



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Local Government, Rural Development and Co-operatives
Local Government Division
Local Government Engineering Department

Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

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Design and Supervision Consultancy

Environmental Screening Report

For Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id: 422944031
with culverts and side drains

Under the package no. EMCRP/W18

November-2020





ACRONYMS

BOQ	Bill of Quantities
BFS	Brick Flat Soiling
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
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UE	Upazila Engineer
UNHCR	The United Nations High Commissioner for Refugees
UNO	Upazila Nirbahi Officer
VAT	Value-Added Tax
WB	World Bank

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Hosting Community and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as preparation of school cum cyclone shelters, facilitating growth centers and RCC Bridge development, road development works are highly significant to ensure all branches of interventions are welded together. Local Government Engineering Department (LGED) as the implementing agency with D&SC (Development Design Consultants Limited-DDC) identifies the project beneficiary as Displaced Rohingya Population (DRP) and Hosting Community or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements has been carried out in accordance with guidelines from World Bank; as a result environmental and social screening reports has been produced along with worked out impact factors which are introduced with mitigation and management measures. In order to present a quick picturesque of the proposed component, an overview is given hereunder.

This proposed Ukhiya Darogabazar GC to Hijalia via Harinmara Road belongs to Hajirpara, Khairatipara, Horinmara villages at Rajapalong union, Ward-6 under Ukhiya Upazila. This road starts from Dhusori road stretching 2039 meters from east to west side. Some dispersed human settlements are present along the road, though at sufficient distance from the alignment. There are some important socio-cultural and religious components along the road length, including Kahairatipara mosque (500m), Khairatipara GPS (450m) are at north side, at south side Hajirpara notun mosque (500m), at east side Hajirpara bill (100m) and at west side West Hajirpara mosque including Hefjakhana (300m). No significant disturbances by the construction of this road component are anticipated.

The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient

roadways and associated safeguard facilities. Since the road will not pass through any sensitive areas of any kind and necessary environmental conservative, mitigation and offsetting measures will be adopted with due care and diligence during the construction period, the component should be taken undoubtedly in further consideration for development.

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ 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 923,033². 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 effects.

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. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

The sub-project has the primary target to improve the communication facilities of the area. This intervention, without a doubt facilitates the following: it will

- ✓ Support to rural development along with education, business, agriculture, farming etc.

¹ ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)

² IOM Needs and Population Monitoring round 12 as of October 10, 2018

- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **‘Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District’**; with a package name-EMCRP/W18.

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W18: Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District:

Improvement of (1) Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id: 422944031 (2) Nalbania pry. School Road, Id: 422944032 (3) West diglia road, Id: 422944034 (4) Bottali-Chagol Bazar Road, Id: 422944040 (5) Ratnapalong Boddho Mondir Road Id:422944062 and (6) Rumka-Sabek Rumka pry. School Road, Id: 422944044 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (1) Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031

Component Location:

i. ID-422944031	ii. Ward No.: 6	iii. Mouza: Rajapalong
iv. Village: Hajirpara	v. Name of Union: Rajapalong	
vi. Name of the Upazila: Ukhiya		
vii. Construction Year: 2020-2021	viii. Length (m): 2039	ix. Width (m): 4.9-5.5
Distance from UZHQ: 0.5 Km.		
GPS Coordinates	Latitude Value: 21°14'35.15" N (Starting Point)	
	Longitude Value: 92°07'55.36" E (Starting Point)	
	Latitude Value: 21°14'47.0" N (Ending Point)	
	Longitude Value: 92°06'55.7" E (Ending Point)	
Condition of Road	Brick Flat Soiling (BFS), Earthen	
Communication Source	Radio & Mobile Network	

Subproject interventions:

- Bituminous Carpeting options.
- 1no. Cross Drain (dimension: 0.750mX 0.750m) at 1434m of chainage
- 1 no. Box Culverts (dimension: 2.0mX2.0m) at Ch. 1945m, 4 nos. (dimension: 3.0mX2.0m) at Ch. 439.0m, Ch. 550.0m, Ch. 835.0m & Ch. 1786.0m and 1 no. (dimension: 3.0mX3.0m) at 1693.0m of chainage
- 320.0 m L-Drain at different chainage
- 61.0m U-Drain at different chainage
- 90.0m (1.5m height) Toe wall
- 169.0m Brick Palisading wall
- RCC Retaining wall (36.0m length and 3.0m height) and (36.0m length and 4.0m height) with Pre-cast RCC Pile (6.0m length) at different chainage
- Road safety work and

<ul style="list-style-type: none"> • Environmental Mitigation work
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period: 2020-2021
Estimated total cost of component: 43,888,331.71 (Tk.)

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. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the consultation meeting with local community from 04:30 PM to 05:50 PM on 29 January, 2020 at Hajirpara Notun Mosque Point which is adjacent of the sub-project location, Refer to **Figure 2.1.1**, Public Consultation Participants List are attached in **Appendix-5**. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants on environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

The participants were spontaneous and expressed that the sub- project will provide them various benefits including communication and transportation facilities. They also expressed that at present they are facing various types of problems due to this unimproved condition of the road.

Discussion was also made on various environmental issues like dust/air pollution, water pollution etc. which are potential environmental hazards during road construction. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase.

2.3 Suggestions and recommendations of the participants

The significant suggestions that came out during the meeting are given below:

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

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. 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 is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several community, agricultural lands and community level forest. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps.

Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Kahairatipara mosque (500m), Khairatipara GPS (450m), at south side is Hajirpara notun mosque (500m), at east side Hajirpara bill (100m) and west side is West Hajirpara mosque including Hefjakhana (300m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).

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. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

3.3.1 General Consideration

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 Bank³ 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. 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, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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 plantation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific Consideration

The sub-project area is not adjacent to the sea. The cyclone has higher impact in the area and water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge was not reported in the vicinity of the subproject. Temperature was reported to be increased and Thunder storm is found to have highest impact in the area. Thunder storm has been seen create more damage than before but no casualty was reported.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of-the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sqm for a single arrester. In addition, tree plantation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

³ <https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf>

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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.

The proposed road is on plain land. A number of trees of road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree in the periphery of the subproject. Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Kahairatipara mosque (500m), Khairatipara GPS (450m), at south side is Hajirpara notun mosque (500m), at east side Hajirpara bill (100m) and west side is West Hajirpara mosque including Hefjakhana (300m) from the proposed improvement site.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. On the other hand, some part of the proposed road is passing by the agricultural land. So, 1no. Cross Drain (dimension: 0.750mX 0.750m) at 1434m of chainage and 6 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 1945m, 4 nos. (dimension: 3.0mX2.0m) at Ch. 439.0m, Ch. 550.0m, Ch. 835.0m & Ch. 1786.0m and 1 no. (dimension: 3.0mX3.0m) at 1693.0m of chainage will be constructed at the subproject area for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. Some small hills or high land is found beside the road. As a mitigation measure, 320.0 m L-Drain at different chainage and 61.0m U-Drain at different chainage will be constructed for drainage mountain eel water during rainy season. Due to the low land in different chainage of the road 90.0m (1.5m height) Toe wall, 169.0m Brick Palisading wall and RCC Retaining wall (36.0m length and 3.0m height) and (36.0m length and 4.0m height) with Pre-cast RCC Pile (6.0m length) at different chainage will be constructed for mitigation measure. 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. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific environmental 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.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf Upazila of Cox's Bazar district in order to offset the environmental and ecological devastation, that had been occurred due to the evolution of Rohingya Crisis, to an achievable level. Many of these road lengths will go through and by the Rohingya Camps, up on the hill and are already denuded of trees or vegetation. Local Government Engineering

Department (LGED) will allocate and channelize the finance to the Forest Department under the said additional financing component and oversee the progress of works with due diligence. However, this enhancement work will improve the environmental quality of the area and reinstate some parts of the ecosystem services to those areas, though primarily.

4.2 Health and Safety Measures under COVID situation

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

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

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

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

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 LIMITATIONS OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing 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.



Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District; EMCRP/W18).

Name of the component: Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031

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

Estimated total cost of sub-project (in Taka): 197,069,106.42 (including provisional sum)

Estimated construction period duration: 9 Month

Estimated total cost of the component (in Taka): 43,888,331.71

Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies on how long projects can operate in the camps.

District: Cox's Bazar

Sub-District: Ukhiya

Union: Rajapalong

Name of Community/Local Area: Hajirpara, Khairatipara, Horinmara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road and construction with Bituminous Carpeting options. For drainage of rain water 1no. **Cross Drain** (dimension: 0.750mX 0.750m) at 1434m of chainage and 6 nos. **Box Culverts** accordingly 1 no. (dimension: 2.0mX2.0m) at Ch. 1945m, 4 nos. (dimension: 3.0mX2.0m) at Ch. 439.0m, Ch. 550.0m, Ch. 835.0m & Ch. 1786.0m and 1 no. (dimension: 3.0mX3.0m) at 1693.0m of chainage, for mountain eel water drainage during rainy season **320.0 m L-Drain** at different chainage and **61.0m U-Drain** at different chainage has been included in the estimation. Due to the low land in different chainage protection work of the road 90.0m (1.5m height) Toe wall, 169.0m Brick Palisading wall and RCC Retaining wall (36.0m length and 3.0m height) and (36.0m length and 4.0m height) with Pre-cast RCC Pile (6.0m length) at different chainage as well as road safety work and Environmental Mitigation work has been included in the estimation.

Estimated footprint / land area for this sub-project is 9,991.1 sqm.

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

This proposed Ukhiya Darogabazar GC to Hijalia via Harinmara Road belongs to Hajirpara, Khairatipara, Horinmara villages at Rajapalong union, Ward-6 under Ukhiya Upazila. This road has started from Dhusori road stretching 2039 meters from east to west side, along with Konarpara village (500m), Khairatipara village, Kahairatipara mosque (500m), Khairatipara GPS (500m), Hajirpara notun mosque (500m), West Hajirpara mosque including Hefjakhana 300m), Hajirpara bill (100m).

Important Environmental Features (IEFs) near site:

Detail Chainage Length of the sub-project: 2039m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Detailed Chainage length of the Sub-Project

Chainage	Left	Right	Environmental Impact
"0" Point 000-300	L		Agricultural field, bamboo fencing, household connecting road to left, RCC bridge, agricultural field
		R	Open space, big trees, permanent settlement (paka), tin shed fencing, bamboo fencing, Khal, connecting bamboo made bridge, bamboo bushes, bamboo fencing, household connecting road to right, Brick boundary wall, permanent settlement, bamboo fencing
300-600	L		Agricultural field, culvert, big trees, shop, household connecting road to left, bamboo fencing, bushes, bridge, protection wall, small slab
		R	Agricultural field, big trees, household connecting road to right, tin shed fencing, culvert
600-900	L		Agricultural field
		R	Agricultural field
900-1200	L		Bridge, shop, big trees, tin shed fencing, pond
		R	Agricultural field, bamboo fencing, household connecting road to right, brick boundary wall, permanent settlement, bamboo fencing, tin shed fencing
1200-1500	L		Shop(1317m), household connecting road to left, open space, bamboo fencing, bamboo bushes, tila, bamboo fencing, bamboo bushes, household connecting road to left, agricultural field, culvert, tila, betel leaf yard
		R	Tin shed fencing, bamboo fencing, tila, permanent settlement, bamboo fencing, agricultural field, bamboo bushes, bamboo fencing, bushes, tila
1500-1800	L		Bushes, agricultural field, small trees, culvert, household connecting road to left, Mosque, brick boundary wall
		R	Bushes, agricultural field, culvert, open space, bamboo fencing
1800-2100	L		Electric pole, bamboo fencing, household connecting road to left, bushes, agricultural field, vegetable garden, small trees,
		R	Open space, tila, bamboo fencing, electric pole, household connecting road to right, big trees, bamboo fencing, vegetables garden, electric pole, big trees, bamboo fencing, earthen household, bamboo fencing



Figure: Starting Point of Ukhiya Darogabazar GC to Hijalia via Harinmara Road

Overall Comments

DDC conducted consultation meeting with host community regarding the sub-project activities. Local 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 local individuals were participated in participatory public consultation meeting. Local communities have no objection to construction this sub-project. The community also appreciated the initiative for having easily accessible and passive their emergency situation. The proposed sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental setting of the area thus not going to create intimidation to important environmental features. No drainage congestion/water logging has been observed in the road area. But, some local trees like betel nut, rain tree etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and cross drains, culverts have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season. The proposed Sub-project area for the construction included flat areas and moderate hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any 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.

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 brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic, fuel etc. in equipment yards. Human wastes might be deposited 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. This sub-project is situated within Hajirpara, Khairatipara, Horinmara villages under Rajapalong union, Ward-6 of Ukhiya Upazila, Cox's Bazar. Some sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site are at north side Kahairatipara mosque (500m), Khairatipara GPS (450m), at south side Hajirpara notun mosque (500m), at east side Hajirpara bill (100m) and west side West Hajirpara mosque including Hefjakhana (300m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. 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.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 8-9 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

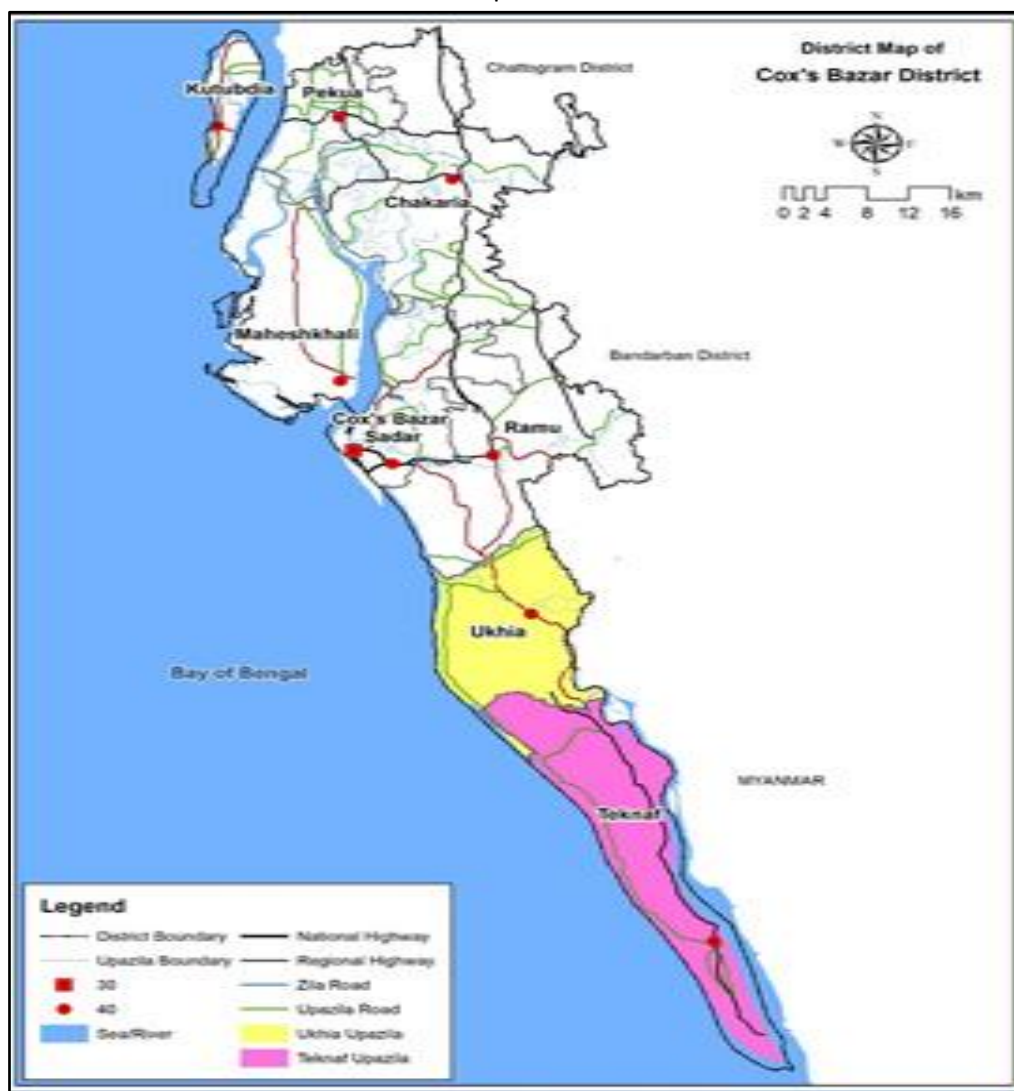


Figure 3: District Map with project location

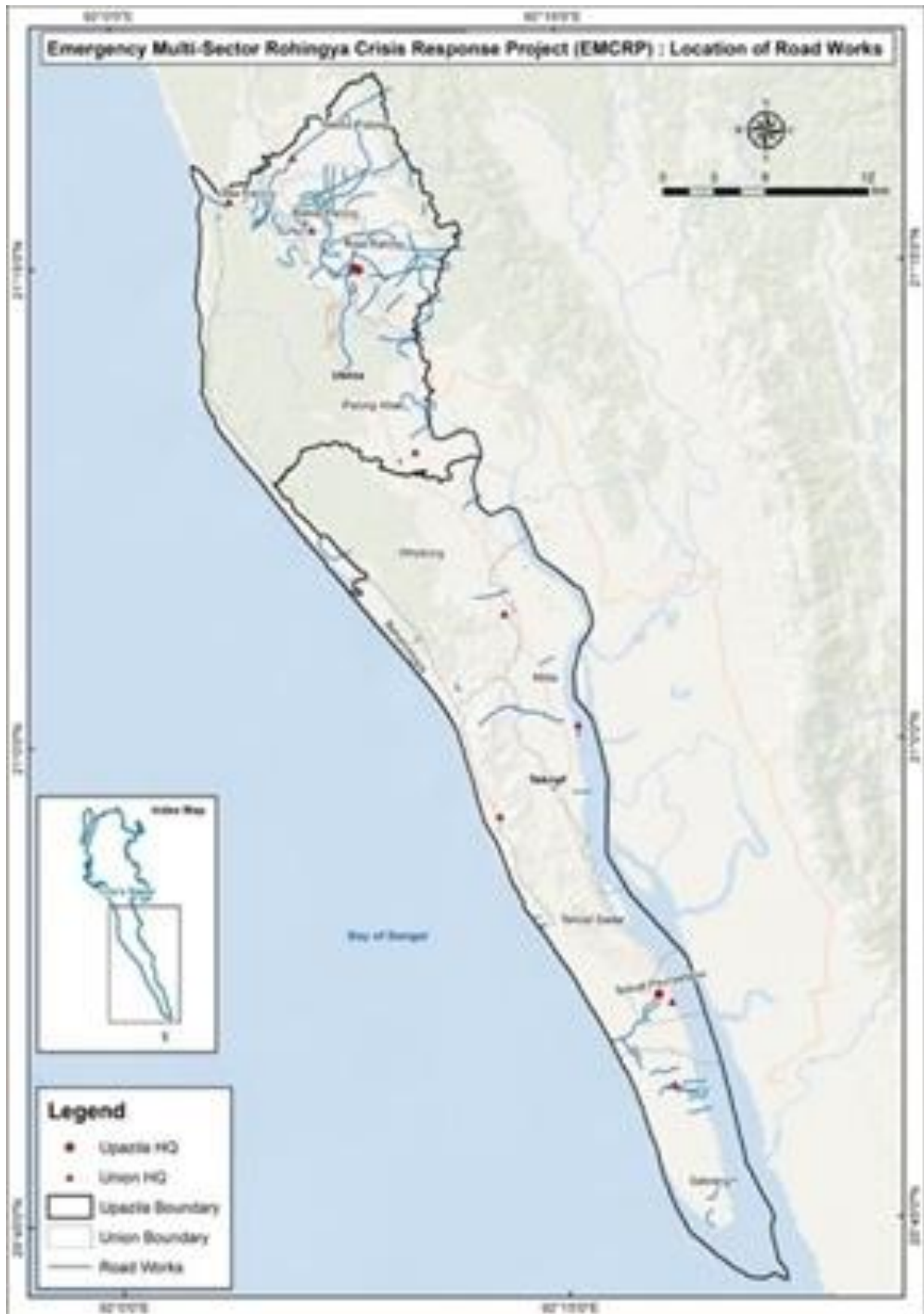


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

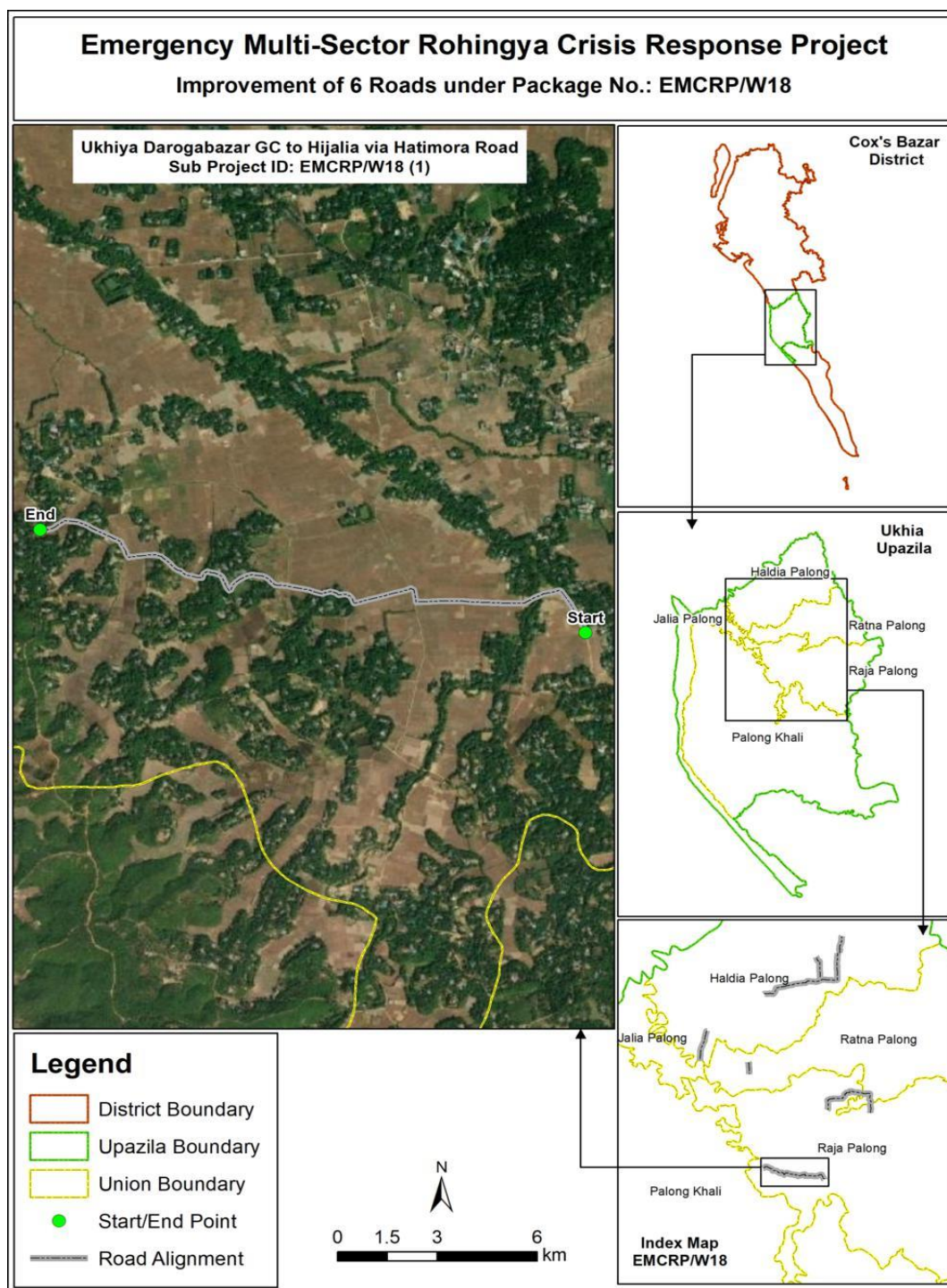


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road. Based on field survey, this sub-project involves of Brick Flat Soiling (BFS) and earthen. According to the design this sub-project will be developed with Bituminous Carpeting (BC) from Ch. 00 to Ch. 2039m.

Sub-project Location:

Important Features	
ID	422944031
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
WARD	06
Total Chainage	2039m
Proposed Chainage	2039m
Road Type	Village Road
Proposed Intervention Type	Bituminous Carpeting (BC)
Road Starting Point Coordinates	Latitude: 21°14'35.15" N Longitude: 92°07'55.36" E
Road Ending Point Coordinates	Latitude: 21°14'47.0" N Longitude: 92°06'55.7" E
Land ownership	
Land is owned by Government.	
Expected construction period: 9 (Nine 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:	
<ul style="list-style-type: none"> i) The proposed Sub-project is located within Hajirpara, Khairatipara, Horinmara villages. Some other villages named Konarpara, Chengkhola, Dhusori within one kilometer. ii) No historical sites were found iii) Not required to relocate local community. iv) Some trees will be affected. v) Very low chance of loss of agricultural land. vi) Some Household Boundary made of bamboo and tin may need adjustments. vii) Environmental Sensitivity: No mentionable eco concerned establishment, no socio-cultural site and elephant corridors (Checked with local IUCN representative). 	

Section B: Environmental Screening

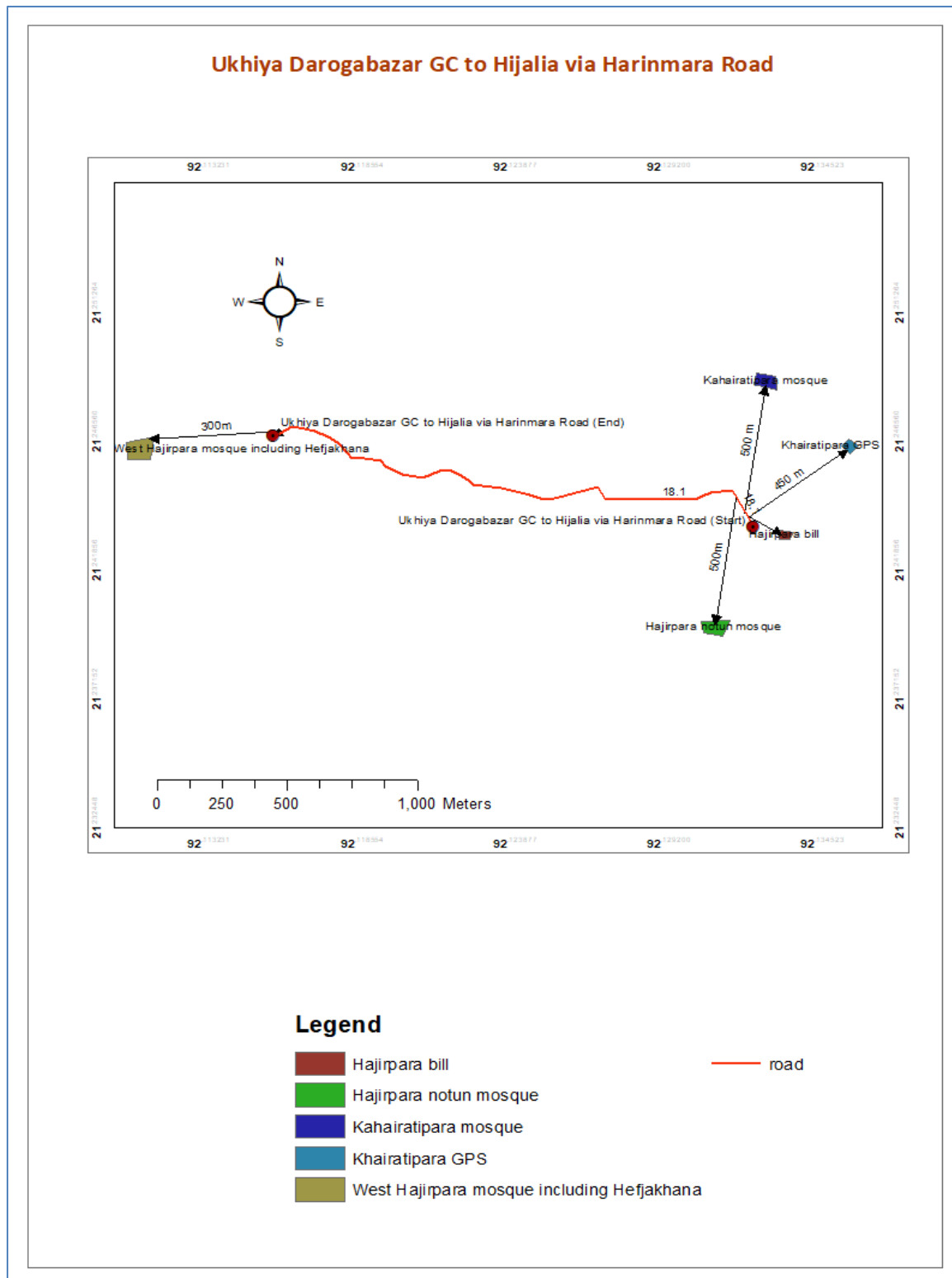
B.1: Environmental feature of sub-project location

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:

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including at north side Kahairatipara mosque (500m), Khairatipara GPS (450m), at south side is Hajirpara notun mosque (500m), at east side Hajirpara bill (100m) and west side is West Hajirpara mosque including Hefjakhana (300m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. Apart from this structure no other sensitive environmental, cultural, archaeological, religious sites exists.

A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas (within 30m buffer zone) are shown below



Location of environmentally important and sensitive areas:

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

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

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 subproject boundary)

(3) Other issues:

No more mentionable issues rose.

*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 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 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, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Landslide potential is low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. The impacts are negative but very small scale, site-specific within a relatively small area and adjustable by mitigation measures.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 100 feet and deep tubewell depth is 500 feet. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

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 681 μ s/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 across the road side of the proposed subproject area 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):

South Horinmara road is located at the end of proposed subproject. Concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce.

Possible location of labor camps:

Labor camp can be established along the road since there are available open private lands. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.

Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) steels viii) Bitumen are the most common type of road materials used in construction.

Identification of access road for transportation (Yes/No):

Yes. The brick soling road can offer space adjacent labor camp to facilitate material unloading. However, considerations need to be taken account for avoiding disturbance at points where mosque, graveyard, primary school and high school is located. The pickup trucks as material transportation vehicles can enter the access road. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Earth/ mud, plastics, brick chips, cement dusts, dust from bricks, steel wires, during construction which can be identified as solid wastes. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Residual waste from the labor camps will be generated. Equipment maintenance/vehicles on-site and scrap material will occur during construction work which is mostly solid wastes. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 350 kg.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most common type of road materials used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito

<p>breeding and other disease vectors: (High/Medium/Low with explanation)</p> <p>The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.</p>
<p>Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)</p> <p>No pre - existing drainage channel is found.</p>
<p>Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)</p> <p>Low. Because under this interventions, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.</p>
<p>Activities that can lead to landslides, slumps, slips and other mass movements in road cuts:</p> <p>Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.</p>
<p>Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)</p> <p>Low, Potential erosion may occur when moderately to highly sloping terrains are disturbed for the improvement of sub-project. The impacts are negative but short term, site specific within a relatively small area and adjustable by mitigation measures.</p>
<p>Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:</p> <p>No traffic movement impacts on light but low effects of noise and air pollution.</p>

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

<p>Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:</p> <p>No</p>
<p>Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)</p> <p>No</p>
<p>Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)</p>

No.
<p>Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation)</p> <p>There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.</p>
<p>Likely direct and indirect impacts on economic development in the project areas by the sub-project:</p> <p>Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.</p>
<p>Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes):(High/Medium/Low with description)</p> <p>No existing drainage channels or surface water bodies found in the project area, therefore, no such effect can be anticipated</p>
<p>Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)</p> <p>There are no protected areas in or around project sites, and no known areas of ecological interest.</p>
<p>Activities leading to landslides, slumps, slips and other mass movements in road cuts:</p> <p>The entire sub-project component area is nearly flat, thus no such type of impacts is anticipated.</p>
<p>Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains:(High/Medium/Low with explanation)</p> <p>No</p>
<p>Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:</p> <p>Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.</p>

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

Please summarize the results of environmental screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in Section 8.2 of ESMF. This table needs to be completed by environmental specialists. Please add rows to the table as necessary.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
1: Sub-Project Interventions	Air quality	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection; 	Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> 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 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> No visible degradation to nearby drainages, khals or water bodies due to soil erosion. Rain storms in construction phase. 	Monitoring as weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>and covered.</p> <ul style="list-style-type: none"> 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 construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. 			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> 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. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to nearby drainages, 	Water quality test (mainly GW) twice during the construction period in six months interval.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					<p><i>khals</i> or water bodies due to construction activities.</p> <ul style="list-style-type: none"> Records should be kept and logged. 	
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health & Safety orientation trainings; Condition of sanitation facilities for workers 	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Record of regular inspection. Record of accidents/incidents 	Monthly monitoring.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Storage of construction materials	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Orienting concerned person and team assigned for the construction work. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • List of materials and sources of materials; 	During implementation phase, as necessary with discussion with PIU, Consultant
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Complaints from community; • Regular inspection of waste management activity; • Waste disposal record. 	As work weekly progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil	Under the sub-project intervention, the overall score is low.	<ul style="list-style-type: none"> • During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or 	Contractor, environmental specialist of D&SC	<ul style="list-style-type: none"> • Location of road alignment and slope. 	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	erosion and landslides)		toe of the road embankment remain within the right of way and does not disturb the crop.			
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low .	<ul style="list-style-type: none"> With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. 	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and	Under the sub-project intervention, the overall score is low .	<ul style="list-style-type: none"> 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 specialist of D&SC	<ul style="list-style-type: none"> Complaints from community; 	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	productivity)					
	Noise pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB) 	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. 	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road 	Construction Contractor, environmental specialist of D&Sc.	<ul style="list-style-type: none"> • Complaints from communities, pedestrians 	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>speed limits.</p> <ul style="list-style-type: none"> The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. Local residents should be kept informed about planned Works 			
4. Post Construction	Road Safety	Under the issue the overall score is low .	<ul style="list-style-type: none"> Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate traffic detours, and sufficient signage & warning signs, Post speed limits and suitable bending on the road. The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. 	Construction Contractor, environmental specialist of D&Sc	<ul style="list-style-type: none"> Road signage and safety instruments at suitable locations and chainage 	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is low .	<ul style="list-style-type: none"> Replantation of trees during monsoon period Maintain of trees properly Check survival of trees and replant the dead trees 	Construction Contractor, environmental specialist of D&Sc	<ul style="list-style-type: none"> Number of complaints from stakeholders; Records of trees number and tree plantation inspection; 	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is low.	<ul style="list-style-type: none"> No advertisement/boardings shall be allowed within the Right of Way limits of the project road. Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. Clear smooth speed breaker/rough surfaces should be clear in views. Regular maintenance of road surface and shoulders. 	LGED	<ul style="list-style-type: none"> Number of complaints from stakeholders; 	During Operation under LGED's regular maintenance program in each 3 years.

* 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

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 Access and evacuation Roads: Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> No land acquisition is allowed within this sub-project activities <p>So, there are no any mitigation measures according to this impact.</p>	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	<ul style="list-style-type: none"> Under this subproject, there is no scope of negative impact of adjacent livelihoods 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	<ul style="list-style-type: none"> All of the project stakeholders should be consulted Separate community level consultation meeting with the potential affected HHs Consultation meeting with host communities about the project objectives and scope of works 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	<ul style="list-style-type: none"> Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	<ul style="list-style-type: none"> Selection of sub-project sites and all implementing interventions must take place outside of the 	PIU	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	conflict	elephant corridor/influence area.		PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	<ul style="list-style-type: none"> • Our selected sites avoided the low land near the water bodies or natural flow path to avoid the flash flood or any kind of surface runoff. • Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. • After completing the development we restored the place as like before to avoid the cut and fill operational problems. • This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. • Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. • The contractor ensuring sound environment for the local residents near the sub project site. 	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	<ul style="list-style-type: none"> • Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipments (PPEs) must be ensured in sites before starting any kinds of construction works. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	<ul style="list-style-type: none"> • Acceptable range of emission of CO, particulate 	Contractor	Environmental

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>matter [SPM (Suspended particulate matter), PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices</p> <ul style="list-style-type: none"> Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level 		Consultant of PIU, PSC
Construction Activity	Safety Issues	<ul style="list-style-type: none"> Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem Before works started Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. Records of every training must be kept at site. All kinds of Child labour are completely prohibited in every site. Every construction materials storage site will be well fenced by Tin and safety caution tape. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	<ul style="list-style-type: none"> Contractors will maintain proper route for traffic management which is to beconsulted with and confirmed by the Executive Engineer of Cox's Bazar. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	<ul style="list-style-type: none"> A detailed assessment of the available resources and consent of the local representative for 	PIU & Contractor	Social Development

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>withdrawal of water from existing surface water sources shall be taken.</p> <ul style="list-style-type: none"> • 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 works starts. 		Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	<ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	<ul style="list-style-type: none"> • 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 labour camps will be put in place • Treated water will be made available at site for 	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>drinking purpose.</p> <ul style="list-style-type: none"> Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through consultation. 		
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	<p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site After completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	<p>Health & Safety Risks:</p> <ul style="list-style-type: none"> 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, 	<ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. 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 	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
	hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	<p>appropriate to the nature of the potential fire.</p> <ul style="list-style-type: none"> 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 the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, 		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>heat stroke, and dehydration. Written records of this awareness training shall be kept on site.</p> <ul style="list-style-type: none"> Adequate quantities of drinking water will be available at all Sites, on different locations within the site. Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. 		
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	<ul style="list-style-type: none"> Preventative maintenance schedule should be followed. Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time. 	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site	<p>The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials 	<ul style="list-style-type: none"> Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder. 	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
clearance after the construction)	✓ Health & Safety risks to workers and local community			Bazar
Operation & Maintenance	Noise disturbances to fauna	<ul style="list-style-type: none"> Provision to maintain noise and vibration 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. 	UE (under the direct guidance of Executive Engineer)	UNO, PSC

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 the 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.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and 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. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.



- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use 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 the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite 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 a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, +8801714980171

Tanvir Ahsan Haque, Environmental Specialist, +8801688117059

Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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

Appendix-3: Cost of Environmental 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. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	<u>Grass Turfing</u> Turfing on embankment top and slope & 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)	5979.30 Sq.m	@38.15 Tk. Per sqm	228,110.30
2.	<u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	2039.0m	@ 2.56 BDT	5,219.84
3.	<u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	2 nos.	@12822.86 per toilet	25,645.72
4.	<u>First Aid Box</u> Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated	1 no.	LS @5000 Tk. Per box	5,000

SI no.	Description of item	Quantity	Unit price	Total amount
	and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.			
5.	<u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge.	1 no.	LS @ Tk. 30,000	30,000
6.	<u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge.	1 no.	LS @ Tk. 15,000	15,000

SI no.	Description of item	Quantity	Unit price	Total amount
7.	<u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	LS	LS @ Tk 30,000	30,000
8.	<u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroj, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet.	200 nos.	@ Tk. 1000	200,000
9.	<u>Motivation training</u> 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.	1 no.	LS @ Tk. 10,000	10,000



SI no.	Description of item	Quantity	Unit price	Total amount
10.	<u>Waste disposal facility</u> 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.	LS	@ Tk. 5000	5,000
11.	<u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area 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.	LS	@ Tk. 5000	5,000
12.	<u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	1 no.	LS @ Tk. 30,000	30,000
13.	<u>Environmental management</u> 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. <u>[One person to be appointed for W18(1), W18(2) & W18(3)]</u>	12	@ Tk. 35000	420,000
	Subtotal Bill: Environmental facilities			1,008,975.86

Cost of H&S Measures under COVID 19 Situations

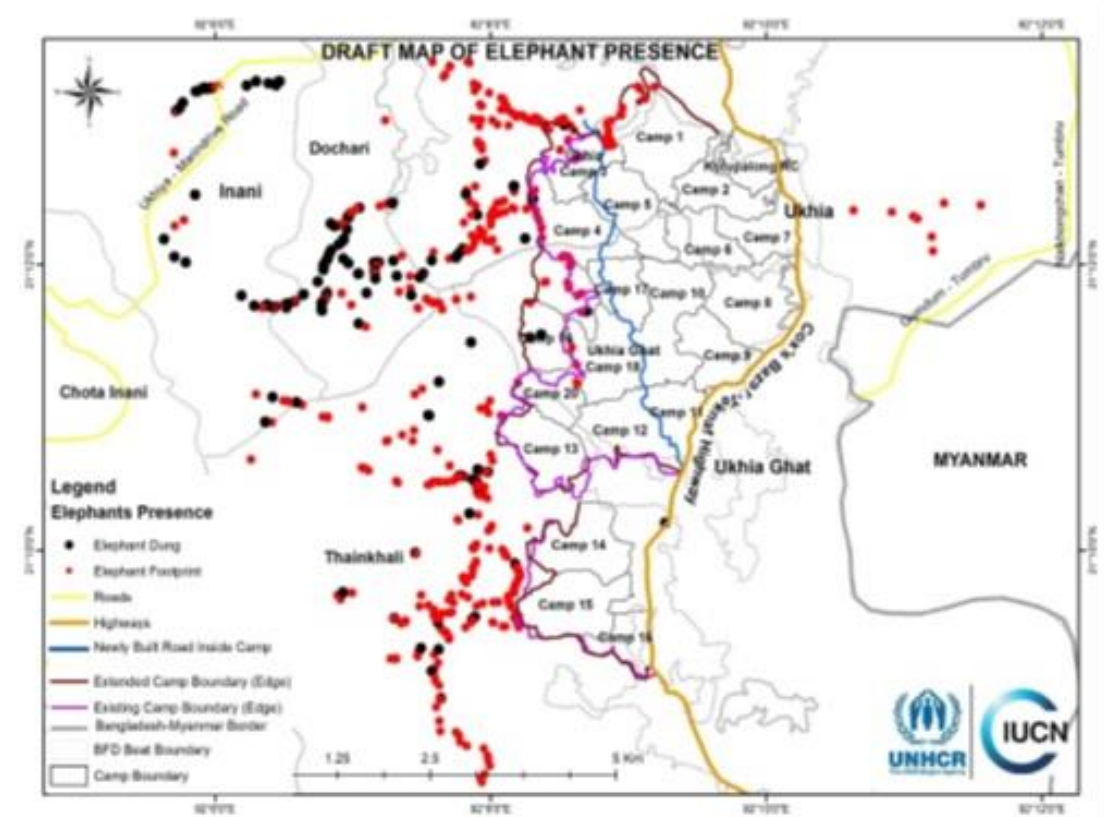
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 40 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-18.1).

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. 45 people a day and showering of 40 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	24 nos. for each site		N/A	400.00	24	9,600.00	For labors who work in close contact, 24 in each site



Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	5 nos. each day in each site		N/A	12.00	1350	16,200.00	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	40 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	2 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						121,325.00	

Appendix-4: Elephant Presence Map



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

Appendix-5: Attendance of participants in the Consultation Meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
অসহায়ী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাশ্টি সেবায় প্রকল্প
 Local Government Engineering Department (LGED)
 Public Consultation Participants List
 Communication and Participation Programme
 Focus Group Discussion

সময়: 4:30 Pm Ukhiya Daroga Bazar Road তারিখ: 29/01/2020
 উপ-প্রকল্প/কমপোনেন্ট এর নাম:
 মত বিমোহন স্থান: Hajire parca - Notun Mosque - Point
 ইউনিয়ন: Rajapalong ওয়ার্ড নং: 6 ডাকঘর: Ukhiya উপজেলা: Ukhiya জেলা: কক্সবাজার

অংশগ্রহণকারীদের তালিকা (পরিচয় ও স্বাক্ষর):

ক্রম নং	নাম	বয়স	পুরুষ/মহিলা	গ্রাম	স্বাক্ষর/চিহ্নসহ
1	Mahmud Alam	46	✓	হাজিরা মায়া	মহম্মদ আলম
2	কবিঃ আবদুল হক	৬০	✓	হাজিরা মায়া	আবদুল হক
3	মুহাম্মদ হুসৈন	৬০	✓	হাজিরা মায়া	মুহাম্মদ হুসৈন
4	মিঃ আলী হুসৈন	45	✓	হাজিরা মায়া	মিঃ আলী হুসৈন
5	জাহাঙ্গীর আলী	40	✓	হাজিরা মায়া	জাহাঙ্গীর আলী
6	হাজিরা মায়া	35	✓	হাজিরা মায়া	হাজিরা মায়া
7	মুহাম্মদ	66	✓	দোহরা	মুহাম্মদ
8	মুহাম্মদ	43	✓	দোহরা	মুহাম্মদ
9	আলী আবদুল	36	✓	দোহরা	আলী আবদুল
10	মুহাম্মদ হুসৈন	40	✓	হাজিরা মায়া	মুহাম্মদ হুসৈন
11	মুহাম্মদ হুসৈন	26	✓	হাজিরা মায়া	মুহাম্মদ হুসৈন
12	মুহাম্মদ হুসৈন	51	✓	দুহুরি	মুহাম্মদ হুসৈন
13	মুহাম্মদ হুসৈন	55	✓	হাজিরা মায়া	মুহাম্মদ হুসৈন
14	মুহাম্মদ হুসৈন	65	✓	হাজিরা মায়া	মুহাম্মদ হুসৈন
15	মুহাম্মদ হুসৈন	77	✓	হাজিরা মায়া	মুহাম্মদ হুসৈন

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-project Component Sites



Existing Surroundings of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Local Government, Rural Development and Co-operatives
Local Government Division
Local Government Engineering Department

Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

For Nalbania pry. school Road, Id:422944032,
with culverts and side drains

Under the package no. EMCRP/W18

November-2020



ACRONYMS

BOQ	Bill of Quantities
BFS	Brick Flat Soiling
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
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UE	Upazila Engineer
UNHCR	The United Nations High Commissioner for Refugees
UNO	Upazila Nirbahi Officer
VAT	Value-Added Tax
WB	World Bank

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Hosting Community and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as preparation of school cum cyclone shelters, facilitating growth centers and RCC Bridge development, road development works are highly significant to ensure all branches of interventions are welded together. Local Government Engineering Department (LGED) as the implementing agency with D&SC (Development Design Consultants Limited-DDC) identifies the project beneficiary as Displaced Rohingya Population (DRP) and Hosting Community or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements has been carried out in accordance with guidelines from World Bank; as a result, environmental and social screening reports has been produced along with worked out impact factors which are introduced with mitigation and management measures. In order to present a quick picturesque of the proposed component, an overview is given hereunder.

This proposed Nalbunia pry. school Road belongs to Nalbunia village at Haldiapalong union, Ward-5 under Ukhiya Upazila. This road has started from Mariccha-Patabari road stretching 810 meters from North to South side, along with paddy land, Nalbunia GPS, ponds, Haldia khal betel nut garden etc. some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including at north side Ukhiya to Mariccha road (5m), Farhad store(7m), at south side is Nalbunia GPS (8m), Nalbunia Buddhist cremation (600m), Nalbunia Buddhist Bihar (300m), Haldia khal (5m), at south-western side South Haldia Ghatirpara GPS (700m), at east side Nalbunia station (500m), Nalbunia Darul Kuryan Madrasha, Mosque and a pond within (500m), at north-eastern side Nalbunia Buddhist Cremation (700m) and at west side Hazirpara Haoatul Haque mosque including graveyard and a pond (500m), Nalbunia sub-health centre (400m), pond (5m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has

detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient roadways and associated safeguard facilities. Since the road will not pass through any sensitive areas of any kind and necessary environmental conservative, mitigation and offsetting measures will be adopted with due care and diligence during the construction period, the component should be taken undoubtedly in further consideration for development.

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ 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 923,033². 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 effects.

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. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this

¹ ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)

² IOM Needs and Population Monitoring round 12 as of October 10, 2018

area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

The sub-project has the primary target to improve the communication facilities of the area. This intervention, without a doubt facilitates the following: it will

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **‘Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District’**; with a package name-EMCRP/W18.

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W18: Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District:

Improvement of Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id: 422944031 (2) Nalbania pry. School Road, Id: 422944032 (3) West diglia road, Id: 422944034 (4) Bottali-Chagol Bazar Road, Id: 422944040, (5) Ratnapalong Boddho Mondir Road Id: 422944062 and (6) Rumka-Sabek Rumka pry. School Road, Id: 422944044 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (2) Nalbania pry. school Road, Id:422944032

Component Location:

i. ID-422944032	ii. Ward No.: 5	iii. Mouza: Haldiapalong
iv. Village: Nalnunia	v. Name of Union: Haldiapalong	
vi. Name of the Upazila: Ukhiya		
vii. Construction Year: 2020-2021	viii. Length (m): 810	ix. Width (m): 4.9-5.5
Distance from UZHQ: 10 Km.		
GPS Coordinates	Latitude Value: 21.306286 N (Starting Point) Longitude Value: 92.129942 E (Starting Point)	
	Latitude Value: 21.299736 N (Ending Point) Longitude Value: 92.130936 E (Ending Point)	
Condition of Road	HBB, Earthen	
Communication Source	Radio & Mobile Network	

Subproject interventions:

- Bituminous Carpeting options.
- 5nos. Cross Drain (dimension: 0.975mX 0.975m) at Ch. 37m, Ch. 254m, Ch. 440m, Ch. 674m & Ch. 732m
- 3 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 7.0m, Ch. 295.0m & Ch. 775.0m
- 46.0m Brick Palisading wall

<ul style="list-style-type: none"> • Road safety work and • Environmental Mitigation and Enhancement work
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period: 2020-2021
Estimated total cost of component: 13,209,331.00 (Tk.)

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. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the consultation meeting with local community from 12:03 PM to 01:35 PM on 28 January, 2020 at Nalbunia GPS which is adjacent of the sub-project location, Refer to **Figure 2.1.1**, Public Consultation Participants List are attached in **Appendix-5**. The local individuals, chairman and/or member of Union Parishad, Primary School teachers, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme

requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants on environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

The participants were spontaneous and expressed that the sub- project will provide them various benefits including communication and transportation facilities. They also expressed that at present they are facing various types of problems due to this unimproved condition of the road.

Discussion was also made on various environmental issues like dust/air pollution, water pollution etc. which are potential environmental hazards during road construction. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase.

2.3 Suggestions and recommendations of the participants

The significant suggestions that came out during the meeting are given below:

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

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. 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 is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several community, agricultural lands and community level forest. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.

Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Mariccha-Patabari road (5m), Farhad store(7m), at south side is Nalbunia GPS (8m), Nalbunia Buddhist cremation (600m), Nalbunia Buddhist Bihar (300m), Haldia khal (5m), at south-western side South Haldia Ghatirpara GPS (700m), at east side Nalbunia station (500m), Nalbunia Darul Kuryan Madrasha, Mosque and a pond within (500m), at north-eastern side Nalbunia Buddhist Cremation (700m) and at west side Hazirpara Haoatul Haque mosque including graveyard and a pond (500m), Nalbunia sub-health centre (400m), pond (5m). Some establishments are at short distances and will be affected by dust and noise pollution during construction period. The rest of them are at sufficient distances and no scope to disturbance by this sub-project. No disturbance to all these establishments/features is anticipated due to construction activities, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).

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. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

3.3.1 General Consideration

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 Bank³ 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. 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, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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

3.3.2 Site Specific Consideration

The sub-project area is not adjacent to the sea. The cyclone has higher impact in the area and water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge was not reported in the vicinity of the subproject. Temperature was reported to be increased and Thunder storm is found to have highest impact in the area. Thunder storm has been seen create more damage than before but no casualty was reported.

³ <https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf>

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of-the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sqm for a single arrester. In addition, tree plantation on the road slope/within the premises is also suggested to soothe the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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.

The proposed road is on a plain land. A number of trees of road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree in the periphery of the subproject. Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Mariccha-Patabari road (5m), Farhad store(7m), at south side is Nalbunia GPS (8m), Nalbunia Buddhist cremation (600m), Nalbunia Buddhist Bihar (300m), Haldia khal (5m), at south-western side South Haldia Ghatirpara GPS (700m), at east side Nalbunia station (500m), Nalbunia Darul Kuryan Madrasha, Mosque and a pond within (500m), at north-eastern side Nalbunia Buddhist Cremation (700m) and at west side Hazirpara Haoatul Haque mosque including graveyard and a pond (500m), Nalbunia sub-health centre (400m), pond (5m) from the proposed improvement site.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. So, 5nos. Cross Drain (dimension: 0.975mX 0.975m) at Ch. 37m, Ch. 254m, Ch. 440m, Ch. 674m & Ch. 732m and 3 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 7.0m, Ch. 295.0m & Ch. 775.0m will be constructed at the subproject area for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural lands to provide a sustainable irrigated agricultural system. Small hills or high land is not found beside the road. Due to the low land in different chainage of the road 46.0m Brick Palisading wall at different chainage will be constructed for mitigation measure. 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. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local

communities. The subproject specific environmental 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.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf Upazila of Cox's Bazar district in order to offset the environmental and ecological devastation, that had been occurred due to the evolution of Rohingya Crisis, to an achievable level. Many of these road lengths will go through and by the Rohingya Camps, up on the hill and are already denuded of trees or vegetation. Local Government Engineering Department (LGED) will allocate and channelize the finance to the Forest Department under the said additional financing component and oversee the progress of works with due diligence. However, this enhancement work will improve the environmental quality of the area and reinstate some parts of the ecosystem services to those areas, though primarily.

4.2 Health and Safety Measures under COVID situation

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

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

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

- e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
- f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

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

4.3 Cost of Environmental Enhancement Works in BOQ

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

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 LIMITATIONS OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.

- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing 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.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District; EMCRP/W18).

Name of the component: Nalbania pry. school Road, Id:422944032

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

Estimated total cost of sub-project (in Taka): 197,069,106.42 (including provisional sum)

Estimated construction period duration: 9 Months

Estimated total cost of the component (in Taka): 13,209,331.00

Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies on how long projects can operate in the camps.

District: Cox's Bazar

Sub-District: Ukhiya

Union: Haldiapalong

Name of Community/Local Area: Nalbunia

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road and construction with Bituminous Carpeting options. For drainage of rain water 5nos. **Cross Drain** (dimension: 0.975mX 0.975m) at Ch. 37m, Ch. 254m, Ch. 440m, Ch. 674m & Ch. 732m and 3 nos. **Box Culverts** (dimension: 2.0mX2.0m) at Ch. 7.0m, Ch. 295.0m & Ch. 775.0m has been included in the estimation. Due to the low land in different chainage for protection work of the road 46.0m Brick Palisading wall at different chainage as well as for road safety work and Environmental Mitigation work has been included in the estimation.

Estimated footprint / land area for this sub-project is 3,369 sqm.

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

This proposed Nalbania pry. school Road belongs to Nalbunia village at Haldiapalong union, Ward-5 under Ukhiya Upazila. This road has started from Mariccha-Patabari road stretching 810 meters from North to South side, that's passed over Haldia Khal as well as along with paddy land, Nalbunia GPS, ponds, betel nut garden etc. which are shown in following table:

Important Environmental Features (IEFs) near site:

Detail Chainage Length of the sub-project: 810m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Detailed Chainage length of the Sub-Project

Chainage	Left	Right	Environmental Impact
"0" Point 000-300	L		Start from a big rain tree, culvert, agricultural field, brick boundary wall, household connecting road to left, bamboo fencing, betel nut garden, pond(10m), agricultural field
		R	Agricultural field, betel leaf yard, pond (10m), Nalbunia GPS (8m), Tubewell (5m), wash block (5m), trees, pond (5m), household connecting road to right, bamboo fencing, betel nut garden, agricultural field
300-600	L		Banana trees, agricultural field, betel nut garden, bamboo fencing, Haldia khal
		R	Agricultural field, local small trees, pond, brick boundary wall, permanent settlement (building), Haldia khal
600-900	L		Trees, agricultural field, Sabek Rumkha GPS road
		R	Trees, pond, agricultural field



Figure: Starting Point of Nalbunia pry. School Road

Overall Comments

DDC conducted consultation meeting with host community regarding the sub-project activities. Local 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 local individuals were participated in participatory public consultation meeting. Local communities have no objection to construction this sub-project. The community also appreciated the initiative for having easily accessible and passive their

emergency situation. The proposed sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental setting of the area thus not going to create intimidation to important environmental features. No drainage congestion/water logging have been observed in the road area. But, some local trees like betel nut, rain tree etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and cross drains, culverts have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season. The proposed Sub-project area for the construction included flat areas and moderate hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any 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.

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 bituminous, brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. in equipment yards. Human wastes might be deposited 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. This sub-project is situated within Nalbunia village under Haldiapalong union, Ward-5 of Ukhiya Upazila, Cox's Bazar. Some sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site are at north side Farhad store(7m), at south side is Nalbunia GPS (8m), Nalbunia Buddhist cremation (600m), Nalbunia Buddhist Bihar (300m), Haldia khal (5m), at south-western side South Haldia Ghatirpara GPS (700m), at east side Nalbunia Darul Kuryan Madrasha and Mosque and a pond within (500m), at north-eastern side Nalbunia Buddist Cremation (700m) and at west side Hazirpara Haoatul Haque mosque including graveyard and a pond (500m), Nalbunia sub-health centre (400m), pond (5m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 15-16 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.



Figure 3: District Map with project location

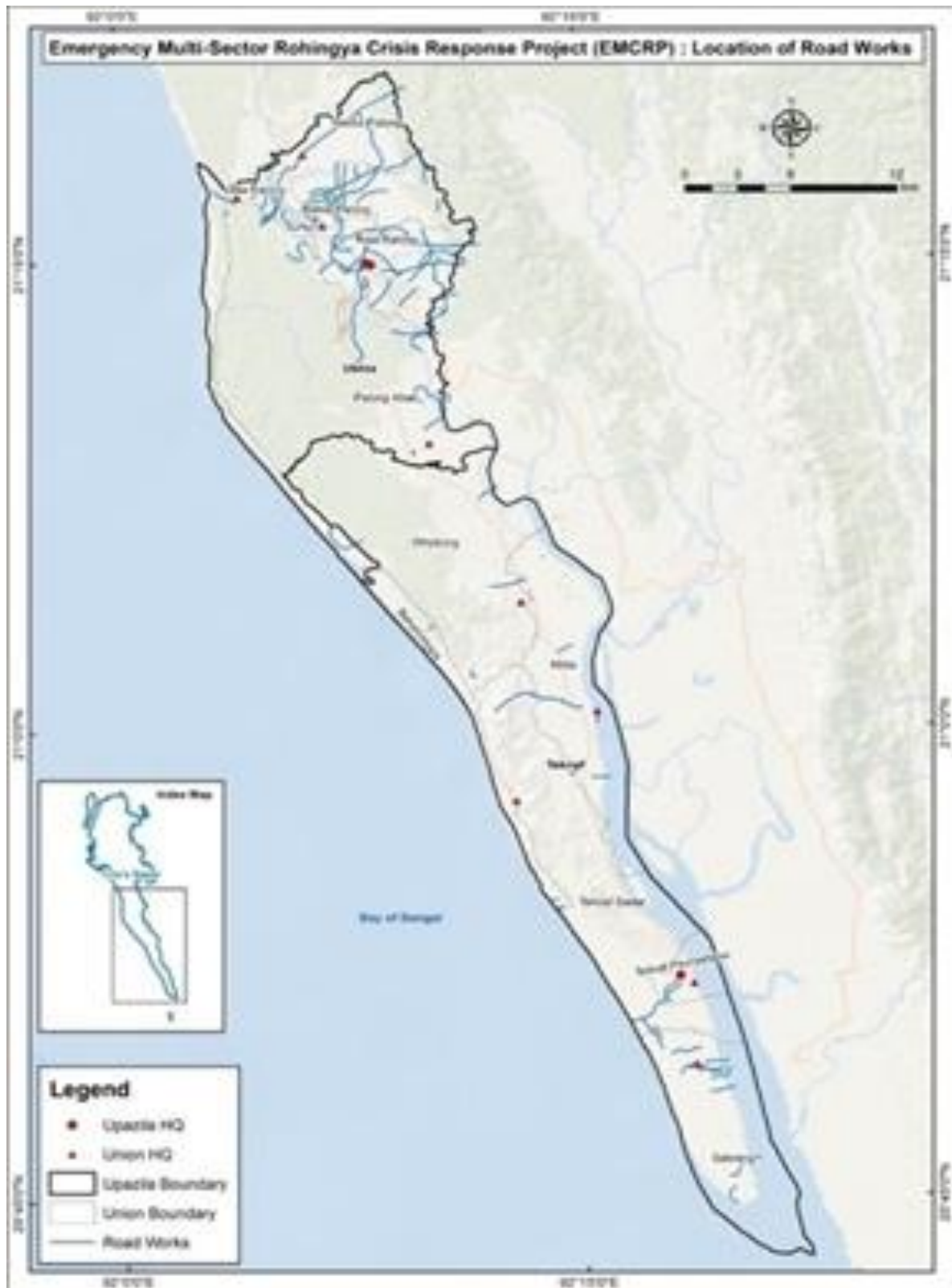


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

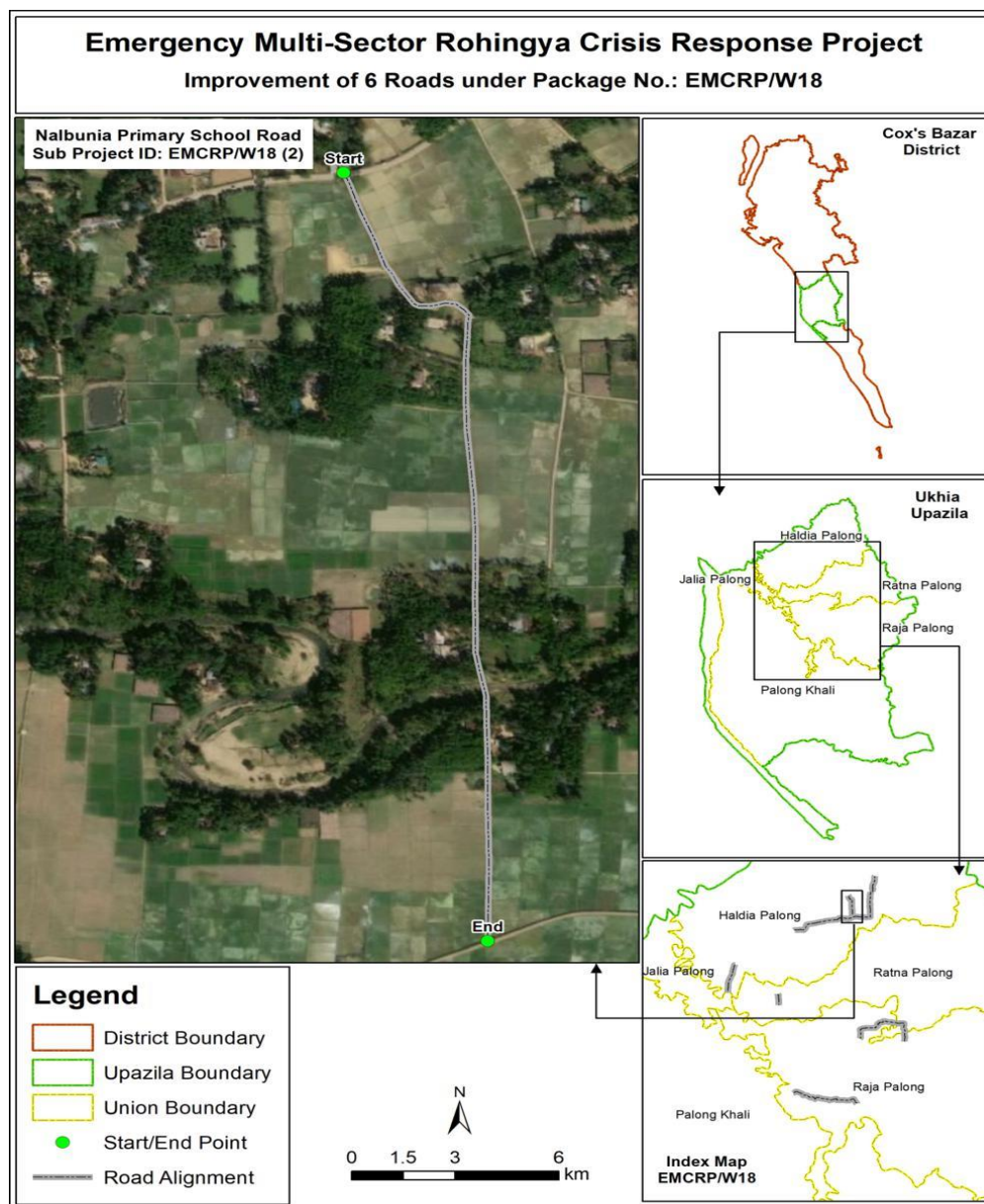


Figure 5: Upazia Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road. Based on field survey, this sub-project involves of HBB and earthen. According to the design this sub-project will be developed with Bituminous Carpeting (BC) from Ch. 00 to Ch. 810m.

Sub-project Location:

Important Features	
ID	422944032
District	Cox's Bazar

Upazila	Ukhiya
Union	Haldiapalong
WARD	05
Total Chainage	810m
Proposed Chainage	810m
Road Type	Village Road
Proposed Intervention Type	Bituminous Carpeting (BC)
Road Starting Point Coordinates	Latitude: 21.306286 N Longitude: 92.129942 E
Road Ending Point Coordinates	Latitude: 21.299736 N Longitude: 92.130936 E

Land ownership

Land is owned by Government.

Expected construction period: 9 (Nine 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:

- i) The proposed Sub-project is located within Nalbunia village, some other villages named Haldia, Patabari, Lambabill, Ghatirpara, Telipara, Valukia, Moulavipara, Hatirguna etc. within one kilometer.
- ii) No historical sites were found
- iii) Not required to relocate local community.
- iv) A pond is found adjacent to the area but no such effect can be anticipated.
- v) Some trees and vegetation will be affected.
- vi) Some Household Boundary made of bamboo and tin may need adjustments.
- vii) Environmental Sensitivity: No mentionable eco concerned establishment, no socio-cultural site and elephant corridors (Checked with local IUCN representative).

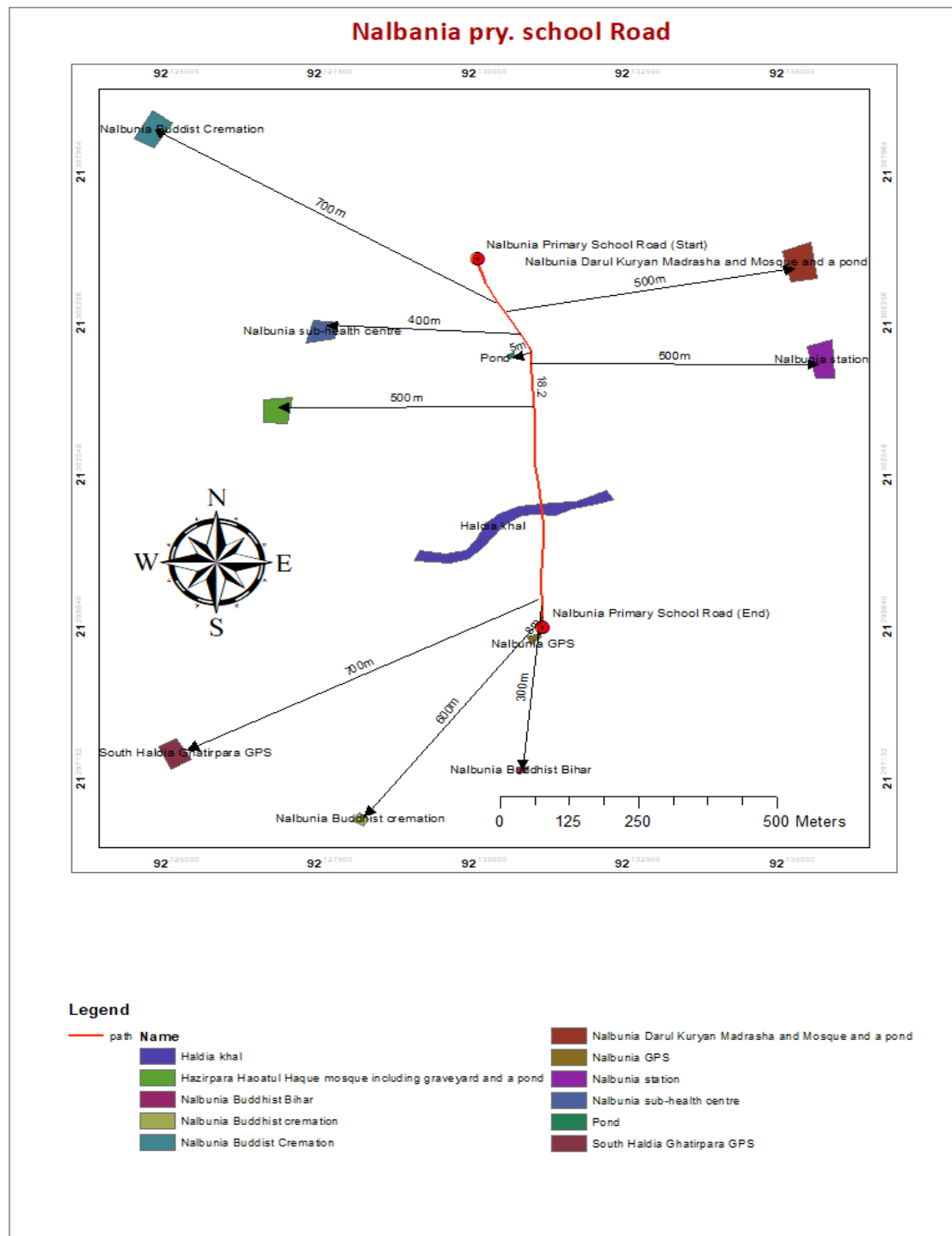
Section B: Environmental Screening
B.1: Environmental feature of sub-project location

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:

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including at north side Mariccha-Patabari road (5m), Farhad store(7m), at south side is Nalbunia GPS (8m), Nalbunia Buddhist cremation (600m), Nalbunia Buddhist Bihar (300m), Haldia khal (5m), at south-western side South Haldia Ghatirpara GPS (700m), at east side Nalbunia station (500m), Nalbunia Darul Kuryan Madrasha, Mosque and a pond within (500m), at north-eastern side Nalbunia Buddhist Cremation (700m) and at west side Hazirpara Haoatul Haque mosque including graveyard and a pond (500m), Nalbunia sub-health centre (400m), pond (5m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. Apart from this structure no other sensitive environmental, cultural, archaeological, religious sites exists.

A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas are shown below.



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, school and human settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out within

the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

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 subproject boundary)

(3) Other issues:

No more mentionable issues rose.

*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 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 etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

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

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

Landslide potential is low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. The impacts are negative but very small scale, site-specific within a relatively small area and adjustable by mitigation measures.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80 feet and deep tubewell depth is 800 feet. But the shallow tube well is not working properly

during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

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 across the road side of the proposed subproject area 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):

Goramiar road, Mariccha-Patabari road at the concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also, the route has narrow curves.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce.

Possible location of labor camps:

Labor camp can be established along the road since there are available open private lands. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.

Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) steels viii) Bitumen are the most common type of road materials used in construction.

Identification of access road for transportation (Yes/No):

Yes. For unloading point of materials BC road is the main way for transportation. Head load from unloading point to project location manually by the assigned contractor.

Location identification for raw material storage:

Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Earth/ mud, plastics, brick chips, cement dusts, dust from bricks, steel wires, during construction which can be identified as solid wastes. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Residual waste from the labor camps will be generated. Equipment maintenance/vehicles on-site and scrap material will occur during construction work which are mostly solid wastes. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 200 kg.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) bitumen are the most common type of road materials used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:

(High/Medium/Low with explanation)

The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels as nearby Haldia khal. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

<p>Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)</p> <p>No pre - existing drainage channel is found.</p>
<p>Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)</p> <p>Low. Because under this interventions, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.</p>
<p>Activities that can lead to landslides, slumps, slips and other mass movements in road cuts:</p> <p>Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.</p>
<p>Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)</p> <p>Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.</p>
<p>Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:</p> <p>No traffic movement impacts on light but low effects of noise and air pollution.</p>

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

<p>Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:</p> <p>No</p>
<p>Chance of long-term or semi-permanent destruction of soils:(High/Medium/Low with description)</p> <p>No</p>
<p>Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)</p> <p>No.</p>
<p>Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation)</p> <p>There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.</p>

Likely direct and indirect impacts on economic development in the project areas by the sub-project:

Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.

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

A stretch of chora named Haldia chora (5m) is passing along the road side but it is in safe distance. No such effect can be 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.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

The entire sub-project component area is nearly flat, thus no such type of impacts is anticipated.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

No

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Please summarize the results of environmental screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in Section 8.2 of ESMF. This table needs to be completed by environmental specialists. Please add rows to the table as necessary.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
1: Sub-Project Interventions	Air quality	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection; 	Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> 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 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> No visible degradation to nearby drainages, khals or water bodies due to soil erosion. Rain storms in construction phase. 	Monitoring as weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>and covered.</p> <ul style="list-style-type: none"> 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 construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. 			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> 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. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to nearby drainages, 	Water quality test (mainly GW) twice during the construction period in six months interval.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					<i>khals</i> or water bodies due to construction activities. <ul style="list-style-type: none"> Records should be kept and logged. 	
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health & Safety orientation trainings; Condition of sanitation facilities for workers 	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Record of regular inspection. Record of accidents/incidents 	Monthly monitoring.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Storage of construction materials	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Orienting concerned person and team assigned for the construction work. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • List of materials and sources of materials; 	During implementation phase, as necessary with discussion with PIU, Consultant
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Complaints from community; • Regular inspection of waste management activity; • Waste disposal record. 	As work weekly progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil	Under the sub-project intervention, the overall score is low.	<ul style="list-style-type: none"> • During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or 	Contractor, environmental specialist of D&SC	<ul style="list-style-type: none"> • Location of road alignment and slope. 	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	erosion and landslides)		toe of the road embankment remain within the right of way and does not disturb the crop.			
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low .	<ul style="list-style-type: none"> With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. 	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and	Under the sub-project intervention, the overall score is low .	<ul style="list-style-type: none"> 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 specialist of D&SC	<ul style="list-style-type: none"> Complaints from community; 	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	productivity)					
	Noise pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB) 	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. 	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road 	Construction Contractor, environmental specialist of D&Sc.	<ul style="list-style-type: none"> • Complaints from communities, pedestrians 	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>speed limits.</p> <ul style="list-style-type: none"> The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. Local residents should be kept informed about planned Works 			
4. Post Construction	Road Safety	Under the issue the overall score is low .	<ul style="list-style-type: none"> Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate traffic detours, and sufficient signage & warning signs, Post speed limits and suitable bending on the road. The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. 	Construction Contractor, environmental specialist of D&Sc	<ul style="list-style-type: none"> Road signage and safety instruments at suitable locations and chainage 	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is low .	<ul style="list-style-type: none"> Replantation of trees during monsoon period Maintain of trees properly Check survival of trees and replant the dead trees 	Construction Contractor, environmental specialist of D&Sc	<ul style="list-style-type: none"> Number of complaints from stakeholders; Records of trees number and tree plantation inspection; 	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is low.	<ul style="list-style-type: none"> No advertisement/boardings shall be allowed within the Right of Way limits of the project road. Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. Clear smooth speed breaker/rough surfaces should be clear in views. Regular maintenance of road surface and shoulders. 	LGED	<ul style="list-style-type: none"> Number of complaints from stakeholders; 	During Operation under LGED's regular maintenance program in each 3 years.

* 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

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 Access and evacuation Roads: Nalbania pry. school Road, Id:422944032

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> No land acquisition is allowed within this sub-project activities <p>So, there are no any mitigation measures according to this impact.</p>	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	<ul style="list-style-type: none"> Under this subproject, there is no scope of negative impact of adjacent livelihoods 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	<ul style="list-style-type: none"> All of the project stakeholders should be consulted Separate community level consultation meeting with the potential affected HHs Consultation meeting with host communities about the project objectives and scope of works 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	<ul style="list-style-type: none"> Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	<ul style="list-style-type: none"> Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area. 	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	<ul style="list-style-type: none"> Our selected sites avoided the low land near the water bodies or natural flow path to avoid the flash flood or any kind of surface runoff. Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. After completing the development we restored the place as like before to avoid the cut and fill operational problems. This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. The contractor ensuring sound environment for the local residents near the sub project site. 	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	<ul style="list-style-type: none"> Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. All Personal Protective Equipments (PPEs) must be ensured in sites before starting any kinds of construction works. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	<ul style="list-style-type: none"> Acceptable range of emission of CO, particulate matter [SPM (Suspended particulate matter), PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices 	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level 		
Construction Activity	Safety Issues	<ul style="list-style-type: none"> Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem Before works started Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. Records of every training must be kept at site. All kinds of Child labour are completely prohibited in every site. Every construction materials storage site will be well fenced by Tin and safety caution tape. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	<ul style="list-style-type: none"> Contractors will maintain proper route for traffic management which is to beconsulted with and confirmed by the Executive Engineer of Cox's Bazar. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	<ul style="list-style-type: none"> 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 	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
		<p>from the appropriate department need to be undertaken before setting up bore wells.</p> <ul style="list-style-type: none"> 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 works starts. 		
Construction Activity	Increase in road accidents	<ul style="list-style-type: none"> Maintain safety measures during the movement of heavy machinery and equipment. Local community will be trained up on traffic management and awareness. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	<ul style="list-style-type: none"> 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 labour camps will be put in place Treated water will be made available at site for drinking purpose. Adequate accommodation arrangements for labour forces. 	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Labor code of conduct is to be disclosed through 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: <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site After completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and 	<ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. 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 	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
	dermatitis.	<p>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.</p> <ul style="list-style-type: none"> • 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 the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be 		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>available at all Sites, on different locations within the site.</p> <ul style="list-style-type: none"> • 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	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	<ul style="list-style-type: none"> • Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time. 	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the construction)	<p>The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community 	<ul style="list-style-type: none"> • Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder. 	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar
Operation	Noise disturbances to fauna	<ul style="list-style-type: none"> • Provision to maintain noise and vibration from the 	UE (under the direct	UNO, PSC.

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
&Maintenance		<p>operation and maintenance of machinery and equipment by proper monitoring and measures.</p> <ul style="list-style-type: none"> • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. 	guidance of Executive Engineer)	

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 the 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.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and 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. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.



- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use 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 the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite 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 a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, +8801714980171
Tanvir Ahsan Haque, Environmental Specialist, +8801688117059
Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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

Appendix-3: Cost of Environmental 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. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

SI no.	Description of item	Quantity	Unit price	Total amount
1.	<u>Grass Turfing</u> Turfing on embankment top and slope & 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)	2413.0 Sq.m	@38.15 Tk. Per sqm	92,055.95
2.	<u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	810.0m	@ 2.56 BDT	2,073.60
3.	<u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men	2 nos.	@12822.86 per toilet	25,645.72
4.	<u>First Aid Box</u>	1 no.	LS @5000 Tk. Per	5,000

SI no.	Description of item	Quantity	Unit price	Total amount
	Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.		box	
5.	<u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge.	1 no.	LS @ Tk. 30,000	30,000
6.	<u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge.	1 no.	LS @ Tk. 15,000	15,000

SI no.	Description of item	Quantity	Unit price	Total amount
7.	<u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	LS	LS @ Tk 30,000	30,000
8.	<u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet.	100 nos.	@ Tk. 1000	100,000
9.	<u>Motivation training</u> 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.	1 no.	LS @ Tk. 10,000	10,000
10.	<u>Waste disposal facility</u> 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.	LS	@ Tk. 5000	5,000



SI no.	Description of item	Quantity	Unit price	Total amount
11.	<u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area 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.	LS	@ Tk. 5000	5,000
12.	<u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	1 no.	LS @ Tk. 30,000	30,000
13.	<u>Environmental management</u> 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. <u>[One person to be appointed for W18(1), W18(2) & W18(3)]</u>	Presented in the BoQ of Ukhiya Darogabazar GC to Hijalia via Harinmara Road (Id: 422944031) and not repeated here.		
	Subtotal Bill: Environmental facilities			349,775.27

Cost of H&S Measures under COVID 19 Situations

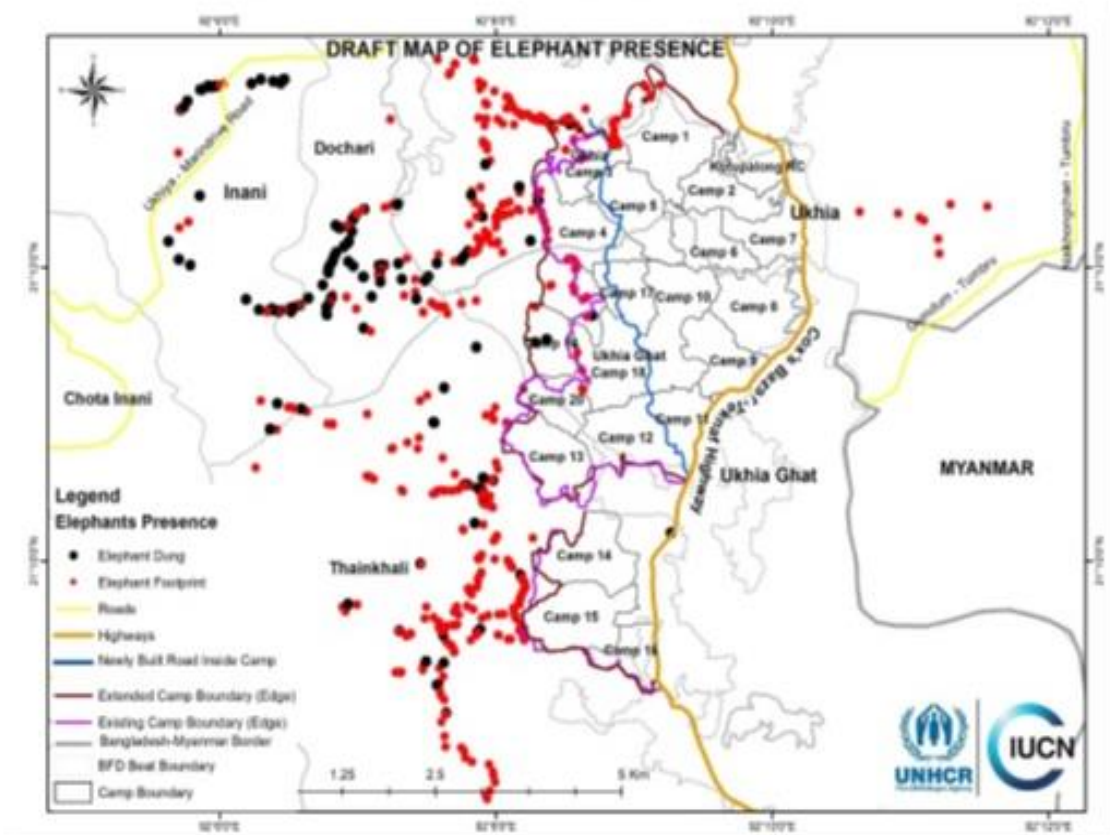
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 16 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-18.2).

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)	43		54	50.00	97	4,850.00	To be placed in a case/holder on the basin, for washing hands for max. 21 people a day and showering of 16 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	9nos. for each site		N/A	400.00	9	3,600.00	For labors who work in close contact, 9 in each site



Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	5 nos. each day in each site		N/A	12.00	1350	16,200.00	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	16 nos. for each labor camp		35.00	288	10,080.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1 Can	N/A	2 Can	250.00	3	750.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	9	3,600.00	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						89,180.00	

Appendix-4: Elephant Presence Map



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

Appendix-5: Attendance of participants in the Consultation Meeting

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

Time: 12:30 PM Date: 28/01/2020

COMMUNICATION AND PARTICIPATION PROGRAMME
FOCUS GROUP DISCUSSION

ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রকল্পে (ই এম সি আর পি)
কনসাল্টেশন সময় নতুননিয় প্রাইমারী স্কুলে যেতে
কর দিচ্ছিলাম এবং নতুননিয় সিম্পারক

ইমার্জেন্সি প্রকল্প পরিচালক
নাম: মাহিনা
ইমার্জেন্সি
জেনা: অরুণা কান্ত

অংশগ্রহণকারীদের তালিকা (পরিচয় ও বয়স)

ক্রমিক সং	নাম	বয়স	পুং/মহি	পিতা	বাস
০১	মোঃ রফিক আহম্মদ	৬০	পুং	নতুননিয়	বাইসিডি অংশ
০২	মোঃ আমানত উল্লাহ	৬২	পুং	পুং	পুং
০৩	মোঃ ইদ্রিস	২৮	পুং	পুং	পুং
০৪	মোঃ রুশ	৪০	পুং	পুং	পুং
০৫	মোঃ আমান আহম্মদ	৬২	পুং	পুং	পুং
০৬	মোঃ আবদুল হকিম	৩৫	পুং	পুং	পুং
০৭	মোঃ আমান	৫০	পুং	পুং	পুং
০৮	মোঃ জাহাঙ্গীর হুসৈন	২৭	পুং	পুং	পুং
০৯	মোঃ হাদী আবদুল আজিজ	৬০	পুং	পুং	পুং
১০	মোঃ আবদুল মালিক	৬০	পুং	পুং	পুং
১১	মোঃ আবদুল আজিজ	৫০	পুং	পুং	পুং
১২	মোঃ হাদী আহম্মদ	৫৭	পুং	পুং	পুং
১৩	মোঃ নূর মুহাম্মদ	৫৫	পুং	পুং	পুং
১৪	মোঃ কবির	৩৮	পুং	পুং	পুং
১৫	মোঃ রফিক উল্লাহ	২২	পুং	পুং	পুং
১৬	মোঃ জাহাঙ্গীর আহম্মদ	৪৬	পুং	পুং	পুং
১৭	মোঃ আবদুল গফুর	৬৭	পুং	পুং	পুং
১৮	মোঃ ফারুক আহম্মদ	৫০	পুং	পুং	পুং
১৯	মোঃ জাহাঙ্গীর আহম্মদ	৬৬	পুং	পুং	পুং
২০	হাদীউল আহম্মদ	৫৫	পুং	পুং	পুং
২১	মোঃ নূর মুহাম্মদ	৫০	পুং	পুং	পুং

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-project Component Sites



Existing Surroundings of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Local Government, Rural Development and Co-operatives
Local Government Division
Local Government Engineering Department

Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

For West Diglia Road, Id:422944034 with culverts and side drains

Under the package no. EMCRP/W18

November-2020



ACRONYMS

BOQ	Bill of Quantities
BFS	Brick Flat Soiling
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
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UE	Upazila Engineer
UNHCR	The United Nations High Commissioner for Refugees
UNO	Upazila Nirbahi Officer
VAT	Value-Added Tax
WB	World Bank

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Hosting Community and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as preparation of school cum cyclone shelters, facilitating growth centers and RCC Bridge development, road development works are highly significant to ensure all branches of interventions are welded together. Local Government Engineering Department (LGED) as the implementing agency with D&SC (Development Design Consultants Limited-DDC) identifies the project beneficiary as Displaced Rohingya Population (DRP) and Hosting Community or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements has been carried out in accordance with guidelines from World Bank; as a result environmental and social screening reports has been produced along with worked out impact factors which are introduced with mitigation and management measures. In order to present a quick picturesque of the proposed component, an overview is given hereunder.

This proposed West Diglia Road belongs to West Diglia village at Rajapalong union, Ward-4 under Ukhiya Upazila. This road has started from Ukhiya-Patabari Road stretching 1326 meters from east to west side, some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Goyalmara GPS cum Cyclone center (500m), Goyalmara Dakhil Madrasha (500m), Amir Hamza Market (150m), at south side Sikderbil jame Mosque (400m), at east side tarpukur including Nurania Hefjakhana (200m) and west side West Diglia jame mosque (25m), Hazi Nur Ahmed Jame Mosque (500m), Sonabora Jumma Mosque (300m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient

roadways and associated safeguard facilities. Since the road will not pass through any sensitive areas of any kind and necessary environmental conservative, mitigation and offsetting measures will be adopted with due care and diligence during the construction period, the component should be taken undoubtedly in further consideration for development.

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ 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 923,033². 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 effects.

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. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

The sub-project has the primary target to improve the communication facilities of the area. This intervention, without a doubt facilitates the following: it will

- ✓ Support to rural development along with education, business, agriculture, farming etc.

¹ ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)

² IOM Needs and Population Monitoring round 12 as of October 10, 2018

- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **‘Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District’**; with a package name-EMCRP/W18.

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W18: Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District:

(1) Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031 (2) Nalbania pry. school Road, Id:422944032 (3) West diglia road, Id:422944034 (4) Bottali-Chagol Bazar Road, Id:422944040 (5) Ratnapalong Boddho Mondir Road Id:422944062 and (6) Rumka-Sabek Rumka pry. school Road, Id:422944044 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (3) West Diglia Road, Id:422944034

Component Location:

i. ID-422944034	ii. Ward No.: 4	iii. Mouza: Rajapalong
iv. Village: West Diglia	v. Name of Union: Rajapalong	
vi. Name of the Upazila: Ukhiya		
vii. Construction Year: 2020-2021	viii. Length (m): 1326	ix. Width (m): 4.9-5.5
Distance from UZHQ: 4 Km.		
GPS Coordinates	Latitude Value: 21.261900 N (Starting Point) Longitude Value: 92.1445300 E (Starting Point)	
	Latitude Value: 21.262811 N (Ending Point) Longitude Value: 92.132922 E (Ending Point)	
Condition of Road	Brick Flat Soiling (BFS), Earthen	
Communication Source	Radio & Mobile Network	

Subproject interventions:

- Bituminous Carpeting options.
- 1no. Cross Drain (dimension: 0.975mX 0.975m) at 56m of chainage
- 2 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 185.0m & Ch. 503.0m of chainage
- 92.0m (1.5m height) Toe wall
- 174.0m Brick Palisading wall
- RCC Retaining wall (200.0m length and 5.0m height) with Pre-cast RCC Pile (6.0m length) from Ch. (1050.0-1114.0) m L/S, Ch. (1190.0-1326.0) m L/S at different chainage
- Road safety work and
- Environmental Mitigation work

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period: 2020-2021
Estimated total cost of component: 45,303,737.62 (Tk.)

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. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the consultation meeting with local community from 11:35 AM to 01:10 PM on 29 January, 2020 at West Diglia Chourastha More, which is adjacent of the sub-project location, Refer to **Figure 2.1.1**, Public Consultation Participants List are attached in **Appendix-5**. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants on environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

The participants were spontaneous and expressed that the sub- project will provide them various benefits including communication and transportation facilities. They also expressed that at present they are facing various types of problems due to this unimproved condition of the road.

Discussion was also made on various environmental issues like dust/air pollution, water pollution etc. which are potential environmental hazards during road construction. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase.

2.3 Suggestions and recommendations of the participants

The significant suggestions that came out during the meeting are given below:

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

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. 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 is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several community, agricultural lands and community level forest. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps.

Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Goyalmara GPS cum Cyclone center (500m), Goyalmara Dakhil Madrasha (500m), Amir Hamza Market (150m), at south side Sikderbil jame Mosque (400m), at east side tarpukur including Nurania Hefjakhana (200m) and west side West Diglia jame mosque 925m), Hazi Nur Ahmed Jame Mosque (500m), Sonabora Jumma Mosque (300m). No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).

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. Appendix-4 presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

3.3.1 General Consideration

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 Bank³ 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. 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, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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 plantation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific

The sub-project area is not adjacent to the sea. The cyclone has higher impact in the area and water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge was not reported in the vicinity of the subproject. Temperature was reported to be increased and Thunder storm is found to have highest impact in the area. Thunder storm has been seen create more damage than before but no casualty was reported.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of-the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sqm for a single arrester. In addition, tree plantation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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

³ <https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf>

engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

The proposed road is on a plain land. A number of trees of road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree in the periphery of the subproject. Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Goyalmara GPS cum Cyclone center (500m), Goyalmara Dakhil Madrasha (500m), Amir Hamza Market (150m), at south side Sikderbil jame Mosque (400m), at east side tarpukur including Nurania Hefjakhana (200m) and west side West Diglia jame mosque (25m), Hazi Nur Ahmed Jame Mosque (500m), Sonabora Jumma Mosque (300m) from the proposed improvement site.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. So, 1no. **Cross Drain** (dimension: 0.975mX 0.975m) at 56m of chainage and 2 nos. **Box Culverts** (dimension: 2.0mX2.0m) at Ch. 185.0m & Ch. 503.0m of chainage will be constructed at the subproject area for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural lands to provide a sustainable irrigated agricultural system. Small hills or high land is not found beside the road. Due to the low land in different chainage of the road 92.0m (1.5m height) Toe wall, 174.0m Brick Palisading wall and RCC Retaining (200.0m length and 5.0m height) with Pre-cast RCC Pile (6.0m length) from Ch. (1050.0-1114.0) m L/S, Ch. (1190.0-1326.0) m L/S at different chainage will be constructed for mitigation measure. 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. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific environmental 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.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf Upazila of Cox's Bazar district in order to offset the environmental and ecological devastation, that had been occurred due to the evolution of Rohingya Crisis, to an achievable level. Many of these road lengths will go through and by the Rohingya Camps, up on the hill and are already denuded of trees or vegetation. Local Government Engineering Department (LGED) will allocate and channelize the finance to the Forest Department under the said additional financing component and oversee the progress of works with due diligence. However, this enhancement work will improve the environmental quality of the area and reinstate some parts of the ecosystem services to those areas, though primarily.

4.2 Health and Safety Measures under COVID situation

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

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

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

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

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 LIMITATIONS OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing 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.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District; EMCRP/W18).

Name of the component: West Diglia Road, Id:422944034

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

Estimated total cost of sub-project (in Taka): 197,069,106.42 (including provisional sum)

Estimated construction period duration: 9 Month

Estimated total cost of the component (in Taka): 45,303,737.62

Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies on how long projects can operate in the camps.

District: Cox's Bazar

Sub-District: Ukhiya

Union: Rajapalong

Name of Community/Local Area: West Diglia, East Diglia, Sikderbil, Pukuria

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road and construction with Bituminous Carpeting options. For drainage of rain water 1no. **Cross Drain** (dimension: 0.975mX 0.975m) at 56.0m of chainage and 2 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 185.0m & Ch. 503.0m of chainage has been included in the estimation. Due to the low land in different chainage for protection work of the road 92.0m (1.5m height) Toe wall, 174.0m Brick Palisading wall and RCC Retaining wall (200.0m length and 5.0m height) with Pre-cast RCC Pile (6.0m length) from Ch. (1050.0-1114.0) m L/S, Ch. (1190.0-1326.0) m L/S at different chainage as well as for road safety work and Environmental Mitigation work has been included in the estimation.

Estimated footprint / land area for this sub-project is 6,497.4 sqm.

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

This proposed West Diglia Road belongs to West Diglia village at Rajapalong union, Ward-4 under Ukhiya Upazila. This road has started from Ukhiya-Patabari Road stretching 1326 meters from east to west side, along with agriculture fields, culverts, bamboo bushes, household connecting roads, water body, trees etc.

Important Environmental Features (IEFs) near site:

Detail Chainage Length of the sub-project: 1326m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Detailed Chainage length of the Sub-Project

Chainage	Left	Right	Environmental Impact
"0" Point 000-300	L		Agricultural field, electric pole, water pump, culvert, bamboo fencing, trees, bamboo fencing, household connecting road to left, tin shed fencing, bamboo fencing, household connecting road to left
		R	Shop, agricultural field, bamboo fencing, electric pole, big trees, RCC pole with wire fencing, drain (earthen), water pump, agricultural field, household connecting road to right, pond, bushes, bamboo fencing, bamboo bushes
300-600	L		Bamboo fencing, permanent settlement (paka), big trees, agricultural field, electric pole, household connecting road to left, brick boundary wall, permanent settlement, household connecting road to left
		R	Trees, bamboo fencing, bamboo bushes, big tree, bamboo fencing, agricultural field, electric pole
600-900	L		Tin shed fencing, electric pole, trees, bamboo fencing, small pond, vegetables garden, water pump, agricultural field
		R	Agricultural field, electric pole (2nos.), mosque, big trees, pond, agricultural field, electric pole, household connecting road to right
900-1326	L		Culvert, vegetables land, bamboo bushes, khal
		R	Agricultural field



Figure: Starting Point of West Diglia Road

Overall Comments

DDC conducted consultation meeting with host community regarding the sub-project activities. Local 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 local individuals were participated in participatory public consultation meeting. Local communities have no objection to construction this sub-project. The community also appreciated the initiative for having easily accessible and passive their emergency situation. The proposed component of the sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental setting of the area thus not going to create intimidation to important environmental features. No drainage congestion/water logging have been observed in the road area. But, some local trees like betel nut, rain tree etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and cross drains, culverts have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season. The proposed Sub-project area for the construction included flat areas and moderate hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any 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.

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 brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic, fuel etc. in equipment yards. Human wastes might be deposited 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. This sub-project is situated within West Diglia village under Rajapalong union, Ward-4 of Ukhiya Upazila, Cox's Bazar. Some sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site are at north side Goyalmara GPS cum Cyclone center (500m), Goyalmara Dakhil Madrasha (500m), Amir Hamza Market (150m), at south side Sikderbil jame Mosque (400m), at east side tarpukur including Nurania Hefjakhana (200m) and west side West Diglia jame mosque (25m), Hazi Nur Ahmed Jame Mosque (500m), Sonabora Jumma Mosque (300m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 7-8 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.



Figure 3: District Map with project location

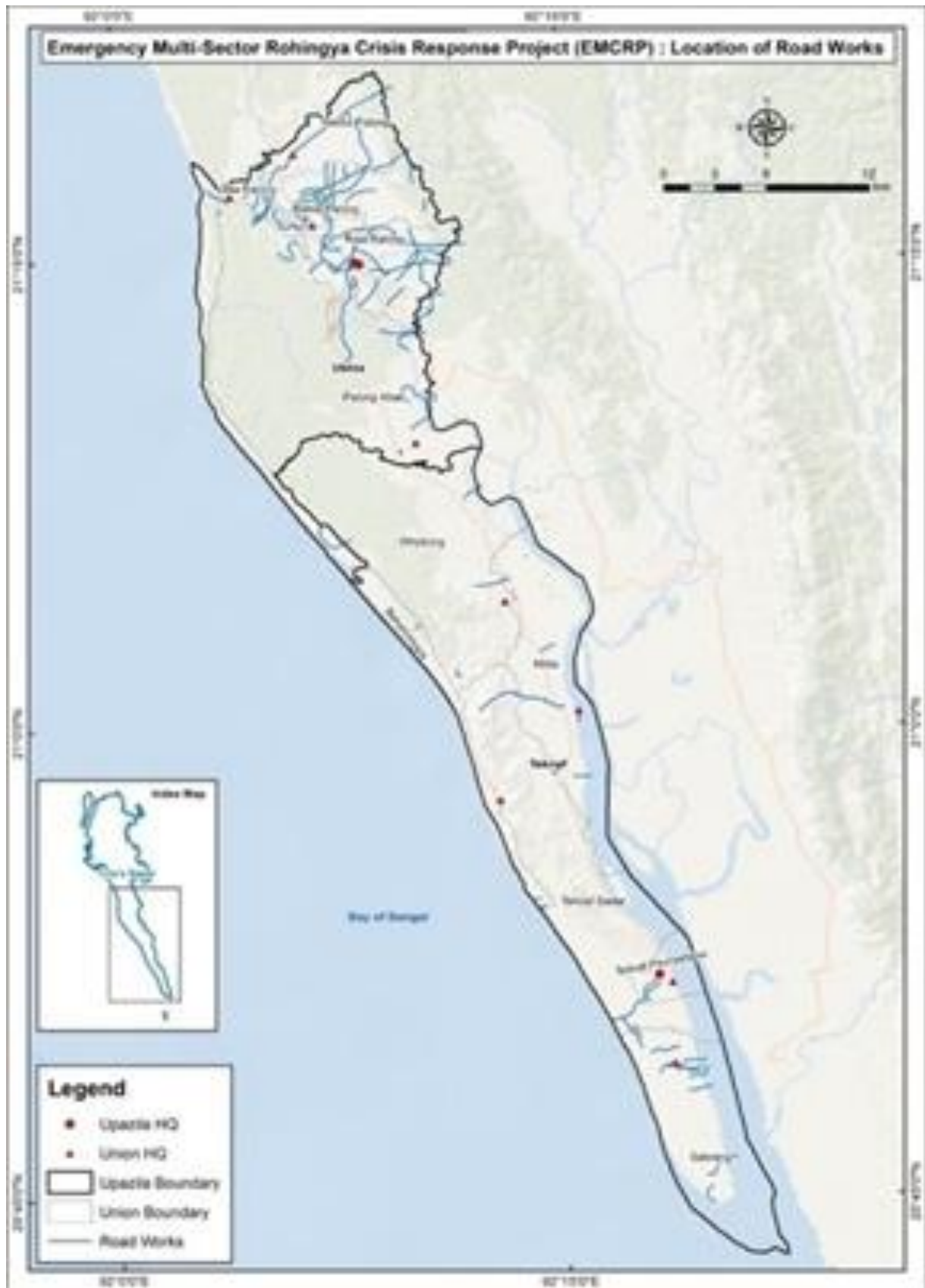


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

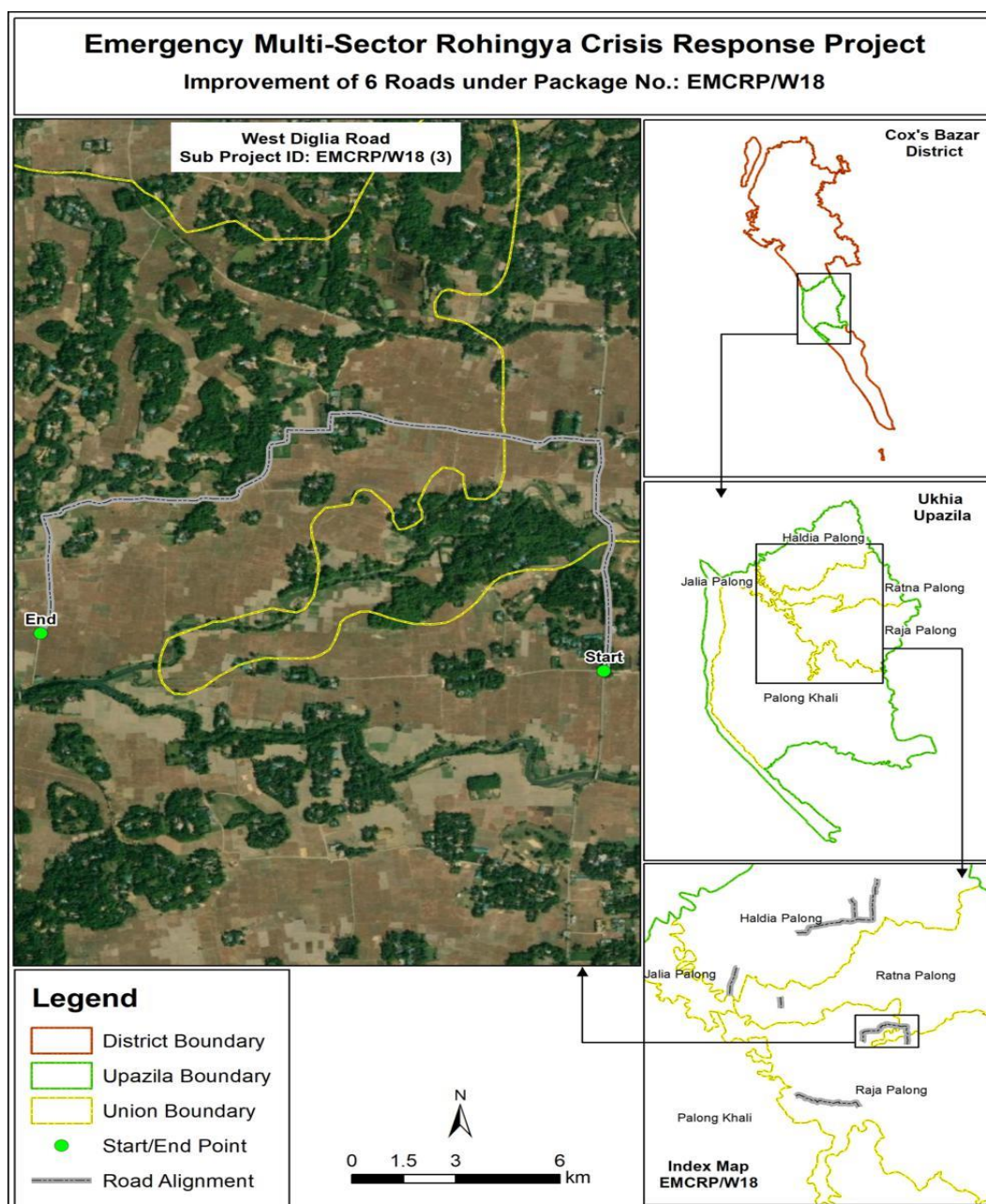


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road. Based on field survey, this sub-project involves of Brick Flat Soiling (BFS) and earthen. According to the design this sub-project will be developed with Bituminous Carpeting (BC) from Ch. 00 to Ch. 1326m.

Sub-project Location:

Important Features	
ID	422944034
District	Cox's Bazar
Upazila	Ukhiya

Union	Rajapalong
WARD	04
Total Chainage	1326m
Proposed Chainage	1326m
Road Type	Village Road
Proposed Intervention Type	Bituminous Carpeting (BC)
Road Starting Point Coordinates	Latitude: 21.261900 N Longitude: 92.144530 E
Road Ending Point Coordinates	Latitude: 21.262811 N Longitude: 92.132922 E

Land ownership
Land is owned by Government.

Expected construction period: 9 (Nine 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:

- i) The proposed Sub-project is located within West Diglia village Some other villages named East Diglia, Sikderbil, Pukuria within one kilometer.
- ii) No historical sites were found
- iii) Not required to relocate local community.
- iv) Some trees and vegetation will be affected.
- v) Very low chance of loss of agricultural land.
- vi) Some Household Boundary made of bamboo and tin may need adjustments.
- vii) Environmental Sensitivity: No mentionable eco concerned establishment, no socio-cultural site and elephant corridors (Checked with local IUCN representative).

Section B: Environmental Screening

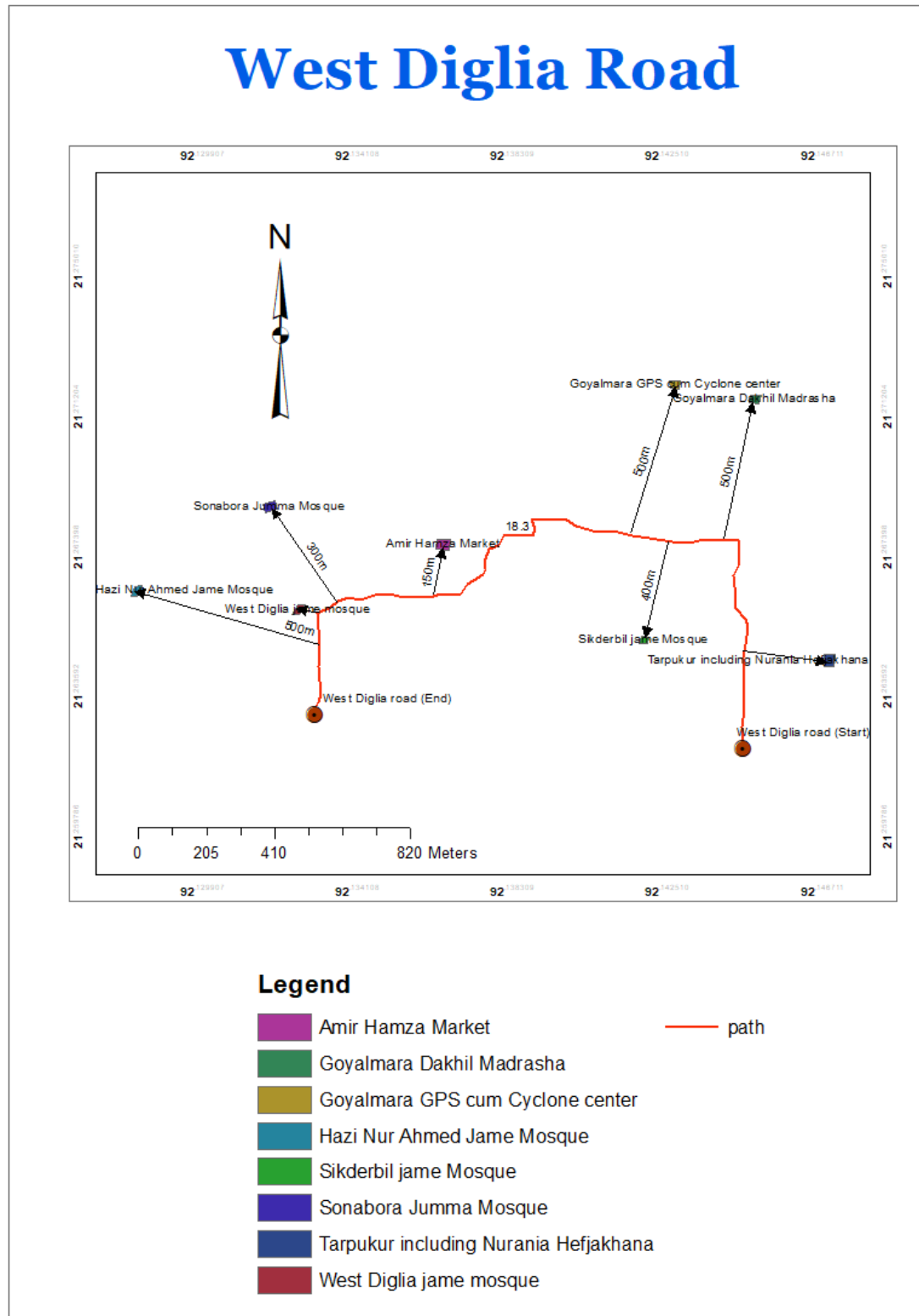
B.1: Environmental feature of sub-project location

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:

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including at north side Goyalmara GPS cum Cyclone center (500m), Goyalmara Dakhil Madrasha (500m), Amir Hamza Market (150m), at south side Sikderbil jame Mosque (400m), at east side tarpukur including Nurania Hefjakhana (200m) and west side West Diglia jame mosque (25m), Hazi Nur Ahmed Jame Mosque (500m), Sonabora Jumma Mosque (300m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. Apart from this structure no other sensitive environmental, cultural, archaeological, religious sites exists.

A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas (within 30m buffer zone) are shown below.



Location of environmentally important and sensitive areas:

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

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

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 subproject boundary)

(3) Other issues:

No more mentionable issues rose.

*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 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 etc. move on the road surface adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

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

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

Landslide potential is low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. The impacts are negative but very small scale, site-specific within a relatively small area and adjustable by mitigation measures.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 100 feet and deep tubewell depth is 800 feet. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

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 across the road side of the proposed sub-project area 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):

Ukhiya-Patabari road is the main way for materials transportation. Concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also, the route has narrow curves.

Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:

Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce.

Possible location of labor camps:

Labor camp can be established along the road since there are available open private lands.

However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.

Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) steels viii) Bitumen are the most common type of road materials used in construction.

Identification of access road for transportation (Yes/No):

Yes. For unloading point of materials HBB road is the main way for transportation. Head load from unloading point to project location manually by the assigned contractor.

Location identification for raw material storage:

Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Earth/ mud, plastics, brick chips, cement dusts, dust from bricks, steel wires, during construction which can be identified as solid wastes. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Residual waste from the labor camps will be generated. Equipment maintenance/vehicles on-site and scrap material will occur during construction work which are mostly solid wastes. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 300 kg.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most common type of road materials used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.

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

The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

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. Because under this interventions, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.

Activities that can lead to landslides, slumps, slips and other mass movements in road cuts:

Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)

Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

No traffic movement impacts on light but low effects of noise and air pollution.

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:

No

Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)

No

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)

No.

<p>Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)</p> <p>There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.</p>
<p>Likely direct and indirect impacts on economic development in the project areas by the sub-project:</p> <p>Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.</p>
<p>Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)</p> <p>No existing drainage channels or surface water bodies found in the project area, therefore, no such effect can be anticipated</p>
<p>Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)</p> <p>There are no protected areas in or around project sites, and no known areas of ecological interest.</p>
<p>Activities leading to landslides, slumps, slips and other mass movements in road cuts:</p> <p>The entire sub-project component area is nearly flat, thus no such type of impacts is anticipated.</p>
<p>Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)</p> <p>No</p>
<p>Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:</p> <p>Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.</p>

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

Please summarize the results of environmental screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in Section 8.2 of ESMF. This table needs to be completed by environmental specialists. Please add rows to the table as necessary.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
1: Sub-Project Interventions	Air quality	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection; 	Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> 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 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> No visible degradation to nearby drainages, khals or water bodies due to soil erosion. Rain storms in construction phase. 	Monitoring as weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>and covered.</p> <ul style="list-style-type: none"> 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 construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. 			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> 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. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to nearby drainages, 	Water quality test (mainly GW) twice during the construction period in six months interval.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					<i>khals</i> or water bodies due to construction activities. <ul style="list-style-type: none"> Records should be kept and logged. 	
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health & Safety orientation trainings; Condition of sanitation facilities for workers 	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Record of regular inspection. Record of accidents/incidents 	Monthly monitoring.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Storage of construction materials	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Orienting concerned person and team assigned for the construction work. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • List of materials and sources of materials; 	During implementation phase, as necessary with discussion with PIU, Consultant
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Complaints from community; • Regular inspection of waste management activity; • Waste disposal record. 	As work weekly progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and	Under the sub-project intervention, the overall score is low.	<ul style="list-style-type: none"> • During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment 	Contractor, environmental specialist of D&SC	<ul style="list-style-type: none"> • Location of road alignment and slope. 	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	landslides)		remain within the right of way and does not disturb the crop.			
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low .	<ul style="list-style-type: none"> With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. 	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low .	<ul style="list-style-type: none"> 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 specialist of D&SC	<ul style="list-style-type: none"> Complaints from community; 	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Noise pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB) 	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. 	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. 	Construction Contractor, environmental specialist of D&Sc.	<ul style="list-style-type: none"> • Complaints from communities, pedestrians 	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<ul style="list-style-type: none"> The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. Local residents should be kept informed about planned Works 			
4. Post Construction	Road Safety	Under the issue the overall score is low .	<ul style="list-style-type: none"> Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate traffic detours, and sufficient signage & warning signs, Post speed limits and suitable bending on the road. The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. 	Construction Contractor, environmental specialist of D&Sc	<ul style="list-style-type: none"> Road signage and safety instruments at suitable locations and chainage 	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is low .	<ul style="list-style-type: none"> Replantation of trees during monsoon period Maintain of trees properly Check survival of trees and replant the dead trees 	Construction Contractor, environmental specialist of D&Sc	<ul style="list-style-type: none"> Number of complaints from stakeholders; Records of trees number and tree plantation inspection 	Immediately after the construction work is over.
5. Operatio	Maintenance of road and	Under the issue	<ul style="list-style-type: none"> No advertisement/boardings shall be allowed within the Right of Way 	LGED	<ul style="list-style-type: none"> Number of complaints from 	During Operation under

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
nal Phase	assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	the overall score is low .	limits of the project road. <ul style="list-style-type: none"> Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. Clear smooth speed breaker/rough surfaces should be clear in views. Regular maintenance of road surface and shoulders. 		stakeholders;	LGED's regular maintenance program in each 3 years.

* 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

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 Access and evacuation Roads: West Diglia Road, Id: 422944034

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> No land acquisition is allowed within this sub-project activities <p>So, there are no any mitigation measures according to this impact.</p>	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	<ul style="list-style-type: none"> Under this subproject, there is no scope of negative impact of adjacent livelihoods 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	<ul style="list-style-type: none"> All of the project stakeholders should be consulted Separate community level consultation meeting with the potential affected HHs Consultation meeting with host communities about the project objectives and scope of works 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	<ul style="list-style-type: none"> Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	<ul style="list-style-type: none"> Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area. 	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	<ul style="list-style-type: none"> Our selected sites avoided the low land near the water bodies or natural flow path to avoid the flash flood or any kind of surface runoff. Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. After completing the development we restored the place as like before to avoid the cut and fill operational problems. This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. The contractor ensuring sound environment for the local residents near the sub project site. 	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	<ul style="list-style-type: none"> Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. All Personal Protective Equipments (PPEs) must be ensured in sites before starting any kinds of construction works. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	<ul style="list-style-type: none"> Acceptable range of emission of CO, particulate matter [SPM (Suspended particulate matter), PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices 	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level 		
Construction Activity	Safety Issues	<ul style="list-style-type: none"> Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem Before works started Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. Records of every training must be kept at site. All kinds of Child labour are completely prohibited in every site. Every construction materials storage site will be well fenced by Tin and safety caution tape. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	<ul style="list-style-type: none"> Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	<ul style="list-style-type: none"> 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 	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
		<p>from the appropriate department need to be undertaken before setting up bore wells.</p> <ul style="list-style-type: none"> 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 works starts. 		
Construction Activity	Increase in road accidents	<ul style="list-style-type: none"> Maintain safety measures during the movement of heavy machinery and equipment. Local community will be trained up on traffic management and awareness. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	<ul style="list-style-type: none"> 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 labour camps will be put in place Treated water will be made available at site for drinking purpose. Adequate accommodation arrangements for labour forces. 	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Labor code of conduct is to be disclosed through 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: <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site After completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and 	<ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. 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 	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
	dermatitis.	<p>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.</p> <ul style="list-style-type: none"> • 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 the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be 		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>available at all Sites, on different locations within the site.</p> <ul style="list-style-type: none"> • 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	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	<ul style="list-style-type: none"> • Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time. 	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the construction)	<p>The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community 	<ul style="list-style-type: none"> • Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder. 	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar
Operation	Noise disturbances to fauna	<ul style="list-style-type: none"> • Provision to maintain noise and vibration from the 	UE (under the direct	UNO, PSC.

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
&Maintenance		<p>operation and maintenance of machinery and equipment by proper monitoring and measures.</p> <ul style="list-style-type: none"> Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. 	guidance of Executive Engineer)	

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 the 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.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and 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. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.



- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use 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 the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite 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 a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, +8801714980171

Tanvir Ahsan Haque, Environmental Specialist, +8801688117059

Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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

Appendix-3: Cost of Environmental 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. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

SI no.	Description of item	Quantity	Unit price	Total amount
1.	<u>Grass Turfing</u> Turfing on embankment top and slope & 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)	3957.00 Sq.m	@38.15 Tk. Per sqm	150,959.55
2.	<u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	1326.0m	@ 2.56 BDT	3,394.56
3.	<u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men	2 nos.	@12822.86 per toilet	25,645.72
4.	<u>First Aid Box</u>	1 no.	LS @5000 Tk. Per	5,000

SI no.	Description of item	Quantity	Unit price	Total amount
	Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.		box	
5.	<u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge.	1 no.	LS @ Tk. 30,000	30,000
6.	<u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge.	1 no.	LS @ Tk. 15,000	15,000

SI no.	Description of item	Quantity	Unit price	Total amount
7.	<u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	LS	LS @ Tk 30,000	30,000
8.	<u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krishnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet.	140 nos.	@ Tk. 1000	140,000
9.	<u>Motivation training</u> 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.	1 no.	LS @ Tk. 10,000	10,000

SI no.	Description of item	Quantity	Unit price	Total amount
10.	<u>Waste disposal facility</u> 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.	LS	@ Tk. 5000	5,000
11.	<u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area 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.	LS	@ Tk. 5000	5,000
12.	<u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	1 no.	LS @ Tk. 30,000	30,000
13.	<u>Environmental management</u> 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. <u>[One person to be appointed for W18(1), W18(2) & W18(3)]</u>	Presented in the BoQ of Ukhiya Darogabazar GC to Hijalia via Harinmara Road (Id: 422944031) and not repeated here.		
	Subtotal Bill: Environmental facilities			449,999.83

Cost of H&S Measures under COVID 19 Situations

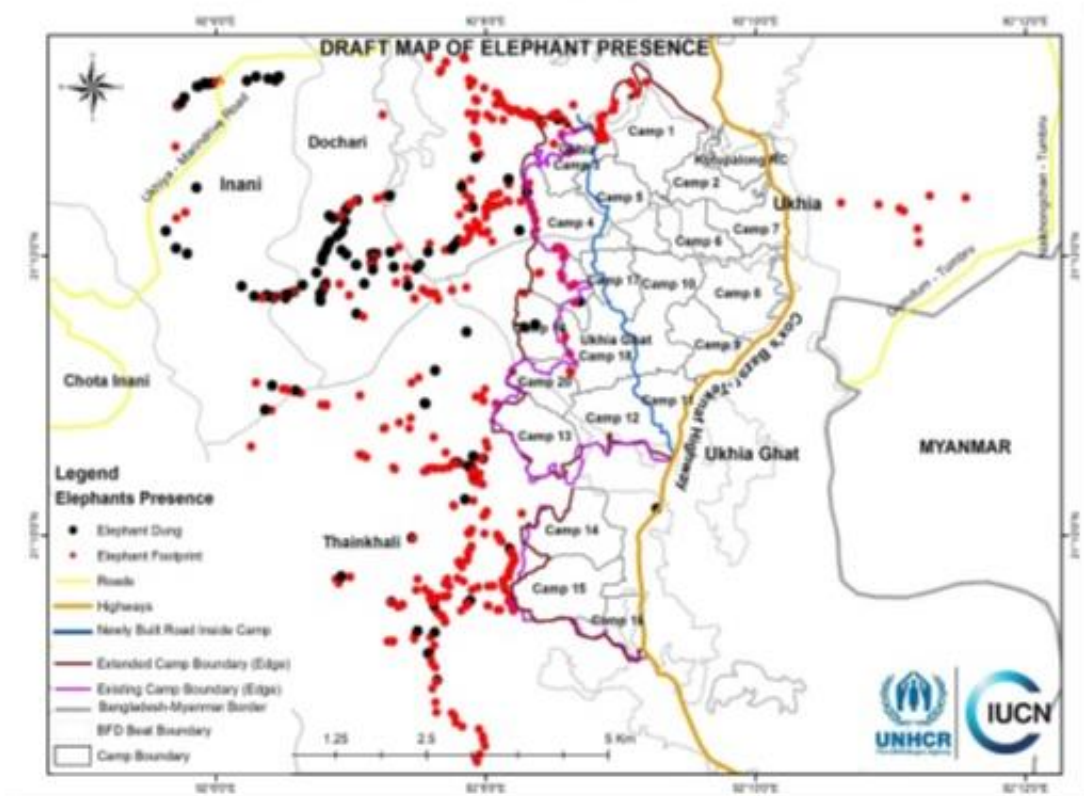
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 26 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-18.3).

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)	70		88	50.00	158	7,900.00	To be placed in a case/holder on the basin, for washing hands for max. 31 people a day and showering of 26 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	15 nos. for each site		N/A	400.00	15	6,000.00	For labors who work in close contact, 15 in each site



Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	5 nos. each day in each site		N/A	12.00	1350	16,200.00	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	26 nos. for each labor camp		35.00	468	16,380.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1 Can	N/A	2 Can	250.00	3	750.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	9	3,600.00	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						100,930.00	

Appendix-4: Elephant Presence Map



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

Appendix-5: Attendance of participants in the Consultation Meeting

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মানসি সেবায় প্রকল্প
 Local Government Engineering Department (LGED)
 Public Consultation Participants List
 Communication and Participation Programme
 Focus Group Discussion

সময়: 11:35 তারিখ: 29.01.20

উপ-প্রকল্প/কম্পোনেন্ট এর নাম: পাবনা দিঘলিয়া-৩।
 মতামতের স্থান: পাবনা দিঘলিয়া টোলপ্লাজা মোড়।
 ইউনিয়ন: বাকুলিয়া-৩ কার্যকর: ৪ জন: চাকতিয়া ইউনিয়ন: উদ্বিগ্ন: ৩ জন: বাকুলিয়া

অংশগ্রহণকারীদের তালিকা (পরিচয় ও স্বাক্ষর):

ক্র.সং.	নাম	বয়স	পুরুষ/মহিলা	গ্রাম	স্বাক্ষর/সিগনেচার
১	হুসাইন আলী	৬২	✓	পা: দিঘলিয়া	[Signature]
২	আব্দুল হামিদ	৫৫	✓	পা: দিঘলিয়া	[Signature]
৩	মোহাম্মদ হাফিজ	২০	✓	পা: দিঘলিয়া	[Signature]
৪	আব্দুল কাদের	৪৪	✓	পা: দিঘলিয়া	[Signature]
৫	হাসিনুল হক	৩৪	✓	পা: দিঘলিয়া	[Signature]
৬	মোহাম্মদ হাফিজ	২৫	✓	পা: দিঘলিয়া	[Signature]
৭	মুহাম্মদ মিয়া	৪৬	✓	পা: দিঘলিয়া	[Signature]
৮	আব্দুল হামিদ	৩৫	✓	পা: দিঘলিয়া	[Signature]
৯	আব্দুল হামিদ	৪০	✓	পা: দিঘলিয়া	[Signature]
১০	আব্দুল হামিদ	৬০	✓	পা: দিঘলিয়া	[Signature]
১১	মোহাম্মদ হামিদ	৩৬	✓	পা: দিঘলিয়া	[Signature]
১২	মোহাম্মদ হামিদ	৩০	✓	পা: দিঘলিয়া	[Signature]
১৩	মোহাম্মদ হামিদ	৪০	✓	পা: দিঘলিয়া	[Signature]
১৪	পা: আব্দুল হামিদ	২৩	✓	পা: দিঘলিয়া	[Signature]

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-project Component Sites



Existing Surroundings of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Local Government, Rural Development and Co-operatives
Local Government Division
Local Government Engineering Department

Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy
Environmental Screening Report
For Bottali-Chagol Bazar Road, Id: 422944040
with culverts and side drains
Under the package no. EMCRP/W18
November-2020



ACRONYMS

BOQ	Bill of Quantities
BFS	Brick Flat Soiling
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
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UE	Upazila Engineer
UNHCR	The United Nations High Commissioner for Refugees
UNO	Upazila Nirbahi Officer
VAT	Value-Added Tax
WB	World Bank

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Hosting Community and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as preparation of school cum cyclone shelters, facilitating growth centers and RCC Bridge development, road development works are highly significant to ensure all branches of interventions are welded together. Local Government Engineering Department (LGED) as the implementing agency with D&SC (Development Design Consultants Limited-DDC) identifies the project beneficiary as Displaced Rohingya Population (DRP) and Hosting Community or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements has been carried out in accordance with guidelines from World Bank; as a result, environmental and social screening reports has been produced along with worked out impact factors which are introduced with mitigation and management measures. In order to present a quick picturesque of the proposed component, an overview is given hereunder.

This proposed Bottali-Chagol Bazar Road belongs to Rumkha Bazarpara village at Haldiapalong union, Ward-7 under Ukhiya Upazila. This road has started from Cox's Bazar-Teknaf highway stretching 975 meters from north side to south side, some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Battali Jame mosque (10m), pond (6m), Shaheed A.T.M Jafor Alam School and college (500m), Fakiramora Madrasah & Hafezkhana (500m), Sabek Rumkha GPS (1km), Dhurumkhali station jame mosque (1km), Dhurumkhali khal (1km); at south side Rumkha Bazar (75m), Palong Public Kindergarten (80m), Rumkha Bazar jame mosque & Hafezkhana (90m); at east side Tocchekhali khal (5m), Cremation (8m), graveyard (10m), Courtbazar station (800m); and west side Rumkha Islamia Alim Mosque & Madrasah (500m), Rumkha Monir market (100m), Reju Khal (500m), Shaheed A.T.M Diabetics Hospital (500m), Khunda Fakirer Mazar & graveyard (200m), Gorachand Madbarpara Buddhist Temple (1km), Chowdhurypara GPS (800m), Chowdhurypara mosque & orphanage (800m), Chowdhurypara graveyard (1km). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential

pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient roadways and associated safeguard facilities. Since the road will not pass through any sensitive areas of any kind and necessary environmental conservative, mitigation and offsetting measures will be adopted with due care and diligence during the construction period, the component should be taken undoubtedly in further consideration for development.

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ 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 923,033². 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 effects.

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. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this

¹ ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)

² IOM Needs and Population Monitoring round 12 as of October 10, 2018

area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

The sub-project has the primary target to improve the communication facilities of the area. This intervention, without a doubt facilitates the following: it will

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **‘Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District’**; with a package name-EMCRP/W18.

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W18: Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District:

Improvement of

(1) Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031 (2) Nalbania pry. school Road, Id:422944032 (3) West diglia road, Id:422944034 (4) Bottali-Chagol Bazar Road, Id:422944040 (5) Ratnapalong Boddho Mondir Road Id:422944062 and (6) Rumka-Sabek Rumka pry. school Road, Id:422944044 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (4) Bottali-Chagol Bazar Road, Id:422944040

Component Location:

i. ID-422944040	ii. Ward No.: 7	iii. Mouza: Rumkhapalong
iv. Village: Rumkha Bazarpara	v. Name of Union: Halদিাপালং	
vi. Name of the Upazila: Ukhiya		
vii. Construction Year: 2020-2021	viii. Length (m): 975	ix. Width (m): 4.9-5.5
Distance from UZHQ: 7 Km.		
GPS Coordinates	Latitude Value: 21.285218 N (Starting Point) Longitude Value: 92.100310 E (Starting Point)	
	Latitude Value: 21.276774 N (Ending Point) Longitude Value: 92.098455 E (Ending Point)	
Condition of Road	Herring Bone Bond (HBB)	
Communication Source	Radio & Mobile Network	

Subproject interventions:

- **Bituminous Carpeting** options.
- 1no. **Cross Drain** (dimension: 0.975mX 0.975m) at 30.0m of chainage
- 2 nos. **Box Culverts** (dimension: 2.0mX2.0m) at Ch. 155.0m and at 785.0m of chainage
- 212.0m (1.5m height) Toe wall
- 26.0m Brick Palisading wall
- RCC Retaining wall (32.0m length and 3.0m height) with Pre-cast RCC Pile (6.0m length) at different chainage
- Road safety work and
- Environmental Mitigation work

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period: 2020-2021

Estimated total cost of component: 18,977,260.17 (Tk.)

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. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the consultation meeting with local community from 01:58 PM to 03:20 PM on 25 January, 2020 at alongside Battali Jame Mosque which is adjacent of the sub-project location, Refer to **Figure 2.1.1**, Public Consultation Participants List are attached in **Appendix-5**. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants on environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

The participants were spontaneous and expressed that the sub- project will provide them various benefits including communication and transportation facilities. They also expressed that at present they are facing various types of problems due to this unimproved condition of the road.

Discussion was also made on various environmental issues like dust/air pollution, water pollution etc. which are potential environmental hazards during road construction. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase.

2.3 Suggestions and recommendations of the participants

The significant suggestions that came out during the meeting are given below:

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

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. 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 is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several community, agricultural lands and community level forest. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.

Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Battali Jame mosque (10m), pond (6m), Shaheed A.T.M Jafor Alam School and college (500m), Fakiramora Madrasah & Hafezkhana (500m), Sabek Rumkha GPS (1km), Dhurumkhali station jame mosque (1km), Dhurumkhali khal (1km); at south side Rumkha Bazar (75m), Palong Public Kindergarten (80m), Rumkha Bazar jame mosque & Hafezkhana (90m); at east side Tocchekhali khal (5m), Cremation (8m), graveyard (10m), Courtbazar station (800m); and west side Rumkha Islamia Alim Mosque & Madrasah (500m), Rumkha Monir market (100m), Reju Khal (500m), Shaheed A.T.M Diabetics Hospital (500m), Khunda Fakirer Mazar & graveyard (200m), Gorachand Madbarpara Buddhist Temple (1km), Chowdhurypara GPS (800m), Chowdhurypara mosque & orphanage (800m), Chowdhurypara graveyard (1km). Some establishments are at short distances might get affected by air and dust but most of the features are at sufficient distances so no disturbance to all these establishments/features is anticipated due to construction activities, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).

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. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

3.3.1 General Consideration

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 Bank³ 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. 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, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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

3.3.2 Site Specific

The sub-project area is not adjacent to the sea. The cyclone has higher impact in the area and water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge was not reported in the

³ <https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf>

vicinity of the subproject. Temperature was reported to be increased and Thunder storm is found to have highest impact in the area. Thunder storm has been seen create more damage than before but no casualty was reported.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of-the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sqm for a single arrester. In addition, tree plantation on the road slope/within the premises is also suggested to soothe the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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.

The proposed road is on plain land. A number of trees of road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree in the periphery of the subproject. Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Battali Jame mosque (10m), pond (6m), Shaheed A.T.M Jafor Alam School and college (500m), Fakiramora Madrasah & Hafezkhana (500m), Sabek Rumkha GPS (1km), Dhurumkhali station jame mosque (1km), Dhurumkhali khal (1km); at south side Rumkha Bazar (75m), Palong Public Kindergarten (80m), Rumkha Bazar jame mosque & Hafezkhana (90m); at east side Tocchekhali khal (5m), Cremation (8m), graveyard (10m), Courtbazar station (800m); and west side Rumkha Islamia Alim Mosque & Madrasah (500m), Rumkha Monir market (100m), Reju Khal (500m), Shaheed A.T.M Diabetics Hospital (500m), Khunda Fakirer Mazar & graveyard (200m), Gorachand Madbarpara Buddhist Temple (1km), Chowdhurypara GPS (800m), Chowdhurypara mosque & orphanage (800m), Chowdhurypara graveyard (1km). from the proposed improvement site.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. So, 1no. Cross Drain (dimension: 0.975mX 0.975m) at 30.0m of and 2 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 155.0m and at 785.0m of chainage will be constructed at the subproject area for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural lands to provide a sustainable irrigated agricultural system. Small hills or high land is not found beside the road. Due to

the low land in different chainage of the road 212.0m (1.5m height) Toe wall, 26.0m Brick Palisading wall and RCC Retaining wall (32.0m length and 3.0m height) with Pre-cast RCC Pile (6.0m length) at different chainage will be constructed for mitigation measure. 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. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific environmental 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.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf Upazila of Cox's Bazar district in order to offset the environmental and ecological devastation, that had been occurred due to the evolution of Rohingya Crisis, to an achievable level. Many of these road lengths will go through and by the Rohingya Camps, up on the hill and are already denuded of trees or vegetation. Local Government Engineering Department (LGED) will allocate and channelize the finance to the Forest Department under the said additional financing component and oversee the progress of works with due diligence. However, this enhancement work will improve the environmental quality of the area and reinstate some parts of the ecosystem services to those areas, though primarily.

4.2 Health and Safety Measures under COVID situation

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

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

- a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
- b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.

- c. General practice of cleaning and hygiene has to be maintained in all project/site offices and camp sites, and supply of necessary PPEs and cleaning /disinfecting materials along with proper use of those is to be ensured.
- d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
- e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
- f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

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

4.3 Cost of Environmental Enhancement Works in BOQ

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

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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. LIMITATIONS OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project.

There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing 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.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District; EMCRP/W18).

Name of the component: Bottali-Chagol Bazar Road, Id:422944040

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

Estimated total cost of sub-project (in Taka): 197,096,106.42 (Including provisional sum)

Estimated construction period duration: 9 Month

Estimated total cost of the component (in Taka): 18,977,260.17

Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies on how long projects can operate in the camps.

District: Cox's Bazar

Sub-District: Ukhiya

Union: Haldiapalong

Name of Community/Local Area: Rumkha Bazarpara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.):

The Sub-Project is categorized as a village road and construction with Bituminous Carpeting options. For drainage of rain water 1no. Cross Drain (dimension: 0.975mX 0.975m) at 30.0m of chainage and 2 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 155.0m and at 785.0m of chainage will be constructed on the sub-project, Due to the low land in different chainage for protection work of the road 212.0m (1.5m height) Toe wall, 26.0m Brick Palisading wall and RCC Retaining wall (32.0m length and 3.0m height) with Pre-cast RCC Pile (6.0m length) at different chainage as well as for road safety work and Environmental Mitigation work has been included in the estimation.

Estimated footprint / land area for this sub-project is 4,777.5 sqm.

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

This proposed Bottali-Chagol Bazar Road belongs to Rumkha Bazarpara village at Haldiapalong union, Ward-7 under Ukhiya Upazila. This road has started from Cox's Bazar-Teknaf highway stretching 975 meters from north side to south side, along with mosque, agricultural land, bridge, khal, connecting road, graveyard, boundary fencing, trees etc.

Important Environmental Features (IEFs) near site:

Detail Chainage Length of the sub-project: 975m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Detailed Chainage length of the Sub-Project

Chainage	Left	Right	Environmental Impact
"0" Point 000-300	L		Battali Jame mosque, bamboo fencing, pond, agricultural land, Cox's Bazar-Teknaf highway, Tacchekhali khal
		R	Agricultural land
300-600	L		Tacchekhali khal, bridge, agricultural land, akashi trees, tin shed fencing, mango trees, rain tree, electric pole
		R	Agricultural land, Tacchekhali khal, nut trees, Akashi trees
600-975	L		Graveyard, agricultural land, connecting road, graveyard, agricultural land, open space
		R	Betel nut garden, electric pole, Diabetics Hospital connecting road, nut trees, agricultural land, electric pole



Figure: Starting Point of Bottali-Chagol Bazar Road

Overall Comments

DDC conducted consultation meeting with host community regarding the sub-project activities. Local 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 local individuals were participated in participatory public consultation meeting. Local communities have no objection to construction this sub-project. The community also appreciated the initiative for having easily accessible and passive their emergency situation. The proposed sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental setting of the area thus not going to create intimidation to important environmental features. No drainage congestion/water logging have been observed in the road area. But, some local trees like betel nut, rain tree etc., or additional vegetation may need to clear out due to construction

activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and cross drains, culverts have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season. The proposed Sub-project area for the construction included flat areas and moderate hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any 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.

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 brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic, fuel etc. in equipment yards. Human wastes might be deposited 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. This sub-project is situated within Rumkha Bazarpara village under Halদিাপালং union, Ward-7 of Ukhiya Upazila, Cox's Bazar. Some sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site are at north side Battali Jame mosque (10m), pond (6m), Shaheed A.T.M Jafor Alam School and college (500m), Fakiramora Madrasah & Hafezkhana (500m), Sabek Rumkha GPS (1km), Dhurumkhali station jame mosque (1km), Dhurumkhali khal (1km); at south side Rumkha Bazar (75m), Palong Public Kindergarten (80m), Rumkha Bazar jame mosque & Hafezkhana (90m); at east side Tocchekhali khal (5m), Cremation (8m), graveyard (10m), Courtbazar station (800m); and west side Rumkha Islamia Alim Mosque & Madrasah (500m), Rumkha Monir market (100m), Reju Khal (500m), Shaheed A.T.M Diabetics Hospital (500m), Khunda Fakirer Mazar & graveyard (200m), Gorachand Madbarpara Buddhist Temple (1km), Chowdhurypara GPS (800m), Chowdhurypara mosque & orphanage (800m), Chowdhurypara graveyard (1km). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 13-14 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

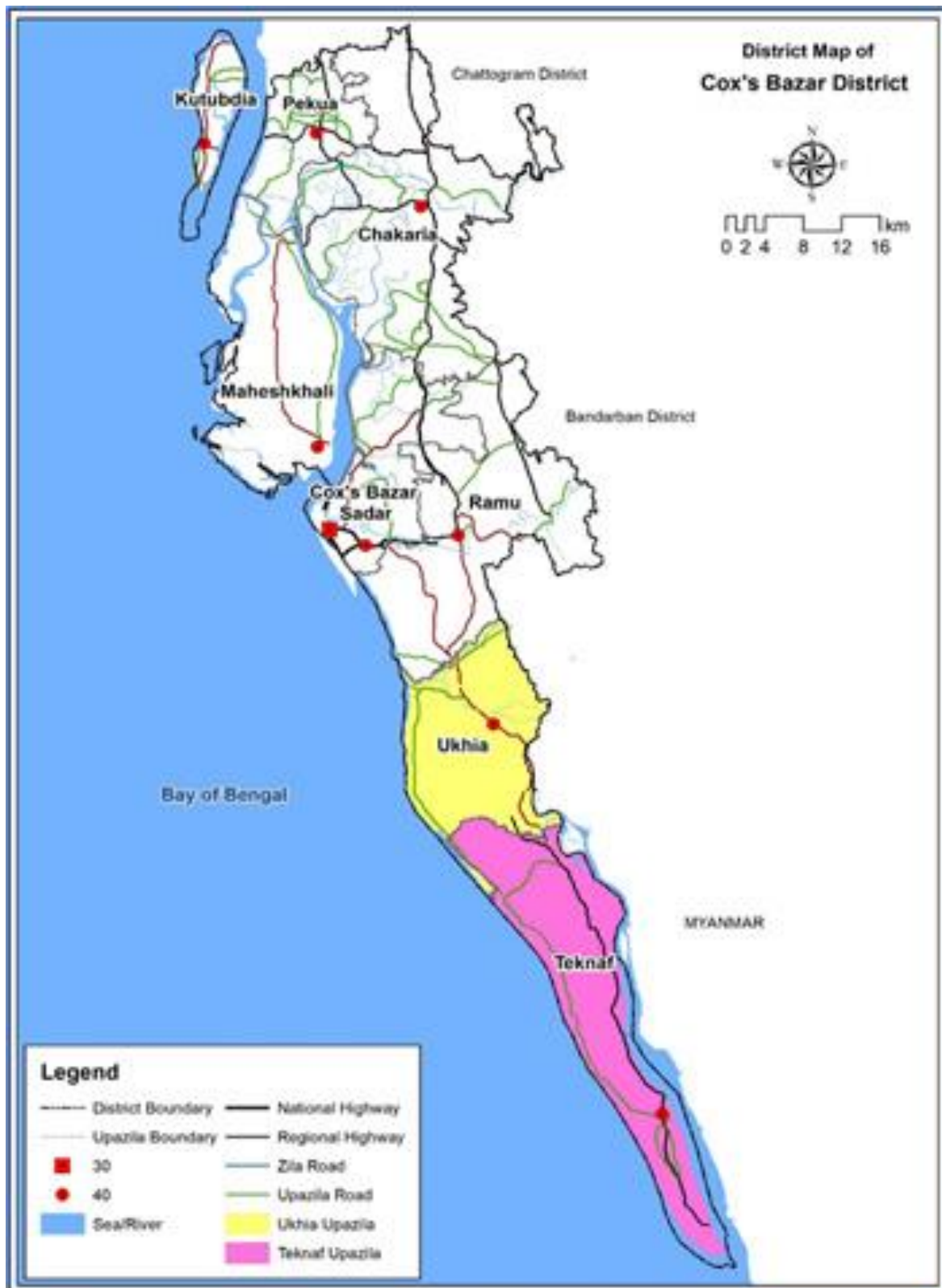


Figure 3: District Map with project location

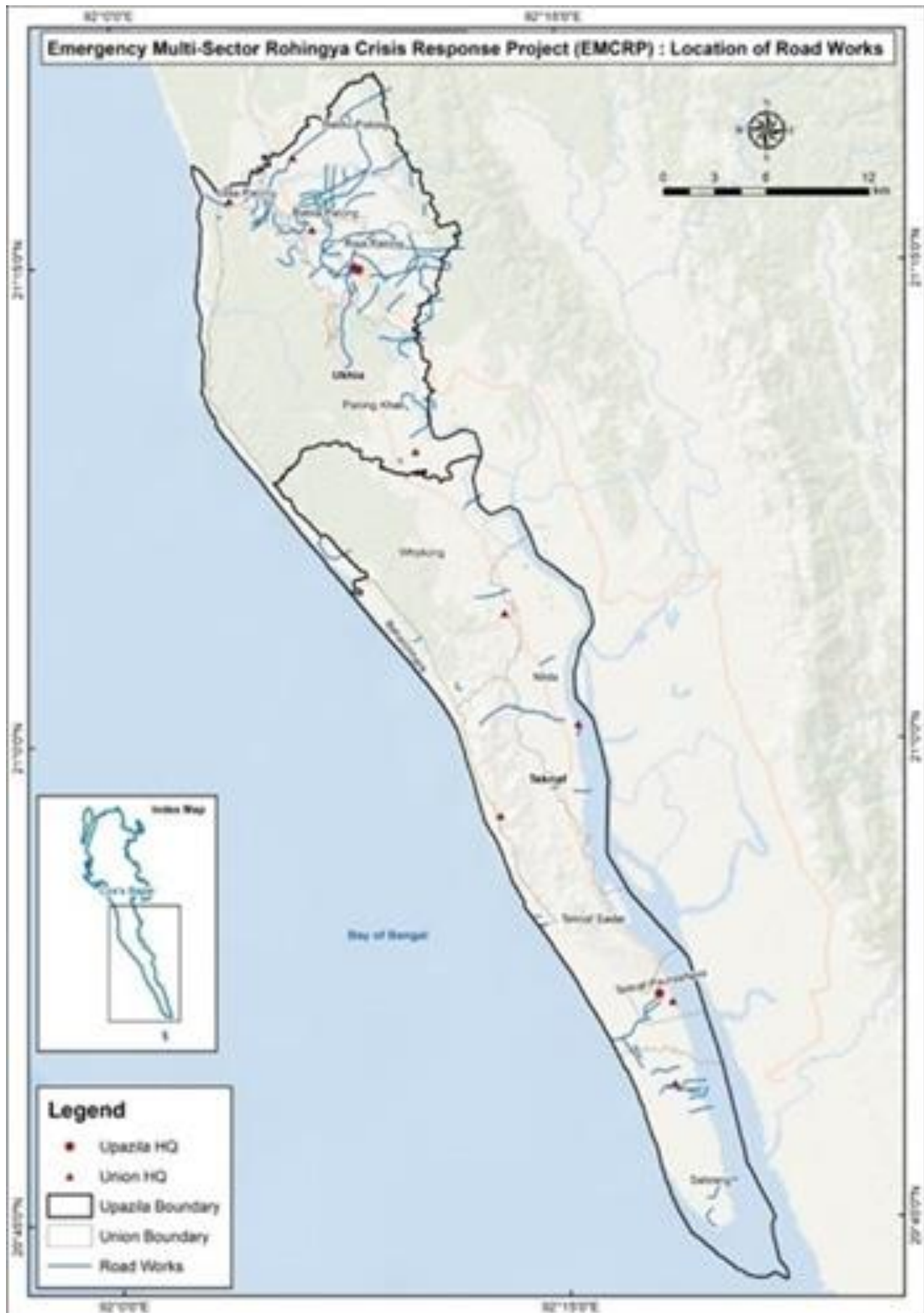


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

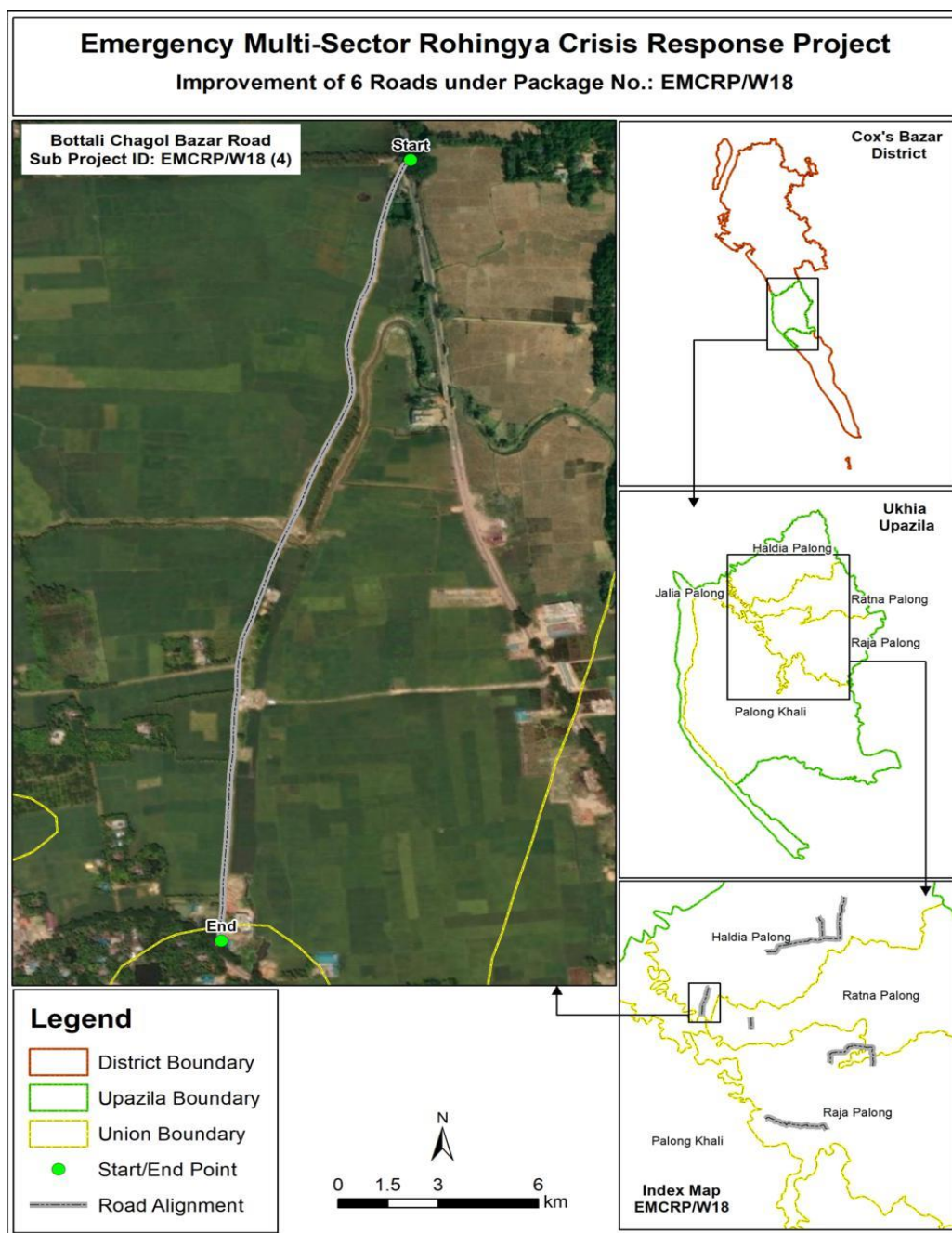


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road. Based on field survey, this sub-project involves of Herring Bone Bond (HBB). According to the design this sub-project will be developed with Bituminous Carpeting (BC) from Ch. 00 to Ch. 975m.

Sub-project Location:

Important Features	
ID	422944040

District	Cox's Bazar
Upazila	Ukhiya
Union	Haldiapalong
WARD	07
Total Chainage	995m
Proposed Chainage	975m
Road Type	Village Road
Proposed Intervention Type	Bituminous Carpeting (BC)
Road Starting Point Coordinates	Latitude: 21.285218 N Longitude: 92.100310 E
Road Ending Point Coordinates	Latitude: 21.276774 N Longitude: 92.098455 E

Land ownership

Land is owned by Government.

Expected construction period: 9 (Nine 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:

- i) The proposed Sub-project is located within Rumkha Bazarpara villages. Some other villages named Battali, Classipara, Sabek Rumkha, Dhurumkhali, Chowdhurypara etc. within one kilometer.
- ii) Some ponds and khal were found during field survey
- iii) No historical sites were found
- iv) Not required to relocate local community.
- v) Very low chance of loss of agricultural land.
- vi) Some Household Boundary made of bamboo and tin may need adjustments.
- vii) Environmental Sensitivity: No mentionable eco concerned establishment, no socio-cultural site and elephant corridors (Checked with local IUCN representative).

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

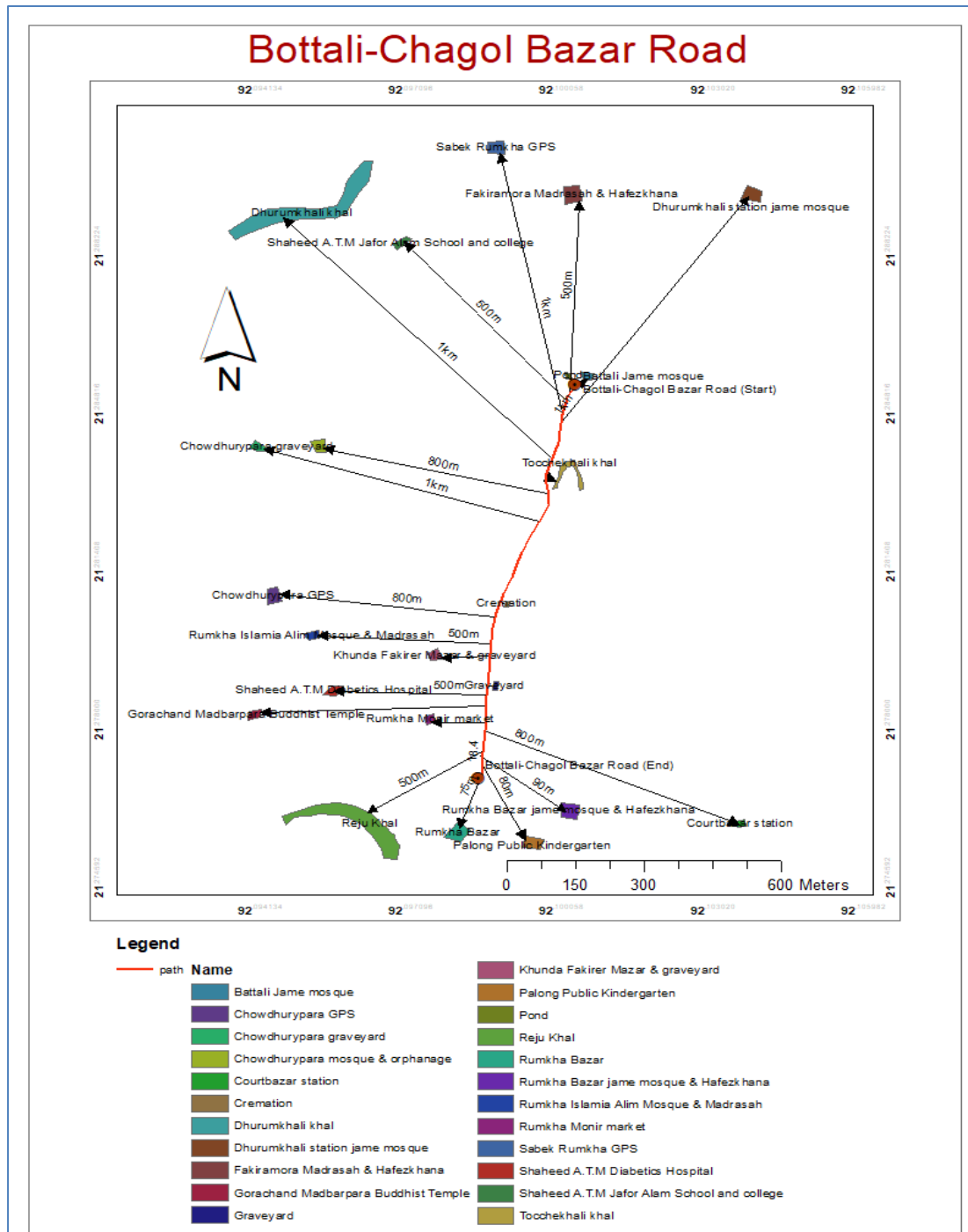
Description of cultural properties (if applicable, including distance from site):

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

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including at north side Battali Jame mosque (10m), pond (6m), Shaheed A.T.M Jafor Alam School and college (500m), Fakiramora Madrasah & Hafezkhana (500m), Sabek Rumkha GPS (1km), Dhurumkhali station jame mosque (1km), Dhurumkhali khal (1km); at south side Rumkha Bazar (75m), Palong Public Kindergarten (80m), Rumkha Bazar jame mosque & Hafezkhana (90m); at east side Tocchekhali khal (5m), Cremation (8m), graveyard (10m), Courtbazar station (800m); and west side Rumkha Islamia Alim Mosque & Madrasah (500m), Rumkha Monir market (100m), Reju Khal (500m), Shaheed A.T.M Diabetics Hospital (500m), Khunda Fakirer Mazar & graveyard (200m), Gorachand Madbarpara

Buddhist Temple (1km), Chowdhurypara GPS (800m), Chowdhurypara mosque & orphanage (800m), Chowdhurypara graveyard (1km). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. Apart from this structure no other sensitive environmental, cultural, archaeological, religious sites exists.

A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas are shown below.



Location of environmentally important and sensitive areas:

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

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

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 subproject boundary)

(3) Other issues:

No more mentionable issues rose.

*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 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 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, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Landslide potential is low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. The impacts are negative but very small scale, site-specific within a

relatively small area and adjustable by mitigation measures.
Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH): Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 200 feet and deep tubewell depth is 800 feet. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer. 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 across the road side of the proposed subproject area 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): Courtbazar connecting road, Diabetics hospital connecting road are concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also, the route has narrow curves.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce.
Possible location of labor camps: Labor camp can be established along the road since there are available open private lands. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) steels viii) Bitumen are the most common type of road materials used in construction.

Identification of access road for transportation (Yes/No):

Yes. The brick soling road can offer space adjacent labor camp to facilitate material unloading. The pickup trucks as material transportation vehicles can enter the access road. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Earth/ mud, plastics, brick chips, cement dusts, dust from bricks, steel wires, during construction which can be identified as solid wastes. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 10 kg daily and sludge may amount to 2 kg per day.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Residual waste from the labor camps will be generated. Equipment maintenance/vehicles on-site and scrap material will occur during construction work which are mostly solid wastes. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most common type of road materials used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.

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

The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being

natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
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. Because under this interventions, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts:
Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)
Low, Potential erosion may occur when moderately to highly sloping terrains are disturbed for the improvement of sub-project. The impacts are negative but short term, site specific within a relatively small area and adjustable by mitigation measures.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:
No traffic movement impacts on light but low effects of noise and air pollution.

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:
No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)
No
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)
No.
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 of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.

Likely direct and indirect impacts on economic development in the project areas by the sub-project:

Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.

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

Tocchekhali khal and a pond located within 10m from the proposed site and Reju Khal and Dhurumkhali khal are located at sufficient distances from the construction site. No such effect can be 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.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

The entire sub-project component area is nearly flat, thus no such type of impacts is anticipated.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

No

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Please summarize the results of environmental screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in Section 8.2 of ESMF. This table needs to be completed by environmental specialists. Please add rows to the table as necessary.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
1: Sub-Project Interventions	Air quality	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection; 	Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> 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 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. 	Monitoring as weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>and covered.</p> <ul style="list-style-type: none"> 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 construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. 			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> 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. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to nearby drainages, <i>khals</i> or water 	Water quality test (mainly GW) twice during the construction period in six months interval.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					bodies due to construction activities. • Records should be kept and logged.	
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. • Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. • Records for any type of training or awareness building sessions must be kept at site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Site-specific H&S Plan; • Records of supply of uncontaminated water; • Record of Health & Safety orientation trainings; • Condition of sanitation facilities for workers. 	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Record of regular inspection. • Record of accidents/incidents. 	Monthly monitoring.
	Storage of construction materials	Under the subproject	<ul style="list-style-type: none"> • Orienting concerned person and team assigned for the construction work. 	Construction Contractor and monitored by	<ul style="list-style-type: none"> • List of materials and sources of materials; 	During implementation phase, as

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
		intervention the overall score is low .		Consultant and PIU		necessary with discussion with PIU, Consultant
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Complaints from community; • Regular inspection of waste management activity; • Waste disposal record. 	As work weekly progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and landslides)	Under the sub-project intervention, the overall score is low.	<ul style="list-style-type: none"> • During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment remain within the right of way and does not disturb the crop. 	Contractor, environmental specialist of D&SC	<ul style="list-style-type: none"> • Location of road alignment and slope. 	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low .	<ul style="list-style-type: none"> With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. 	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low .	<ul style="list-style-type: none"> 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 specialist of D&SC	<ul style="list-style-type: none"> Complaints from community; 	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Noise pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB) 	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. 	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. 	Construction Contractor, environmental specialist of D&SC.	<ul style="list-style-type: none"> • Complaints from communities, pedestrians 	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<ul style="list-style-type: none"> The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. Local residents should be kept informed about planned Works 			
4. Post Construction	Road Safety	Under the issue the overall score is low .	<ul style="list-style-type: none"> Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate traffic detours, and sufficient signage & warning signs, Post speed limits and suitable bending on the road. The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. 	Construction Contractor, environmental specialist of D&SC.	<ul style="list-style-type: none"> Road signage and safety instruments at suitable locations and chainage 	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is low .	<ul style="list-style-type: none"> Replantation of trees during monsoon period Maintain of trees properly Check survival of trees and replant the dead trees 	Construction Contractor, environmental specialist of D&SC.	<ul style="list-style-type: none"> Number of complaints from stakeholders; Records of trees number and tree plantation inspection 	Immediately after the construction work is over.
5. Operatio	Maintenance of road and	Under the issue	<ul style="list-style-type: none"> No advertisement/boardings shall be allowed within the Right of Way 	LGED	<ul style="list-style-type: none"> Number of complaints from 	During Operation under

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
nal Phase	assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	the overall score is low .	limits of the project road. <ul style="list-style-type: none"> Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. Clear smooth speed breaker/rough surfaces should be clear in views. Regular maintenance of road surface and shoulders. 		stakeholders;	LGED's regular maintenance program in each 3 years.

* 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

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 Access and evacuation Roads: Bottali-Chagol Bazar Road, Id: 422944040

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> No land acquisition is allowed within this sub-project activities <p>So, there are no any mitigation measures according to this impact.</p>	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	<ul style="list-style-type: none"> Under this subproject, there is no scope of negative impact of adjacent livelihoods 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	<ul style="list-style-type: none"> All of the project stakeholders should be consulted Separate community level consultation meeting with the potential affected HHs Consultation meeting with host communities about the project objectives and scope of works 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	<ul style="list-style-type: none"> Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	<ul style="list-style-type: none"> Selection of sub-project sites and all implementing interventions must take place outside of the 	PIU	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	conflict	elephant corridor/influence area.		PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	<ul style="list-style-type: none"> Our selected sites avoided the low land near the water bodies or natural flow path to avoid the flash flood or any kind of surface runoff. Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. After completing the development we restored the place as like before to avoid the cut and fill operational problems. This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. The contractor ensuring sound environment for the local residents near the sub project site. 	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	<ul style="list-style-type: none"> Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. All Personal Protective Equipments (PPEs) must be ensured in sites before starting any kinds of construction works. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	<ul style="list-style-type: none"> Acceptable range of emission of CO, particulate matter [SPM (Suspended particulate matter), PM2.5, 10] and Hydrocarbons must be maintained 	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>through good construction work practices</p> <ul style="list-style-type: none"> Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level 		
Construction Activity	Safety Issues	<ul style="list-style-type: none"> Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem Before works started Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. Records of every training must be kept at site. All kinds of Child labour are completely prohibited in every site. Every construction materials storage site will be well fenced by Tin and safety caution tape. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	<ul style="list-style-type: none"> Contractors will maintain proper route for traffic management which is to beconsulted with and confirmed by the Executive Engineer of Cox's Bazar. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	<ul style="list-style-type: none"> 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. 	PIU & Contractor	Social Development Specialist and Gender Specialist

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> 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 works starts. 		of PIU, PSC
Construction Activity	Increase in road accidents	<ul style="list-style-type: none"> Maintain safety measures during the movement of heavy machinery and equipment. Local community will be trained up on traffic management and awareness. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	<ul style="list-style-type: none"> 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 labour camps will be put in place Treated water will be made available at site for drinking purpose. Adequate accommodation arrangements for labour 	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>forces.</p> <ul style="list-style-type: none"> Labor code of conduct is to be disclosed through consultation. 		
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	<p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site After completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	<p>Health & Safety Risks:</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. 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 	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
	hearing loss, heat stress, and dermatitis.	<p>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.</p> <ul style="list-style-type: none"> • 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 the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. 		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Adequate quantities of drinking water will be available at all Sites, on different locations within the site. Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. 		
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	<ul style="list-style-type: none"> Preventative maintenance schedule should be followed. Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time. 	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the construction)	<p>The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community 	<ul style="list-style-type: none"> Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder. 	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Operation & Maintenance	Noise disturbances to fauna	<ul style="list-style-type: none"> Provision to maintain noise and vibration 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. 	UE (under the direct guidance of Executive Engineer)	UNO, PSC.

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 the 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.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and 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. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.



- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use 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 the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite 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 a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, +8801714980171

Tanvir Ahsan Haque, Environmental Specialist, +8801688117059

Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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

Appendix-3: Cost of Environmental 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. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	<u>Grass Turfing</u> Turfing on embankment top and slope & 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)	2883.0 Sq.m	@38.15 Tk. Per sqm	109,986.45
2.	<u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	975.0m	@ 2.56 BDT	2,496.00
3.	<u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	2 nos.	@12822.86 per toilet	25,645.72
4.	<u>First Aid Box</u> Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated	1 no.	LS @5000 Tk. Per box	5,000

SI no.	Description of item	Quantity	Unit price	Total amount
	and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.			
5.	<u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge.	1 no.	LS @ Tk. 30,000	30,000
6.	<u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge.	1 no.	LS @ Tk. 15,000	15,000

SI no.	Description of item	Quantity	Unit price	Total amount
7.	<u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	LS	LS @ Tk 30,000	30,000
8.	<u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krishnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet.	100 nos.	@ Tk. 1000	100,000
9.	<u>Motivation training</u> 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.	1 no.	LS @ Tk. 10,000	10,000



Sl no.	Description of item	Quantity	Unit price	Total amount
10.	<u>Waste disposal facility</u> 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.	LS	@ Tk. 5000	5,000
11.	<u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area 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.	LS	@ Tk. 5000	5,000
12.	<u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	1 no.	LS @ Tk. 30,000	30,000
13.	<u>Environmental management</u> 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. <u>[One person to be appointed for W18(4), W18(5) & W18(6)]</u>	12	@ Tk. 35000	420,000
	Subtotal Bill: Environmental facilities			788,128.17

Cost of H&S Measures under COVID 19 Situations

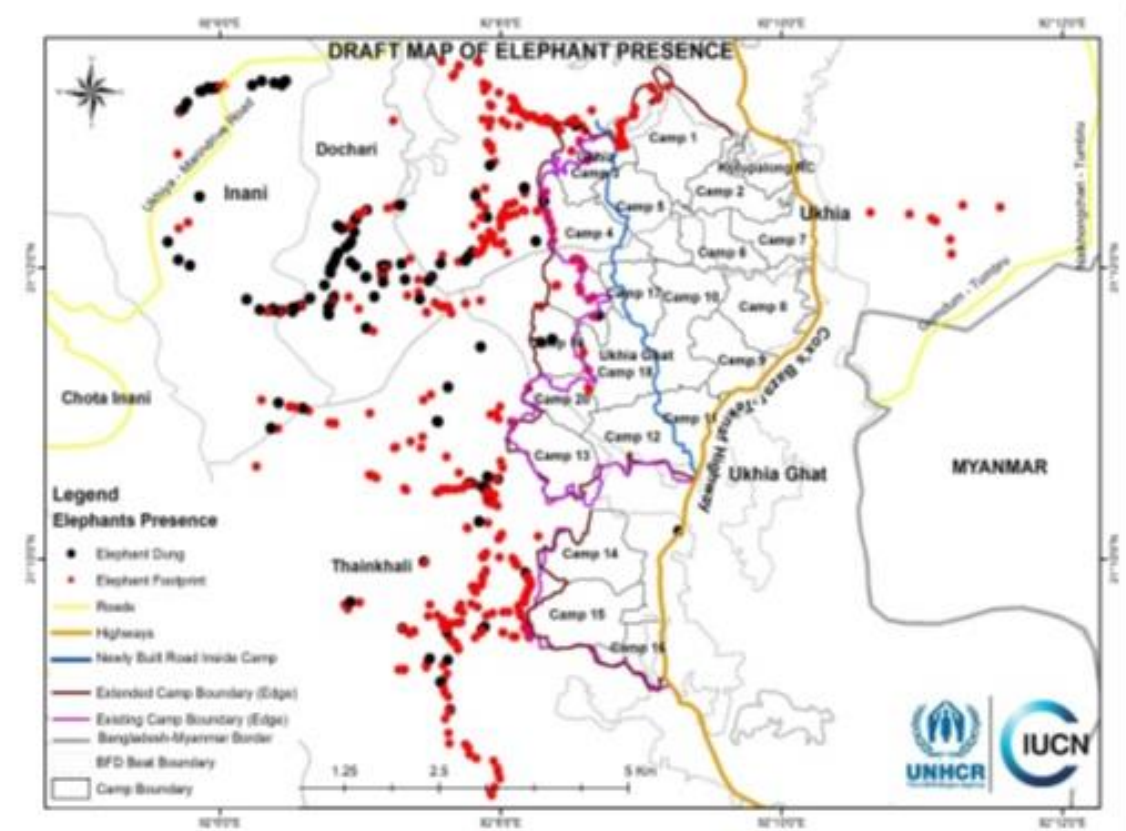
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-18.4).

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)	54		68	50.00	122	6,100.00	To be placed in a case/holder on the basin, for washing hands for max. 25 people a day and showering of 20 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill)	2 bottles and 1 Can for each site	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office
6.	Face Shield/ Protective Safety Goggles	12 nos. for each site		N/A	400.00	12	4,800.00	For labors who work in close contact, 12 in each site



Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	5 nos. each day in each site		N/A	12.00	1350	16,200.00	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	360	12,600.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1 Can	N/A	2 Can	250.00	3	750.00	
10.	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	9	3,600.00	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						94,150.00	

Appendix-4: Elephant Presence Map



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

Appendix-5: Attendance of participants in the Consultation Meeting

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

Time: ১১.৫৪ PM.....

Date: 25/07/2020

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

সভার নাম: বড়োনি হাট চানন বারের গ্রুপ
সরবিসের স্থান: বড়োনি গ্রুপ প্রজেক্ট গ্রুপ

ইমার্জেন্সি ইন্টিগ্রেসিভ
কর্মসূচী: বঙ্গালান-৮৭০
উপকরণ: উদ্ভিদ
সেবা: রক্তচাপ

অংশগ্রহণকারীদের তালিকা (পরিচয় ও বয়স)

ক্রমিক নং	নাম	বয়স	পুরুষ/মহিলা	গ্রাম	স্বাক্ষর
০১	মদাতুল্লাহ আলী	৪৬	পুরুষ	কমলা কানন	
০২	" এম. জাহান্না	৬৮	"	"	আব্বাস
০৩	" আব্দুল করিম	৩৬	"	"	আব্বাস
০৪	" মোস্তাফিজ আলী	২৪	"	"	আব্বাস
০৫	" হেলাল উদ্দিন (কো)	৬৫	"	"	আব্বাস
০৬	" নূরুল আলী	২৬	"	"	আব্বাস
০৭	" রিজাদ	২০	"	"	আব্বাস
০৮	" মো: আব্দুল নাসের	২৬	"	"	আব্বাস
০৯	" আব্দুল	২০	"	"	আব্বাস
১০	" জাহান্না আলী	৬২	"	"	আব্বাস
১১	" আব্দুল করিম	৬০	"	"	আব্বাস
১২	" মোহের আলী	৬০	"	"	আব্বাস
১৩	" সাহাব উদ্দিন ক্রি:	৪২	"	"	আব্বাস
১৪	" মো: মাহমুদ উল্লাহ	৩০	"	"	আব্বাস
১৫	" কামরুল হুসাইন	৪০	"	"	আব্বাস
১৬	" মমতুল হুসাইন	২৬	"	"	আব্বাস
১৭	" মনির	২৬	"	"	আব্বাস
১৮	" মাহমুদ আলী	৪৬	"	"	আব্বাস
১৯	" মাহমুদ আলী	৩৭	"	"	আব্বাস
২০	" মাহমুদ	৬২	"	"	আব্বাস

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-project Component Sites



Existing Surroundings of the Sub-Project



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Local Government, Rural Development and Co-operatives
Local Government Division
Local Government Engineering Department

Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

For Ratnapalong Boddho Mondir Road Id: 422944062
with culverts and side drains

Under the package no. EMCRP/W18

November-2020





ACRONYMS

BOQ	Bill of Quantities
BFS	Brick Flat Soiling
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
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UE	Upazila Engineer
UNHCR	The United Nations High Commissioner for Refugees
UNO	Upazila Nirbahi Officer
VAT	Value-Added Tax
WB	World Bank

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Hosting Community and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as preparation of school cum cyclone shelters, facilitating growth centers and RCC Bridge development, road development works are highly significant to ensure all branches of interventions are welded together. Local Government Engineering Department (LGED) as the implementing agency with D&SC (Development Design Consultants Limited-DDC) identifies the project beneficiary as Displaced Rohingya Population (DRP) and Hosting Community or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements has been carried out in accordance with guidelines from World Bank; as a result environmental and social screening reports has been produced along with worked out impact factors which are introduced with mitigation and management measures. In order to present a quick picturesque of the proposed component, an overview is given hereunder.

This proposed Ratnapalong Boddho Mondir Road belongs to Ratnapalong village at Ratnapalong union, Ward-8 under Ukhiya Upazila. This road has started from Valukia-Court bazar road stretching 1255 meters from South side to North side, some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Khandakarpara graveyard (200m); at south side Jhawtala central mosque (80m), Telipara Jame mosque (90m), Middle Ratna Buddhist Temple (120m); at east side Ratna GPS (20m), Palong Model High School (25m), Madborpara Jame Mosque (80m), Chadilkata Jame Mosque (60m) and west side Playground (5m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient roadways and associated safeguard facilities. Since the road will not pass through any sensitive areas of any kind and necessary environmental conservative, mitigation and offsetting measures will be adopted with due care and diligence during the construction period, the component should be taken undoubtedly in further consideration for development.

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ 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 923,033². 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 effects.

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. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

¹ ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)

² IOM Needs and Population Monitoring round 12 as of October 10, 2018

The sub-project has the primary target to improve the communication facilities of the area. This intervention, without a doubt facilitates the following: it will

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under 'Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District'; with a package name-EMCRP/W18.

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W18: Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District:

(1) Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031 (2) Nalbania pry. school Road, Id:422944032 (3) West diglia road, Id:422944034 (4) Bottali-Chagol Bazar Road, Id:422944040 (5) Ratnapalong Boddho Mondir Road Id:422944062 and (6) Rumka-Sabek Rumka pry. school Road, Id:422944044 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (5) Ratnapalong Boddho Mondir Road Id:422944062

Component Location:

i. ID-422944062	ii. Ward No.: 8	iii. Mouza: Ratnapalong
iv. Village: Ratnapalong	v. Name of Union: Ratnapalong	
vi. Name of the Upazila: Ukhiya		
vii. Construction Year: 2020-2021	viii. Length (m): 1255	ix. Width (m): 4.9-5.5
Distance from UZHQ: 3 Km.		
GPS Coordinates	Latitude Value: 21.2763144 N (Starting Point) Longitude Value: 92.1115908 E (Starting Point)	
	Latitude Value: 21.2727027 N (Ending Point) Longitude Value: 92.1113447 E (Ending Point)	
Condition of Road	Bituminous Carpeting (BC)	
Communication Source	Radio & Mobile Network	

Subproject interventions:

- Bituminous Carpeting options.
- 1no. Cross Drain (dimension: 0.975mX 0.975m) at 1175.0m of chainage
- 2 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 667.0m and 1091.0m of chainage. 2 nos. Box Culvert (dimension: 1vX4.5mX3.5m) at Ch. 623.0m and 835.0m of chainage
- Road safety work and
- Environmental Mitigation work

Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period: 2020-2021
Estimated total cost of component: 21,366,128.86 (Tk.)

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. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the consultation meeting with local community from 11:00 AM to 12:25 PM on 01 February, 2020 at a Shop of Middle Ratnapalong which is adjacent of the sub-project location, Refer to **Figure 2.1.1**, Public Consultation Participants List are attached in **Appendix-5**. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants on environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

The participants were spontaneous and expressed that the sub- project will provide them various benefits including communication and transportation facilities. They also expressed that at present they are facing various types of problems due to this unimproved condition of the road.

Discussion was also made on various environmental issues like dust/air pollution, water pollution etc. which are potential environmental hazards during road construction. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase.

2.3 Suggestions and recommendations of the participants

The significant suggestions that came out during the meeting are given below:

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

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. 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 is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several community, agricultural lands and community level forest. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.

Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Khandakarpara graveyard (200m); at south side Jhawtala central mosque (80m), Telipara Jame mosque (90m), Middle Ratna Buddhist Temple (120m); at east side Ratna GPS (20m), Palong Model High School (25m), Madborpara Jame Mosque (80m), Chadilkata Jame Mosque (60m) and west side Playground (5m). No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).

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. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

3.3.1 General Consideration

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 Bank³ 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. 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, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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 plantation in sub-project areas, construction of drainage facilities along the road length and installing thunder arrester across the areas, have been suggested and will be implemented.

3.3.2 Site Specific

The sub-project area is not adjacent to the sea. The cyclone has higher impact in the area and water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge was not reported in the vicinity of the subproject. Temperature was reported to be increased and Thunder storm is found to have highest impact in the area. Thunder storm has been seen create more damage than before but no casualty was reported.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of-the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sqm for a single arrester. In addition, tree plantation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

³ <https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf>

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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.

The proposed road is on plain land. A number of trees of road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree in the periphery of the subproject. Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Khandakarpara graveyard (200m); at south side Jhawtala central mosque (80m), Telipara Jame mosque (90m), Middle Ratna Buddhist Temple (120m); at east side Ratna GPS (20m), Palong Model High School (25m), Madborpara Jame Mosque (80m), Chadilkata Jame Mosque (60m) and west side Playground (5m) from the proposed improvement site.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. So, a Cross Drain (dimension: 0.975mX 0.975m) at 1175.0m of and 4 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 667.0m and 1091.0m of chainage and (dimension: 1vX4.5mX3.5m) at Ch. 623.0m and 835.0m of chainage will be constructed at the subproject area for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. 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. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific environmental 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.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf Upazila of Cox's Bazar district in order to offset the environmental and ecological devastation, that had been occurred due to the evolution of Rohingya Crisis, to an achievable level. Many of these road lengths will go through and by the Rohingya Camps, up on the hill and are already denuded of trees or vegetation. Local Government Engineering Department (LGED) will allocate and channelize the finance to the Forest Department under the said additional financing component and oversee the progress of works with due diligence. However, this

enhancement work will improve the environmental quality of the area and reinstate some parts of the ecosystem services to those areas, though primarily.

4.2 Health and Safety Measures under COVID situation

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

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

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

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

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 LIMITATIONS OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing 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.



Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District; EMCRP/W18).

Name of the component: Ratnapalong Boddho Mondir Road Id:422944062

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

Estimated total cost of sub-project (in Taka): 197,069,106.42 (Including provisional sum)

Estimated construction period duration: 9 Month

Estimated total cost of the component (in Taka): 21,366,128.86

Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies on how long projects can operate in the camps.

District: Cox's Bazar

Upazila: Ukhiya

Union: Ratnapalong

Name of Community/Local Area: Ratnapalong

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road and construction with Bituminous Carpeting options. For drainage of rain water 1no. Cross Drain (dimension: 0.975mX 0.975m) at 1175.0m of chainage and 2 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 667.0m and 1091.0m of chainage and 2 nos. Box Culvert (dimension: 1vX4.5mX3.5m) at Ch. 623.0m and 835.0m of chainage will be constructed as well as for road safety work and Environmental Mitigation work has been included in the estimation.

Estimated footprint / land area for this sub-project is 6,149.5 sqm.

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

This proposed Ratnapalong Boddho Mondir Road belongs to Ratnapalong village at Ratnapalong union, Ward-8 under Ukhiya Upazila. This road has started from Valukia-Court bazar road stretching 1255 meters from South side to North side, along with settlements, trees, playground, boundary fencing, open space, graveyard etc.

Important Environmental Features (IEFs) near site:

Detail Chainage Length of the sub-project: 1255m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Detailed Chainage length of the Sub-Project

Chainage	Left	Right	Environmental Impact
"0" Point 000-300	L		Big trees, brick boundary wall, settlement (paka), electric pole, settlement (tin shed), bushes, agricultural land, bamboo fencing, electric pole, brick boundary wall, settlement (paka), agricultural land
		R	Tin shed fencing, shop, rice mill, timber yard, open space, brick boundary wall, bushes, settlement (paka), brick boundary walls, settlements (paka)
300-600	L		U-drain, brick boundary wall, household connecting road to left, tin shed fencing, bamboo fencing, trees, agricultural land, RCC pole with wire fencing, household connecting road to left, settlement (paka)
		R	Household connecting road to right, RCC pole with wire fencing, agricultural land, trees, open field
600-900	L		Open space, high ground, banana trees, big trees, electric pole
		R	Playground, brick boundary wall
900-1255	L		RCC pole with wire fencing, graveyard, open space, settlement (paka)
		R	Tin shed fencing, school building (under construction)



Figure: Starting Point of Ratnapalong Boddho Mondir Road

Overall Comments

DDC conducted consultation meeting with host community regarding the sub-project activities. Local 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 local individuals were participated in participatory

public consultation meeting. Local communities have no objection to construction this sub-project. The community also appreciated the initiative for having easily accessible and passive their emergency situation. The proposed sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental setting of the area thus not going to create intimidation to important environmental features. No drainage congestion/water logging have been observed in the road area. But, some local trees like betel nut, rain tree etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and cross drains, culverts have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season. The proposed Sub-project area for the construction included flat areas and moderate hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any 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.

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 brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic, fuel etc. in equipment yards. Human wastes might be deposited 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. This sub-project is situated within Ratnapalong village under Ratnapalong union, Ward-8 of Ukhiya Upazila, Cox's Bazar. Some sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site are at north side Khandakarpara graveyard (200m); at south side Jhawtala central mosque (80m), Telipara Jame mosque (90m), Middle Ratna Buddhist Temple (120m); at east side Ratna GPS (20m), Palong Model High School (25m), Madborpara Jame Mosque (80m), Chadilkata Jame Mosque (60m) and west side Playground (5m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 8-9 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

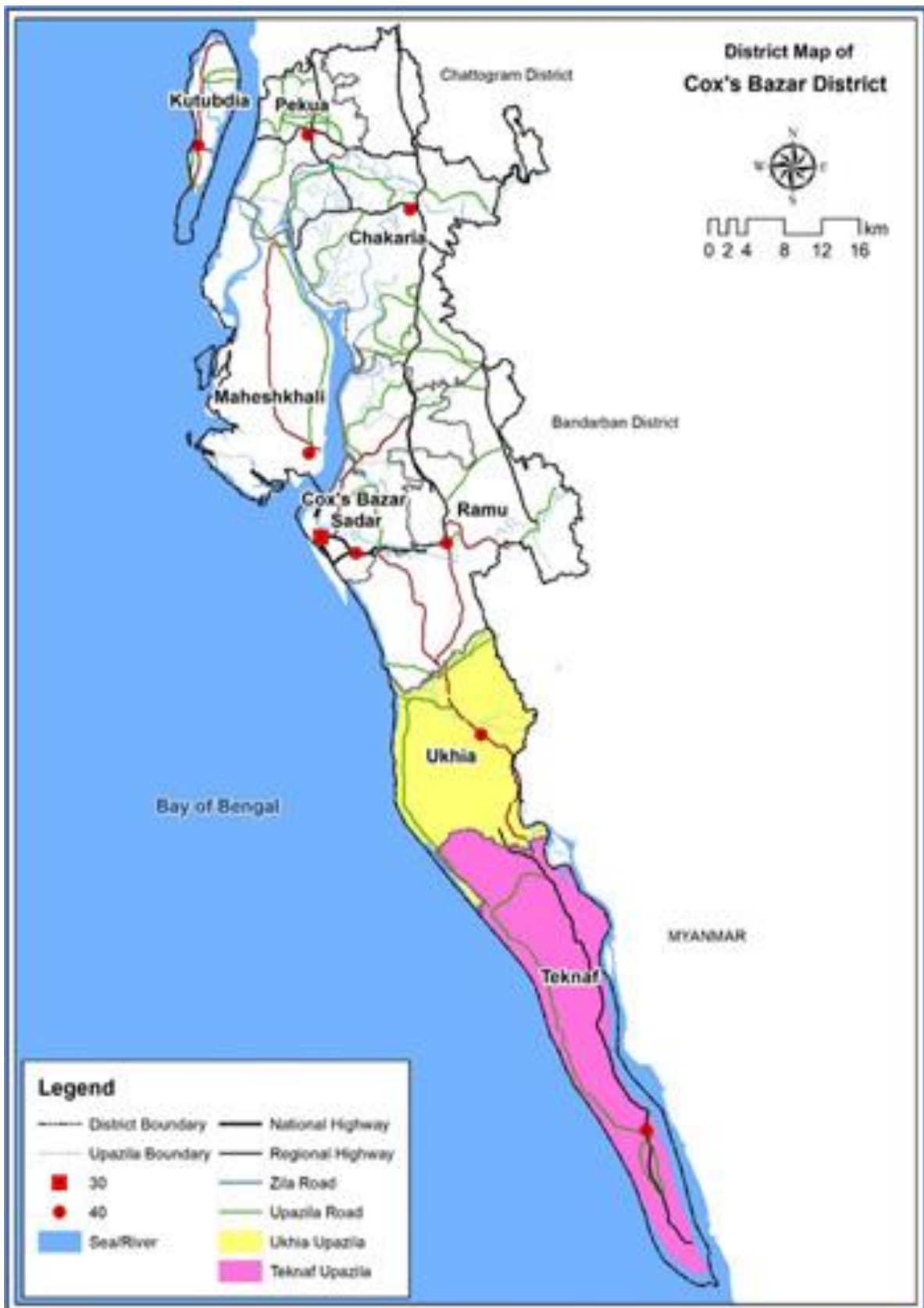


Figure 3: District Map with project location

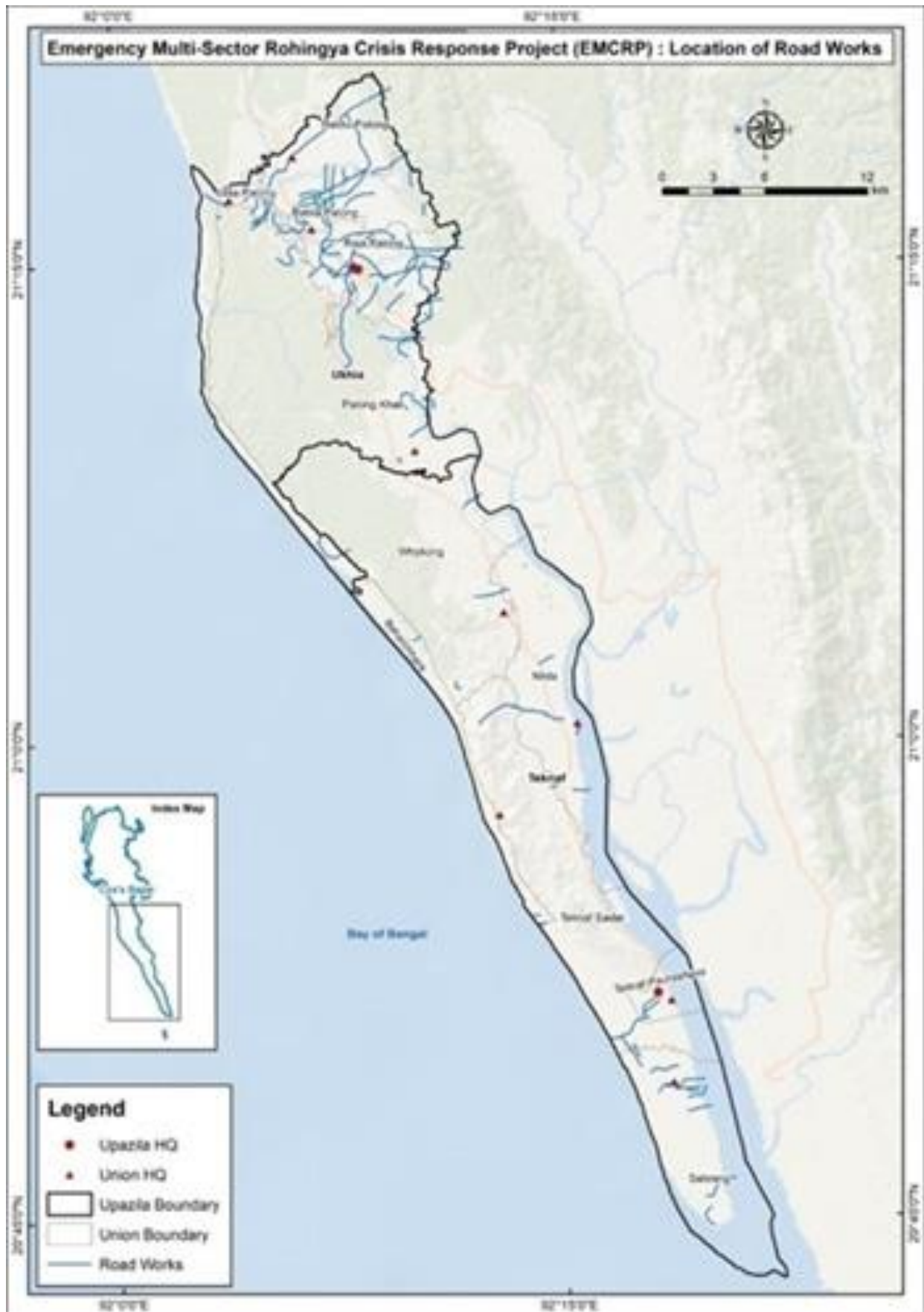


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

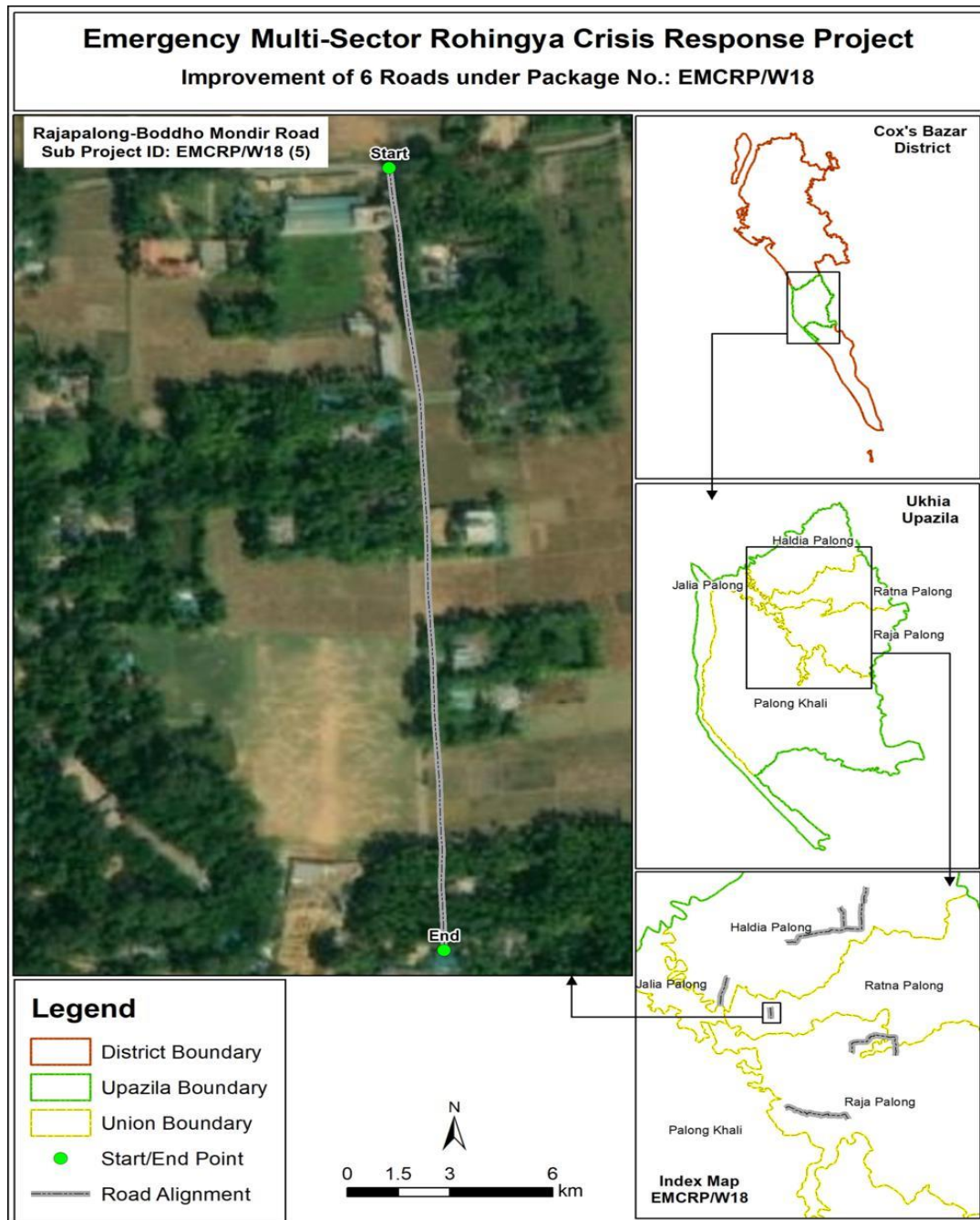


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road. Based on field survey, this sub-project involves of Bituminous carpeting (BC) as broken. According to the design this sub-project will be developed with Bituminous Carpeting (BC) from Ch. 00 to Ch. 1255m.

Sub-project Location:

Important Features	
ID	422944062
District	Cox's Bazar
Upazila	Ukhiya
Union	Ratnapalong
WARD	08
Total Chainage	1255m
Proposed Chainage	1255m
Road Type	Village Road
Proposed Intervention Type	Bituminous Carpeting (BC)
Road Starting Point Coordinates	Latitude: 21.2763144 N Longitude: 92.1115908 E
Road Ending Point Coordinates	Latitude: 21.2727027 N Longitude: 92.1113447 E

Land ownership
Land is owned by Government.

Expected construction period: 9 (Nine 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 Ratnapalong village. Some other villages named East Ratna, West Ratna, Valukia, Goyalmara within one kilometer.
- No historical sites were found.
- Not required to relocate local community.
- Some trees and vegetation will be affected.
- Very low chance of loss of agricultural land.
- Some Household Boundary made of bamboo and tin may need adjustments.
- Environmental Sensitivity: No mentionable eco concerned establishment, no socio-cultural site and elephant corridors (Checked with local IUCN representative).

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

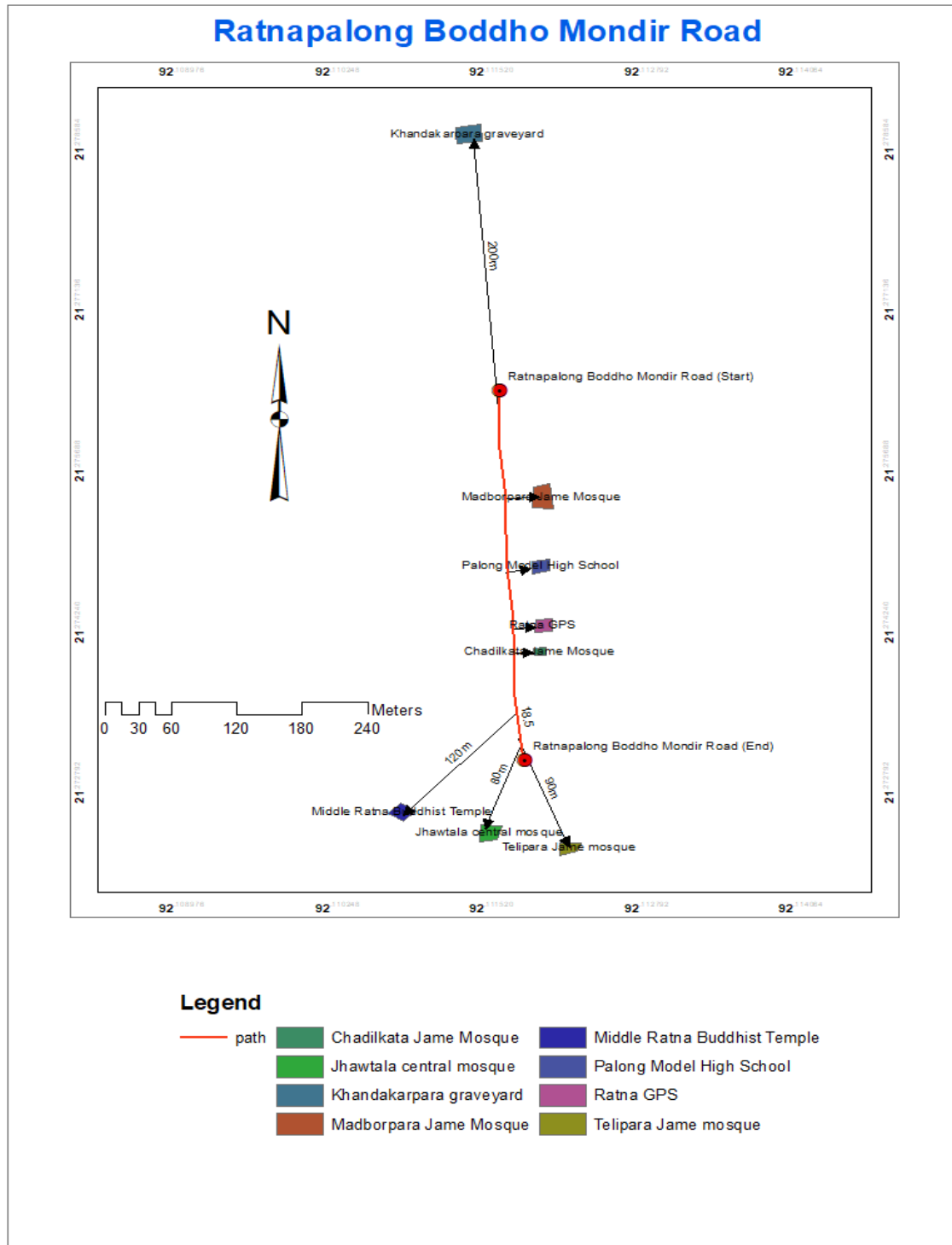
Description of cultural properties (if applicable, including distance from site):

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

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including at north side Khandakarpara graveyard (200m); at south side Jhawtala central mosque (80m), Telipara Jame mosque (90m), Middle Ratna Buddhist Temple (120m); at east side Ratna GPS (20m), Palong Model High School (25m), Madborpara Jame Mosque (80m), Chadilkata Jame Mosque (60m) and west side Playground (5m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. Apart from this structure no other sensitive

environmental, cultural, archaeological, religious sites exists.

A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas (within 30m buffer zone) are shown below.



Location of environmentally important and sensitive areas:

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

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

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 subproject boundary)

(3) Other issues:

No more mentionable issues rose.

*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 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 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, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Landslide potential is low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. The impacts are negative but very small scale, site-specific within a

relatively small area and adjustable by mitigation measures.
Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH): Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80 feet and deep tubewell depth is 500 feet. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer. 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 across the road side of the proposed subproject area 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): Balukhali road and Jhawtola road are found adjacent to the subproject area. Concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also, the route has narrow curves.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce.
Possible location of labor camps: Labor camp can be established along the road since there are available open private lands. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.):

i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) steels viii) Bitumen are the most common type of road materials used in construction.

Identification of access road for transportation (Yes/No):

Yes. Adjacent two roads can offer space adjacent labor camp to facilitate material unloading. The pickup trucks as material transportation vehicles can enter the access road. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Earth/ mud, plastics, brick chips, cement dusts, dust from bricks, steel wires, during construction which can be identified as solid wastes. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 25 kg daily and sludge may amount to 3 kg per day.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Residual waste from the labor camps will be generated. Equipment maintenance/vehicles on-site and scrap material will occur during construction work which are mostly solid wastes. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 250 kg.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most common type of road materials used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.

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

The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher

during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

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. Because under this interventions, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.

Activities that can lead to landslides, slumps, slips and other mass movements in road cuts:

Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)

Low, Potential erosion may occur when moderately to highly sloping terrains are disturbed for the improvement of sub-project. The impacts are negative but short term, site specific within a relatively small area and adjustable by mitigation measures.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

No traffic movement impacts on light but low effects of noise and air pollution.

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:

No

Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)

No

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)

No.

Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:

<p>(High/Medium/Low with explanation)</p> <p>There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.</p>
<p>Likely direct and indirect impacts on economic development in the project areas by the sub-project:</p> <p>Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.</p>
<p>Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)</p> <p>No existing drainage channels or surface water bodies found in the project area, therefore, no such effect can be anticipated</p>
<p>Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)</p> <p>Low, There are no protected areas in or around project sites, and no known areas of ecological interest.</p>
<p>Activities leading to landslides, slumps, slips and other mass movements in road cuts:</p> <p>The entire sub-project component area is nearly flat, thus no such type of impacts is anticipated.</p>
<p>Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains:(High/Medium/Low with explanation)</p> <p>No</p>
<p>Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:</p> <p>Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.</p>

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

Please summarize the results of environmental screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in Section 8.2 of ESMF. This table needs to be completed by environmental specialists. Please add rows to the table as necessary.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
1: Sub-Project Interventions	Air quality	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection. 	Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> 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 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. 	Monitoring as weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>and covered.</p> <ul style="list-style-type: none"> 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 construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. 			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> 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. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to nearby drainages, <i>khals</i> or water 	Water quality test (mainly GW) twice during the construction period in six months interval.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					<p>bodies due to construction activities.</p> <ul style="list-style-type: none"> Records should be kept and logged. 	
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health & Safety orientation trainings; Condition of sanitation facilities for workers 	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Record of regular inspection. Record of accidents/incidents. 	Monthly monitoring.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Storage of construction materials	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Orienting concerned person and team assigned for the construction work. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • List of materials and sources of materials 	During implementation phase, as necessary with discussion with PIU, Consultant.
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Complaints from community; • Regular inspection of waste management activity; • Waste disposal record. 	As work weekly progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and	Under the sub-project intervention, the overall score is low.	<ul style="list-style-type: none"> • During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment 	Contractor, environmental specialist of D&SC	<ul style="list-style-type: none"> • Location of road alignment and slope. 	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	landslides)		remain within the right of way and does not disturb the crop.			
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low .	<ul style="list-style-type: none"> With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. 	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low .	<ul style="list-style-type: none"> 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 specialist of D&SC	<ul style="list-style-type: none"> Complaints from community; 	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Noise pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB) 	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. 	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. 	Construction Contractor, environmental specialist of D&S.	<ul style="list-style-type: none"> • Complaints from communities, pedestrians 	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<ul style="list-style-type: none"> The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. Local residents should be kept informed about planned Works 			
4. Post Construction	Road Safety	Under the issue the overall score is low .	<ul style="list-style-type: none"> Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate traffic detours, and sufficient signage & warning signs, Post speed limits and suitable bending on the road. The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. 	Construction Contractor, environmental specialist of D&S.	<ul style="list-style-type: none"> Road signage and safety instruments at suitable locations and chainage 	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is low .	<ul style="list-style-type: none"> Replantation of trees during monsoon period Maintain of trees properly Check survival of trees and replant the dead trees 	Construction Contractor, environmental specialist of D&S.	<ul style="list-style-type: none"> Number of complaints from stakeholders; Records of trees number and tree plantation inspection 	Immediately after the construction work is over.
5. Operatio	Maintenance of road and	Under the issue	<ul style="list-style-type: none"> No advertisement/boardings shall be allowed within the Right of Way 	LGED	<ul style="list-style-type: none"> Number of complaints from 	During Operation under

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
nal Phase	assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	the overall score is low .	limits of the project road. <ul style="list-style-type: none"> Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. Clear smooth speed breaker/rough surfaces should be clear in views. Regular maintenance of road surface and shoulders. 		stakeholders	LGED's regular maintenance program in each 3 years.

* 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

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 Access and evacuation Roads: Ratnapalong Boddho Mondir Road Id: 422944062

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> No land acquisition is allowed within this sub-project activities <p>So, there are no any mitigation measures according to this impact.</p>	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	<ul style="list-style-type: none"> Under this subproject, there is no scope of negative impact of adjacent livelihoods 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	<ul style="list-style-type: none"> All of the project stakeholders should be consulted Separate community level consultation meeting with the potential affected HHs Consultation meeting with host communities about the project objectives and scope of works 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	<ul style="list-style-type: none"> Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	<ul style="list-style-type: none"> Selection of sub-project sites and all implementing interventions must take place outside of the 	PIU	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	conflict	elephant corridor/influence area.		PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	<ul style="list-style-type: none"> Our selected sites avoided the low land near the water bodies or natural flow path to avoid the flash flood or any kind of surface runoff. Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. After completing the development we restored the place as like before to avoid the cut and fill operational problems. This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. The contractor ensuring sound environment for the local residents near the sub project site. 	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	<ul style="list-style-type: none"> Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. All Personal Protective Equipments (PPEs) must be ensured in sites before starting any kinds of construction works. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	<ul style="list-style-type: none"> Acceptable range of emission of CO, particulate matter [SPM (Suspended particulate matter), 	Contractor	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices</p> <ul style="list-style-type: none"> Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level 		PSC
Construction Activity	Safety Issues	<ul style="list-style-type: none"> Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem Before works started Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. Records of every training must be kept at site. All kinds of Child labour are completely prohibited in every site. Every construction materials storage site will be well fenced by Tin and safety caution tape. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	<ul style="list-style-type: none"> Contractors will maintain proper route for traffic management which is to beconsulted with and confirmed by the Executive Engineer of Cox's Bazar. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	<ul style="list-style-type: none"> A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water 	PIU & Contractor	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>sources shall be taken.</p> <ul style="list-style-type: none"> • 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 works starts. 		Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	<ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	<ul style="list-style-type: none"> • 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 labour camps will be put in place • Treated water will be made available at site for drinking purpose. 	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through 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: <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site After completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: <ul style="list-style-type: none"> 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, 	<ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. 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. 	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
	temporary or permanent hearing loss, heat stress, and dermatitis.	<ul style="list-style-type: none"> 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 the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of 		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>this awareness training shall be kept on site.</p> <ul style="list-style-type: none"> Adequate quantities of drinking water will be available at all Sites, on different locations within the site. Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. 		
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	<ul style="list-style-type: none"> Preventative maintenance schedule should be followed. Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time. 	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the	<p>The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials ✓ Health & Safety risks to 	<ul style="list-style-type: none"> Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder. 	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
construction)	workers and local community			
Operation & Maintenance	Noise disturbances to fauna	<ul style="list-style-type: none"> Provision to maintain noise and vibration 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. 	UE (under the direct guidance of Executive Engineer)	UNO, PSC.

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 the 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.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and 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. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.



- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use 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 the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite 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 a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, +8801714980171

Tanvir Ahsan Haque, Environmental Specialist, +8801688117059

Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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

Appendix-3: Cost of Environmental 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. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

SI no.	Description of item	Quantity	Unit price	Total amount
1.	<u>Grass Turfing</u> Turfing on embankment top and slope & 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)	3723.0 Sq.m	@38.15 Tk. Per sqm	142,032.45
2.	<u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	1255.0m	@ 2.56 BDT	3,212.80
3.	<u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men.	2 nos.	@12822.86 per toilet	25,645.72
4.	<u>First Aid Box</u> Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated	1 no.	LS @5000 Tk. Per box	5,000

SI no.	Description of item	Quantity	Unit price	Total amount
	and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.			
5.	<u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge.	1 no.	LS @ Tk. 30,000	30,000
6.	<u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge.	1 no.	LS @ Tk. 15,000	15,000

Sl no.	Description of item	Quantity	Unit price	Total amount
7.	<u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	LS	LS @ Tk 30,000	30,000
8.	<u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet.	160 nos.	@ Tk. 1000	160,000
9.	<u>Motivation training</u> 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.	1 no.	LS @ Tk. 10,000	10,000
10.	<u>Waste disposal facility</u> 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.	LS	@ Tk. 5000	5,000



SI no.	Description of item	Quantity	Unit price	Total amount
11.	<p><u>Water Test (Drinking Water samples)</u></p> <p>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area 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.</p>	LS	@ Tk. 5000	5,000
12.	<p><u>Working labour shed:</u></p> <p>Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.</p>	1 no.	LS @ Tk. 30,000	30,000
13.	<p><u>Environmental management</u></p> <p>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. <u>[One person to be appointed for W18(4), W18(5) & W18(6)]</u></p>	Presented in the BoQ of Bottali-Chagol Bazar Road, Id: 422944040, and is not repeated here.		
	Subtotal Bill: Environmental facilities			460,890.97

Cost of H&S Measures under COVID 19 Situations

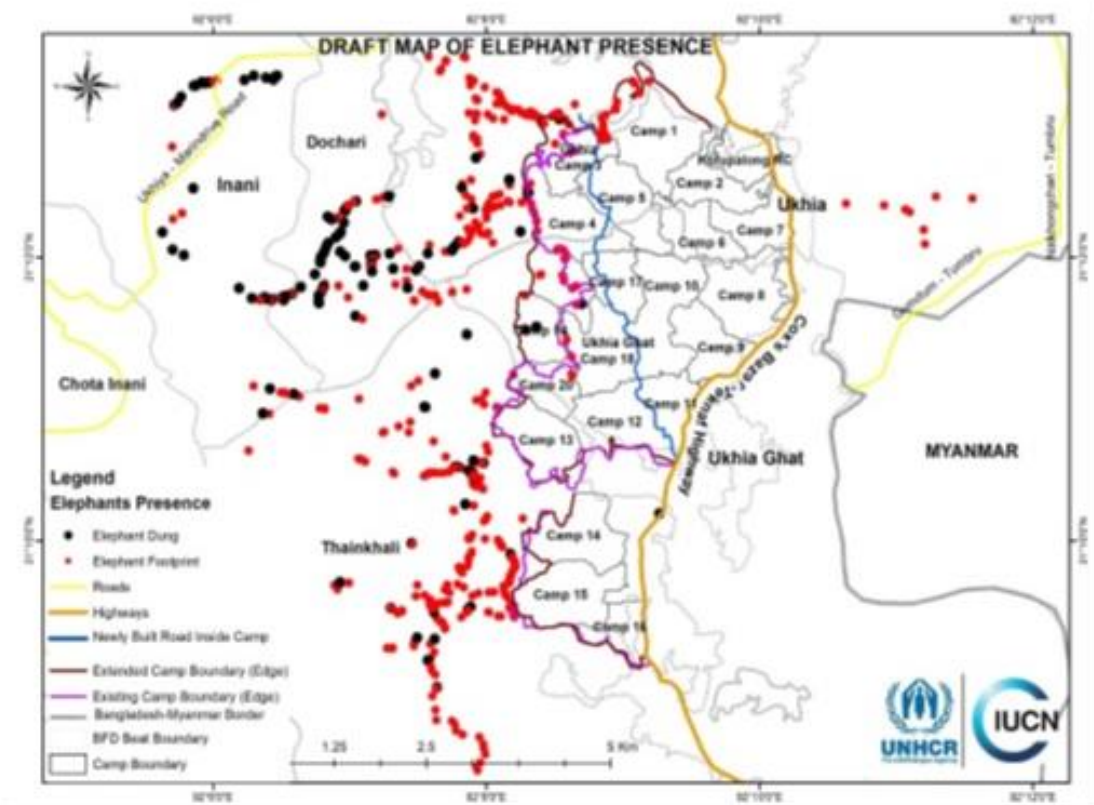
Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 25 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-18.5).

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)	68		84	50.00	152	7,600.00	To be placed in a case/holder on the basin, for washing hands for max. 30 people a day and showering of 25 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	16 nos. for each site		N/A	400.00	16	6,400.00	For labors who work in close contact, 16 in each site



Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	5 nos. each day in each site		N/A	12.00	1350	16,200.00	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	25 nos. for each labor camp		35.00	450	15,750.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1 Can	N/A	2 Can	250.00	3	750.00	
10.	Detergent Cleaner	N/A	1.250 kg in each camp/month		400.00	11.25	4,500.00	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						101,300.00	

Appendix-4: Elephant Presence Map



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

Appendix-5: Attendance of participants in the Consultation Meeting

W-18
5

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

Time: 11:00 AM Date: 01/02/20

COMMUNICATION AND PARTICIPATION PROGRAMME
FOCUS GROUP DISCUSSION

ইমাজেলি মাষ্টি সেটর রোহিঙ্গা জাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

কনসল্টেড নাম: Rotna palong Badda mendir Road
যাও বিবিসিরে ছাড়া Shop of Middle Rtrapalong

হাউসিং: Ratna palong
আলখা: Ukhiya
উপজেলা: Ukhiya
জেলা: Cox's Bazar

অংশগ্রহণকারীদের তালিকা (পরিচয় ও বয়স)

ক্রমিক নং	নাম	বয়স	পুরুষ/মহিলা	গ্রাম	স্বাক্ষর
1	Munna Sikder	32	✓	Ukhiya	
2	জাহান্না উদ্দিন	65	✓	রত্নাপালং	
3	জেনাবী নূর	50	✓	রত্নাপালং	জেনাবী নূর
4	জাহান্না	38	✓	রত্নাপালং	জাহান্না
5	নজরুল ইসলাম	65	✓	রত্নাপালং	নজরুল
6	শ্রী: উজ্জ্বল	18		রত্নাপালং	উজ্জ্বল
7	শ্রী: মাহিন	18		রত্নাপালং	মাহিন
8	ইমরুল হুদ	23	✓	রত্নাপালং	ইমরুল হুদ
9	মোহাম্মদ হোসেন	20	✓	রত্নাপালং	মোহাম্মদ
10	মোহাম্মদ হোসেন	62	✓	রত্নাপালং	মোহাম্মদ
11	মোহাম্মদ হোসেন	35	✓	রত্নাপালং	মোহাম্মদ
12	মোহাম্মদ হোসেন	28	✓	রত্নাপালং	মোহাম্মদ
13	মোহাম্মদ হোসেন	25	✓	রত্নাপালং	মোহাম্মদ
14	মোহাম্মদ হোসেন	24	✓	রত্নাপালং	মোহাম্মদ
15	মোহাম্মদ হোসেন	48	✓	রত্নাপালং	মোহাম্মদ
16	মোহাম্মদ হোসেন	37	✓	রত্নাপালং	মোহাম্মদ
17	মোহাম্মদ হোসেন	58	✓	রত্নাপালং	মোহাম্মদ

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-project Component Sites



Existing Surroundings of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Ministry of Local Government, Rural Development and Co-operatives
Local Government Division
Local Government Engineering Department

Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

For Rumka-Sabek Rumka Primary School Road, Id:422944044
with culverts and side drains

Under the package no. EMCRP/W18

November-2020



ACRONYMS

BOQ	Bill of Quantities
BFS	Brick Flat Soiling
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
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UE	Upazila Engineer
UNHCR	The United Nations High Commissioner for Refugees
UNO	Upazila Nirbahi Officer
VAT	Value-Added Tax
WB	World Bank

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Hosting Community and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as preparation of school cum cyclone shelters, facilitating growth centers and RCC Bridge development, road development works are highly significant to ensure all branches of interventions are welded together. Local Government Engineering Department (LGED) as the implementing agency with D&SC (Development Design Consultants Limited-DDC) identifies the project beneficiary as Displaced Rohingya Population (DRP) and Hosting Community or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements has been carried out in accordance with guidelines from World Bank; as a result environmental and social screening reports has been produced along with worked out impact factors which are introduced with mitigation and management measures. In order to present a quick picturesque of the proposed component, an overview is given hereunder.

This proposed Ukhiya Rumka-Sabek Rumka pry. school Road belongs to Moulavipara, Nasirpara, Katirpara, Nalbunia, North Patabari villages at Haldiapalong union, Ward-4, 5, 6 & 7 under Ukhiya Upazila. This road has started from Moulavipara Farid Alam house stretching 3720 meters from west side to north side, some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Nasir para mosque (50m), Patabari bazar (500m), Patabari GPS (1km), Patabari Dharmananda Buddhist Bihar (500m), North Patabari mosque and Madrasah (50m), Nalbunia Buddhist temple (300m), Nalbunia mosque and graveyard (100m), Yahahia Us-Sunna mosque and Madrasah (500m) at south side Haludia khal (10m), Nalbunia Baytun Karim mosque (10m), Nalbunia GPS (1km), Nalbunia Buddhist cremation (500m), Haldiapalong sub-health center (1km), Darul Quryan Ai-Islamia Mosque including Madrasah and Hafezkhana (500m), at east side Moulavipara mosque (15m), Middle Haldia GPS (500m), South Haldia GPS (200m), Nabin Mahajan Buddhist cremation (300m), South haldia-Katipara community clinic (300) and west side moulavipara Islamia Madrashah including mosque, hefjakhana and graveyard (10m), Middle Haldia mosque and graveyard (15), Salishar Chorra (100m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management

practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient roadways and associated safeguard facilities. Since the road will not pass through any sensitive areas of any kind and necessary environmental conservative, mitigation and offsetting measures will be adopted with due care and diligence during the construction period, the component should be taken undoubtedly in further consideration for development.

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ 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 923,033². 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 effects.

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. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to

¹ ISCG: Situation Report Rohingya Refugee Crisis, (September 27, 2018)

² IOM Needs and Population Monitoring round 12 as of October 10, 2018

improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

The sub-project has the primary target to improve the communication facilities of the area. This intervention, without a doubt facilitates the following: it will

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under ‘Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District’; with a package name-EMCRP/W18.

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W18: Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District:

(1) Ukhiya Darogabazar GC to Hijalia via Harinmara Road, Id:422944031 (2) Nalbania pry. school Road, Id:422944032 (3) West diglia road, Id:422944034 (4) Bottali-Chagol Bazar Road, Id:422944040 (5) Ratnapalong Boddho Mondir Road Id:422944062 and (6) Rumka-Sabek Rumka pry. school Road, Id:422944044 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (6) Rumka-Sabek Rumka pry. school Road, Id:422944044

Component Location:

i. ID-422944044	ii. Ward No.: 4, 5, 6 & 7	iii. Mouza: Haldiapalong & Paglirbil
iv. Village: Moulavipara, Nasirpara, Katirpara, Nalbunia, North Patabari	v. Name of Union: Haldiapalong	
vi. Name of the Upazila: Ukhiya		
vii. Construction Year: 2020-2021	viii. Length (m): 3720 (BC work from Ch. 2100m to 5820m)	ix. Width (m): 4.9-5.5
Distance from UZHQ: 15 Km.		
GPS Coordinates	Latitude Value: 21.295806 N (Starting Point) Longitude Value: 92.115936 E (Starting Point)	
	Latitude Value: 21.312185 N (Ending Point) Longitude Value: 92.136701 E (Ending Point)	
Condition of Road	HBB, Brick Flat Soiling (BFS), Earthen	
Communication Source	Radio & Mobile Network	

Subproject interventions:

- **Bituminous Carpeting** options.
- 12nos. **Cross Drain** (dimension: 0.975mX 0.975m) at Ch. 2146m, Ch.2174m, Ch. 2224m, Ch. 3145m, Ch. 4040m, Ch. 4434m, Ch.4660m, Ch. 4930m, Ch. 5327m, Ch. 5538m, Ch. 5582m & 5770m of chainage
- 4 nos. **Box Culverts** (dimension: 2.0mX2.0m) at Ch. 2730.0m, Ch. 3615.0m, Ch. 3795.0m & 4141.0m of chainage
- **384.0 m L-Drain** at different chainage
- 198.0m Toe wall (125.0m=1.5m height and 73.0m=2.0m height)
- 223.0m Brick Palisading wall
- Road safety work and
- Environmental Mitigation work

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period: 2020-2021

Estimated total cost of component: 51,324,317.06 (Tk.)

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. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the consultation meeting with local community from 05:12 PM to 06:30 PM on 27 January, 2020 at Nalbunia Vutto shop which is adjacent of the sub-project location, Refer to **Figure 2.1.1**, Public Consultation Participants List are attached in **Appendix-5**. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants on environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

The participants were spontaneous and expressed that the sub- project will provide them various benefits including communication and transportation facilities. They also expressed that at present they are facing various types of problems due to this unimproved condition of the road.

Discussion was also made on various environmental issues like dust/air pollution, water pollution etc. which are potential environmental hazards during road construction. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase.

2.3 Suggestions and recommendations of the participants

The significant suggestions that came out during the meeting are given below:

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

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. 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 is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several community, agricultural lands and community level forest. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps.

Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Nasir para mosque (50m), Patabari bazar (500m), Patabari GPS (1km), Patabari Dharmananda Buddhist Bihar (500m), North Patabari mosque and Madrasah (50m), Nalbunia Buddhist temple (300m), Nalbunia mosque and graveyard (100m), Yahahia Us- Sunna mosque and Madrasah (500m) at south side Haludia khal (10m), Nalbunia Baytun Karim mosque (10m), Nalbunia GPS (1km), Nalbunia Buddhist cremation (500m), Haldiapalong sub-health center (1km), Darul Quryan Ai-Islamia Mosque including Madrasah and Hafezkhana (500m), at east side Moulavipara mosque (15m), Middle Haldia GPS (500m), South Haldia GPS (200m), Nabin Mahajan Buddhist cremation (300m), South haldia-Katipara community clinic (300) and west side moulavipara Islamia Madrasah including mosque, hefjakhana and graveyard (10m), Middle Haldia mosque and graveyard (15), Salishar Chorra (100m). No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).

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. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

3.3.1 General Consideration

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 Bank³ 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. 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, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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

3.3.2 Site Specific Consideration

The sub-project area is not adjacent to the sea. The cyclone has higher impact in the area and water stagnation has higher impact in this area, Intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge was not reported in the

³ <https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf>

vicinity of the subproject. Temperature was reported to be increased and Thunder storm is found to have highest impact in the area. Thunder storm has been seen create more damage than before but no casualty was reported.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only, and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of-the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sqm for a single arrester. In addition, tree plantation on the road slope/within the premises is also suggested to soothe the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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.

The proposed road is on a plain land. A number of trees of road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree in the periphery of the subproject. Some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length, including are at north side Nasir para mosque (50m), Patabari bazar (500m), Patabari GPS (1km), Patabari Dharmananda Buddhist Bihar (500m), North Patabari mosque and Madrasah (50m), Nalbunia Buddhist temple (300m), Nalbunia mosque and graveyard (100m), Yahahia Us- Sunna mosque and Madrasah (500m) at south side Haludia khal (10m), Nalbunia Baytun Karim mosque (10m), Nalbunia GPS (1km), Nalbunia Buddhist cremation (500m), Haldiapalong sub-health center (1km), Darul Quryan Ai-Islamia Mosque including Madrasah and Hafezkhana (500m), at east side Moulavipara mosque (15m), Middle Haldia GPS (500m), South Haldia GPS (200m), Nabin Mahajan Buddhist cremation (300m), South haldia-Katipara community clinic (300) and west side moulavipara Islamia Madrashah including mosque, hefjakhana and graveyard (10m), Middle Haldia mosque and graveyard (15), Salishar Chorra (100m) from the proposed improvement site.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. So, 12nos. Cross Drain (dimension: 0.975mX 0.975m) at Ch. 2146m, Ch.2174m, Ch. 2224m, Ch. 3145m, Ch. 4040m, Ch. 4434m, Ch.4660m, Ch. 4930m, Ch. 5327m, Ch. 5538m, Ch. 5582m & 5770m of chainage and 4 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 2730.0m, Ch. 3615.0m, Ch. 3795.0m & 4141.0m of chainage will be constructed at the subproject area for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help

to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. Some small hills or high land is found beside the road. As a mitigation measure, 384.0 m L-Drain at different chainage will be constructed for drainage mountain eel water during rainy season. Due to the low land in different chainage of the road 198.0m Toe wall (125.0m=1.5m height and 73.0m=2.0m height), 223.0m Brick Palisading wall at different chainage will be constructed for mitigation measure. 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. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific environmental 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.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf Upazila of Cox's Bazar district in order to offset the environmental and ecological devastation, that had been occurred due to the evolution of Rohingya Crisis, to an achievable level. Many of these road lengths will go through and by the Rohingya Camps, up on the hill and are already denuded of trees or vegetation. Local Government Engineering Department (LGED) will allocate and channelize the finance to the Forest Department under the said additional financing component and oversee the progress of works with due diligence. However, this enhancement work will improve the environmental quality of the area and reinstate some parts of the ecosystem services to those areas, though primarily.

4.2 Health and Safety Measures under COVID situation

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

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

- a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
- b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

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

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 LIMITATIONS OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project.

There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing 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.

Implementation of this Sub-project will have large positive impacts to the communities in terms of improved infrastructural transportation & communication facilities, which would eventually develop the socio-economic condition of the catchment areas. So, strong recommendation should be put in place to implement the sub-project within shortest possible period of time, and with great care and efficiency.

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 roads and construction of culverts with side drains under Cox's Bazar District; EMCRP/W18).

Name of the component: Rumka-Sabek Rumka pry. school Road, Id:422944044

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

Estimated total cost of sub-project (in Taka): 197,069,106.42 (including provisional sum)

Estimated construction period duration: 9 Month

Estimated total cost of the component (in Taka): 51,324,317.06

Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies on how long projects can operate in the camps.

District: Cox's Bazar

Upazila: Ukhiya

Union: Haldiapalong

Name of Community/Local Area: Moulavipara, Nasirpara, Katirpara, Nalbunia, North Patabari

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road and construction with Bituminous Carpeting options. For drainage of rain water 12nos. Cross Drain (dimension: 0.975mX 0.975m) at Ch. 2146m, Ch.2174m, Ch. 2224m, Ch. 3145m, Ch. 4040m, Ch. 4434m, Ch.4660m, Ch. 4930m, Ch. 5327m, Ch. 5538m, Ch. 5582m & 5770m of chainage and 4 nos. Box Culverts (dimension: 2.0mX2.0m) at Ch. 2730.0m, Ch. 3615.0m, Ch. 3795.0m & 4141.0m of chainage, for mountain eel water drainage during rainy season **384.0 m L-Drain** at different chainage and **61.0m U-Drain** at different chainage has been included in the estimation. Due to the low land in different chainage for protection work of the road 198.0m Toe wall (125.0m=1.5m height and 73.0m=2.0m height) and 223.0m Brick Palisading wall will be constructed at different chainage as well as for road safety work and Environmental Mitigation work has been included in the estimation.

Estimated footprint / land area for this sub-project is 18,228 sqm.

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

This proposed Ukhiya Rumka-Sabek Rumka pry. school Road belongs to Moulavipara, Nasirpara, Katirpara, Nalbunia, North Patabari villages at Haldiapalong union, Ward-4, 5, 6 & 7 under Ukhiya Upazila. This road has started from Moulavipara Farid Alam house stretching 3720 meters from west side to north side, along with betel leaf yard, mosques, madrasah, chorra, agricultural fields, shops, boundary fences or walls, connecting roads, household connecting roads, ponds, settlements etc.

Important Environmental Features (IEFs) near site:

Detail Chainage Length of the sub-project: 3720m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Detailed Chainage length of the Sub-Project

Chainage	Left	Right	Environmental Impact
“0” Point 000-300	L		Agricultural land, betel leaf yard, electric pole, Mosque with hefjakhana, brick boundary wall, graveyard, guide wall, bridge, chorra
		R	Settlement (Earthen), Tubewell, brick boundary wall, settlement (tin shed), settlement (earthen), agricultural land, connecting road, betel leaf yard
300-600	L		Small hill, agricultural land, brick boundary wall, settlement (tin shed)
		R	Betel leaf yard, agricultural land, brick boundary wall, settlement (tin shed)
600-900	L		Agricultural land, betel leaf yard, shop, pond, bamboo fencing
		R	Agricultural land, culvert, bamboo fencing
900-1200	L		Electric pole, pond, brick boundary wall, mosque and madrasah, tin shed fencing, brick boundary wall, agricultural land, brick boundary wall
		R	Bamboo fencing, tila, shop, agricultural land, household connecting road, betel leaf yard
1200-1500	L		Graveyard, pond, mosque, big trees, brick boundary wall, wire fencing, betel nut garden, connecting road
		R	Agricultural land, electric pole
1500-1800	L		Agricultural land, Nalbunia Primary School road
		R	Agricultural land, South Haldia Primary School road, settlement (tin shed)
1800-2100	L		Agricultural land, household connecting road
		R	Agricultural land, household connecting road
2100-2400	L		Agricultural land, pond, trees, culvert
		R	Agricultural land, household connecting road, connecting road, Thimchori bazar road
2400-2700	L		Agricultural land, household connecting road, electric pole, bamboo fencing, betel nut garden, betel leaf yard, bridge, Haldia khal
		R	Agricultural land, brick boundary wall, electric pole, betel nut garden
2700-3000	L		Bamboo fencing, betel leaf yard, household connecting road, betel nut garden, brick boundary wall, settlement (building), agricultural land, betel leaf yard, tin shed fencing, shop
		R	Graveyard, bamboo fencing, betel nut garden, tin shed fencing, shop,

			mosque, pond, electric pole
3000-3300	L		Agricultural land, mosque, settlement (building), shop, connecting road, trees, agricultural land
		R	Trees, agricultural land, betel nut garden, graveyard, agricultural land, tin shed fencing, settlement (tin shed), brick boundary wall
3300-3600	L		Bamboo fencing, banana garden, settlement (tin shed), household connecting road, electric pole, agricultural land, settlements, pond, agricultural land, brick boundary wall, settlement (building), tin shed fencing
		R	Brick boundary wall, wire fencing, trees, betel leaf yard, open land, brick boundary wall, mosque, shop, agricultural land, pond, brick boundary wall, household connecting road, betel nut garden, electric pole, small hill
3600-3900	L		Trees, bamboo bushes, agricultural land, settlement (building),
		R	Electric pole, agricultural land



Figure: Starting Point of Rumka-Sabek Rumka pry. school Road

Overall Comments

DDC conducted consultation meeting with host community regarding the sub-project activities. Local 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 local individuals were participated in participatory public consultation meeting. Local communities have no objection to construction this sub-project. The community also appreciated the initiative for having easily accessible and passive their emergency situation. The proposed sub-project (Road construction) is not located within any

remarkable environmentally sensitive area and will not cause any severe affect to the environmental setting of the area thus not going to create intimidation to important environmental features. No drainage congestion/water logging have been observed in the road area. But, some local trees like betel nut, rain tree etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and cross drains, culverts have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season. The proposed Sub-project area for the construction included flat areas and moderate hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any 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.

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 brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic, fuel etc. in equipment yards. Human wastes might be deposited 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. This sub-project is situated within Moulavipara, Nasirpara, Katirpara, Nalbunia, North Patabari villages under Haldiapalong union, Ward-4, 5, 6 & 7 of Ukhiya Upazila, Cox's Bazar. Some sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site are at north side Nasir para mosque (50m), Patabari bazar (500m), Patabari GPS (1km), Patabari Dharmananda Buddhist Bihar (500m), North Patabari mosque and Madrasah (50m), Nalbunia Buddhist temple (300m), Nalbunia mosque and graveyard (100m), Yahahia Us- Sunna mosque and Madrasah (500m) at south side Haludia khal (10m), Nalbunia Baytun Karim mosque (10m), Nalbunia GPS (1km), Nalbunia Buddhist cremation (500m), Haldiapalong sub-health center (1km), Darul Quryan Ai-Islamia Mosque including Madrasah and Hafezkhana (500m), at east side Moulavipara mosque (15m), Middle Haldia GPS (500m), South Haldia GPS (200m), Nabin Mahajan Buddhist cremation (300m), South haldia-Katipara community clinic (300) and west side moulavipara Islamia Madrashah including mosque, hefjakhana and graveyard (10m), Middle Haldia mosque and graveyard (15), Salishar Chorra (100m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 20-21 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

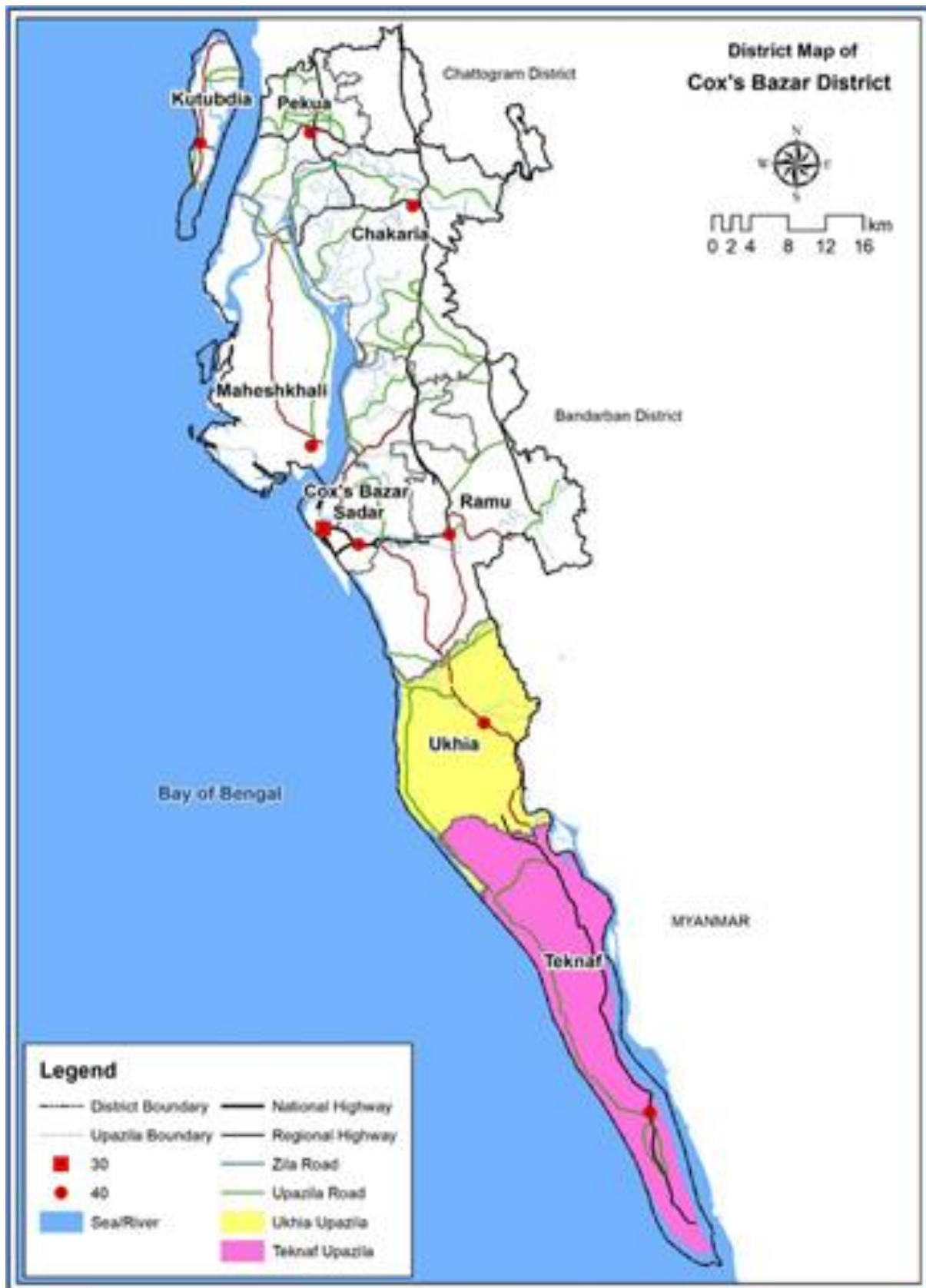


Figure 3: District Map with project location



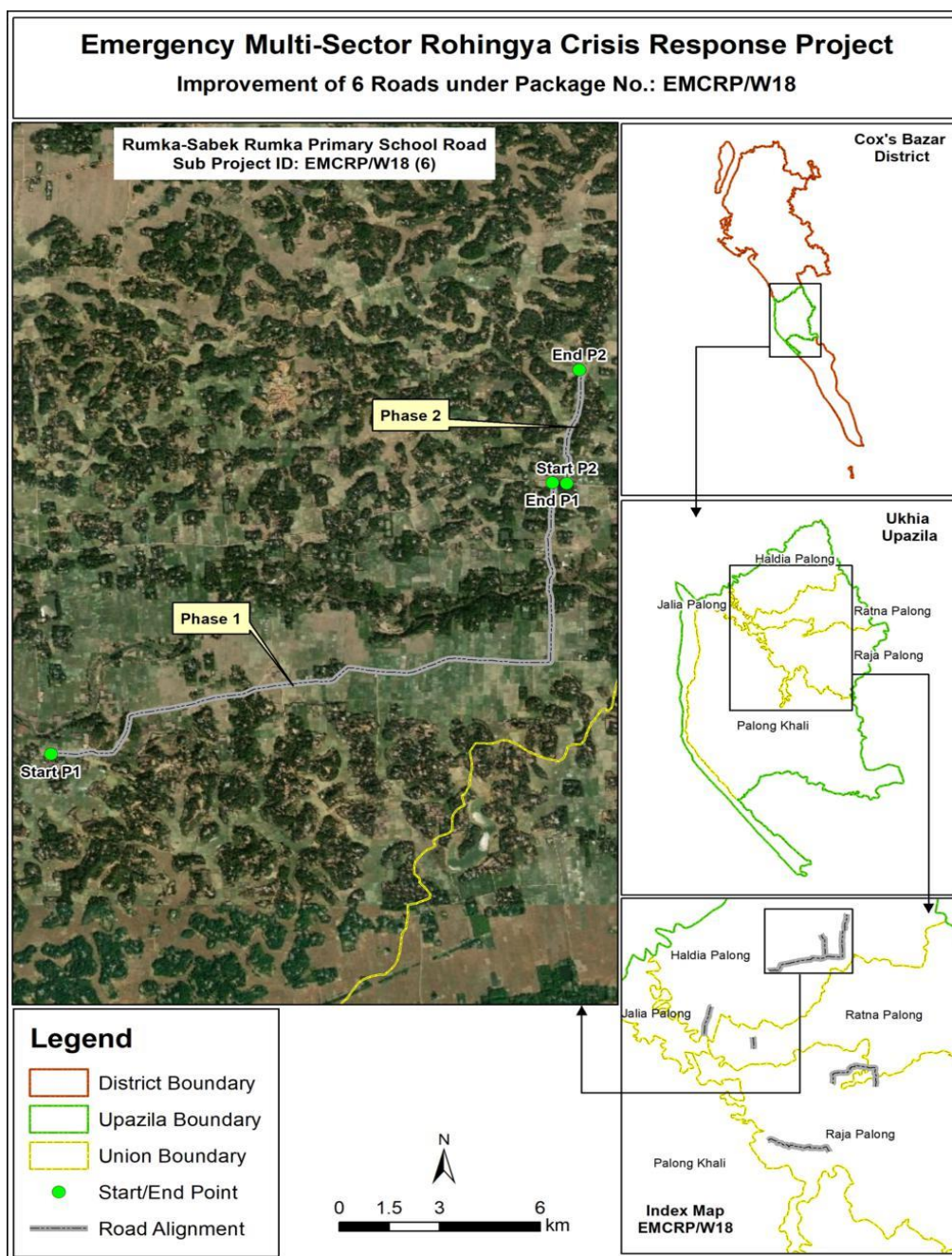


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road. Based on field survey, this sub-project involves of Brick Flat Soiling (BFS) and earthen. According to the design this sub-project will be developed with Bituminous Carpeting (BC) from Ch. 2100.0 to Ch. 5820.0m.

Sub-project Location:

Important Features	
ID	422944044

District	Cox's Bazar
Upazila	Ukhiya
Union	Haldiapalong
WARD	4, 5, 6 & 7
Total Chainage	5820m
Proposed Chainage	3720m
Road Type	Village Road
Proposed Intervention Type	Bituminous Carpeting (BC)
Road Starting Point Coordinates	Latitude: 21.295806 N Longitude: 92.115936 E
Road Ending Point Coordinates	Latitude: 21.312185N Longitude: 92.136701 E

Land ownership

Land is owned by Government.

Expected construction period: 9 (Nine 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:

- i) The proposed Sub-project is located within Moulavipara, Nasirpara, Katirpara, Nalbunia, North Patabari villages. Some other villages named Middle Haldia, South Haldia, Valukia etc. within one kilometer.
- ii) No historical sites were found
- iii) Not required to relocate local community.
- iv) Some trees and vegetation will be affected.
- v) A khal named Haldia khal located adjacent the subproject area.
- vi) Very low chance of loss of agricultural land.
- vii) Some Household Boundary made of bamboo and tin may need adjustments.
- viii) Environmental Sensitivity: No mentionable eco concerned establishment, no socio-cultural site and elephant corridors (Checked with local IUCN representative).

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

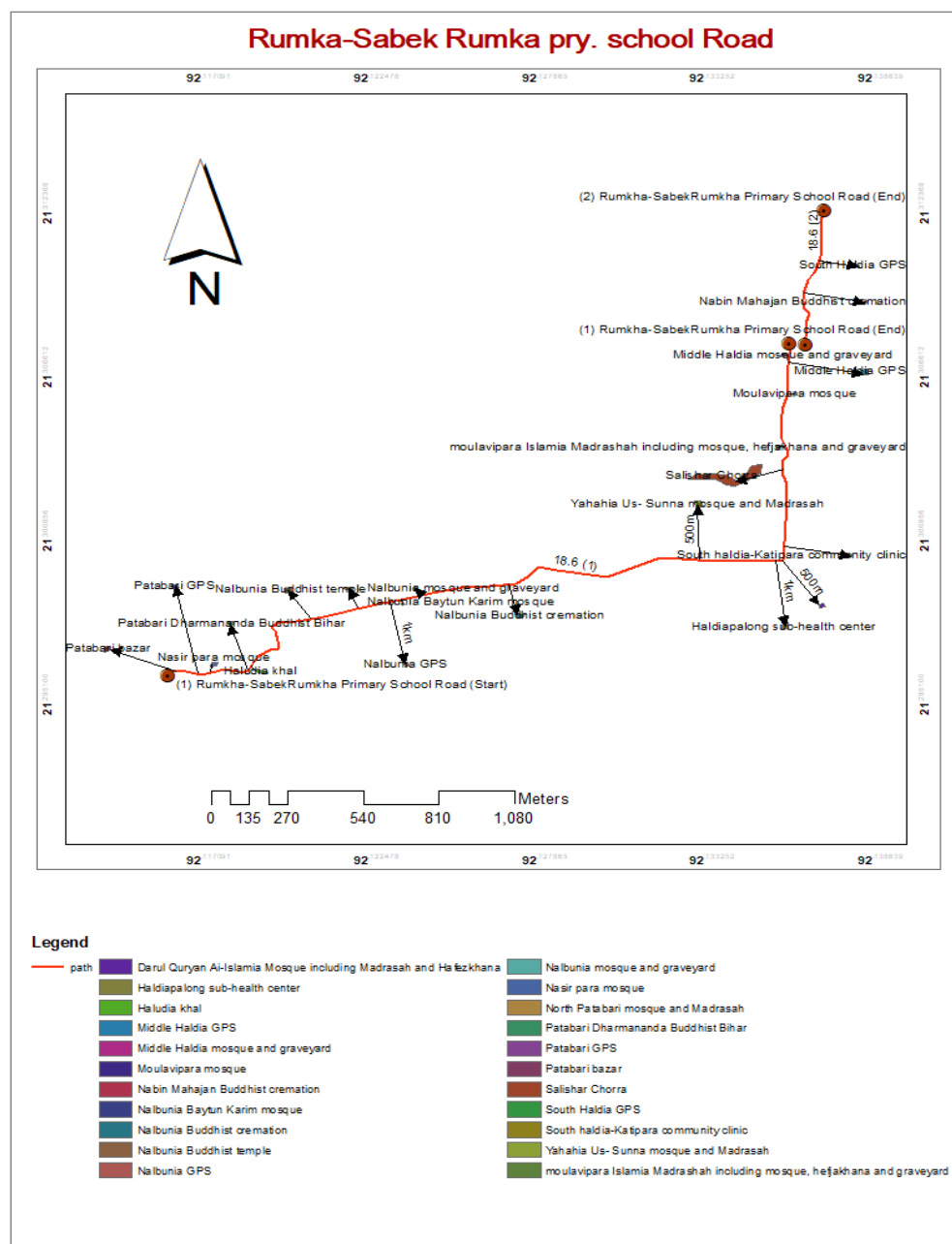
Description of cultural properties (if applicable, including distance from site):

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

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including at north side Nasir para mosque (50m), Patabari bazar (500m), Patabari GPS (1km), Patabari Dharmananda Buddhist Bihar (500m), North Patabari mosque and Madrasah (50m), Nalbunia Buddhist temple (300m), Nalbunia mosque and graveyard (100m), Yahahia Us- Sunna mosque and Madrasah (500m) at south side Haludia khal (10m), Nalbunia Baytun Karim mosque (10m), Nalbunia GPS (1km), Nalbunia Buddhist cremation (500m), Haldiapalong sub-health center (1km), Darul

Quryan Ai-Islamia Mosque including Madrasah and Hafezkhana (500m), at east side Moulavipara mosque (15m), Middle Haldia GPS (500m), South Haldia GPS (200m), Nabin Mahajan Buddhist cremation (300m), South haldia-Katipara community clinic (300) and west side moulavipara Islamia Madrashah including mosque, hefjakhana and graveyard (10m), Middle Haldia mosque and graveyard (15), Salishar Chorra (100m). No scope to disturbance by this sub-project which bring religious and cultural values to the community people. Apart from this structure no other sensitive environmental, cultural, archaeological, religious sites exists.

A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas (within 30m buffer zone) are shown below.



Location of environmentally important and sensitive areas:

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

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

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 subproject boundary)

(3) Other issues:

No more mentionable issues rose.

*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 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 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, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Landslide potential is low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. The impacts are negative but very small scale, site-specific within a

relatively small area and adjustable by mitigation measures.
<p>Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):</p> <p>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 100 feet and deep tubewell depth is 500 feet. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.</p> <p>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)</p>
<p>Status of wildlife movement:</p> <p>N/A (None of the information was found about the wildlife movement in or across the area)</p>
<p>State of forestation:</p> <p>Patches of vegetation containing large and matured trees across the road side of the proposed subproject area are located within 200m radial distance.</p>
<p>Summary of water balance analysis (For water supply scheme only):</p> <p>N/A</p>

B.2: Pre construction Phase

<p>Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):</p> <p>Mir Ahmed DC connecting road, Sultan Sarak, Mistri Baperpara connecting road, Ukhiya- Moriccha connecting road are concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also, the route has narrow curves.</p>
<p>Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:</p> <p>Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce.</p>
<p>Possible location of labor camps:</p> <p>Labor camp can be established along the road since there are available open private lands. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.</p>
<p>Requirement and type of raw materials (e.g. sand, stone, wood, etc.):</p>

i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) steels viii) Bitumen are the most common type of road materials used in construction.

Identification of access road for transportation (Yes/No):

Yes. Mir Ahmed DC connecting road, Sultan Sarak, Mistri Baperpara connecting road, Ukhiya-Moriccha connecting road are the main way for construction material transportation. The pickup trucks as material transportation vehicles can enter the access road. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.):

Earth/ mud, plastics, brick chips, cement dusts, dust from bricks, steel wires, during construction which can be identified as solid wastes. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

Residual waste from the labor camps will be generated. Equipment maintenance/vehicles on-site and scrap material will occur during construction work which are mostly solid wastes. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 400 kg.

Type and quantity of raw materials used (wood, bricks, cement, water, etc.):

Type: i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most common type of road materials used in construction.

Quantity: It is difficult to give exact figures of construction waste produced on a typical construction site.

Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards:

No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.

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

The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

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. Because under this interventions, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.

Activities that can lead to landslides, slumps, slips and other mass movements in road cuts:

Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description)

Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

No traffic movement impacts on light but low effects of noise and air pollution.

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:

No

Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)

No

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)

No.

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 of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.

Likely direct and indirect impacts on economic development in the project areas by the sub-project:

Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.

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

A khal named Haldia khal located adjacent to the subproject area but it is in safe distance. No such effect can be 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.

Activities leading to landslides, slumps, slips and other mass movements in road cuts:

The entire sub-project component area is nearly flat, thus no such type of impacts is anticipated.

Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)

No

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:

Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Please summarize the results of environmental screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in Section 8.2 of ESMF. This table needs to be completed by environmental specialists. Please add rows to the table as necessary.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
1: Sub-Project Interventions	Air quality	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection; 	Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> 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 	Construction Contractor monitored by Consultant and PIU	<ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. 	Monitoring as weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<p>and covered.</p> <ul style="list-style-type: none"> 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 construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. 			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> 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. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to nearby drainages, 	Water quality test (mainly GW) twice during the construction period in six months interval.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					<i>khals</i> or water bodies due to construction activities. <ul style="list-style-type: none"> Records should be kept and logged. 	
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health & Safety orientation trainings; Condition of sanitation facilities for workers 	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> Record of regular inspection. Record of accidents/incidents 	Monthly monitoring.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Storage of construction materials	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Orienting concerned person and team assigned for the construction work. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • List of materials and sources of materials; 	During implementation phase, as necessary with discussion with PIU, Consultant
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is low .	<ul style="list-style-type: none"> • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Complaints from community; • Regular inspection of waste management activity; • Waste disposal record. 	As work weekly progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and	Under the sub-project intervention, the overall score is low.	<ul style="list-style-type: none"> • During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment 	Contractor, environmental specialist of D&SC	<ul style="list-style-type: none"> • Location of road alignment and slope. 	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	landslides)		remain within the right of way and does not disturb the crop.			
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low .	<ul style="list-style-type: none"> With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. 	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low .	<ul style="list-style-type: none"> 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 specialist of D&SC	<ul style="list-style-type: none"> Complaints from community; 	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
	Noise pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB) 	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. 	Construction Contractor and monitored by Consultant and PIU	<ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. 	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is low .	<ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. 	Construction Contractor, environmental specialist of D&S.	<ul style="list-style-type: none"> • Complaints from communities, pedestrians 	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			<ul style="list-style-type: none"> The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. Local residents should be kept informed about planned Works 			
4. Post Construction	Road Safety	Under the issue the overall score is low .	<ul style="list-style-type: none"> Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate traffic detours, and sufficient signage & warning signs, Post speed limits and suitable bending on the road. The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. 	Construction Contractor, environmental specialist of D&S.	<ul style="list-style-type: none"> Road signage and safety instruments at suitable locations and chainage 	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is low .	<ul style="list-style-type: none"> Replantation of trees during monsoon period Maintain of trees properly Check survival of trees and replant the dead trees 	Construction Contractor, environmental specialist of D&S.	<ul style="list-style-type: none"> Number of complaints from stakeholders; Records of trees number and tree plantation inspection 	Immediately after the construction work is over.
5. Operatio	Maintenance of road and	Under the issue	<ul style="list-style-type: none"> No advertisement/boardings shall be allowed within the Right of Way 	LGED	<ul style="list-style-type: none"> Number of complaints from 	During Operation under

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
nal Phase	assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	the overall score is low .	limits of the project road. <ul style="list-style-type: none"> Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. Clear smooth speed breaker/rough surfaces should be clear in views. Regular maintenance of road surface and shoulders. 		stakeholders	LGED's regular maintenance program in each 3 years.

* 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

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 Access and evacuation Roads: Rumka-Sabek Rumka pry. School Road, Id: 422944044

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> No land acquisition is allowed within this sub-project activities <p>So, there are no any mitigation measures according to this impact.</p>	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	<ul style="list-style-type: none"> Under this subproject, there is no scope of negative impact of adjacent livelihoods 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	<ul style="list-style-type: none"> All of the project stakeholders should be consulted Separate community level consultation meeting with the potential affected HHs Consultation meeting with host communities about the project objectives and scope of works 	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	<ul style="list-style-type: none"> Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	<ul style="list-style-type: none"> Selection of sub-project sites and all implementing interventions must take place outside of the 	PIU	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	conflict	elephant corridor/influence area.		PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; Alteration of natural drainage	<ul style="list-style-type: none"> Our selected sites avoided the low land near the water bodies or natural flow path to avoid the flash flood or any kind of surface runoff. Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. After completing the development we restored the place as like before to avoid the cut and fill operational problems. This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. The contractor ensuring sound environment for the local residents near the sub project site. 	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	<ul style="list-style-type: none"> Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. All Personal Protective Equipments (PPEs) must be ensured in sites before starting any kinds of construction works. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	<ul style="list-style-type: none"> Acceptable range of emission of CO, particulate matter [SPM (Suspended particulate matter), 	Contractor	Environmental Consultant of PIU,

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices</p> <ul style="list-style-type: none"> Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level 		PSC
Construction Activity	Safety Issues	<ul style="list-style-type: none"> Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem Before works started Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. Records of every training must be kept at site. All kinds of Child labour are completely prohibited in every site. Every construction materials storage site will be well fenced by Tin and safety caution tape. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	<ul style="list-style-type: none"> Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	<ul style="list-style-type: none"> A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water 	PIU & Contractor	Social Development Specialist and

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>sources shall be taken.</p> <ul style="list-style-type: none"> 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 works starts. 		Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	<ul style="list-style-type: none"> Maintain safety measures during the movement of heavy machinery and equipment. Local community will be trained up on traffic management and awareness. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	<ul style="list-style-type: none"> 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 labour camps will be put in place Treated water will be made available at site for drinking purpose. 	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<ul style="list-style-type: none"> Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through 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: <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site After completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. 	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: <ul style="list-style-type: none"> 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, 	<ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. 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. 	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
	temporary or permanent hearing loss, heat stress, and dermatitis.	<ul style="list-style-type: none"> 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 the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of 		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		<p>this awareness training shall be kept on site.</p> <ul style="list-style-type: none"> • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used. 		
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	<ul style="list-style-type: none"> • Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time. 	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the	<p>The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials ✓ Health & Safety risks to 	<ul style="list-style-type: none"> • Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder. 	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
construction)	workers and local community			
Operation & Maintenance	Noise disturbances to fauna	<ul style="list-style-type: none"> Provision to maintain noise and vibration 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. 	UE (under the direct guidance of Executive Engineer)	UNO, PSC.

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 the 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.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and 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. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.



- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use 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 the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite 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 a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, +8801714980171
Tanvir Ahsan Haque, Environmental Specialist, +8801688117059
Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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

Appendix-3: Cost of Environmental 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. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

SI no.	Description of item	Quantity	Unit price	Total amount
1.	<u>Grass Turfing</u> Turfing on embankment top and slope & 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)	10977.00 Sq.m	@38.15 Tk. Per sqm	418,772.55
2.	<u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	3720.0m	@ 2.56 BDT	9,523.20
3.	<u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men	2 nos.	@12822.86 per toilet	25,645.72
4.	<u>First Aid Box</u>	1 no.	LS @5000 Tk. Per	5,000

SI no.	Description of item	Quantity	Unit price	Total amount
	Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.		box	
5.	<u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge.	1 no.	LS @ Tk. 30,000	30,000
6.	<u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge.	1 no.	LS @ Tk. 15,000	15,000

SI no.	Description of item	Quantity	Unit price	Total amount
7.	<u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles	LS	LS @ Tk 30,000	30,000
8.	<u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet.	300 nos.	@ Tk. 1000	300,000
9.	<u>Motivation training</u> 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.	1 no.	LS @ Tk. 10,000	10,000
10.	<u>Waste disposal facility</u> 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.	LS	@ Tk. 5000	5,000



SI no.	Description of item	Quantity	Unit price	Total amount
11.	<u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area 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.	LS	@ Tk. 5000	5,000
12.	<u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	1 no.	LS @ Tk. 30,000	30,000
13.	<u>Environmental management</u> 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. <u>[One person to be appointed for W18(4), W18(5) & W18(6)]</u>	Presented in the BoQ of Bottali-Chagol Bazar Road, Id: 422944040, and is not repeated here.		
	Subtotal Bill: Environmental facilities			883,941.47

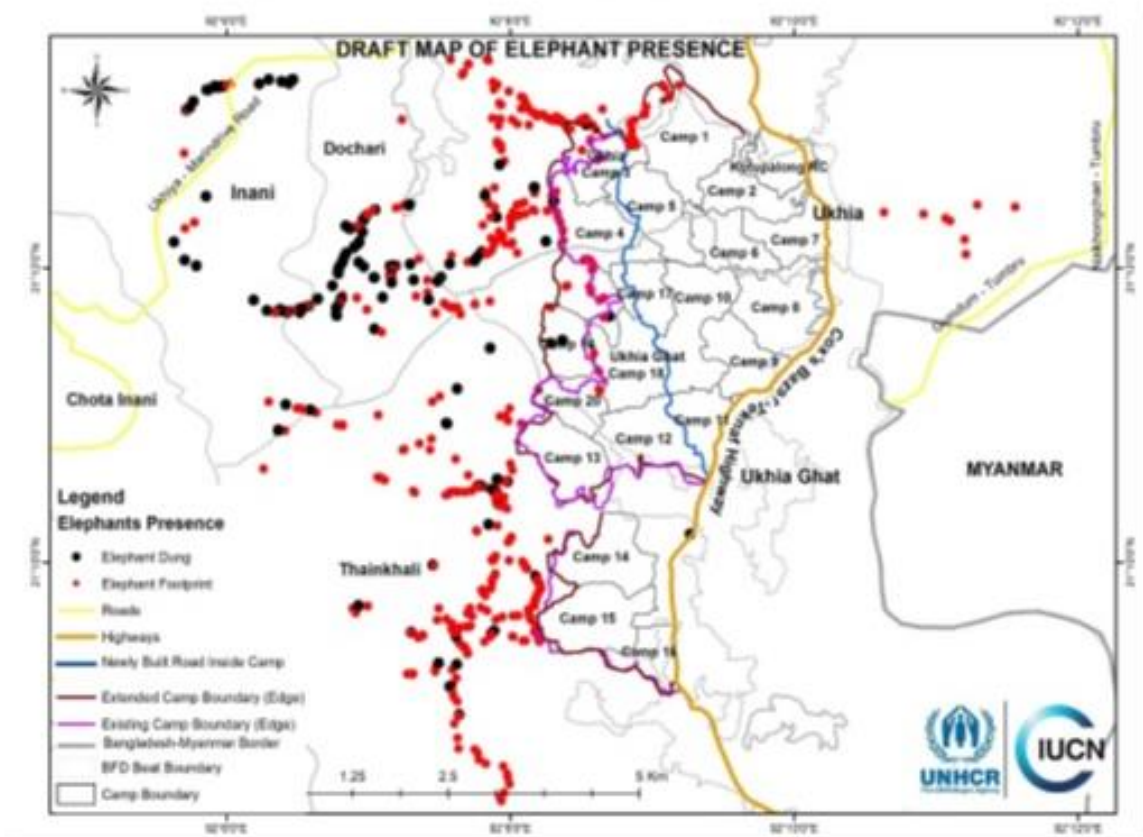
Cost of H&S Measures under COVID 19 Situations

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 74 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-18.6).

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)	200		250	50.00	450	22,500.00	To be placed in a case/holder on the basin, for washing hands for max. 79 people a day and showering of 74 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	40 nos. for each site		N/A	400.00	40	16,000.00	For labors who work in close contact, 40 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7.	One time Mask (Disposable) for Contractors' Staffs	5 nos. each day in each site		N/A	12.00	1350	16,200.00	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	74 nos. for each labor camp		35.00	1332	46,620.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	2 Can	N/A	4 Can	250.00	6	1,500.00	
10.	Detergent Cleaner	N/A	4 kg in each camp/month		400.00	36	14,400.00	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						167,320.00	

Appendix-4: Elephant Presence Map



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

Appendix-5: Attendance of participants in the Consultation Meeting

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

Time: 05:30 PM

Date: 23/01/2020

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

ইমাজেলি মাস্টি সেটর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নাম: ক্রমবর্ধমান-মুক্তি-কেন্দ্রিক রোহিঙ্গা আইজারি ফ্রম ক্রাইসিস
কর ভিত্তিকের স্থান: নন্দাবুনিয়া ইউপি প্রকল্প

ইউনিয়ন: ইন্দ্রদিয়াপাড়া
ডাকঘর: হাতিয়া
উপজেলা: উত্তরা
জেলা: কক্সবাজার

অংশগ্রহণকারীদের তালিকা (পরিচয় ও বয়স)

ক্রমিক নং	নাম	বয়স	পুরুষ/মহিলা	এম	স্বাক্ষর
০১	মো: সজ্জামা বাদশা	০৬	পুরুষ	নন্দাবুনিয়া	
০২	মোহাম্মদ আলম	২২	১১	নন্দাবুনিয়া	
০৬	মো: সা(২৫)	২২	১১	১১	Sched
০৪	কাজী আলম	৫৫	১১	১১	মুহাম্মদ
০৫	মো: আহম্মদ	২০	১১	১১	মুহাম্মদ
০৬	মো: মুহাম্মদ	২২	১১	১১	মুহাম্মদ
০৭	মো: আলম	৫০	১১	১১	মুহাম্মদ
৮	মুহাম্মদ আলম	৩২	১১	১১	মুহাম্মদ
০৯	মোহাম্মদ আলম	২৬	১১	১১	মুহাম্মদ
১০	মোহাম্মদ আলম	২০	১১	১১	মুহাম্মদ
১১	মোহাম্মদ আলম	৫৫	১১	১১	মুহাম্মদ
১২	মোহাম্মদ আলম	৫৫	১১	১১	মুহাম্মদ
১৩	মোহাম্মদ আলম	৬২	১১	১১	মুহাম্মদ
১৪	মোহাম্মদ আলম	২২	১১	১১	মুহাম্মদ
১৫	মোহাম্মদ আলম	২৬	১১	১১	মুহাম্মদ
১৬	মোহাম্মদ আলম	২০	১১	১১	মুহাম্মদ
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২৬	মোহাম্মদ আলম	৩০	১১	১১	মুহাম্মদ
২৭	মোহাম্মদ আলম	৩৬	১১	১১	মুহাম্মদ
২৮	মোহাম্মদ আলম	৩০	১১	১১	মুহাম্মদ
২৯	মোহাম্মদ আলম	৩৬	১১	১১	মুহাম্মদ
৩০	মোহাম্মদ আলম	৩০	১১	১১	মুহাম্মদ

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-project Component Sites



Existing Surroundings of the Sub-Project