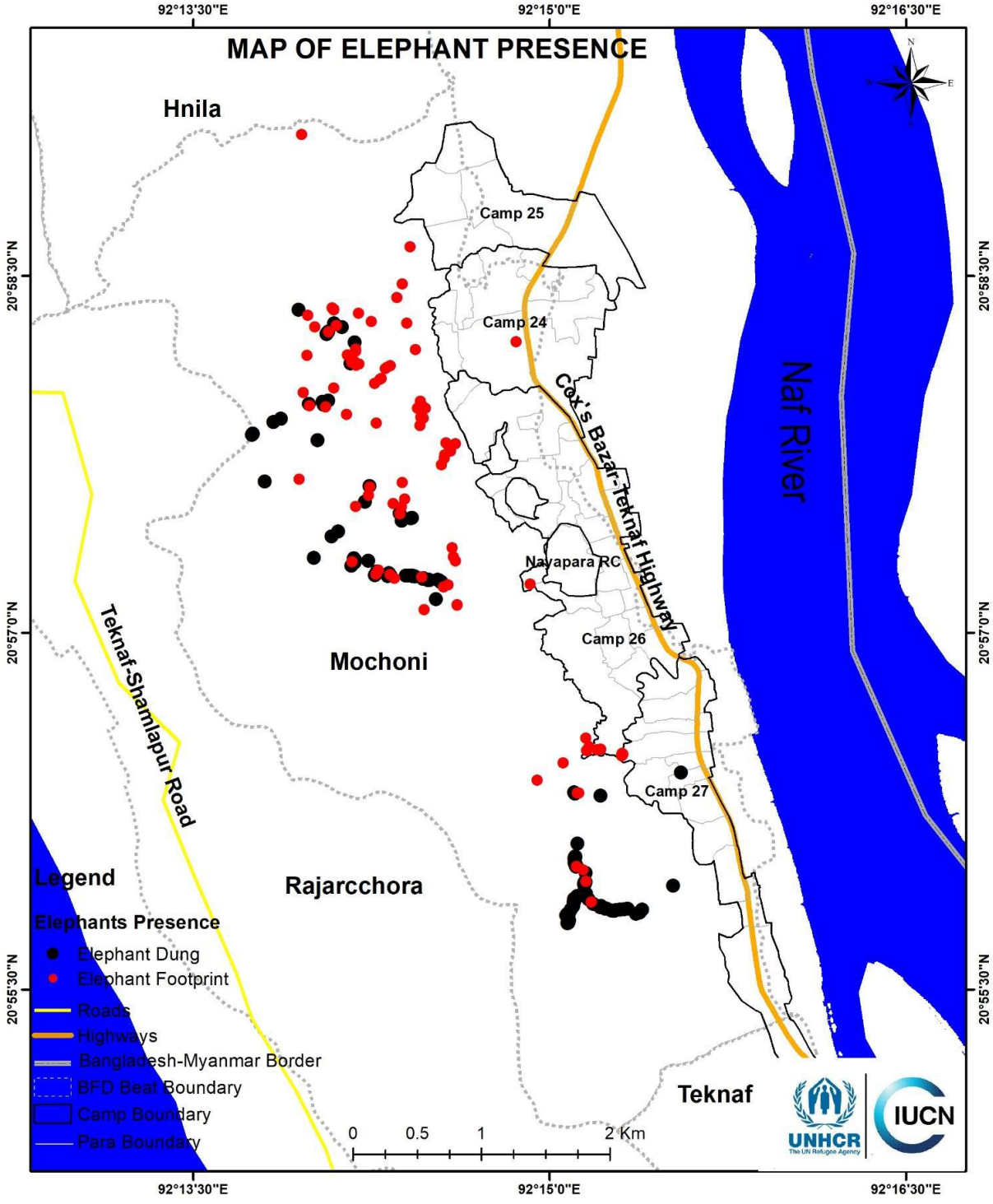
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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

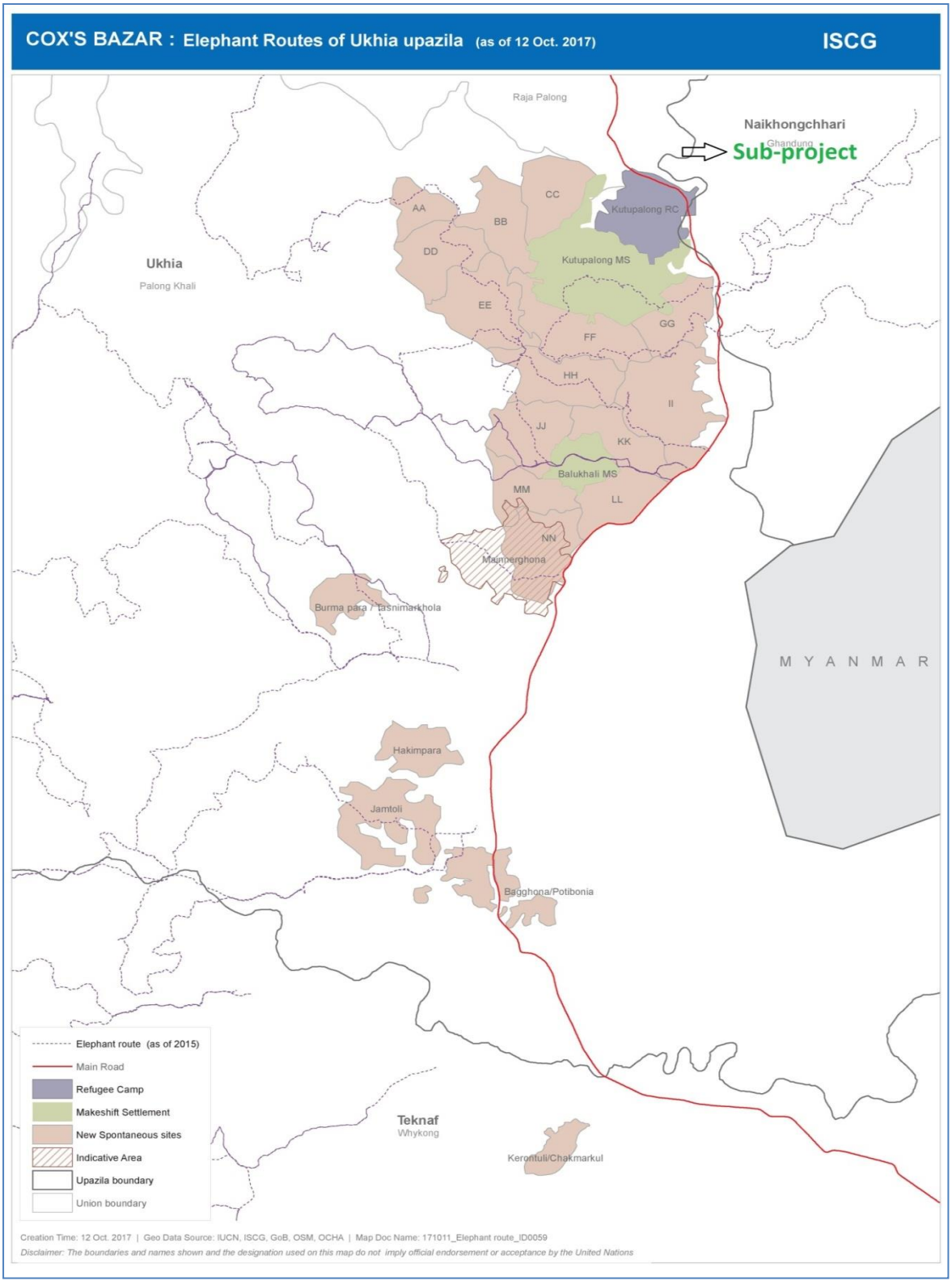
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close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


DRAFT MAP OF ELEPHANT PRESENCE
92°6'0"E
92°8'0"E
92°10'0"E
92°12'0"E
21°12'0"N
21°10'0"N
Ukhiya - Marindrive Road
Dochari
Inani
Chota Inani
Thainkhali
Ukhia
Kutupalong RC
Ukhia Ghat
Camp 1
Camp 2
Camp 3
Camp 4
Camp 5
Camp 6
Camp 7
Camp 8
Camp 9
Camp 10
Camp 11
Camp 12
Camp 13
Camp 14
Camp 15
Camp 16
Camp 17
Camp 18
Camp 19
Camp 20
Cox's Bazar-Teknaf Highway
Naikhongchari - Tumbru
Gumdum - Tumbru
MYANMAR
Legend
Elephants Presence
Elephant Dung
Elephant Footprint
Roads
Highways
Newly Built Road Inside Camp
Extended Camp Boundary (Edge)
Existing Camp Boundary (Edge)
Bangladesh-Myanmar Border
BFD Beat Boundary
Camp Boundary
1.25
2.5
5 Km
UNHCR
The UN Refugee Agency
IUCN



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:...০১.:.০০.টা..... Date..২৭.১২.২০১৯

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ নলবুনিয়া, অঃ প্রাথঃ বিদ্যালয়
মত বিনিময়ের তারিখঃ ২৭/১২/২০১৯

কোড নংঃ ৪২০১০৬০২
স্থানঃ নলবুনিয়া সরকারি প্রাথমিক বিদ্যালয়
ইউনিয়নঃ ইসলিয়া কলাং
ডাকঘরঃ মরিচ্যা চাকরে
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	মোহাম্মদ কুদ্দুছ প্রামাণিক	৪৬	পুরুষ	নলবুনিয়া	
০২	বাদশাহ মিয়া চৌধুরী	৬০	"	"	
০৩	জসিম উদ্দিন চৌধুরী	৩৮	"	"	
০৪	মোঃ শাহ্ আলম	৪০	"	"	
০৫	মোঃ ছৈয়দ হোসেন	৫৫	"	"	
০৬	সুজাতা প্রভা বড়ুয়া	৪০	মহিলা	"	
০৭	রোলিনা আক্তার	৩০	"	"	
০৮	মোঃ আবুল কালাম	৩৮	পুরুষ	"	
০৯	শাহ্ আলম	৪৫	"	"	
১০	ফরিদুল আলমমাঝি	৫০	"	"	
১১	নাছরিন আক্তার	২৭	মহিলা	"	
১২	আবু ছৈয়দ	৩৫	পুরুষ	"	
১৩	সরওয়ার কামাল বাদশাহ	৩৮	"	"	
১৪	ছালেহা বেগম	৩০	মহিলা	"	
১৫	রজিমা বেগম	২৭	"	"	
১৬	জাহাঙ্গীর আলম	৪০	পুরুষ	"	
১৭	আবদুল আজিজ	৬০	"	"	
১৮	মনোয়ারা বেগম	৪৫	মহিলা	"	
১৯	মোঃ কবির আহমেদ	২৮	"	"	

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...০২:০০... Date:২৭/৭/২০১৭

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ নলবুনিয়া সর: প্রাথ: বিদ্যালয়
মত বিনিময়ের তারিখঃ ২৭/৭/২০১৭

কোড নংঃ ৪২০১০৬০২
স্থানঃ নলবুনিয়া সপ্রবি
ইউনিয়নঃ হলদিয়াপালং
ডাকঘরঃ মরিচ্যা বাজার
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	মোঃ ইউনুস	২৫	পুরুষ	নলবনিয়া	
২১	বুরহান উদ্দিন	৩৫	"	"	
২২	দিয়ানত আলী	২৭	"	"	
২৩	[illegible]	৫৪	"	"	
২৪	আলী আহাম্মদ	৫৫	"	"	
২৫	মাহ আলম	৩৫	"	"	
২৬	মিরজা মিয়া	৪৫	"	"	
২৭	জাকারিয়া	৪৬	"	"	
২৮	মোঃ হারুন	২৭	"	"	
২৯	মোঃ হোসাইন	২৬	"	"	

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 11 Multipurpose Disaster Shelter Steel Frame Building **in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11**

Component: Patabari Govt. Primary School

Educational Institution ID: 412010413

Village: Patabari; Union: Rajapalong; Upazila: Ukhiya;

District: Cox's Bazar

December 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 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-W11, 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 Shiler Chora, Patabaria, Mururipara, Nolbuniya, and Peida 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 provide refuge to nearly 789 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. 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	Patabari GPS
Educational Institute ID	412010413
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land Available	1 acres
Catchment household	789
Catchment population	4500 (Male 2160, Female 2340)
Profession	Farmer 60%, day labor 30%, businessman 5% 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	Shiler Chora, Patabaria, Mururipara, Nolbuniya, Peida Para
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

Patabari 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 12ft BC road of nearly 300 m in length, which is connected to the Cox's Bazar-Teknaf Highway. The geographical position of the site is 21°14' 33.9"N and 92° 08' 50.04"E, which is nearly 2.5 km away from the Upazila Headquarters. 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°14' 33.9"N and 92° 08' 50.04"E

Distance from upazila HQ	2.00-2.5 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	One khal named Machkaria Khal is located on 0.5 km south and another chora named Nolbunia Chora is situated on north side.
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]

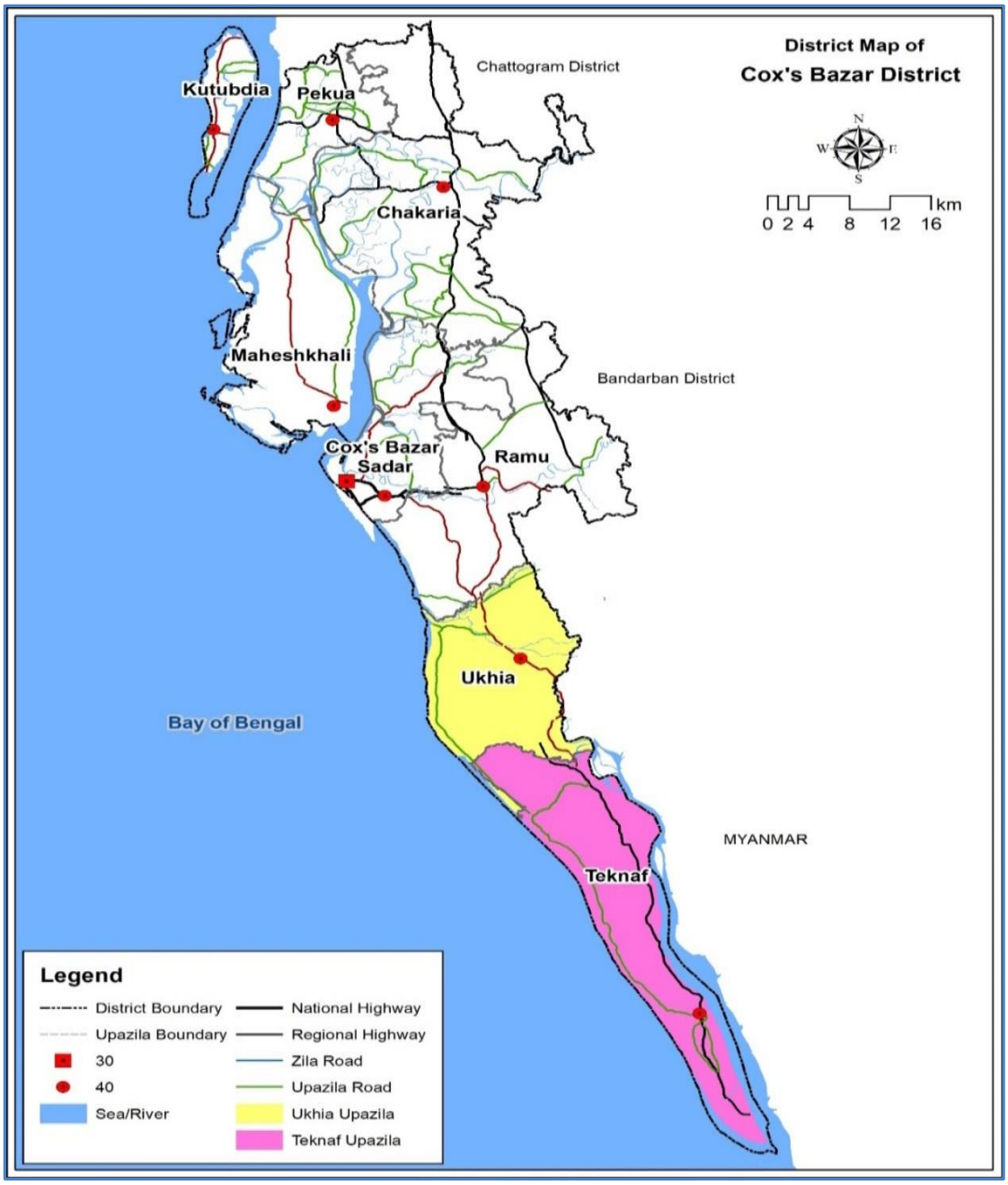


Figure 1.4.1: District Map with project location

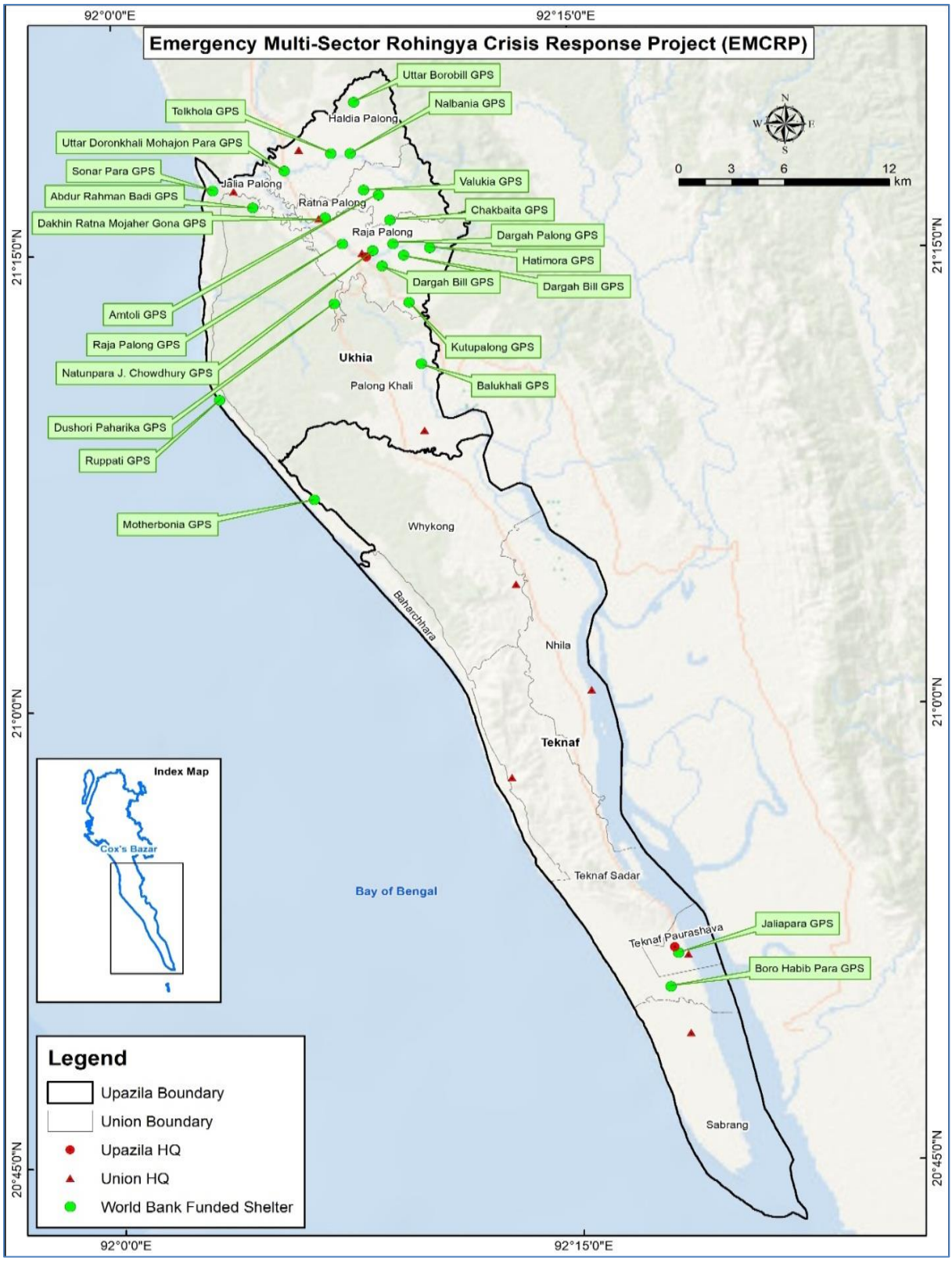


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

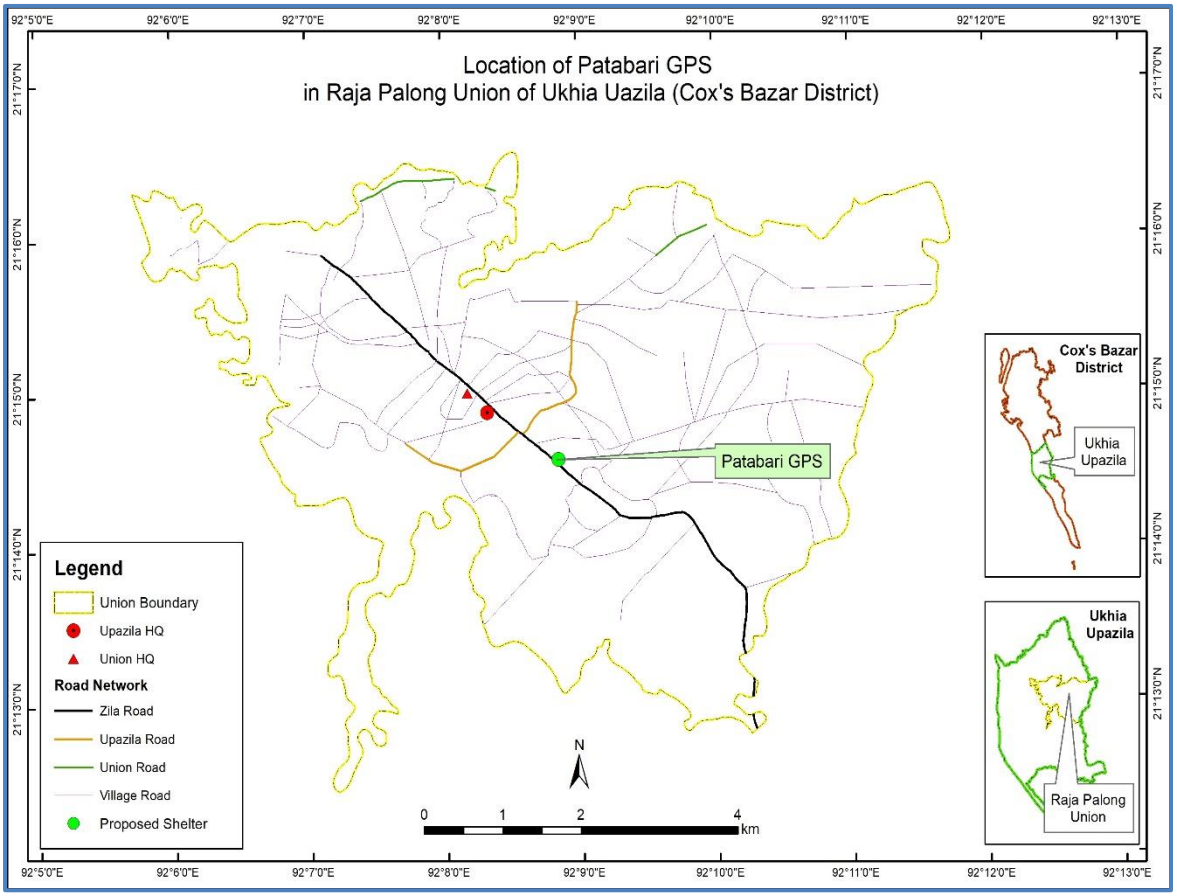


Figure 1.4.3: Union Map with Sub-project location

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 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	Nalbunia Chora(1.5km), Pond(100m), 8 nos. of Settlement(40m), Mosque (300m NE)
South side	Machkaria Chora(1.2km), Pond(150m), Road (20m)
East side	Mosque(300m NE), Ukhia College(500m)
West side	Patabari Central Ananda Mohon Buddhist temple(50m)

[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 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 Patabari 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 disaster 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 space 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.
- 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. A pond (100m) and a human settlement (40m) on the north, a road (20m) on the south and Patabari Central Ananda Mohon Buddhist temple (50m) on the west are located within the close proximity (100m) to the proposed site. Another pond is located at 150m distance on south side, a mosque is at 300 m north-east and the Ukhiya college is located at 500m east from the proposed site boundary. A chora named Nalbunia Chora is located at 1500m north side and another chora named Machkaria is at 1200m south side of the 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 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 on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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 from 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 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 reported. Intensity of precipitation has been seen to have increased in the past few years according to the participants in consultation meeting. 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.

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

As compared to the entire district area or a 50km resolution for model simulation, the sub-project site is a very tiny point for impact generation and estimation, so tiny is its footprint in respect to climate change effects. Yet, to avoid the devastation caused by the growing thunderstorm events, conventional lightning protection system (copper rod to be used as a lightning arrester) will be employed to the proposed shelter. Ramp for cattle and physically challenged people, separate toilets for male and female, tube-well 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 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 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. Some important and close-by socio-environmental features such as a pond (100m) and a human settlement (40m) on the north, a road (20m) on the south and Patabari Central Ananda Mohon Buddhist temple (50m) on the west side of the proposed site might get affected during the construction period with the generated noise, debris and dust, though for a small period of time. As part of the standard mitigation measures and site management practices, Contractor must adhere to the best practice wastes, dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effects to the least level. Human and construction wastes 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 situations

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 around five lacs fifty seven 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 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 **05 Lacs & 57 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 (Patabari GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 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: Patabari
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 north side within the boundary. Another old building is located on east side and it will be demolishing during pre-construction period and new one will be constructed there. A 12ft BC road is passing by on south side and it is connected to Cox's Bazar- Tekhnaf highway.

Ukhiya college is situated at 500m east side and Ukhiya Patabari Central Anando Vhaban Bihar temple is situated at 50m west side. A mosque is located at 300m east and two ponds are found within 200m radius of the sub project area. A chora named Nalbunia Chra is located at 1500m north side and another chora named Machkaria is situated at 1200m south side of the sub-project area. No important environmental feature is found within the sub-project site or in close-by areas. Some agricultural land is found on east side, adjacent to 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 provision for post-disaster services and facilities in respect to diseases prevention, sanitation and hygiene. More than half of the total participants

reported that they used to stay in their houses during disaster, mostly because of onrush to the shelters, limited space for livestock and other social problems. They also requested to involve the local community to construction work and that water supply and the power supply systems need to run uninterrupted during disaster times.

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

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are gravel, stones, rock, wood, copper wires, concrete, iron, plastic etc. Negligible amount of paper, plastic. 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:
A pond (100m) is located on the north and Patabari Central Ananda Mohon Buddhist temple (50m) is on the west within the close proximity (100m) to the proposed site. Another pond is located at 150m distance on south side, a mosque is at 300 m north-east and the Ukhiya college is located at 500m east from the proposed site boundary. 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 and agricultural land 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 exist (ref. IUCN). The nearest elephant migration route is about 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.

An existing old dilapidated school building located on the north side within the boundary will be demolished at pre-construction stage and the proposed one will be constructed on the same piece of land.

Sub-project Location:

The sub-project area is situated in Rajapalong Union under Ukhiya Upazila of Cox's Bazar district, with geographic position at 21°14' 33.9"N and 92° 08' 50.04"E. The distance from the Upazila headquarter is about 2 km. Nearby major road is Cox's Bazar- Teknaf highway, having a distance of 5km from the sub-project site. The school code is 412010413

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 a small one-storied old structure which will be replaced by the proposed new multipurpose school building within the same boundary.

A pond (100m) and a human settlement (40m) are located on the north and Patabari Central Ananda Mohon Buddhist temple (50m) is on the west, within the close proximity (100m) to the proposed site. Another pond is located at 150m distance on south side, a mosque is at 300 m north-east and the Ukhiya college is located at 500m east from the proposed site boundary. No disturbance is anticipated to these sites/areas, if all measures in ESMP are followed strictly. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco-concerned establishment is found in the vicinity.

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

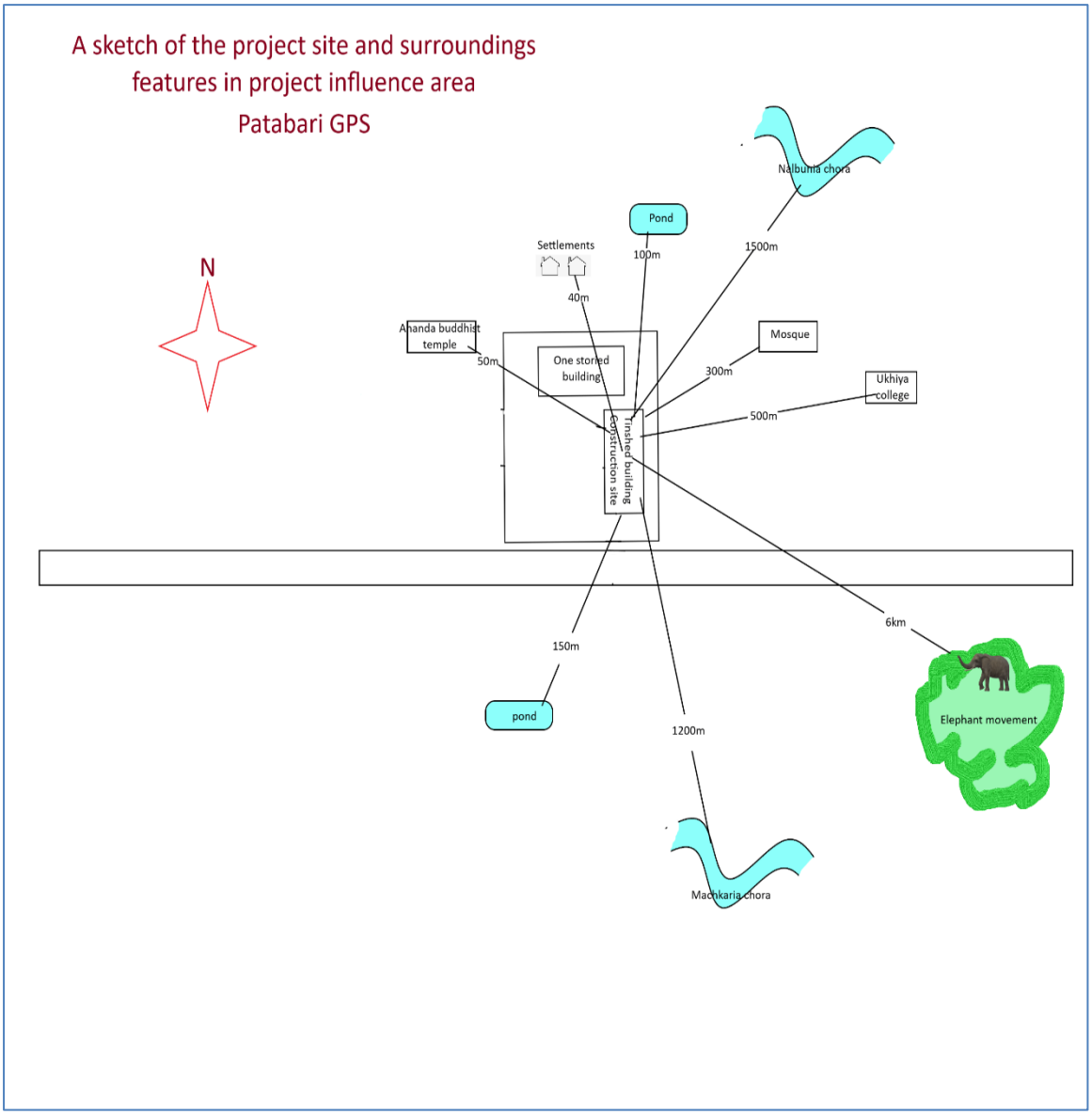
***B.1*: Environmental feature of sub-project location**

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 college named Ukhiya college is situated at 500m east side and a Buddhist temple named Ukhiya Patabari Central Anando Vhaban Bihar temple is situated at 50m west side from the site boundary. A mosque is located at 300m east side; two ponds are found within 200m radius of the sub project area. A chora named Nolbunia Chara is located at 1500m north side and another chora named Machkaria is situated at 1200m south side of the sub-project area and just outside of the influence area.

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 quantities 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. moving 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 200 feet and deep

tubewell depth is 800 feet. In the sub-project area, deep groundwater is 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. A pond is found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project. Local drain is located near the road side but no disturbance or modification will be found 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 east and northern 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 on the west side, adjacent to the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials over this road to 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 respectively. But the tubewells are not working properly during the 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-at pre-construction stage 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 east side within the existing the 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) 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 BC road is the main way for transportation of raw materials. It is located on west side of adjacent sub-project and connected to the Cox's Bazar – Teknaf highway.
Location identification for raw material storage: On 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 school building will be demolishing before starting the construction activities and the new one will be constructed there. So, construction debris and other solid wastes will be generated both during the demolition/pre-construction and construction periods. **Type**: wood, copper wires, concrete, iron, 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 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 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 construction waste produced 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 works. 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 the sub-project area. During construction period one or two water reservoirs 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 within the construction site boundary. 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 related to 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 connecting 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 the sub-project site, and no known areas of ecological interest, except a pond located at 100 m north 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 near to a locality. A BC road connects the sites with the main road. The roads are mainly used for pedestrian access and by light vehicles like bicycles, three wheelers etc. Therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose disaster shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel	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
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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 Buddhist temple named Ukhiya Patabari Central Anando Vhaban Bihar temple is situated at 50m west side. Further, the pond found at 100m North side of sub-project area so labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	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	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
			• 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.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	within a relatively small area and reversible by mitigation measures.		sites to maximum of 20 km/h. • Regular monitoring of air quality.		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.

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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Patabari 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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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Reviewed by: Md. Saiful Islam, Field Level Environmental Specialist, PIU, +8801913442006

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

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

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown)	240 sqm	@23 Tk. Per sqm	5,520
2.	**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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		and another person for 5 shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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's and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	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	20 sets	@ Tk. 5,000 for each set	100,000

Sl no.	Description of item	Quantity	Unit price	Total amount
	shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.			
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

Sl no.	Description of item	Quantity	Unit price	Total amount
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 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 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			557,148

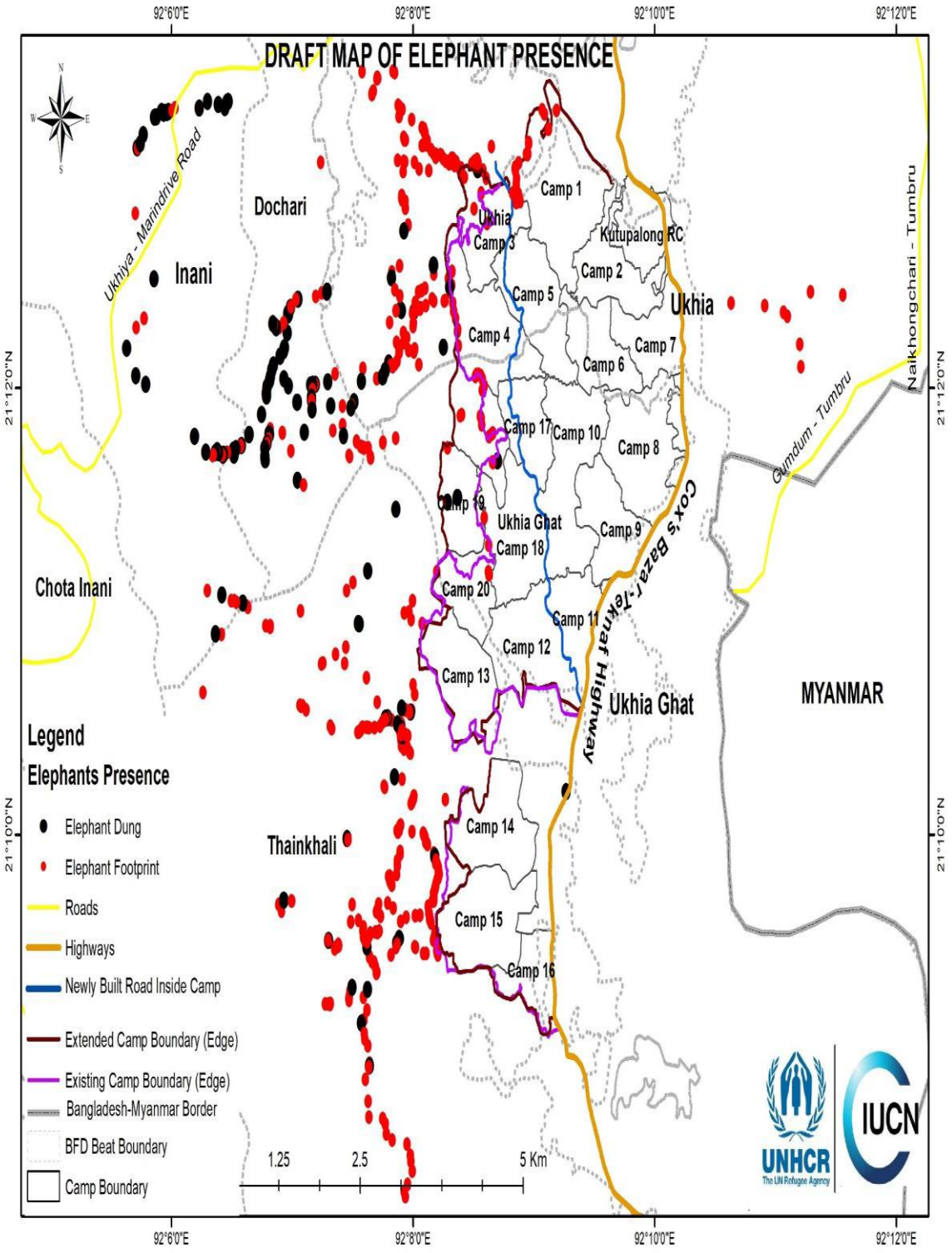
Cost of H&S Measures under COVID 19 Situation

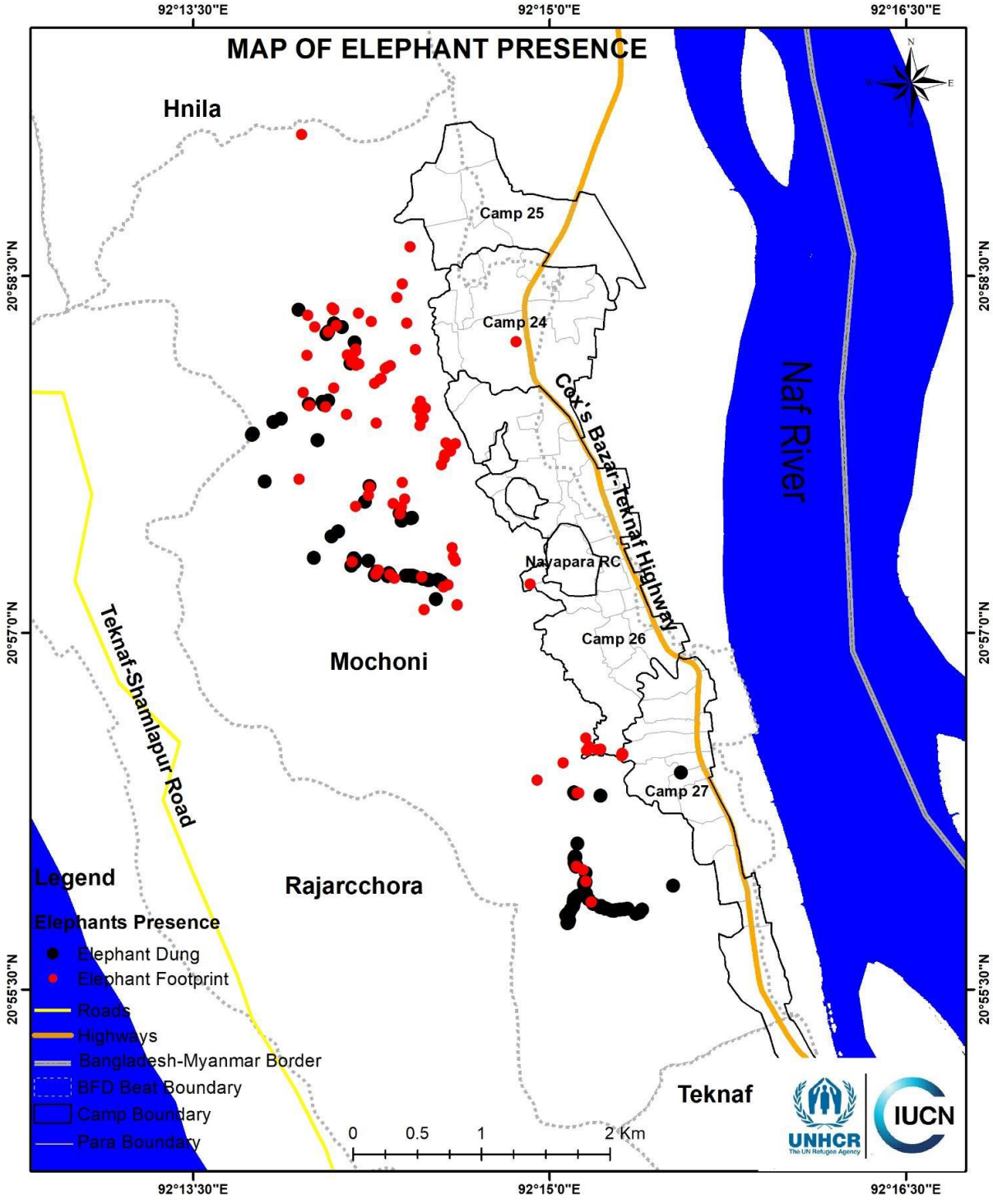
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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.

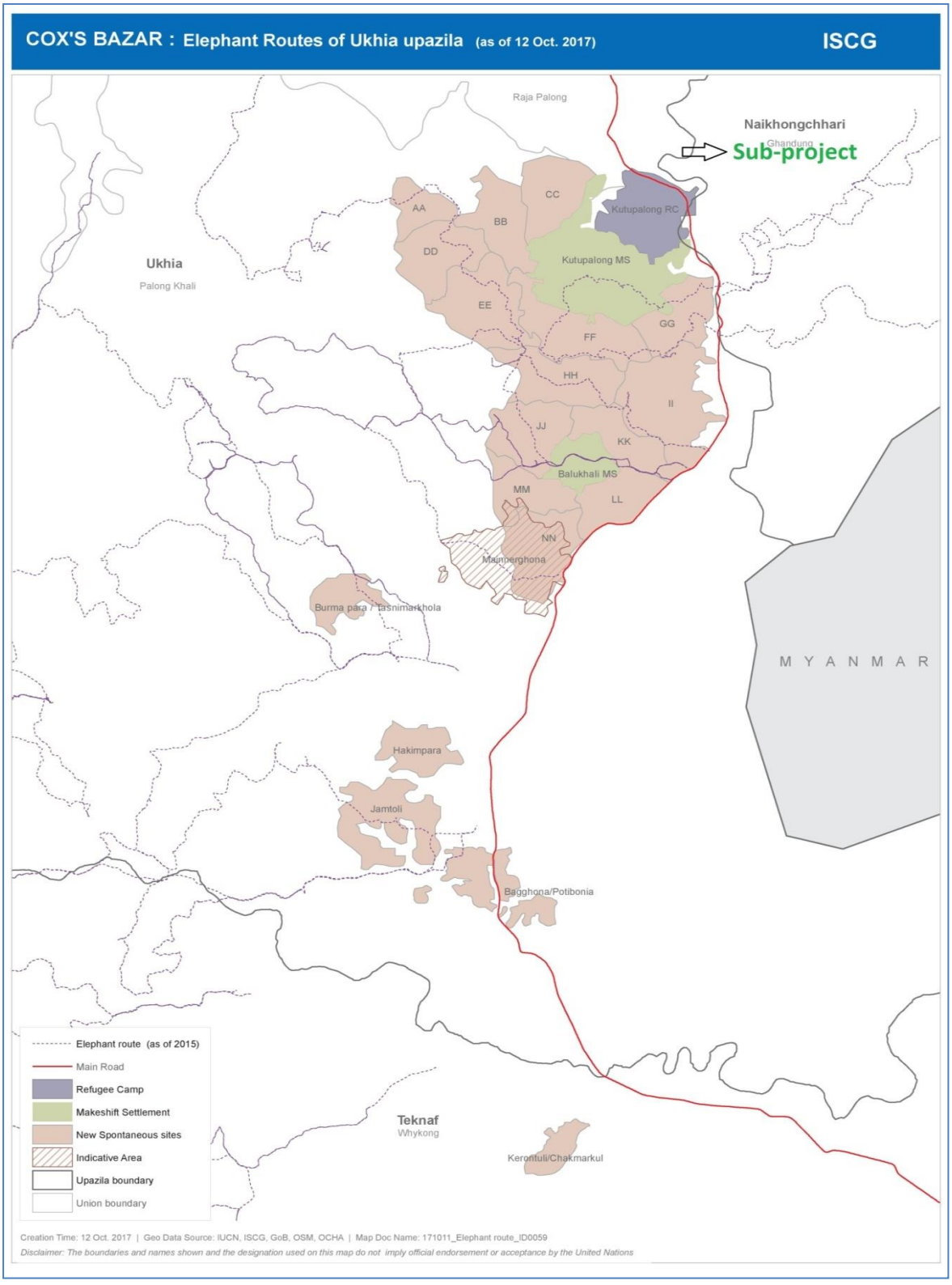
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00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


DRAFT MAP OF ELEPHANT PRESENCE
92°6'0"E
92°8'0"E
92°10'0"E
92°12'0"E
21°12'0"N
21°10'0"N
Ukhiya - Marindrive Road
Dochari
Inani
Chota Inani
Thainkhali
Ukhia
Kutupalong RC
Ukhia Ghat
Camp 1
Camp 2
Camp 3
Camp 4
Camp 5
Camp 6
Camp 7
Camp 8
Camp 9
Camp 10
Camp 11
Camp 12
Camp 13
Camp 14
Camp 15
Camp 16
Camp 17
Camp 18
Camp 19
Camp 20
Cox's Bazar-Teknaf Highway
Naikhongchari - Tumbru
Gumdum - Tumbru
MYANMAR
Legend
Elephants Presence
Elephant Dung
Elephant Footprint
Roads
Highways
Newly Built Road Inside Camp
Extended Camp Boundary (Edge)
Existing Camp Boundary (Edge)
Bangladesh-Myanmar Border
BFD Beat Boundary
Camp Boundary
1.25
2.5
5 Km
UNHCR
The UN Refugee Agency
IUCN



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: 12:00 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 Palabarir Cdc
মত বিনিময়ের তারিখঃ 04/11/19

কোড নংঃ
স্থানঃ
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	মিলন বড়ুয়া	৪৮	পুরুষ	পাতাবাড়ী	
০২	হারুনত সিকদার	৩৪	পুরুষ	উপজেলা	
০৩	রুনা বড়ুয়া	৩৮	মহিলা	মহুরী পাড়া	
০৪	ফারজানা আক্তার	৩২	মহিলা	পাতাবাড়ী	
০৫	সাবিহা বশিদ নয়ন	২৫	মহিলা	পাতাবাড়ী	
০৬	সুবনা বড়ুয়া	২৮	মহিলা	পাতাবাড়ী	
০৭	সুবলা বড়ুয়া	৩৫	মহিলা	পাতাবাড়ী	
০৮	শালতা মল্লিক	৫৫	মহিলা	"	শালতী
০৯	সাহাব উদ্দিন	২৫	পুরুষ	পাতাবাড়ী	
১০	অজিত বড়ুয়া	৫৬	পুরুষ	"	অজিত বড়ুয়া
১১	লোচ্চ বড়ুয়া	৫১	পুরুষ	"	লোচ্চ বড়ুয়া
১২	প্রণব বড়ুয়া	২৮	পুরুষ	"	প্রণব বড়ুয়া

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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Rajapalong Govt. Primary School

Educational Institution ID: 412010401

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

District: Cox's Bazar

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Consultant:

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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-W11, 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 North Pukuria, Shikdar Bill, South Pukuria, Alimura, Jadimura. 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 430 households, containing 2355 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	Rajapalong GPS
Educational Institute ID	412010401
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
Owner of land	GPS
Land Available	1 acres
Catchment household	430
Catchment population	2355 (Male 1195, Female 1160)
Profession	Farmer 55%, day labor 25%, businessman 15% 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	North Pukuria, Shikdar Bill, South Pukuria, Alimura, Jadimura
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 HBB 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

Rajapalong 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 8-ft wide HBB road of nearly 50 m in length, which is connected to the Cox's Bazar-Teknaf Highway. The geographical position of the site is 21°15' 18.50"N and 92° 07' 32.10"E, which is nearly 2.5 km away from the Upazila Headquarters. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, location map of all 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°15’ 18.50”N and 92° 07’ 32.10”E
Distance from upazila HQ	2.00-2.5 km
Nearby major road	Cox’s Bazar- Teknaf highway
Nearby river/canal	Rijo khal is on the 0.5 km west, Hijolia khal is flowing 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]

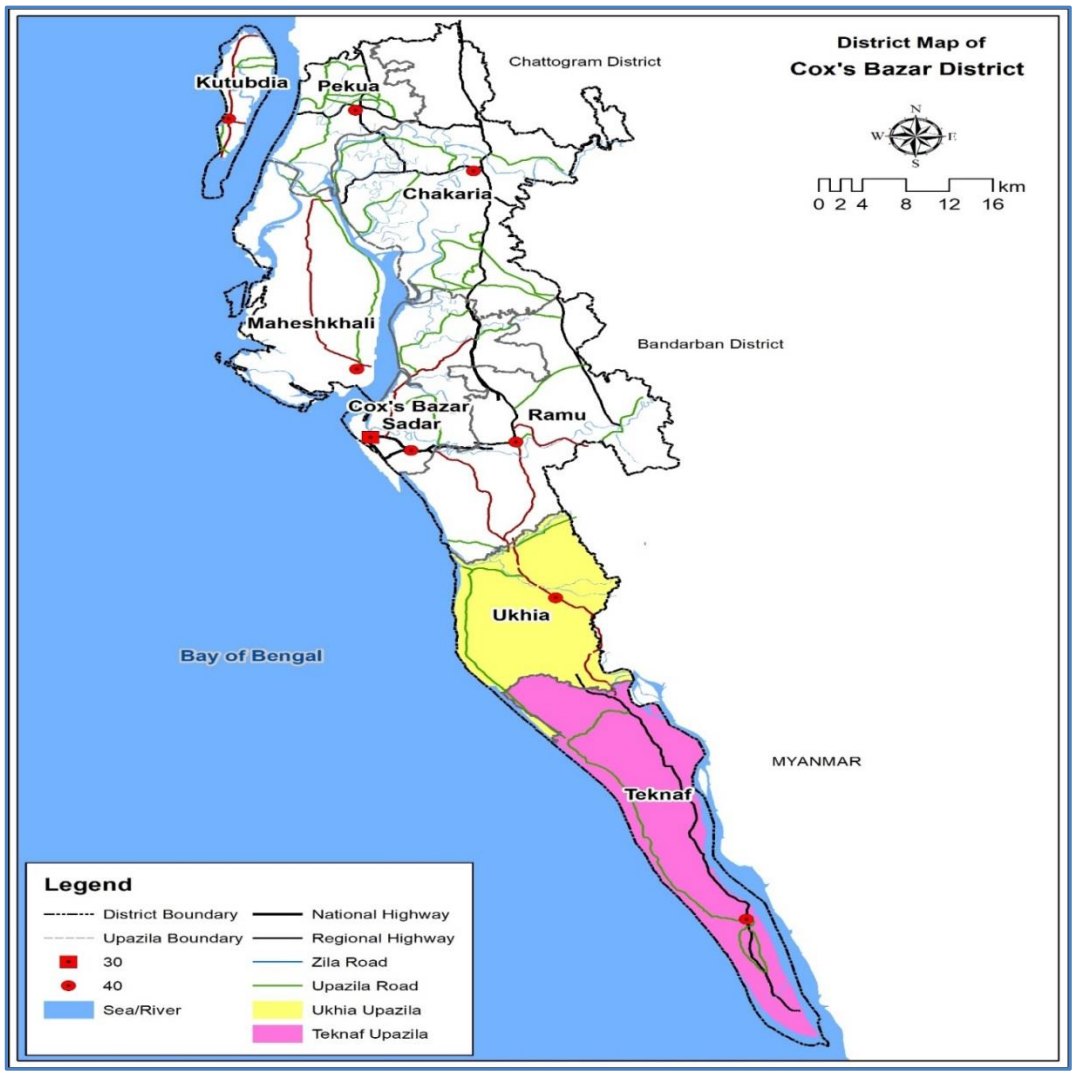


Figure 1.4.1: District Map with project location

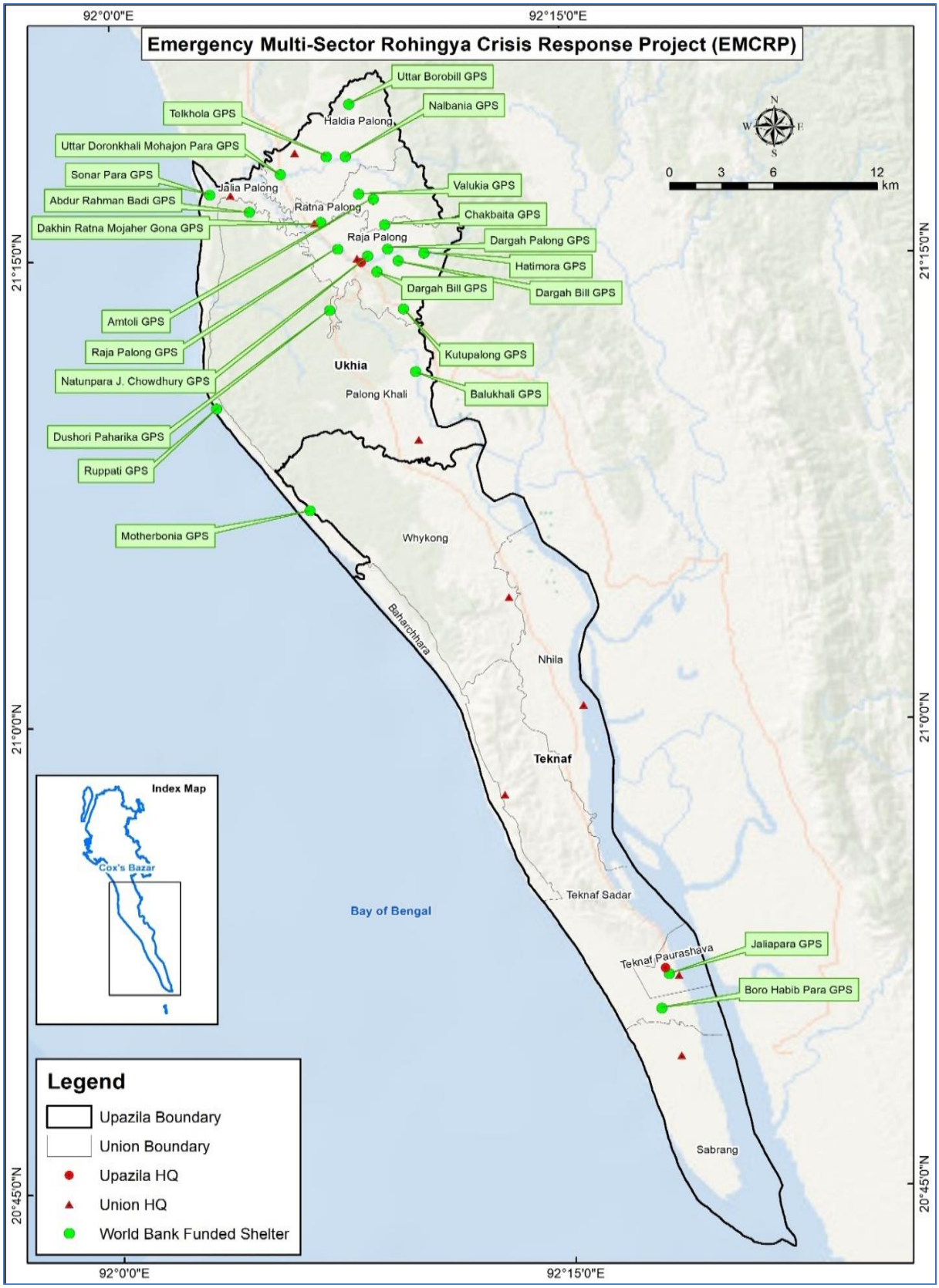


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

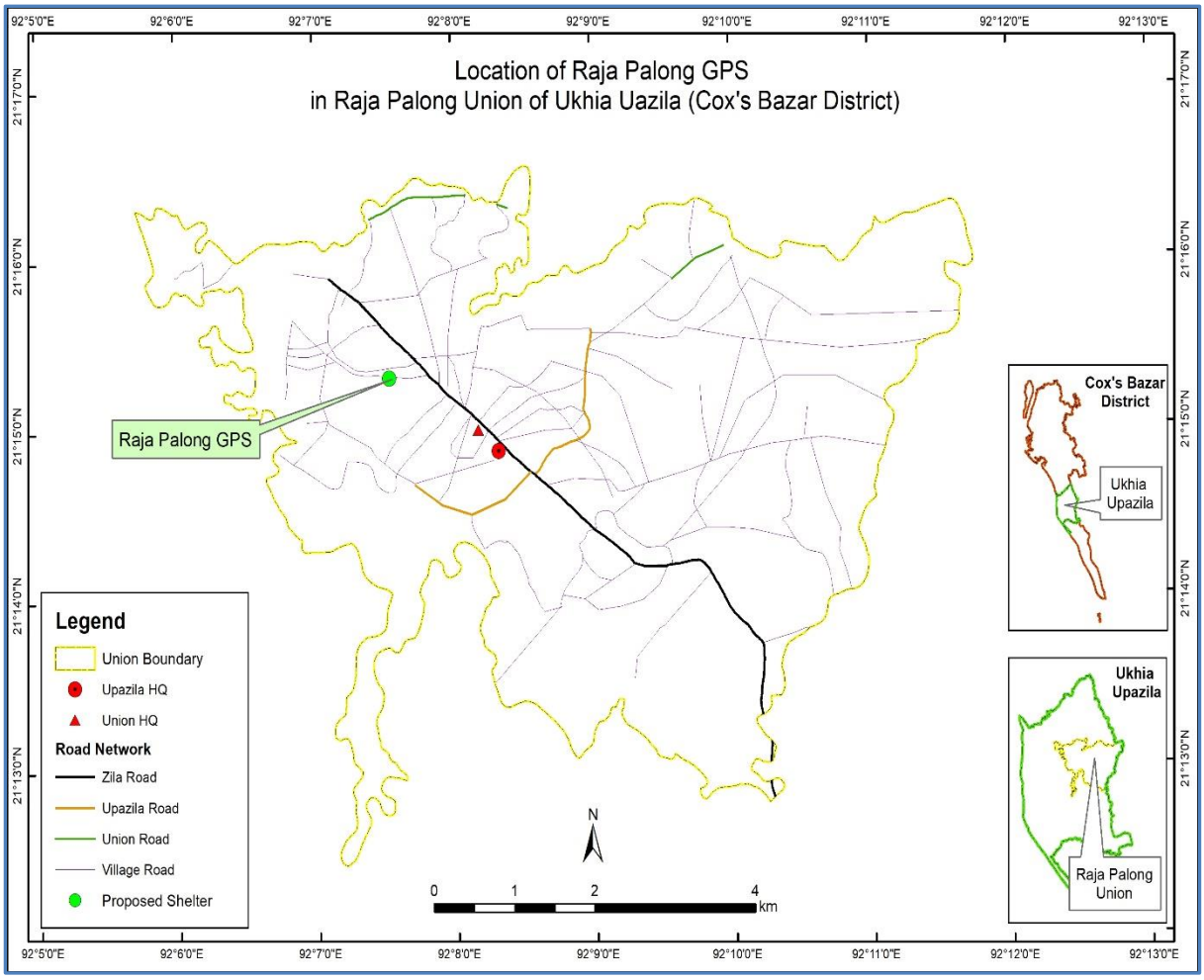


Figure 1.4.3: Union Map with Sub-project location

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 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	Rajapalong dakhil madrasa and mosque(100m), Hijoli Khal(1km), Pond(70m), Graveyard(500m)
South side	Jadiram Buddhist temple(40m), Mosque(200m)
East side	Upazila health complex(200m), 5 nos. of settlement (40m)
West side	Rijo khal(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 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 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 Rajapalong 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 disaster 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 space 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.
- 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 03 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. In the school boundary, a two storied school building is located on south side and a one storied tin shed building is located on east side. Another old tin shed building is located on north side and it will be replaced with the new one. The school field is not so spacious, and students will not get enough space for playing and they are under risk of accident due to the construction activities in the same field. However, proper fencing and strict site maintenance must be an obligatory option for avoiding any nuisance and accidental events. Within the catchment area of the proposed site, Jadiram Buddhist temple (40m-south), number of human settlement (40m-east), a pond (70m-north), Rajapalong dakhil madrasa and mosque (100m-north), another mosque (200m-south) and Upazila health complex (200m-east) are located within 200m reaches around the site. A graveyard is located at 500m north from the site, and two khals- Hijoli at 1km north and Rijo at 500m west are located in the 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 on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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 ensemble 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.

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 according to the participants in consultation meeting. 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 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, 10-15nos. of trees (small and medium size) will be cut down and as a mitigation measure, 60 nos. of trees will be replanted in the periphery of the school. Some important and close-by socio-environmental features and establishments such as the Jadiram Buddhist temple (40m-south), human settlement (40m-east), a pond (70m-north), Rajapalong dakhil madrasa and mosque (100m-north), another mosque (200m-south) and Upazila health complex (200m-east) might get affected during the construction period with the generated noise, debris and dust, though for a small period of time. As part of the standard mitigation measures and site management practices, Contractor must adhere to the best practice wastes, dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effects to the least level. Human and construction wastes 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 situations

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 around five lacs fifty seven 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 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 **05 Lacs & 57 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: (Rajapalong GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 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**: Rajapalong
Name of Community/Local Area: Rajapalong
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 and a one storied tin shed building is located on east side within the school boundary. An old tin shed building located on north side will be replaced with the proposed school building. A 10 feet HBB road is passing by on west side and it is connected to the Cox's Bazar- Tekhnaf highway.

The site surrounding is characterized by the presence of the Jadiram Buddhist temple (40m-south), a cluster of human settlement (40m-east), a pond (70m-north), Rajapalong dakhil madrasa and mosque (100m-north), another mosque (200m-south) and Upazila health complex (200m-east) located within 200m reaches around the site. A graveyard is located at 500m north from the site and a khal (Rijo) is also located in 500m reaches from the site.

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. One mosque is located at 100m north and another mosque located at 200m south. A graveyard is located at 500m north east side. Upazila health complex is located at 200m east of the subproject. A madrasa named Rajapalong Dakhil Madrasa is found at 100m north side of the sub-project site. Community based institutions including religious center such as Mosques, temples, and different forms of educational/cultural institutions bring cultural values and social cohesion to the community people. A buddist temple named Jadiram buddiest temple is found at 40m south side of the school boundary. But there is no chance to cause significant disturbances due to the sufficient distance in between.

Some human settlements are found within 50m distance from the sub-project site. No disturbance is anticipated due to the construction activities to those social and environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN). The nearest elephant migration route is about 10 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.

An existing old school building located on the north side within the boundary will be demolished at pre-construction stage and the proposed one will be constructed on the same piece of land.

Sub-project Location:

The sub-project area is situated in Rajapalong Union under Ukhiya Upazila of Cox's Bazar district, with geographic pisiton at 21°15' 18.50"N and 92° 07' 32.10"E. The distance from the Upazila headquarter is about 1 km. Nearby major road is Cox's Bazar- Teknaf highway, having a distance of 20 meter from the sub-project site. 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. A two-storied school building is located on south side and an one-storied tin shed building is located on east side and a small tin shed old structure located on the north will be replaced by the proposed new multipurpose school building within the same boundary.

Within the project influence area Jadiram Buddhist temple (40m-south), a pond (70m-north), Rajapalong dakhil madrasa and mosque (100m-north), another mosque (200m-south) and Upazila health complex (200m-east) are located, within 200m reaches around the site. A graveyard is located at 500m north from the site, and two khals- Hijoli at 1km north and Rijo at 500m west are located in the area. No disturbance is anticipated to these sites/areas, if all measures in ESMP are followed strictly. No structures, trees and livelihood will be affected by this construction activity. No mentionable eco-concerned establishment is found in the vicinity.

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).

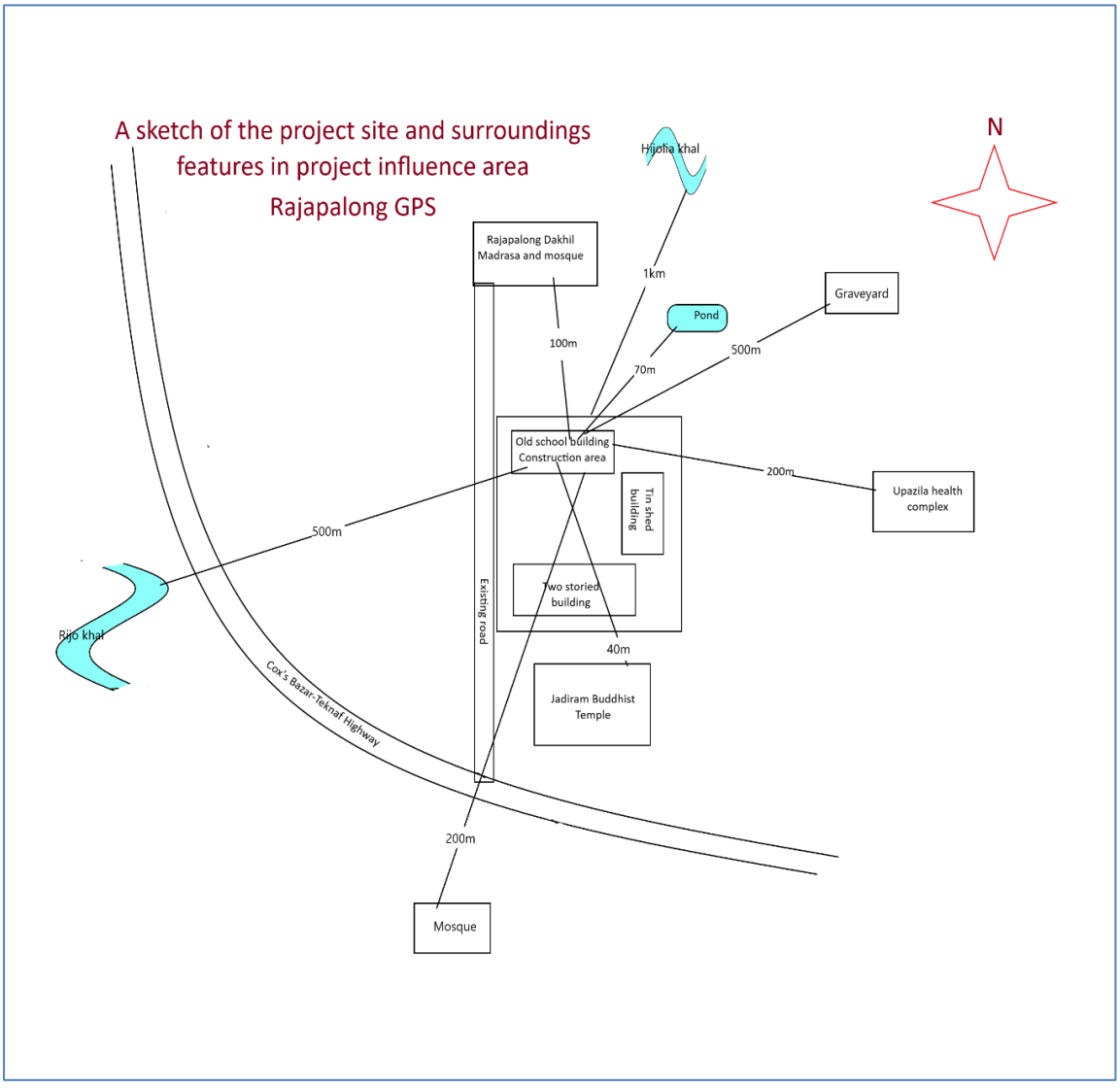
Section B: Environmental Screening

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 Jadiram Buddhist Temple is found at 40m South side of the sub-project. And a mosque is located at 100m north and another mosque is at 200m south from the proposed site. A graveyard is located at 500m north east side, and the Upazila health complex is located at 200m east of the subproject. A madrasa named Rajapalong Dakhil Madrasa is found at 100m north of the sub-project site.

There is no sensitive environmental, cultural, archaeological sites exist 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 on the west side of 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 motor cycle, tempo, auto rickshaw, tractor, trailer, truck, mini truck 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 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.

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 on south side of adjacent the sub-project. It is connected to Cox's Bazar-Teknaf highway. It is possible to carry the construction materials over this road to construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: A deep tube-well is found in school premises. Its depth is 800 feet. But it is only for students and teachers. In order to make a sustainable solution to make water available 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-at pre-construction stage 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 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) 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. 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 the Cox's Bazar-Teknaf highway.
Location identification for raw material storage: On east side of the school field. 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**: Iron, concrete, metal, drywall, wood, plastic, rubber, copper wires 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 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 construction 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 the sub-project area. During construction period one or two water reservoirs 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 in the construction site. 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 relating to 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 are no protected areas in or around project sites, and no known areas of ecological interest, except a pond located at 70m north 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 near to a highway. A HBB road connects the sites to that highway. The connecting HBB road is mainly used as pedestrian access and by light vehicles like bicycles, three wheelers etc. Therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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. • One mosque located at 100m north and another mosque located at 200m south. A madrasa named Rajapalong Dakhil Madrasa is found at 100m north side of the sub-project site. Further, a Buddhist temple is located at 40m south and a fish project found at 70m North side of sub-project so labor camp needs to be set up in such a location that these 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.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	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, 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.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place of materials.	During Design Stage
	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	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
			• 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.			
	Setting up of labor camp(Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking	Contractor, environmental specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Prior to the start of Construction works

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	term, site-specific within a relatively small area and reversible by mitigation measures.		sites to maximum of 20 km/h. • Regular monitoring of air quality.		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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
						basis.
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor monitored by Consultant 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 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Rajapalong 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
	per direction of the E.I.C.		for 5 shelters, i.e. 35,000 Tk.*24 months* 2 Persons (1/11 for 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's and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	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

Sl no.	Description of item	Quantity	Unit price	Total amount
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 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 each set of tests (Lump Sum)	@13,800tk for each set	41,400
	Subtotal Bill: Environmental facilities			557,148

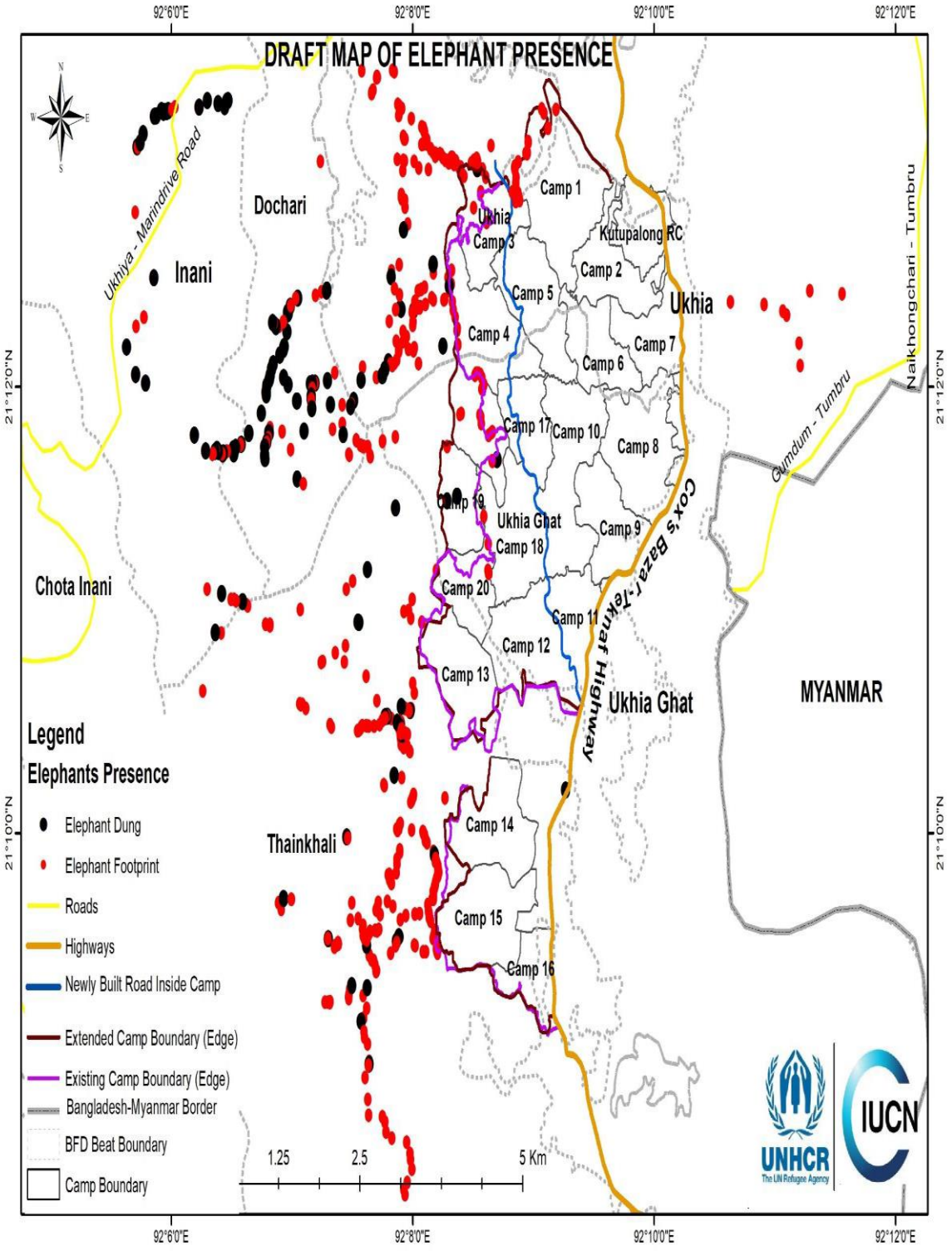
Cost of H&S Measures under COVID 19 Situation

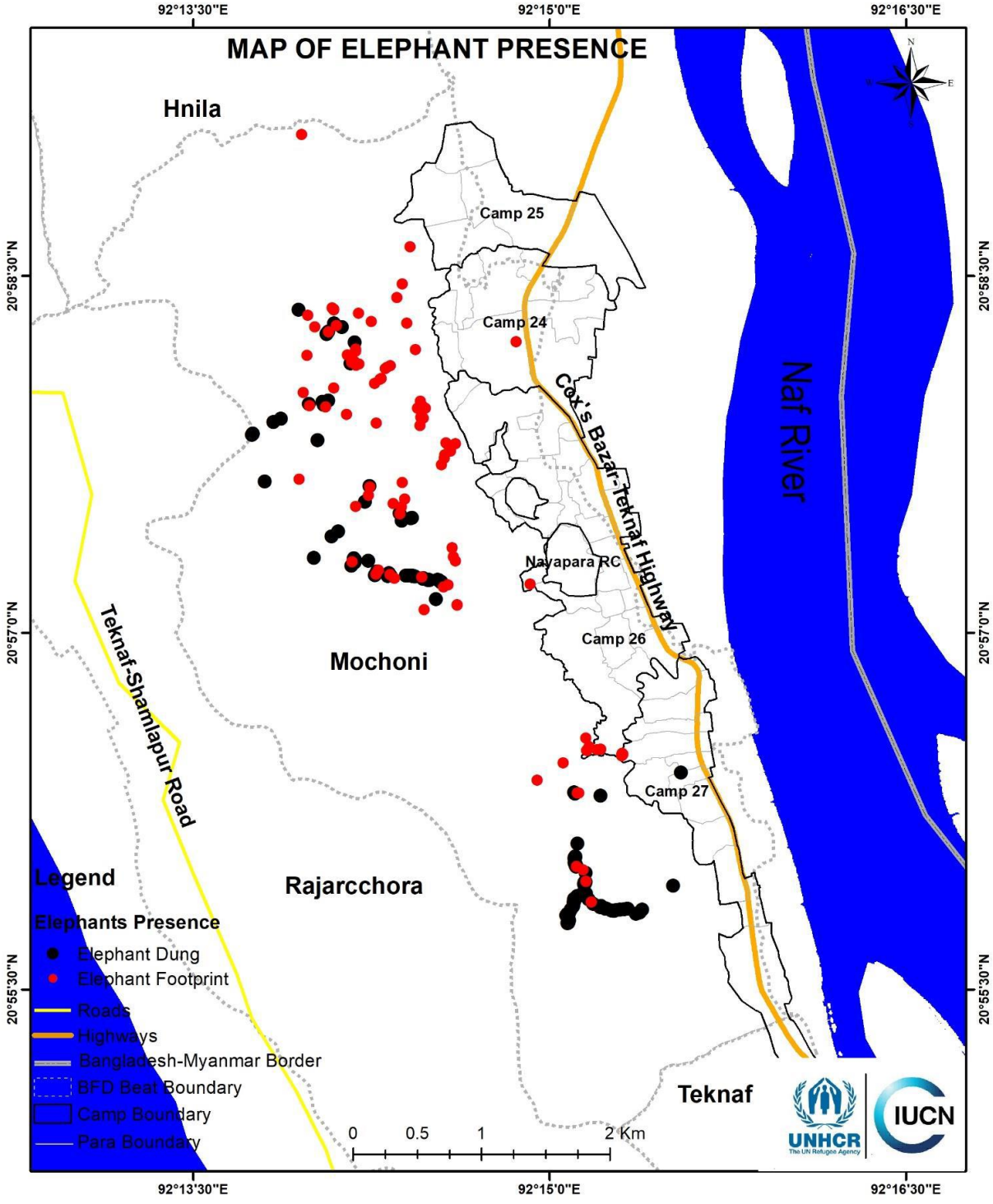
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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.

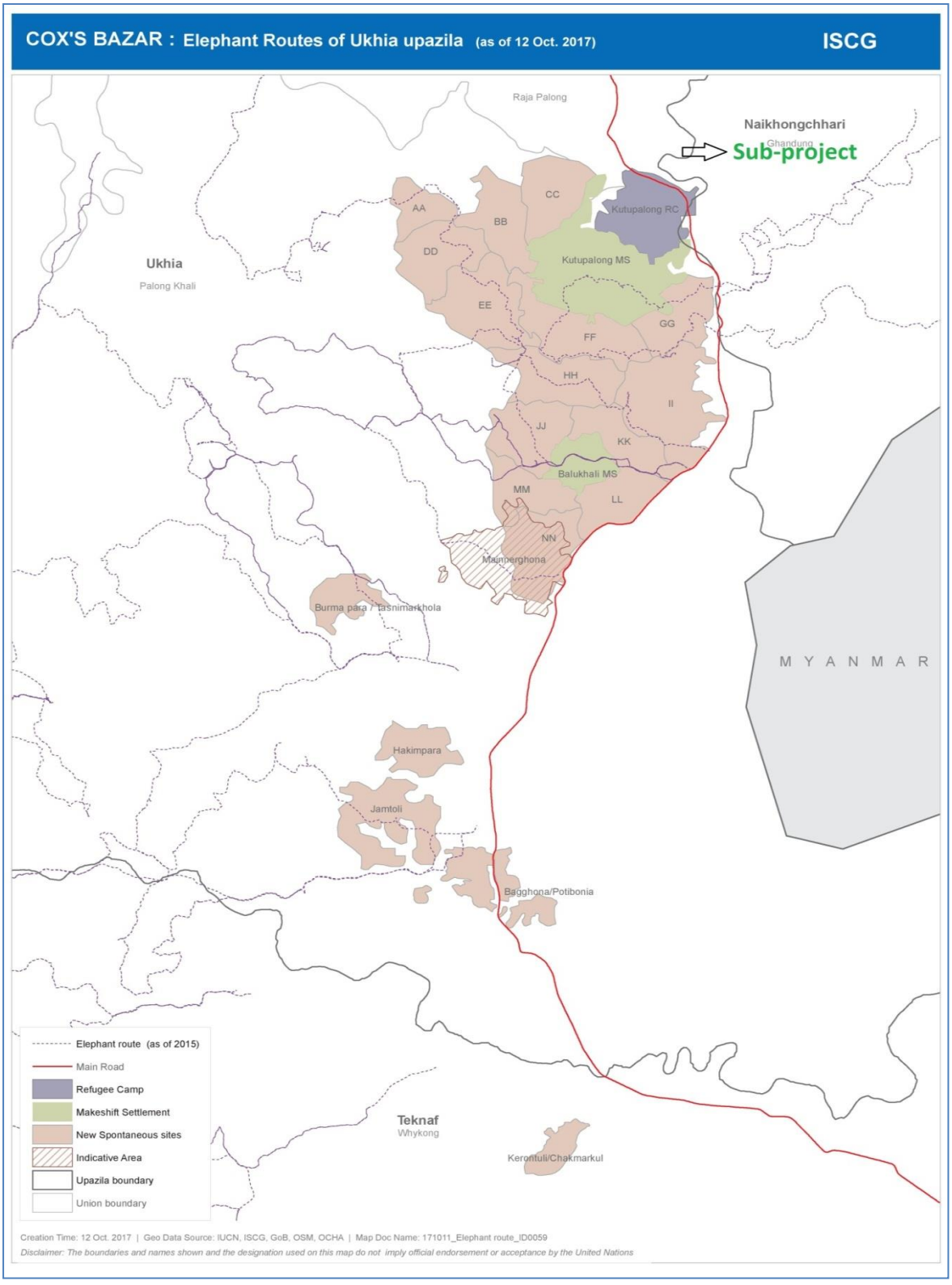
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00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


DRAFT MAP OF ELEPHANT PRESENCE
92°6'0"E
92°8'0"E
92°10'0"E
92°12'0"E
21°12'0"N
21°10'0"N
Ukhiya - Marindrive Road
Dochari
Inani
Chota Inani
Thainkhali
Ukhia
Kutupalong RC
Ukhia Ghat
MYANMAR
Naikhongchari - Tumbru
Gumdum - Tumbru
Cox's Bazar-Teknaf Highway
Camp 1
Camp 2
Camp 3
Camp 4
Camp 5
Camp 6
Camp 7
Camp 8
Camp 9
Camp 10
Camp 11
Camp 12
Camp 13
Camp 14
Camp 15
Camp 16
Camp 17
Camp 18
Camp 19
Camp 20
Legend
Elephants Presence
Elephant Dung
Elephant Footprint
Roads
Highways
Newly Built Road Inside Camp
Extended Camp Boundary (Edge)
Existing Camp Boundary (Edge)
Bangladesh-Myanmar Border
BFD Beat Boundary
Camp Boundary
1.25
2.5
5 Km
UNHCR
The UN Refugee Agency
IUCN



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:..... 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 ০৩/১১/১৯

কোড নংঃ 41201401
স্থানঃ Rajapalong GPS
ইউনিয়নঃ Rajapalong
ডাকঘরঃ Ukhiya
উপজেলাঃ Ukhiya
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	খাইরুন নেছা	৪৯	নারী	রাজাপালং	
০২	সাজেদা বেগম	৪৬	ঐ	ঐ	
০৩	পূরবী প্রভা রুদ্র	৪২	ঐ	ঐ	
০৪	আজহার ভোছাইন	৪০	পুরুষ	ঐ	
০৫	আছাদুল্লাহ সওদাগর	৪৩	ঐ	ঐ	
০৬	তৌলি আহমেদ	৩২	ঐ	ঐ	
০৭	মোঃ আছহাব ভোছাইন	৪০	ঐ	ঐ	
০৮	মোঃ আবুবক্কামান	৬০	ঐ	উখিয়া পৌঃ	
০৯	প্রীতি কণা দাশ	৩৯	নারী	বালুখালী ২ নং ওয়ার্ড	
১০	খালেদা বেগম	৩৭	ঐ	ঐ	
১১	আমীনার হোসেন	৩৭	ঐ	ঐ	
১২	তামির কায়েস	৩০	পুরুষ	১১	
১৩	মোঃ নাসির উদ্দিন	৬৯	ঐ	বালুখালী	
১৪	মমতাজ বেগম	৬০	ঐ	ঐ	

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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 11 Multipurpose Disaster Shelter Steel Frame Building in Ukhiya Upazila of Cox's Bazar District, under the Package No. EMCRP/W11

Component: Telkhola Govt. Primary School

Educational Institution ID: 99412020502

Village: Telkhola; Union: Palongkhali; Upazila: Ukhiya;

District: Cox's Bazar

December 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 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] OM 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-W11, a new climate resilient multi-purpose disaster shelter cum primary school will be constructed in Palongkhali union of Ukhiya Upazila under Cox's Bazar district. The catchment area of the subproject extends across the Telkhola village and the surroundings. 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 810 households, containing 5104 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	Telkhola GPS
Educational Institute ID	99412020502
District	Cox's Bazar
Upazila	Ukhiya
Union	Palongkhali
Owner of land	GPS
Capacity of Shelter	1300
Land Available	40 decimal
Catchment household	810
Catchment population	5104 (Male 2553, Female 2551)
Profession	Farmer 65%, day labor 30%, businessman 4% and others 1%
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	Telkhola
Tribal people	No tribal people found in the catchment area of the Sub-project
Connecting road	01 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 area and the Sub-project

Telkhola 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 HBB road, which is connected to the Cox's Bazar-Teknaf Highway. The geographical position of the site is 21°18' 16.80"N and 92° 07' 11.7"E, which is nearly 10 km away from the Upazila Headquarters. The location details of the Sub-project have been summarized in Table 1.4.1. The District Map with project location, location map of all 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	Palongkhali
GPS position	21°18' 16.80"N and 92° 07' 11.7"E
Distance from upazila HQ	10 km
Nearby major road	Cox's Bazar- Teknaf highway
Nearby river/canal	One khal named Tengrakhali khal is located on 0.5 km

	south 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]

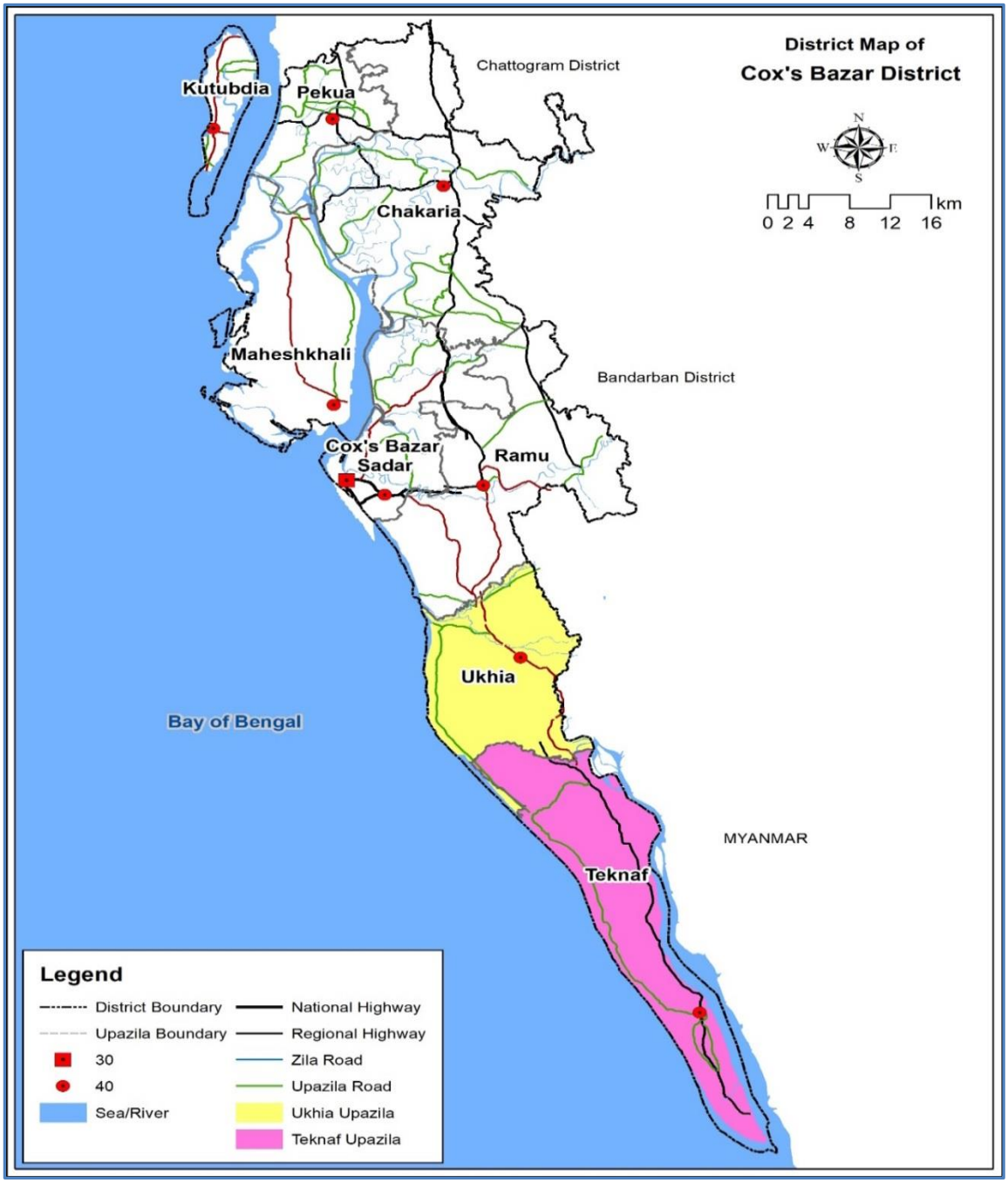


Figure 1.4.1: District Map with project location

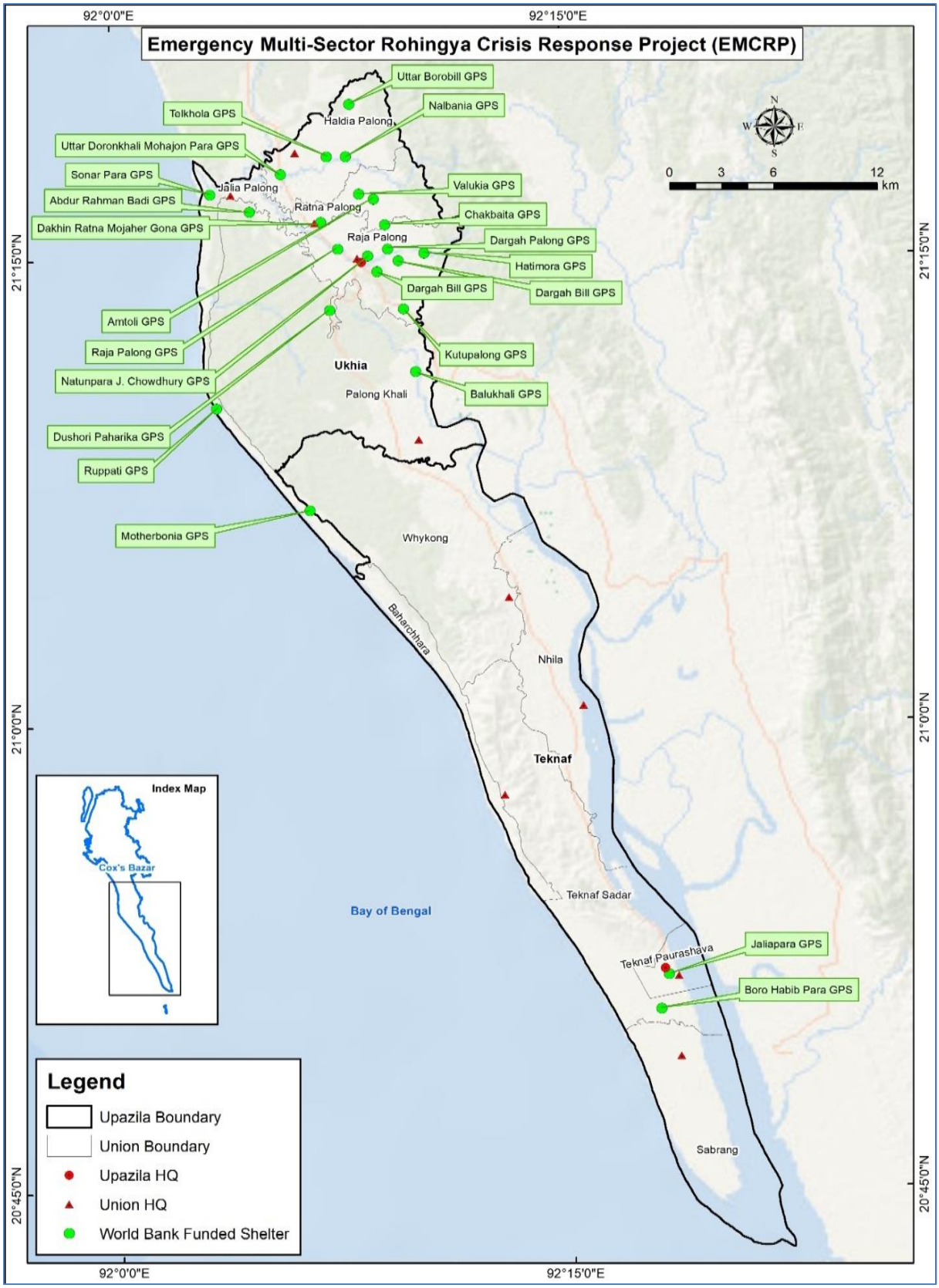


Figure 1.4.2: Location of the proposed Multipurpose Disaster Steel frame buildings (Ukhiya & Teknaf)

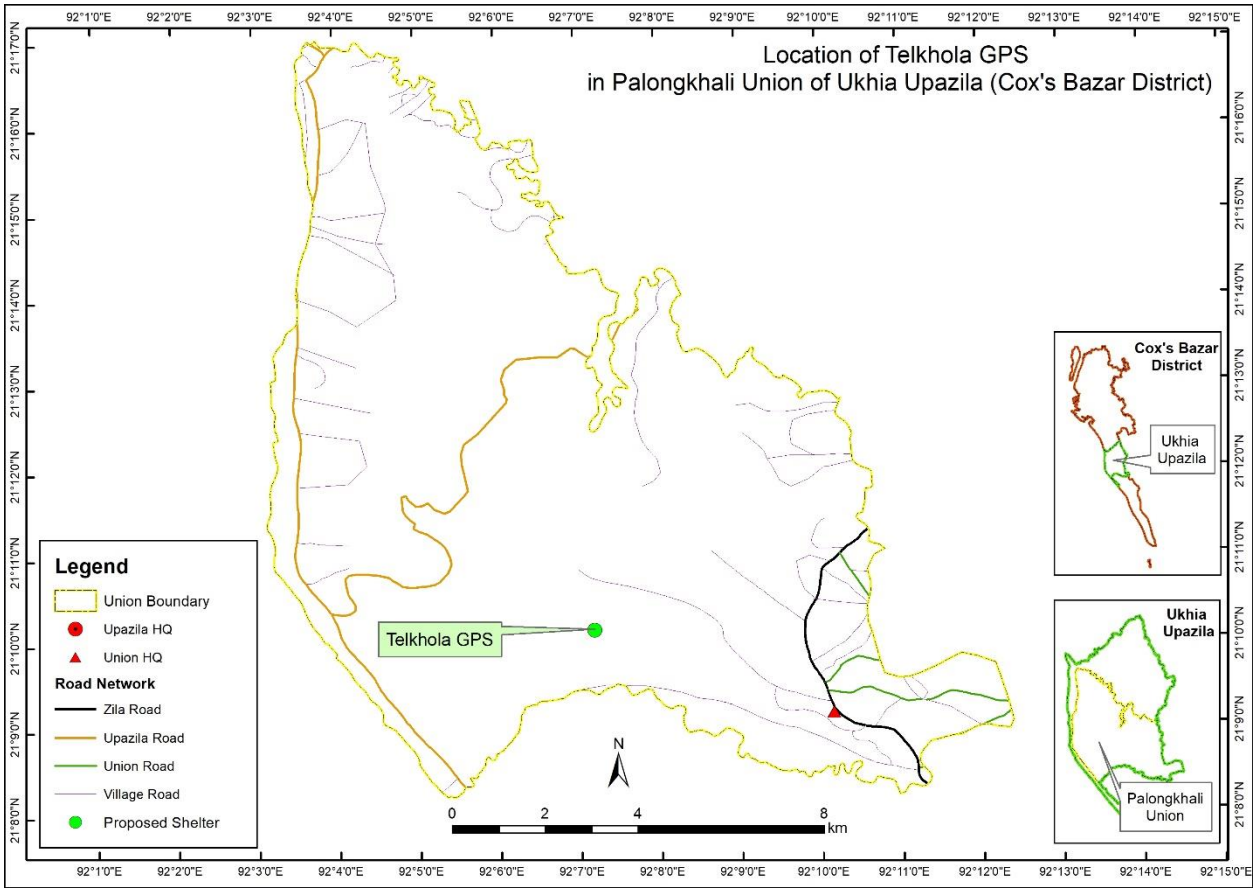


Figure 1.4.3: Union Map with Sub-project location

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 features/establishments around the Sub-project site

Direction	Important features/ establishment (approx. distance from the proposed site)
North side	Telkhola nurani madrasa and mosque (300m)
South side	Tengrakhali khal(500m)
East side	Road (20m), settlements(50m), Pond(50m)
West side	Bidubon Buddhist temple(400m)

[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

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 25 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 Telkhola 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 disaster 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 space 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.
- 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 06 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. A one-story school building is located on south side and another old building is located on north side which will be demolished during the pre-construction period and a new one will be constructed there. The south side of sub-project site is

surrounded by hill. Within the catchment area of the proposed site, a pond (50m-east), a cluster of human settlement (50m-south), a 8ft HBB road (20m-east) connecting to the Cox's Bazar-Teknaf Highway, are located within the close proximity. Telkhola Nurani Madrasa and mosque is located at 300 m north, while the Bidubon Buddhist temple is located at 400m west of the site. A khal named Tengrakhali khal is located on 500m south of the sub project. The area is surrounded by hills and tilas. 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 on the construction site and its very close surroundings, more likely to be generated during the pre, post and construction period. 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. 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. All these impacts can only be prevented or minimized by adopting measures delineated into the ESMP and good practice engineering and site management.

There is no evidence of presence of elephants in the 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.

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 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.

Intensity of precipitation has been seen to have increased in the past few years. The impact of cyclone has increased as per the report according to the participants in consultation meeting. 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, tube-well 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 shelter. As well as tree plantation along the school premises is suggested to subside the effect of precipitation anomaly along the school premises.

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

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, 10-12nos. of trees (small and medium size) will be cut down and as a mitigation measure, 50 nos. of trees will be replanted in the periphery of the school. Some important and close-by socio-environmental features and establishments such as a pond (50m-east), a cluster of human settlement (50m-south), Telkhola Nurani Madrasa and mosque (300m-north) and Bidubon Buddhist temple (400m-west) might get affected during the construction period with the generated noise, debris and dust, though for a small period of time. As part of the standard mitigation measures and site management practices, Contractor must adhere to the best practice wastes, dust and noise control measures (spraying of water at least twice a day, confining noisy works during the holidays, using muffler around the noisy parts of the machineries, controlling the vehicle speed limit within the site, etc.) to minimize the effects to the least level. Human and construction wastes 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. Special and strict care should be placed on preservation of surrounding hills and tillas. 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 around five lacs fifty seven 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 the local communities 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 **05 Lacs & 57 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 (Telkhola GPS)

Name of Sub-Project: Construction of 11 Multipurpose Disaster Shelter Steel Frame Building (LGED/EMCRP-W11)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 47,02,20,000 Tk.
Estimated construction period duration: 24 months
Estimated Operation and Maintenance period (life of sub-project): 15 years
District: Cox'sBazar **Sub-District**: Ukhiya **Union**: Palongkhali
Name of Community/Local Area: Telkhola
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, and another old building is located on the north within the school boundary and it will be demolished during pre-construction period and new one will be constructed there. An 8ft HBB road is passing by on the east side and is connected to the Cox's Bazar-Teknaf Highway.

The site surrounding is characterized by the presence of a pond (50m-east), a cluster of human settlement (50m-south), Telkhola Nurani Madrasa and mosque (300m-north) and Bidubon Buddhist temple (400m-west) within close proximity. A khal named Tengrakhali khal is located on 0.5 km south of the sub project. The project area is surrounded by hills and tilas.

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 camp.

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. A pond is located at 50m east, and a khal named Tengrakhali khal is located on 0.5 km south of the sub project. Telkhola Nurani Madrasa and mosque is located at 300 m north, while the Bidubon Buddhist temple is located at 400m west of the site. 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 project area is surrounded by hills and tilas. Some human settlements are found on south side of adjacent school boundary.

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

An existing old school building located on the north side within the boundary will be demolished at pre-construction stage and the proposed one will be constructed on the same piece of land.

Sub-project Location:

The sub-project area is situated in Palongkhali Union under Ukhiya Upazila of Cox's Bazar district, with geographic position at *21°18' 16.80"N and 92° 07' 11.7"E*. The distance from the Upazila headquarter is about 10 km. Nearby major road is Cox's Bazar- Teknaf highway, distance is 5km from the sub-project site. The school code is *99412020502*

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 wash block is also located within the boundary.

One khal named Tengrakhali khal is located on 0.5 km south of the sub project. No disturbance will is anticipated due to construction activities. Some human settlements are found at 50m east and a pond is found at 50m on the same direction from the 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 is found in the vicinity.

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).

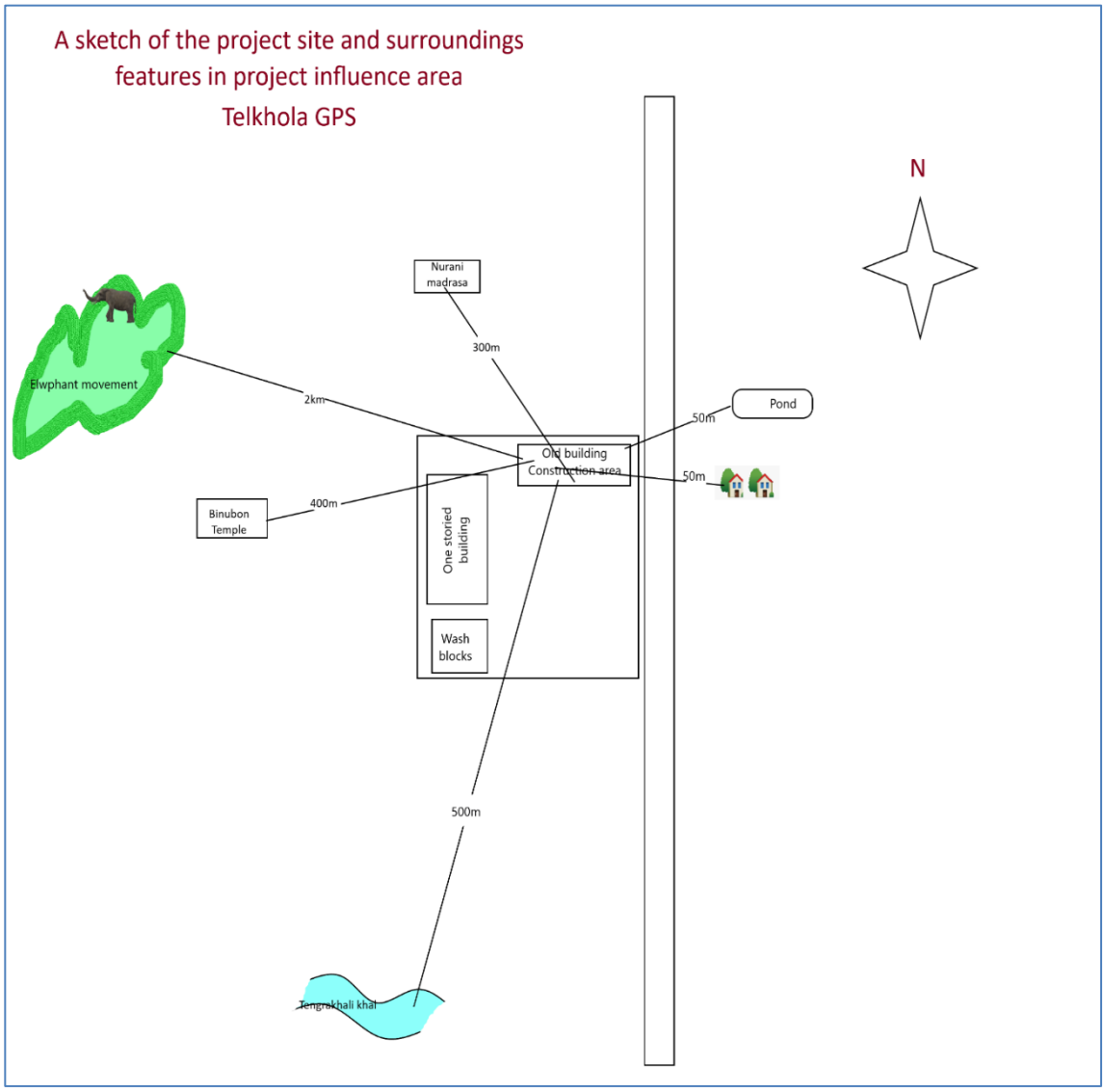
Section B: Environmental Screening

***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 Nurani madrasa with an adjoining mosque is found at 300m north side and a Buddhist temple named Binubon Temple is located at 400m west side of the sub-project area.

There is no sensitive environmental, cultural, archaeological sites exist 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 the surrounding hills/tillas and some dense and matured vegetation around the site. It will and must 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 motor cycle, tempo, auto rickshaw, tractor, trailer, etc. moving 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 deep tubewell is found within the school boundary and depth is 800 feet. In the sub-project area, deep groundwater is 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. A pond is found adjacent to the sub-project area but no disturbance or modification is anticipated by the sub-project. Local drain is located near the road side but no disturbance or modification will be found 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 on east side of adjacent the sub-project. It is connected to the Cox's Bazar-Teknaf highway. It is possible to carry the construction materials over this road to construction site.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: One deep tubewell is found within the school boundary and depth is about 800 feet. But the tubewells does not work properly in dry season, and students' suffering from the 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-at the pre-construction stage 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 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) 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. 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 the Cox's Bazar- Teknaf highway.
Location identification for raw material storage: On south side of the school field. 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 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. **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 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 viii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and ix) 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 reservoirs 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 within the school boundary. Though drainage channel along the adjoining road length and a pond 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 relating to 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 project sites, and no known areas of ecological interest, except the surrounding hills/tilas and a pond located at 50m 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: A HBB road connects the site with the Cox's Bazar-Teknaf Highway. The roads are mainly used as pedestrian access and by lighter vehicles like bicycles, three wheelers etc. therefore, during operation period traffic congestion is not expected. However, if not properly maintained and supervised, low effects of noise and air pollution will be occurred primarily because of the noise and emission from vehicular movement and loose soil being dispersed around during the dry weather, and accidents may occur due to bad condition of the access roads and unsafe driving through it.

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

Section D: Environmental Screening Summary

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan. • Effective GRM will be in place for efficient handling and redressal of every grievance.			
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. • Some human settlements located at 50m east. Further, a pond found at 50m east side of sub-project 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	Under the sub-project intervention the overall score is	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures.	Contractor, environmental specialists of PIU and D&SC	List of selected sites; Identified sources and storage place	During Design Stage

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

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Biodiversity (There are no protected areas in or around subproject sites, and no known areas of ecological interest.)	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialists of PIU and D&SC	If tree cutting required, to be determined during Design stage, Numbers of complaints from sensitive receptors	Monthly
	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	Contractor, environmental specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			separately.			
4. **Post-Construction Phase**	**Construction clean-up** (Damage due to debris, spoils, excess construction materials)	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; • All affected structures rehabilitated/compensated; • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document; • The contractor must arrange the cancellation of all temporary services;	Contractor	Worksite is restored to original conditions; worksite cleanup is satisfactory, camp has been restored to pre project conditions.	After the completion of Works
	Odor& waste disposal	Under the issue the overall score is low.	• Use bin covers and/or tarpaulins during transport of wastes.	Contractor 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	Contractor monitored by Consultant and	Worksite is restored to original	Over the completion of

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/ Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			the re-vegetation specification that forms part of the bidding document.	PIU	conditions;	Works

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

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

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

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

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

Appendix-2

Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for* Construction of 11 Multipurpose Disaster Shelter Steel Frame Building *(LGED/EMCRP-W11): Telkhola 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	PIU	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		paved.		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.	Contractor	Environmental Consultant of

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• 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	• 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	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
	construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Construction Activity	Pollution of water bodies	• Contractor will ensure monitoring of nearby surface and underground water bodies for signs of contamination. Parameter include: pH, TDS, TSS, Coliforms, Pb, Cd and Hg. Test results are to be compared with Bangladesh Environmental Quality Standards of DoE.	Contractor	Environmental Consultant of PIU/D&SC, PSC
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 &	Odours and pollution caused	• Preventative maintenance schedule should be followed.	SMC	UNO, Upazila

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Maintenance	by leaking latrines and faecal sludge impacting surrounding water bodies, flora and fauna			Chairman of Upazila Parishad
Operation & Maintenance	Maintenance of assets, properties and equipment	• Periodic maintenance of building structures, plumbing, water filtering and electric equipment has to be carried out. • Periodic cleaning and maintenance of solar panel, watering to the storage batteries and maintenance/replacing of associated equipment is to be ensured. • 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 per direction of the E.I.C.	2 persons	Monthly basis @Tk. 35,000.00 for 24 months. One person covering 6 shelters and another person for 5 shelters, i.e.	152,728

Sl no.	Description of item	Quantity	Unit price	Total amount
			35,000 Tk.*24 months* 2 Persons (1/11 for 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's and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person(twice: before and after construction start)	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 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,	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
	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			557,148

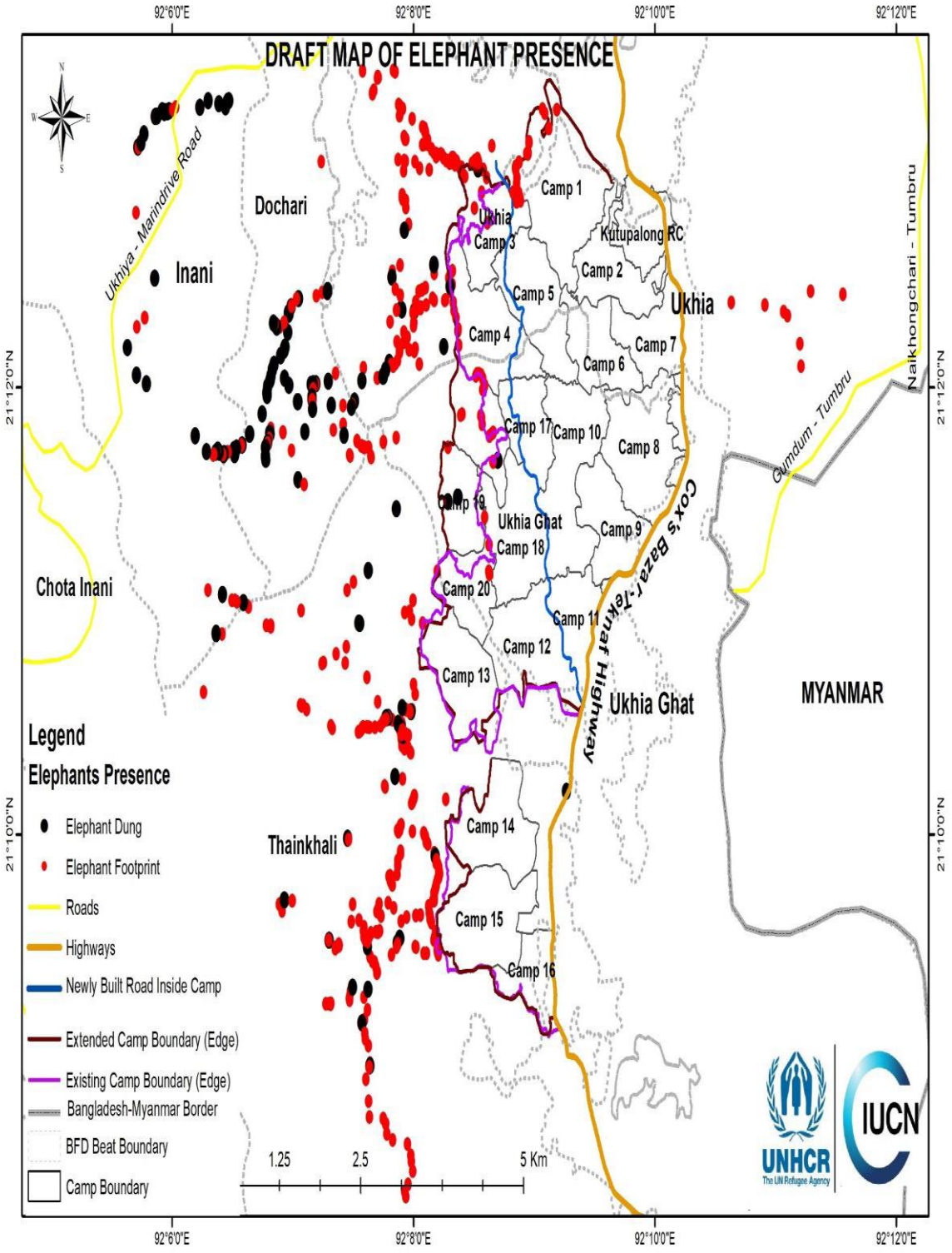
Cost of H&S Measures under COVID 19 Situations

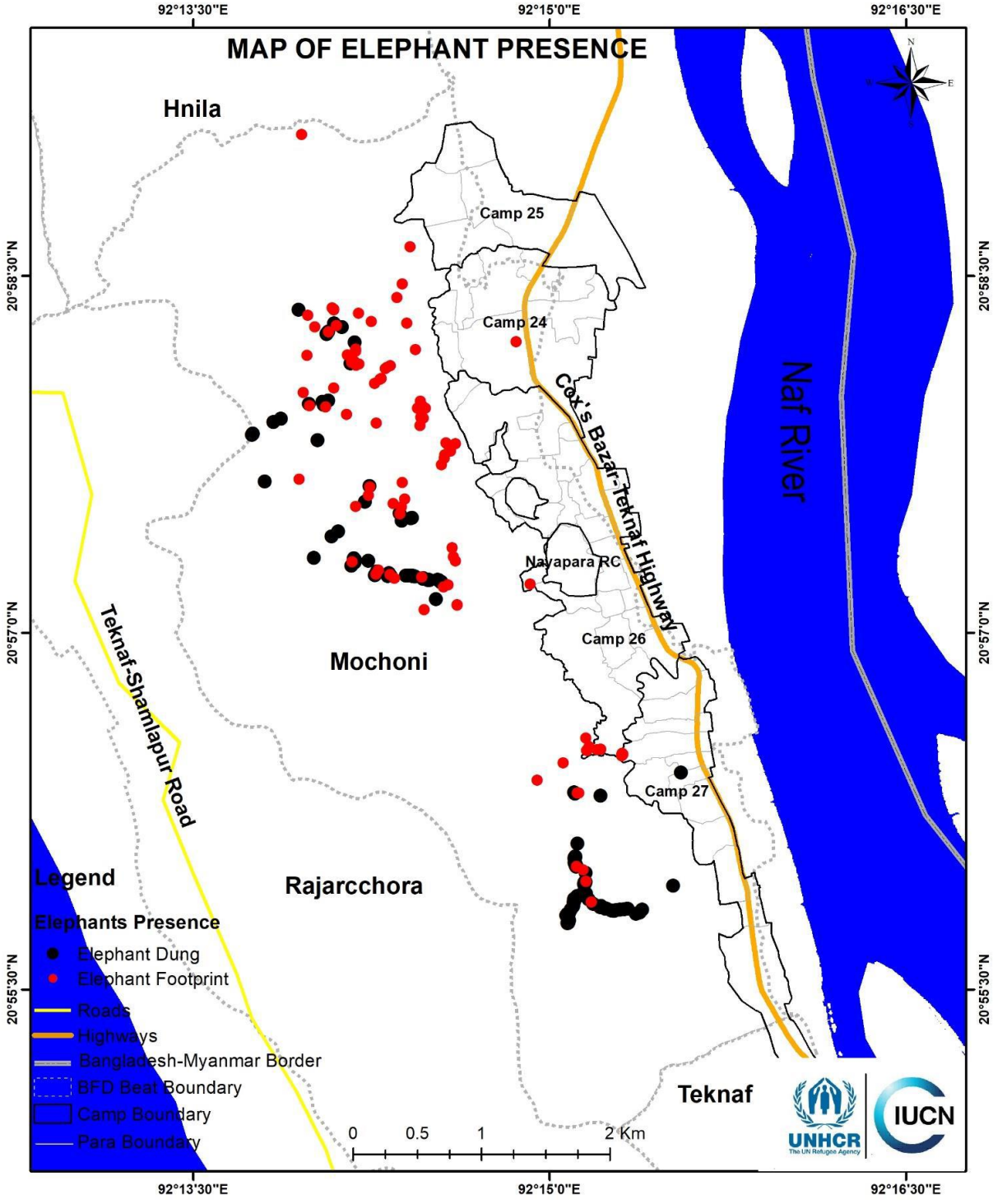
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 540 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-11).

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

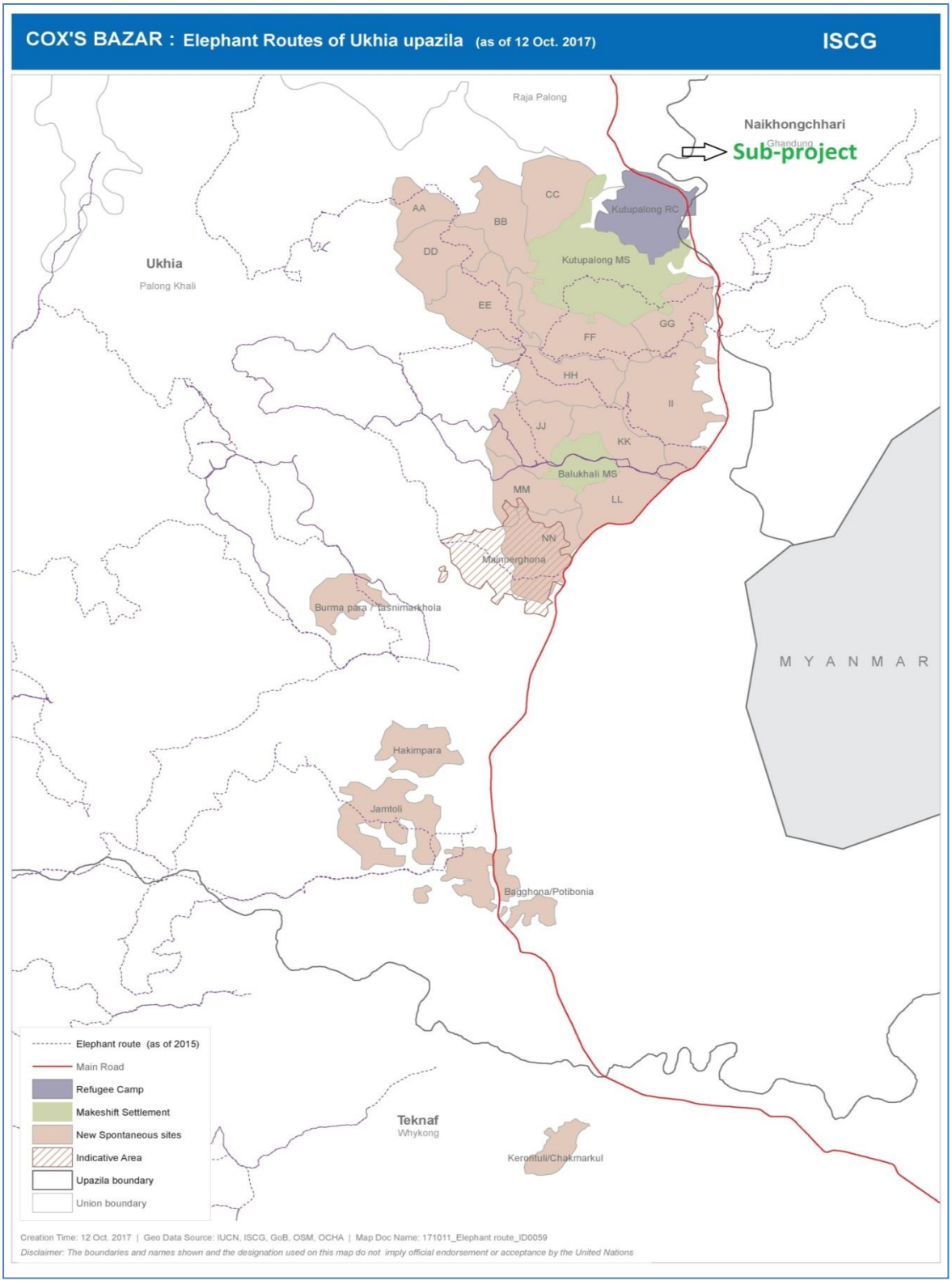
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close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


DRAFT MAP OF ELEPHANT PRESENCE
92°6'0"E
92°8'0"E
92°10'0"E
92°12'0"E
21°12'0"N
21°10'0"N
Ukhiya - Marindrive Road
Dochari
Inani
Chota Inani
Thainkhali
Ukhia
Kutupalong RC
Ukhia Ghat
MYANMAR
Naikhongchari - Tumbru
Gumdum - Tumbru
Cox's Bazar-Teknaf Highway
Camp 1
Camp 2
Camp 3
Camp 4
Camp 5
Camp 6
Camp 7
Camp 8
Camp 9
Camp 10
Camp 11
Camp 12
Camp 13
Camp 14
Camp 15
Camp 16
Camp 17
Camp 18
Camp 19
Camp 20
Legend
Elephants Presence
Elephant Dung
Elephant Footprint
Roads
Highways
Newly Built Road Inside Camp
Extended Camp Boundary (Edge)
Existing Camp Boundary (Edge)
Bangladesh-Myanmar Border
BFD Beat Boundary
Camp Boundary
1.25
2.5
5 Km
UNHCR
The UN Refugee Agency
IUCN



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: 2:00 PM Date: 06.11.19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ Teknaf
মত বিনিময়ের তারিখঃ 06.11.19

কোড নংঃ
স্থানঃ Teknaf
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ Ukhiya
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১	আওকত আলী	৬৮	পুরুষ	তেলখোলা	
২	দীপন কান্তি দাশ	৫০	,,	তেলখোলা	
৩	ফাতেমা ছিদ্দিকা	২৮	মহিলা	তেলখোলা	
৪	মোহাম্মদ আলী	৭১	পুরুষ	তেলখোলা	
৫	মনিক চাকমা	৫২	ঐ	ঐ	
৬	মংচুথোং ,,	৫৯	ঐ	ঐ	
৭	ওহিউল আলম	২৩	ঐ	ঐ	
৮	আফাইল আহমদ	৫৫	ঐ	ঐ	
৯	নুরনাহার বেগম	২৯	মহিলা	ঐ	
১০	হুমুদা বেগম	৩২	ঐ	ঐ	
১১	মনজুরুল চাকমা	৫২	পুরুষ	ঐ	
১২	আবুল হাসেম	৫১	ঐ	ঐ	
১৩	মোহাম্মদ হোছন	৪৯	ঐ	ঐ	
১৪	জিয়া হোছন	৫৫	ঐ	ঐ	
১৫	নিয়ামত চাকমা	৬৬	ঐ	ঐ	
১৬	নিয়ামত ,,	৬৫	ঐ	ঐ	
১৭	আবেকুন্নাহার	৩৫	মহিলা	ঐ	
১৮	আমির হোছন	৩৬	পুরুষ	ঐ	
১৯	দানাচিং	৪৭	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 নংঃ
স্থানঃ
ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
২০	মজিবুর রহমান	৪৫	পুরুষ	উখিয়া	
২১	বেলাল উদ্দিন	২৯	ঐ	ঐ	
২২	শামসুল আলম	৭৫	ঐ	ঐ	
২৩	নুরুল আমিন	২৯	ঐ	ঐ	
২৪	পাহাংক্য চাকমা	৪০	ঐ	ঐ	
২৫	দীপন চাকমা	৫২	ঐ	ঐ	
২৬					

Public Consultation Participants' List