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 Teknaf Kachubonia to Subrang Noapara Bazar Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W26

Development Design Consultants Ltd.

April-2021

ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bricks
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

Contents

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 services. Nevertheless, to aid into the condition and improve the symbiotic relation between Hosting Community and Displaced Rohingya Population (DRP), different interventions are taking place. Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) aided by World Bank holds one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among several 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 is a fundamental motive. In order to take these matters into consideration, screening and assessment of these elements has been adopted 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 sub-project is situated within the localities of Gudarbil, Kochubonia, Choto Habibpara, Boro Habibpara, Chanduli para, Mollardail, Alirdail, Kuancichori para, Guchaccya gram, Katabonia, Puran para and Noapara villages under two identified unions of Teknaf Upazila, Cox's Bazar. Different types of nearly 1800 motorized and non-motorized vehicles and at least 3,600 people pass through the road in a typical day. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at north side World vision Teknaf field office (350m), Graveyard (600m), Mohammodia Riazul Minna Dakhil Madrasha (200m), Boro Habibpara Jame Mosque (100m); at south side Cyclone center (325m), Alirdail GPS (20m), Puranpara jame Mosque & graveyard (5m), Chandulia para bazar (5m); at east side Teknaf Government College (760m), Sabila al Rashid complex (1km), Younus market (800m), Baitush sharif complex (40m), Sabrang High School & GPS (1km), Sabrang Bazar, Mosque & Graveyard (1km), Vocational school (30m), Noapara GPS (500m), Noapara Nabi Hossain High School (500m), Farukia Boro Madrasah (20m); at west side Alirdail Jame Mosque, Madrasha & graveyard (300m), Adarsh Jame Mosque & Madrasha (500m), Kochubonia community clinic (50m), Kochubunia pond (80m), pond (800m); and at north-east side Greenland school and college (900m), WFS center (30m), Graveyard (250m), Teknaf Pilot High School (650m). Apart from these, no other important socio-environmental features are present near the sub-project location. Several water bodies though are located in the vicinity, water logging is not a regular phenomenon. No other sensitive environmental, cultural, archaeological, religious sites were found in the area. 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 may affect several trees. All these impacts are site-specific and manageable 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 or affect any sensitive areas of any kind and sufficient numbers of structures are included in proposed implementation works for the enhancement of ecosystem services in the area, 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 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change 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. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the socio-economic condition of the host communities 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

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

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Widen access to the government support system including health, education and emergency evacuation and sheltering
- ✓ 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-project components under the package name **'Strengthening and widening of 5 nos. roads under Cox's Bazar Districts.'** with the bid package no. **EMCRP/W26**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W26

Description of Sub-project: Strengthening and widening of 5 nos. roads under Cox's Bazar Districts. i, e., **Improvement of widening and Maintenance of** (1) Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003); (2) Rajapalong Asrayon Road (ID: 422944056); (3) Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005); (4) Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002); and (5) Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)

Sub-project Component no. (1) Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003)

Component's Location:

i. ID. 422902003	ii. Ward No.: 1, 2 & 3 of Sabrang union and 7 & 8 of Teknaf Sadar union	iii. Mouza: Sabrang & Teknaf
iv. Village: Gudarbil, Kochubonia, Choto Habibpara, Boro Habibpara, Chanduli para, Mollardail, Alirdail, Kuancichori para, Guchaccya gram, Katabonia, Puran para & Noapara.		v. Name of Union: Sabrang & Teknaf Sadar
vi. Upazila: Teknaf	vii. Sub-Project construction period: 1 year	
viii. Construction Year: 2021	ix. Design Width (m): 5.5 Pavement-4.3m and Shoulder-1.2m (0.6m+0.6m)	x. Length (m): 6555
xi. Distance from UZHQ: 9-10 Km.		
GPS Coordinates	Latitude Value: 20.857182 N Longitude Value: 92.290197 E	Starting Point
	Latitude Value: 20.808966 N Longitude Value: 92.311020 E	Ending Point
Present Condition of Road	BC (Broken)	
Communication Source	Radio & Mobile Networks	

Subproject interventions:

- Bituminous Carpeting options.
- 4 Nos. Box culvert (dimension: 3.5m x 3.5m) at Ch. 255.0m, (dimension: 4.5m x 3.0m) at Ch. 679.0m, (dimension: 2.5m x 2.5m) at Ch. 1018.0m and (dimension: 1.5m x 1.5m) at Ch. 1808.0m

• 1 No. Cross Drain (dimension: 0.975m x 0.975m) at Ch. 1347.0m • 520.0m Toe wall (height 1m) at different chainage • Road safety works and • Environmental Mitigation and Enhancement works
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period (Component -1): 1 year
Estimated total cost of component: 49,253,165.14 (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. D&SC conducted two consultation meetings with local community on 14 December, 2020 at Alirdail more point of Sabrang Union and Chandaliapara bazar more point of Teknaf Sadar Union, Refer to Figure 2.1.1, and Public Consultation Participants' List is attached in Appendix-5 and sub-project pictorial overview is attached in Appendix-6. The local individuals of different ages, chairman and/or member of Union Parishad participated in those consultation meetings. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.

Figure 2.1.1: Consultation meeting (FGD) with local community

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

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 improvement or 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 views and information from affected parties and inhabitants on social and environmental issues. (iii) Consultation with interest groups and the public.

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust and noise pollution that might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely to take place during the road construction, if proper measures are not followed.

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 issues have also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. 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. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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.

- Every possible measure should be taken to avoid any nuisance to public and surrounding inhabitants.

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 and this will help identifying the impacts and their extents. The screening data and information for this Sub-project component 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. 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.

Among the different socio-economic and environmental features within a kilometer from the centerline of the proposed road, following are the important ones: At the north side World vision Teknaf field office (350m), Graveyard (600m), Mohammodia Riazul Minna Dakhil Madrasha (200m), Boro Habibpara Jame Mosque (100m); at south side Cyclone center (325m), Alirdail GPS (20m), Puranpara jame Mosque & graveyard (5m), Chandulia para bazar (5m); at east side Teknaf Government College (760m), Sabila al Rashid complex (1km), Younus market (800m), Baitush sharif complex (40m), Sabrang High School & GPS (1km), Sabrang Bazar, Mosque & Graveyard (1km), Vocational school (30m), Noapara GPS (500m), Noapara Nabi Hossain High School (500m), Farukia Boro Madrasah (20m); at west side Alirdail Jame Mosque, Madrasha & graveyard (300m), Adarsh Jame Mosque & Madrasha (500m), Kochubonia community clinic (50m), Kochubunia pond (80m), pond (800m); and at north-east side Greenland school and college (900m), WFS center (30m), Graveyard (250m), and Teknaf Pilot High School (650m). Some features may face dust and noise pollution due to having a closer proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation or preparatory measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive

work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. 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, 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 Teknaf 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 Overview of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the[4] risk of hill collapse by destabilizing the terrain. Also deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones, as forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf
[4] "Implications of Climate Change for Fresh Groundwater Resources in Coastal Aquifers in Bangladesh", World Bank report.2010

Together with the above-mentioned hazardous situation, again due to sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources. In this case, it is possible that a stationary position of the freshwater-saltwater transition zone can be established via proper management of pumping in the confined aquifer.

The groundwater resource is seen to suffer more from the climate change impact. The impact on groundwater due to climate change impact include

- Sea-level rise could result in a transgression of the sea and a loss of land area. This could also lead to the secondary effect of population migration in the new coastal band due to migration of the coastal population from the encroaching sea, thereby increasing domestic water needs in the new coastal area.
- A higher sea-surface elevation would change the base level for all groundwater gradients in the basin. In many aquifers, this would lead to shifts in local hydraulic gradients, inland hydraulic heads, and the rate of groundwater flow.
- A higher sea level will result in an increase in pressure in the subsea aquifer, resulting in inland movement of saltwater (aquifer seawater intrusion).
- Transgression of the coast implies that saline storm surges of 1 or more meters depth would penetrate beyond the new coast to new land areas. Storm surges transport saline water far inland of the coast and much of this floodwater may infiltrate the ground in areas where the aquifer is not fully saturated. Even where the aquifer is saturated, denser saline water may sink into the aquifer during the flood and later from pools of saltwater that remain following the flood.

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

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time.

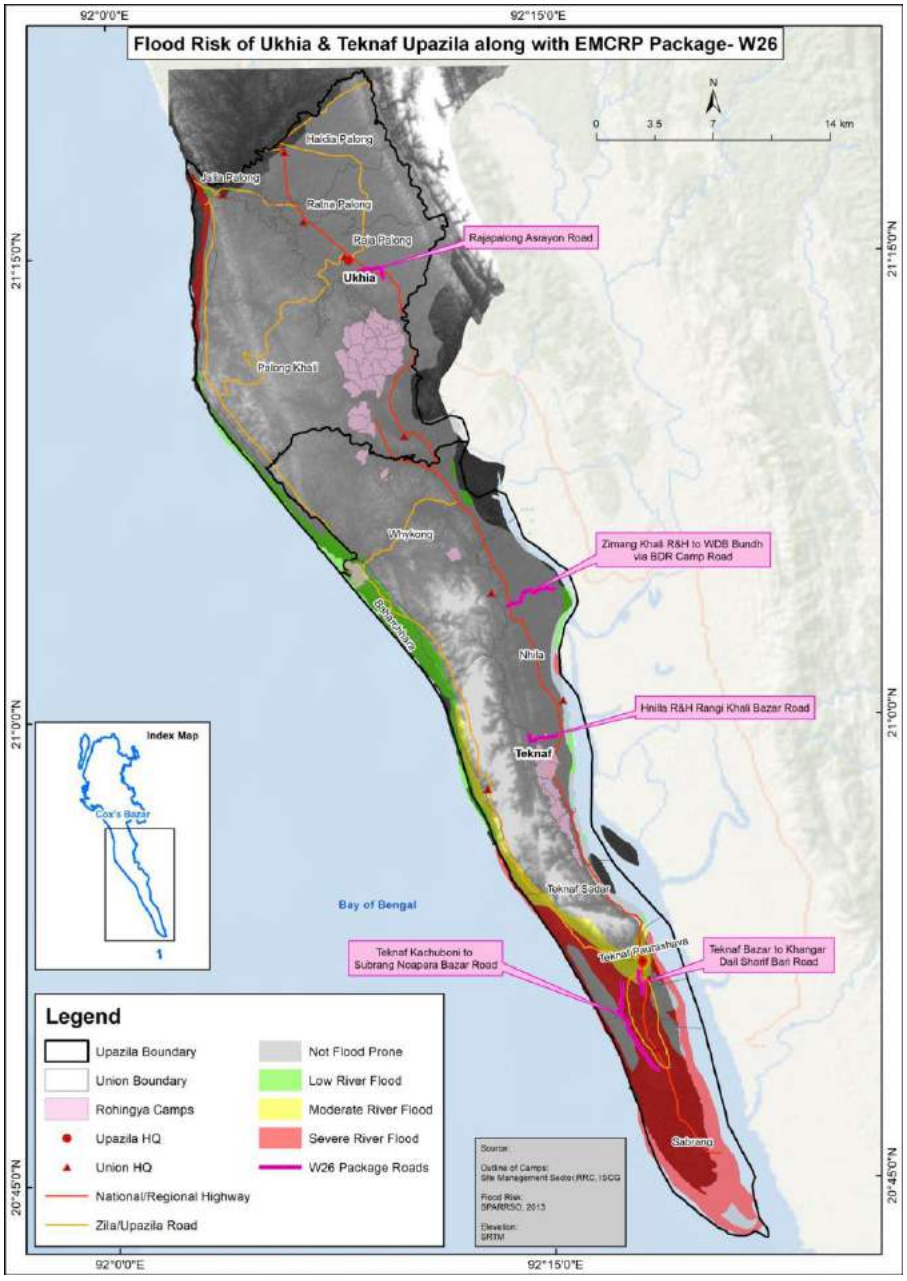


Figure3.3.2.1: Flood inundation risk map near the subprojects

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, and associated mitigation or offsetting measures are really hard to plot on the impact areas, though an overall set of measures are often considered in practical aspect. Fig: 3.3.2.1 shows the inundation risk map of the subprojects under W-26, a portion of the road is found to be in the vicinity of the severe river flood inundation area. FGD done in this area revealed that sometimes due to severe storm surge in the area small roads erode. As part of preventive measures, proper design of slope and stability/compactness on both the shoulder and slope area are to be ensured. Also tree planation on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be planted for each tree fell in the periphery of the subproject. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Some features are very close to the subproject area might get affected during construction period. These include Boro Habibpara Jame Mosque located at 100m north; at south side Alirdail GPS (20m), Puranpara jame Mosque & graveyard (5m), Chandulia para bazar (5m); at east side Baitush sharif complex (40m), Vocational school (30m), Farukia Boro Madrasah (20m); at west side Kochubonia community clinic (50m), Kochubunia pond (80m), and at north-east side WFS center (30m). 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 experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 4 Nos. Box culvert- (dimension: 3.5mx3.5m) at Ch. 255.0m, (dimension: 4.5mx3.0m) at Ch. 679.0m, (dimension: 2.5mx2.5m) at Ch. 1018.0m and (dimension: 1.5mx1.5m) at Ch. 1808.0m and 1 No. Cross Drain (dimension: 0.975mx0.975m) at Ch. 1347.0m will be constructed at the subproject area. Due to the presence of low land along different chainage of the road some protective works of 520.0m Toe wall (height 1m) at different chainage are included in design and estimation. As part of preventive measures during storm surge, proper design of slope and stability/compactness on both the shoulder and slope area are to be ensured. 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 and Social Management Plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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 component, a set of items are included in the BOQ of this sub-project. Cost for engaging a Safeguard Personnel for overseeing the Environmental and Social Management Works under the Package EMCRP/W26 has been added to the BOQ. Environmental quality enhancement works such as grass turfing, tree plantation, and dust suppression measures are included in the estimation. In order to ensure health safety and sanitary measures for workers PPE, First Aid Box, labor shed with appropriate facilities, drinking water facility with water tests, temporary latrine for male and female as well as waste disposal systems have been accounted for. For ensuring safe and environmentally sound work practices and prevailing conditions in the site motivational training on environmental and social considerations has been taken into account. An overview of the estimation is given in **Appendix-3**.

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measure delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety

(OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 situations 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 and 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: **Strengthening and widening of 5 nos. roads under Cox's Bazar Districts (Package:** EMCRP/W26).

Name of the component: Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003).
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 174,570,459.46 Tk.
Estimated construction period duration: 1 year
Estimated total cost of the component (in Taka): **49,253,165.14 Tk.**
Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Cox's Bazar **Upazila**: Teknaf **Union**: Sabrang and Teknaf Sadar

Name of Community/Local Area: Gudarbil, Kochubonia, Choto Habibpara, Boro Habibpara, Chanduli para, Mollardail, Alirdail, Kuancichori para, Guchaccya gram, Katabonia, Puran para & Noapara.

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 with a proposed design of BC from Ch.00 to Ch. 6555m. Proposed safety and service providing structures include 4 Nos. Box culvert (dimension: 3.5mx3.5m) at Ch. 255.0m, (dimension: 4.5mx3.0m) at Ch. 679.0m, (dimension: 2.5mx2.5m) at Ch. 1018.0m and (dimension: 1.5mx1.5m) at Ch. 1808.0m and 1 No. Cross Drain (dimension: 0.975mx0.975m) at Ch. 1347.0m and some additional protective works of 520.0m Toe wall (height 1m) at different chainage, which are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Estimated footprint / land area for this sub-project is 36,052.5 sq m.

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
This proposed Teknaf Kachubonia to Subrang Noapara Bazar Road belongs to Sabrang and Teknaf Sadar unions under Teknaf Upazila. This road starts from Gudarbill Baitus shraf Madrasha & Jame Mosque on Teknaf Sea beach road at north side of Teknaf Sadar Union stretching 6555m to Noyapara bazar to Shahporir dwip road at north-east side of Sabrang union. Several connecting roads fall within the road chainage. This targeted sub-project passes through different important features, such as boundary fences, Chorra, ponds, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, schools, religious institutes, shops, bazars, open field etc. No other significant environmental or socioeconomic features are found near the road component.

However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

Chainage (m)	Left	Right	Features
000-300	L		Paddy land, madrasah, trees
		R	Trees, electric pole, paddy land, bamboo fences
300-600	L		Trees, brick boundary wall, cyclone shelter, connecting road, tin shed fences
		R	Homestead garden, low land, palm trees, connecting road, tin shed household, paddy land
600-900	L		Paddy land, electric pole, homestead garden, connecting road, betelnut yard, bamboo fences
		R	Tin shed fences, homestead garden, connecting road, bamboo fences, brick boundary
900-1200	L		Open space, tower, paddy land
		R	Brick boundary wall, homestead garden, bamboo bushes
1200-1500	L		Tin shed fences, brick boundary wall, homestead garden
		R	Bamboo bushes, shop, connecting road, electric pole, tin shed fences
1500-1800	L		Mosque, primary school, brick boundary wall
		R	High school, connecting road, trees, shop, open field
1800-2100	L		Bamboo fences, brick boundary wall, tin shed fences
		R	Trees, electric pole, open field, homestead garden
2100-2400	L		Madrasah, graveyard, brick boundary wall, bamboo fences
		R	Chandulipara school, cyclone shelter, connecting road, Ebtedayee madrasah, brick boundary wall
2400-2700	L		Open field, betelnut yard, tin shed fences, brick boundary wall
		R	Open space, trees, homestead garden
2700-3000	L		Brick boundary wall, bamboo bushes, betelnut yard, shop
		R	Tin shed household, brick boundary wall, homestead garden
3000-3300	L		Brick boundary wall, bamboo fences
		R	Paddy land, shop, trees, betelnut yard, connecting road
3300-3600	L		Bamboo fences, electric pole, brick boundary wall
		R	Betelnut yard, tin shed fences, primary school, connecting road
3600-3900	L		Tin shed fences, graveyard, brick boundary wall, electric pole, bamboo fences
		R	Brick boundary wall, bamboo fences

3900-4200	L		Connecting road, open land
		R	Shop, connecting road
4200-4500	L		Connecting road, open land
		R	Alirdail school, connecting road, open field
4500-4800	L		Bamboo fences, tin shed fences
		R	Bamboo fences, electric pole
4800-5100	L		Brick boundary wall, connecting road, tin shed fences
		R	Connecting road, mosque, pond
5100-5400	L		Mosque, connecting road, tin shed household, bamboo fences
		R	Building, brick boundary wall, shop
5400-5700	L		Tin shed fences, electric pole, bamboo fences, UP office, connecting road
		R	Connecting road, bamboo fences
5700-6000	L		Electric pole, tin shed fences
		R	Connecting road, bamboo fences
6000-6300	L		Tin shed fences, brick boundary wall, trees, electric pole
		R	Brick boundary wall, tin shed fences, mosque, connecting road
6300-6555	L		Brick boundary wall, building, tower, madrasah
		R	Bamboo fences, building

Figure: Starting point of Teknaf Kachubonia to Subrang Noapara Bazar Road

Overall Comments

The proposed component of the sub-project (Road strengthening & widening) is not located within any remarkable environmentally sensitive or reserved area of any kind and will not cause any severe affect to the environmental settings 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, though local people pointed out about the problem with waterlogging during the rainy season. Eight to ten trees may need to clear out during the construction period, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for this improvement works. In order to minimize the risk of potential sliding or slipping of soil mass, earth will be compacted for stabilization and necessary cut and fill operation along the hill slope is to be ensured. All these inputs will be mainly at construction phase and limited within project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed during the consultation session with local stakeholders that this project's scope of works does not intend to overtake any area of physical lodgment and funding entity has no intention to do so. Some other issues have also been brought to their attention including construction of drainage and protective structures at different chainages on the road.

Different types of nearly 1800 motorized and non-motorized vehicles and at least 3,600 people pass through the road in a typical day. 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. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation. 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 project component.

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 etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project site, such as at north side World vision Teknaf field office (350m), Graveyard (600m), Mohammodia Riazul Minna Dakhil Madrasha (200m), Boro Habibpara Jame Mosque (100m); at south side Cyclone center (325m), Alirdail GPS (20m), Puranpara jame Mosque & graveyard (5m), Chandulia para bazar (5m); at east side Teknaf Government College (760m), Sabila al Rashid complex (1km), Younus market (800m), Baitush sharif complex (40m), Sabrang High School & GPS (1km), Sabrang Bazar, Mosque & Graveyard (1km), Vocational school (30m), Noapara GPS (500m), Noapara Nabi Hossain High School (500m), Farukia Boro Madrasah (20m); at west side Alirdail Jame Mosque, Madrasha & graveyard (300m), Adarsh Jame Mosque & Madrasha (500m), Kochubonia community

clinic (50m), Kochubunia pond (80m), pond (800m); and at north-east side Greenland school and college (900m), WFS center (30m), Graveyard (250m), Teknaf Pilot High School (650m). The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated. In this sub-project area, no elephant migration routes exist (ref. IUCN).

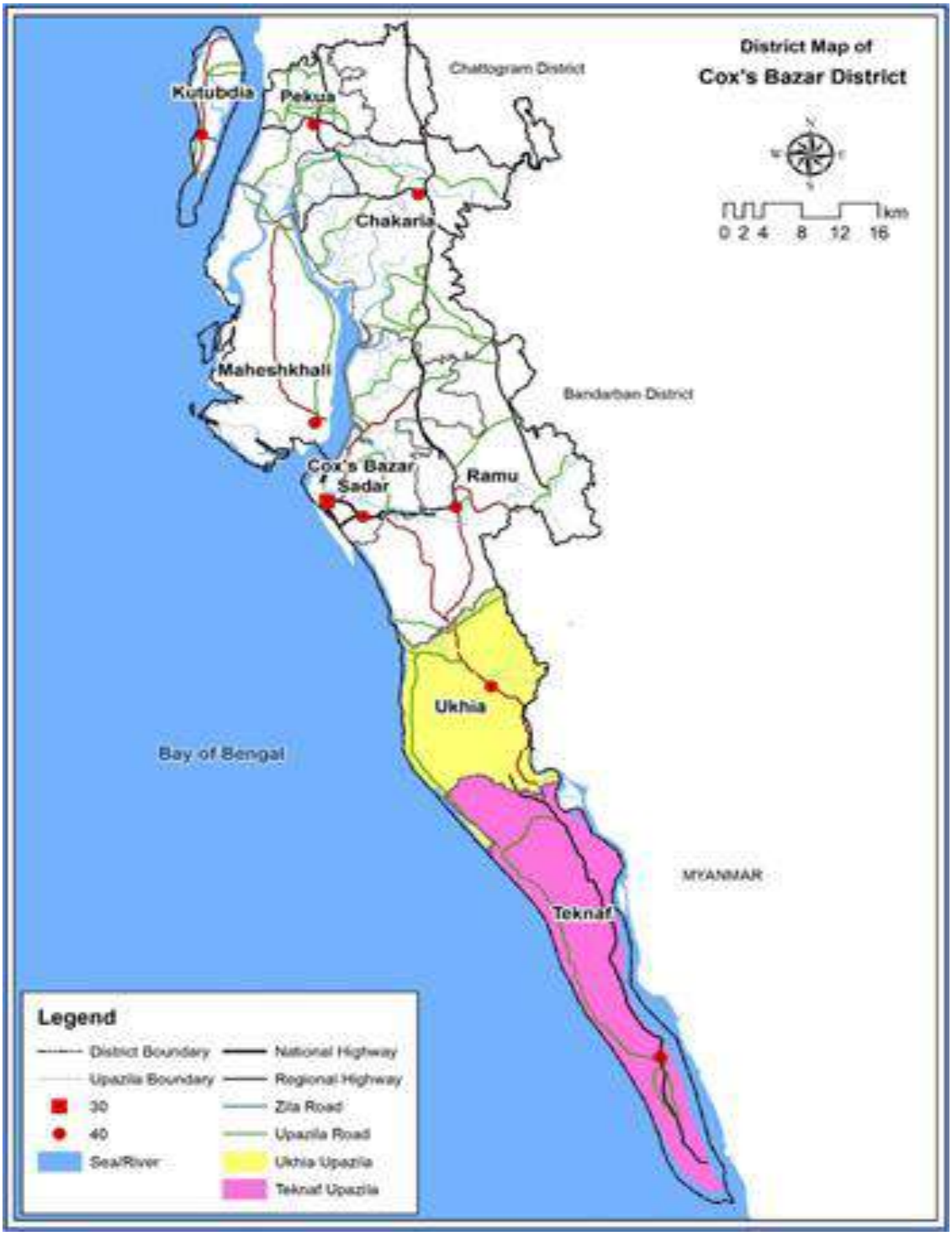


Figure 3: District Map with project location

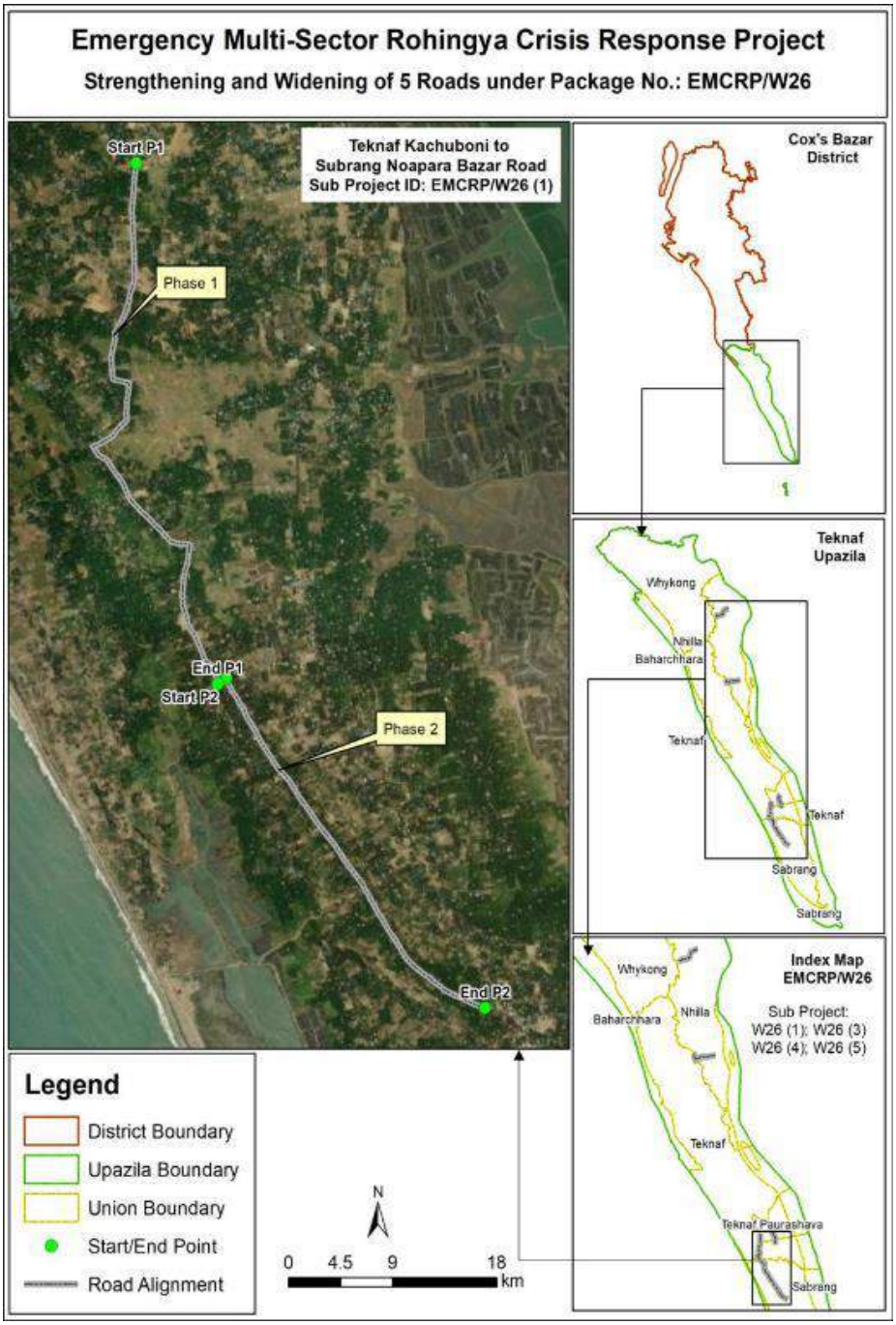


Figure 4: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 6555m. Proposed safety and service providing structures include 4 nos. of Box Culvert, 1 no. Cross Drain, protective works for 520.0m Toe wall at different chainage that are included in the design and estimation, and as part of road safety works include barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Sub-project Location:

Important Features	
ID	422902003
District	Cox's Bazar
Upazila	Teknaf
Union	Sabrang and Teknaf Sadar
WARD	1, 2 & 3 of Sabrang union and 7 & 8 of Teknaf Sadar union
Proposed Chainage	6555m
Road Type	Village Road
Proposed Intervention Type	BC
Road Starting Point Coordinates	Latitude Value: 20.857182 N Longitude Value: 92.290197 E
Road Ending Point Coordinates	Latitude Value: 20.808966 N Longitude Value: 92.311020 E

Land ownership

Land area covering the road length is owned by the Government.

Expected construction period: 1 Year

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 Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 6555m.

i) Some water bodies like ponds, chorra, ditches etc. were identified during visiting time.
ii) No historical sites were identified.
iii) Not required to relocate local community.
iv) Some trees may be affected but a number of trees will be planted during operation phase.
v) No chance to lose of agricultural land.
vi) Some Household Boundary made of bamboo and tin may need adjustments.
vii) Environmental Sensitivity: There are several sites containing bio/ecological niches including patches of vegetation, ponds, ditches or other type of water bodies, which are in closer proximity along the road length and may receive some extent of detrimental impacts during the construction period; but no elephant corridor was identified in the areas. Construction induced impacts may also affect numbers of socio-economic features along the road length; therefore a well-planned ESMP has been prepared to follow in the field.

Section B: Environmental Screening

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

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as at north side World vision Teknaf field office (350m), Graveyard (600m), Mohammodia Riazul Minna Dakhil Madrasha (200m), Boro Habibpara Jame Mosque (100m); at south side Cyclone center (325m), Alirdail GPS (20m), Puranpara jame Mosque & graveyard (5m), Chandulia para bazar (5m); at east side Teknaf Government College (760m), Sabila al Rashid complex (1km), Younus market (800m), Baitush sharif complex (40m), Sabrang High School & GPS (1km), Sabrang Bazar, Mosque & Graveyard (1km), Vocational school (30m), Noapara GPS (500m), Noapara Nabi Hossain High School (500m), Farukia Boro Madrasah (20m); at west side Alirdail Jame Mosque, Madrasha & graveyard (300m), Adarsh Jame Mosque & Madrasha (500m), Kochubonia community clinic (50m), Kochubunia pond (80m), pond (800m); and at north-east side Greenland school and college (900m), WFS center (30m), Graveyard (250m), Teknaf Pilot High School (650m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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 in figure B.1.1

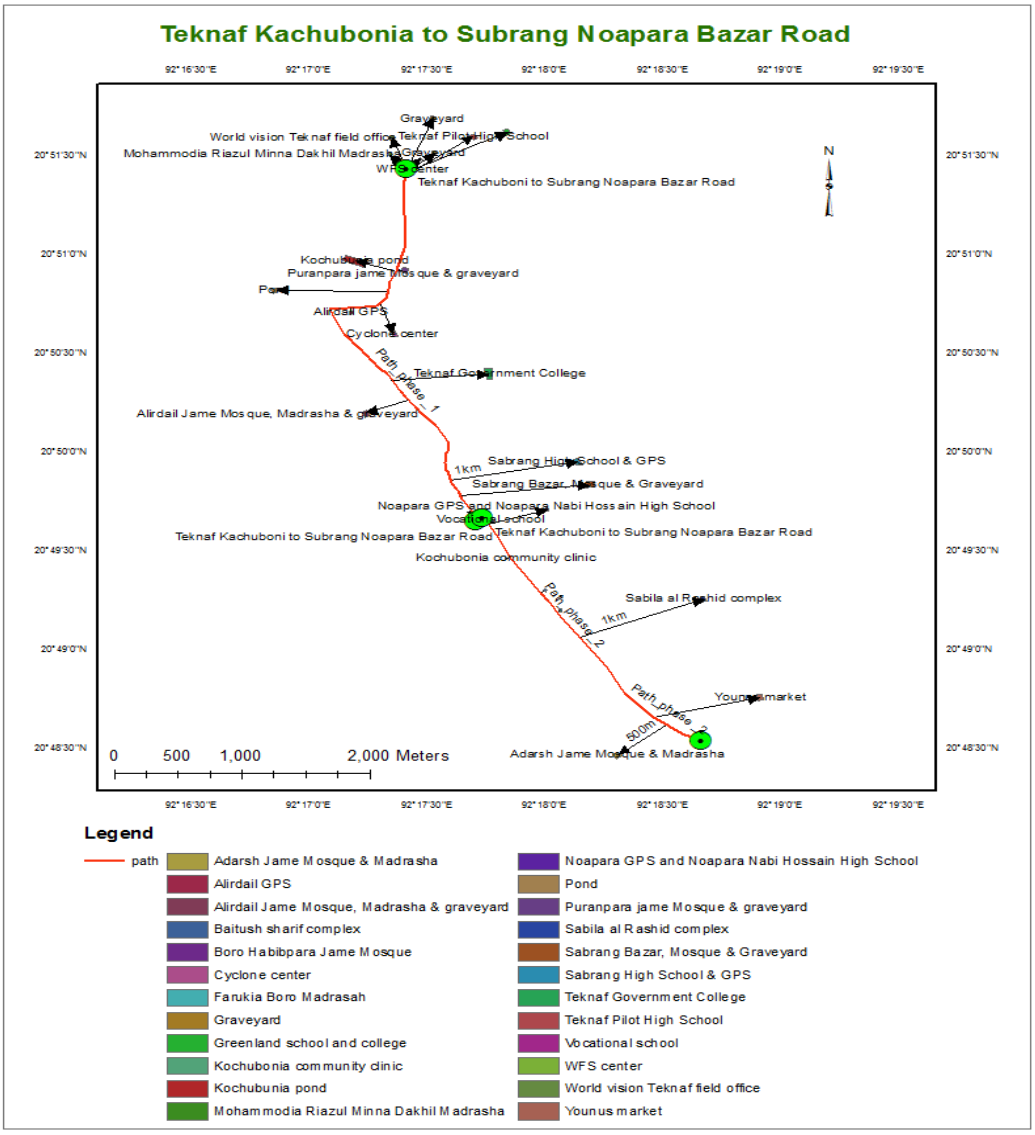


Figure B.1.1: A sketch of the project intervention/influence area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, graveyards, 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 throughout an existing alignment and be limited within a designated Right of Ways (ROW), 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 has been checked on the basis of elephant migration route map, established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

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

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

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

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

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

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

Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads 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 manageable 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 30-40 feet and deep tubewell depth is 300 feet in the area. 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 300-600ft (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.
Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.
*Data source: 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: Discreet 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): Hasompara connecting road, Kachubonia connecting road, Kochubonia sea beach connecting road, Sabrang chandulipara connecting road, Monderdail sea beach connecting road, North Monderdail sea beach connecting road, Alirdrail connecting road, Alirdail koyangchori para connecting road, Kuanci choripara marine drive connecting road and Dail para connecting road can be used as access road for transportation. It is possible to carry construction materials on these roads to the construction site with limited traffic flow to avoid congestion.
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 and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. Hasompara connecting road, Kachubonia connecting road, Kochubonia sea beach connecting road, Sabrang chandulipara connecting road, Monderdail sea beach connecting road, North Monderdail sea beach connecting road, Alirdrail connecting road, Alirdail koyangchori para connecting road, Kuanci choripara marine drive connecting road and Dail para connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 30 kg during the pre-construction phase.

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.3: Construction Phase

Solid waste: Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 45 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi) Bitumen are the most common type of raw materials to be used in construction period. **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. However, the local people has informed during the consultation meeting that the area has no water logging troubles (except in monsoon, sometimes) at present and possibilities of stagnation of water in the long run is unlikely. They also 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) Medium. Kochubunia pond located at 80m distance from the subproject so this pond can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component.

Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities; though a limited scale of short-periodical impact may come across. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by 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 moderate to high 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, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable.
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 creating new stagnant water bodies that can encourage 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) Kochubunia pond located at 80m distance from the subproject and this pond may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.
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. However, vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Low. Concentrated outflow will be carried by proposed drains and culvert.
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, 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 (>1 sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5 sqkm)

Section D: Environmental Screening Summary

The results of Environmental Screening are summarized in following table as per guidance given in the Project ESMF, Section 8.2:

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**.	• 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	• 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.**	• 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.	Construction Contractor monitored by Consultant and PIU	• No visible degradation to nearby drainages, • *Canal (khals)* or water bodies due to soil erosion. • Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	• 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	Construction Contractor and monitored by Consultant and PIU	• Areas for stockpiles, storage of fuels and lubricants and waste materials; • Records of water quality	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
			the environmental management plan.		inspection; Water Quality Test • (National Drinking Water Quality Standard Parameters)if requires; • No visible degradation to nearby drainages, *canals* or water 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**.	• 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	Construction Contractor and monitored by Consultant and PIU	• Site-specific H&S Plan; • Records of supply of uncontaminated water; • Record of Health &Safety	Visual inspection by PIU and supervision consultants on monthly basis

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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.		orientation trainings; • Condition of sanitation facilities for workers	
	Transportation	Under the subproject intervention the overall score is **low.**	• Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents.	Monthly monitoring.
	Storage of construction materials	Under the subproject intervention the overall score is **low**.	• Train concerned person and team assigned for the construction work to ensure items are stored properly and away from steep slopes.	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials	During implementation phase, as necessary through discussion with PIU, Consultant
3: Construction Phase	**Wastes**	Under the sub-project intervention the overall score is **low.**	• 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	Construction Contractor and monitored by Consultant and PIU	• Complaints from community; • Regular inspection of waste management	weekly as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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.		activity; • Waste disposal record.	
	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.	• 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&S.	• Location of road alignment and slope.	Daily as work progresses
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt	With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials; • Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary through the discussion with

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
		natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	consideration: • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. • Chemicals and hazardous			PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	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.**	• 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&S.	• Complaints from community	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• 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 ESMP.	Construction Contractor and monitored by Consultant and PIU	• Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	**Frequency**
					required.	
	Air pollution	Under the subproject intervention the overall score is **low.**	• 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	• 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.**	• 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. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of	Construction Contractor, environmental specialist of D&SC.	• 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
			D&SC. • Local residents should be kept informed about planned Works			
4. Post Construction	**Road Safety**	Under the issue the overall score is **low**.	• 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. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • 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&S.	Construction Contractor, environmental specialist of D&S.	• Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Tree plantation	Under the issue the overall score is **low**.	• Plantation of trees during monsoon period • Maintain of trees properly	Construction Contractor, environmental specialist of D&S.	• Number of complaints from stakeholders; • Records of trees	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			• Check survival of trees and replant the dead trees		number and tree plantation inspection.	
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**.	• 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	• 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) (site specific)

ESMP for Access and evacuation Roads: Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003)

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• 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	• 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	• 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	• All Sites must avoid the low land near the water bodies or natural flow path to avoid the flash flood or any kind or 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 the site shall be restored as before. • This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place. • Sub project intervention must avoid natural disturbance to existing slop and natural drainage. • The contractor must ensure sound environment for the local residents near the sub project site.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipment (PPEs) must be available at sites before starting any kinds of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• 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. • Dust generation must be limited as a result of clearing,	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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	• Unauthorized entry is completely prohibited in construction site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidance 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	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before	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
		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.		
Construction Activity	Increase in road accidents	• 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	• 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. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site • Wastes 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	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and	• 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	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
	musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have 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 this		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		awareness training shall be kept on site. • 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	• 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
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed	• Contractor must prepare a waste management plan including relevant directives from “Waste Management Plan Principles” 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
	in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community			
Operation & Maintenance	Noise disturbances to fauna and traffic safety	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Putting proper signing and signaling, bumping /breakers, smooth & spacious bending, if and wherever required and as observed during the operational period. • 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, Cox's Bazar)	UNO, PSC

Waste Management Plan Principles:

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.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	6555.0m	@ 2.56 BDT	16,780.80
2.	**Water Supply and Sanitation** Providing and maintaining adequate portable water supply, sanitation, and 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
3.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	1 no.	LS @5000 Tk. Per box	5,000

Sl no.	Description of item	Quantity	Unit price	Total amount
4.	**Drinking Water Facilities** 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.	2 no.	LS @ Tk. 30,000	60,000
5.	**Traffic Management** 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
6.	**Personal Protection Equipment for Workers** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
7.	**Tree plantation** Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area preferably at both sides of Road where space is available including protection, fencing and conservation during project defects liability period as required by and as per direction of E-I-C. Tree like Dumur, Amla, Parul, Coconut, Jackfruit, Mango etc. to be planted. The payment is to be made only when trees are fully grown.	500 nos.	@ Tk. 1000	500,000
8.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C.	1 no.	LS @ Tk. 10,000	10,000
9.	**Waste disposal facility** 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
10.	**Water Test (Drinking Water samples)** 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
11.	**Working labour shed:** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
12.	**Environmental management** Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C. **[One person to be appointed for W26(1), W26(2), W26(3), W26(4) & W26(5)]**	1 person	Monthly basis @Tk. 35,000.00 for 12 months. One person covering 5 roads i.e., 35,000 Tk. *12months* (1/5 one road). (Net payment excluding Tax &VAT).	84,000.00
	Subtotal Bill: Environmental facilities			**786,426.52**

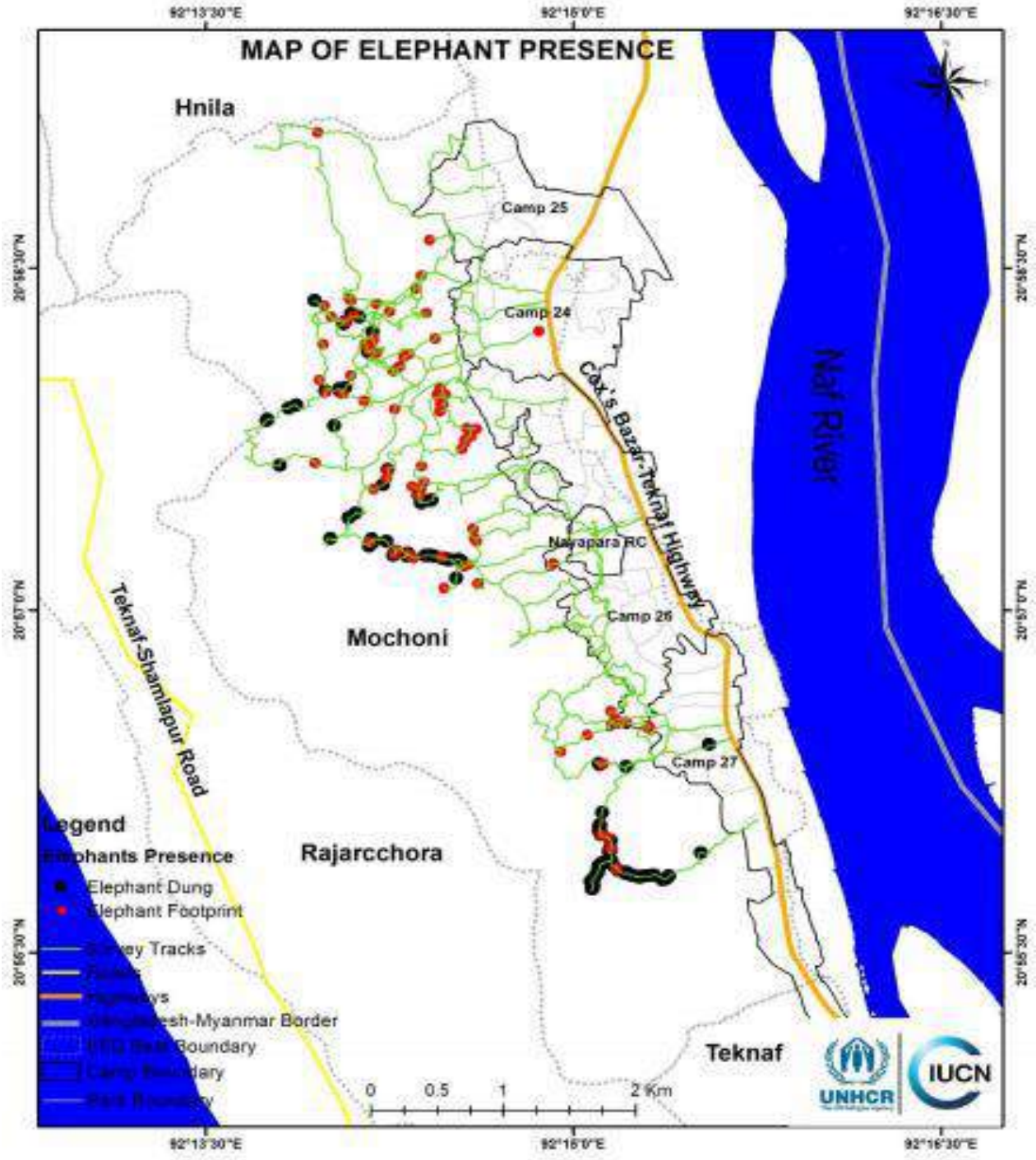
Cost of H&S Measures under COVID 19 Situations

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 130 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-26.1).

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)	351		439	50.00	790	39,500.00	To be placed in a case/holder on the basin, for washing hands for max. 135 people a day and showering of 130 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for	2 bottles and 1 Can for each	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
	Refill)	site						
6.	Face Shield/ Protective Safety Goggles	80 nos. for each site		N/A	400.00	80	32,000.00	For labors who work in close contact, 80 in each site
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	130 nos. for each labor camp		35.00	2,340	81,900.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	6 Can	N/A	10 Can	250.00	16	4,000.00	
10.	Detergent Cleaner	N/A	6 kg in each camp/month		400.00	54	21,600.00	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						**245,300.00**	

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W26.01, Road ID No.- 422902003

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

Focus Group Discussion

সময়: 12:30 PM তারিখ: 14/12/2020

উপ-প্রকল্প/কম্পোনেন্ট এর নাম: Teknaf kachubonia to Sabrang Noonpara Bazar road

মত বিনিময় স্থান: Alir Dail Moath

ইউনিয়ন: Sabrang & Teknaf Sadar ওয়ার্ড নং: 01, 02, 06 & 05 (Teknaf Sadar) জকদর: Sabrang & Teknaf Sadar উপজেলা: Teknaf জেলা: কক্সবাজার

সাব প্যাকেজ নং: W26(01)

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	[illegible]	৪০	পুরুষ	[illegible]	[illegible]
০২	মোনাজালী	৬৫	"	[illegible]	[illegible]
০৩	নুরনেহার	৬৮	"	[illegible]	[illegible]
০৪	মো: ইসাহিন	৪২	"	[illegible]	[illegible]
০৫	AKLAS	৬২	"	[illegible]	AKLAS
০৬	হাবিবউল্লাহ	৫২	"	[illegible]	[illegible]
০৭	মো: আমিন	২৮	"	[illegible]	[illegible]
০৮	ফিয়াস উদ্দিন	৬৪	"	[illegible]	[illegible]
০৯	মো: ইসাহিন	৬৫	"	[illegible]	[illegible]
১০	আবু হুরু সিদ্দিক	৪৫	"	[illegible]	[illegible]
১১	মো: ইকবাল	৪৮	"	[illegible]	[illegible]
১২	মুহাম্মদ আনয়ার	৫২	"	[illegible]	[illegible]
১৩	মো: আমজাদ	৪৭	"	[illegible]	[illegible]
১৪	কালু মেম্বার	৬৬	"	[illegible]	[illegible]

EMCRP/W26.01, Road ID No.- 422902003

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

Focus Group Discussion

সময়: 10:30 AM তারিখ: 14/12/2020

উপ-প্রকল্প/কমপোনেন্ট এর নাম: Teknaf kachuboni to Sabrang Noapara Bazar Road

মত বিনিময় স্থান: Chandelia Para Bazar Moar

ইউনিয়ন: Sabrang → Teknaf Sadar ওয়ার্ড নং: 01, 02, 06 ডাকঘর: Sabrang → 02(Teknaf Sadar) Teknaf Sadar উপজেলা: Teknaf জেলা: কক্সবাজার

সাব প্যাকেজ নং: W26/01

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	[illegible]	৫০	পুরুষ	[illegible]	[illegible]
০২	[illegible]	২৩	পুরুষ	[illegible]	[illegible]
০৩	[illegible]	২৫	ঐ	[illegible]	[illegible]
০৪	[illegible]	২৭	ঐ	ঐ	[illegible]
০৫	[illegible]	২৬	ঐ	[illegible]	[illegible]
০৬	[illegible]	৪০	ঐ	[illegible]	[illegible]
০৭	[illegible]	২৮	ঐ	ঐ	[illegible]
০৮	[illegible]	২৮	ঐ	ঐ	[illegible]
০৯	[illegible]	২৮	ঐ	ঐ	[illegible]
১০	[illegible]	৪৩	ঐ	[illegible]	[illegible]
১১	[illegible]	২৫	ঐ	[illegible]	[illegible]
১২	[illegible]	৫০	ঐ	[illegible]	[illegible]
১৩	[illegible]	৪৪	ঐ	[illegible]	[illegible]

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-Project Component site

Overview of surrounding features of different sections of the Sub-Project Site

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 Rajapalong Asrayon Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W26

Development Design Consultants Ltd.

April-2021

ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bricks
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

Contents

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 services. Nevertheless, to aid into the condition and improve the symbiotic relation between Hosting Community and Displaced Rohingya Population (DRP), different interventions are taking place. Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) aided by World Bank holds one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among several 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 is a fundamental motive. In order to take these matters into consideration, screening and assessment of these elements has been adopted 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 sub-project is situated within the localities of Patabari, Sailerdeva, Muhuripara and Adarshagram villages under Rajapalong union, Ward 9 of Ukhiya Upazila, Cox's Bazar. Different types of nearly 800 motorized and non-motorized vehicles and at least 2,000 people pass through the road in a typical day. There are some community property resources, environmental components and other features located within 1km from the sub project, such as, at north side shuilerdeva chora (50m), Beratram(repatram) buddha temple (30m), shuilerdeva crematory (500m), Shuilerdeva-Typalong hamida dhakil madrasah (800m), Reju khal (30m), Ukhiya GPS (900m), Ukhiya Bazar (500m), Patabari buddha mondir (200m), Patabari GPS(180), patabari ashram (200m), patabari mosque (180m), shuilerdeva Buddha Mondir (200m), Kushalian kindergarten (170m); at south side Patabari playground (5m), Ukhiya Degree college (10m), Adarshagram Mosque (5m); at east side Sharif nursery (5m), T&T graveyard (5m) and at west side Nurul islam technical school & college (100m), and Army camp (20m). Apart from these, no other important socio-environmental features are present near the sub-project location. Several water bodies though are located in the vicinity; water logging is not a regular phenomenon. No other sensitive environmental, cultural, archaeological, religious sites were found in the area. 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 may affect several trees. All these impacts are site-specific and manageable 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 or affect any sensitive areas of any kind and sufficient numbers of structures are included in proposed implementation works for the enhancement of ecosystem services in the area, 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 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change 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. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the socio-economic condition of the host communities 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

- ✓ Widen access to the government support system including health, education and emergency evacuation and sheltering
- ✓ 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-project components under the package name **'Strengthening and widening of 5 nos. roads under Cox's Bazar Districts.'** with the bid package no. **EMCRP/W26**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W26

Description of Sub-project: Strengthening and widening of 5 nos. roads under Cox's Bazar Districts. i, e., **Improvement of widening and Maintenance of** (1) Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003); (2) Rajapalong Asrayon Road (ID: 422944056); (3) Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005); (4) Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002); and (5) Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)

Sub-project Component no. (2) Rajapalong Asrayon Road (ID: 422944056)

Component's Location:

i. ID. 422944056	ii. Ward No.: 9	iii. Mouza: Patabari
iv. Village: Patabari, Sailerdeva, Muhuripara & Adarshagram.		v. Name of Union: Rajapalong
vi. Upazila: Ukhiya	vii. Sub-Project construction period: 1 year	
viii. Construction Year: 2021	ix. Design Width (m): 5.5 Pavement-4.3m and Shoulder-1.2m (0.6m+0.6m)	x. Length (m): 2235
xi. Distance from UZHQ: 1.5 Km.		
GPS Coordinates	Latitude Value: 21.241333 N Longitude Value: 92.144167 E	Starting Point
	Latitude Value: 21.237941 N Longitude Value: 92.157775 E	Ending Point
Present Condition of Road	BC & HBB	
Communication Source	Radio & Mobile Networks	

Subproject interventions:

- Bituminous Carpeting options.
- 1 no. 7.30m long Cross Drain (dimension: 0.750mmX 0.750mm) at Ch. 1555m
- 132.0m RCC U-Drain works at different chainage
- 164.0m L-Drain at different chainage
- 53.0m Toe wall (height 1.5m) at different chainage
- 283.0m Brick Palisading work at different chainage
- Road safety works and

• Environmental Mitigation and Enhancement works
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period (Component -1): 1 year
Estimated total cost of component: 21,468,755.85 (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. D&SC conducted the consultation meeting with local community on 12 December, 2020 in Rumon Store at Shailerdeba, Refer to Figure 2.1.1, and Public Consultation Participants' List is attached in Appendix-5 and sub-project pictorial overview is attached in Appendix-6. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.

Figure 2.1.1: Consultation meeting (FGD) with local community

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

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 improvement or 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 views and information from affected parties and inhabitants on social and environmental issues. (iii) Consultation with interest groups and the public.

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust and noise pollution that might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely to take place during the road construction, if proper measures are not followed.

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 issues have also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. 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. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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.
- Every possible measure should be taken to avoid any nuisance to public and surrounding inhabitants.

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 and this will help identifying the impacts and their extents. The screening data and information for this Sub-project component 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. 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.

Among the different socio-economic and environmental features within half a kilometer from the centerline of the proposed road, following are the important ones: at north side shuilerdeva chora (50m), Beratram(repatram) buddha temple (30m), shuilerdeva crematory(500m), Shuilerdeva-Typalong hamida dhakil madrasah (800m), Reju khal (30m), Ukhiya GPS (900m), Ukhiya Bazar (500m), Patabari buddha mondir (200m), Patabari GPS(180), patabari ashram (200m), patabari mosque (180m), shuilerdeva Buddha Mondir (200m), Kushalian kindergarten (170m); at south side Patabari playground (5m), Ukhiya Degree college (10m), Adarshagram Mosque (5m); at east side Sharif nursery (5m), T&T graveyard (5m) and at west side Nurul islam technical school & college (100m), and Army camp (20m). Some features may face dust and noise pollution due to having a closer proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation or preparatory measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc. all these measures will be complied fully in the field. 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, 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 Overview of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk[4] of hill collapse by destabilizing the terrain. Also deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones, as forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above-mentioned hazardous situation, again due to sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources. In this case, it is possible that a stationary position of the freshwater-saltwater transition zone can be established via proper management of pumping in the confined aquifer.

The groundwater resource is seen to suffer more from the climate change impact. The impact on groundwater due to climate change impact include

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf
[4] "Implications of Climate Change for Fresh Groundwater Resources in Coastal Aquifers in Bangladesh", World Bank report.2010

- Sea-level rise could result in a transgression of the sea and a loss of land area. This could also lead to the secondary effect of population migration in the new coastal band due to migration of the coastal population from the encroaching sea, thereby increasing domestic water needs in the new coastal area.
- A higher sea-surface elevation would change the base level for all groundwater gradients in the basin. In many aquifers, this would lead to shifts in local hydraulic gradients, inland hydraulic heads, and the rate of groundwater flow.
- A higher sea level will result in an increase in pressure in the subsea aquifer, resulting in inland movement of saltwater (aquifer seawater intrusion).
- Transgression of the coast implies that saline storm surges of 1 or more meters depth would penetrate beyond the new coast to new land areas. Storm surges transport saline water far inland of the coast and much of this floodwater may infiltrate the ground in areas where the aquifer is not fully saturated. Even where the aquifer is saturated, denser saline water may sink into the aquifer during the flood and later from pools of saltwater that remain following the flood.

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

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time.

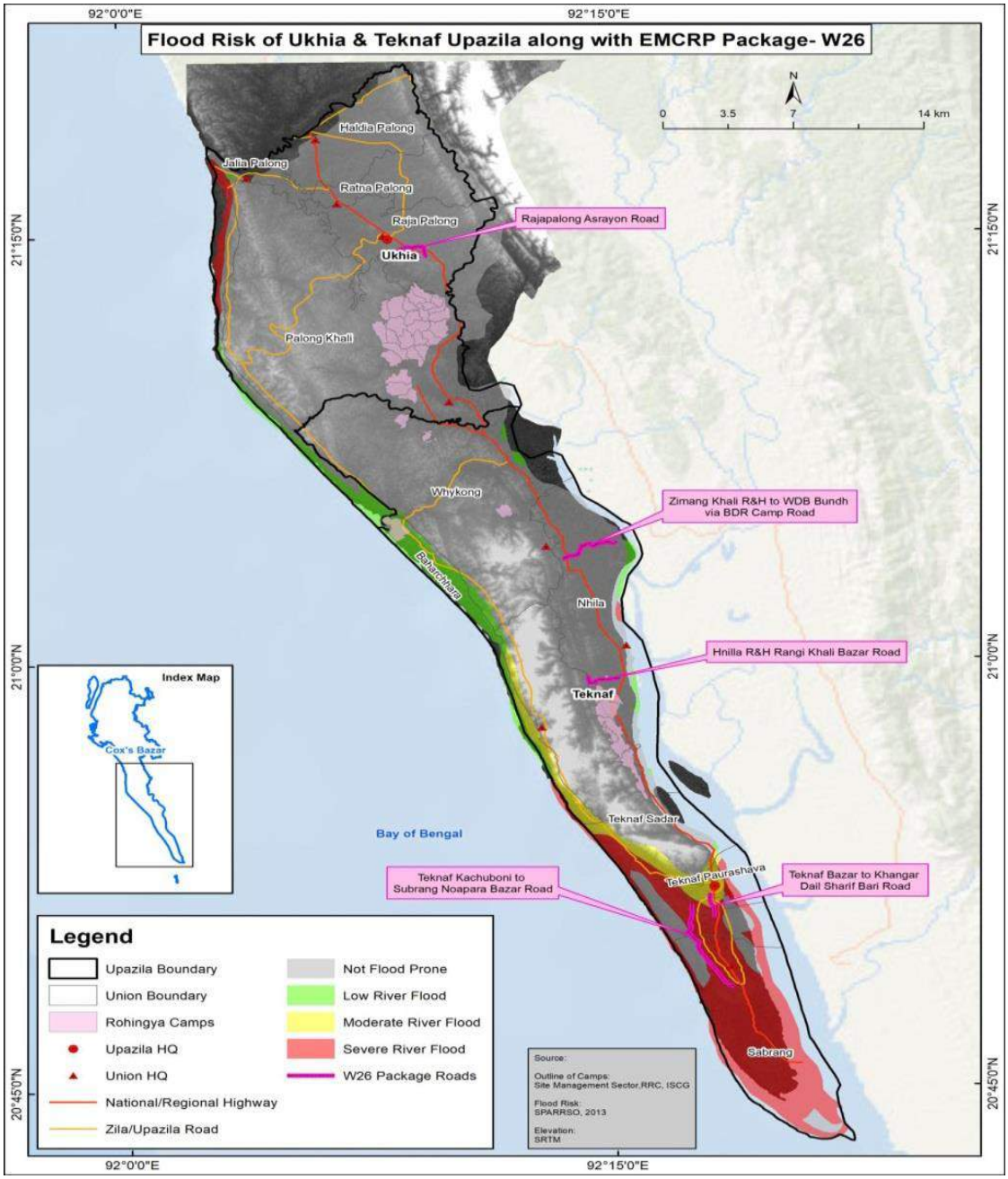


Figure3.3.2.1: Flood inundation risk map near the subprojects

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, and associated mitigation or offsetting measures are really hard to plot on the impact areas, though an overall set of measures are often considered in practical aspect. Fig: 3.3.2.1 shows the inundation risk map of the subprojects under W-26, the subproject is not found in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area.

However, as part of regular measures, proper design of slope and stability/compactness of both the shoulder and slope areas are to be ensured. Also tree planation on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be planted for each tree fell in the periphery of the subproject. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Some features located adjacent to the subproject area might get affected during construction period. Among those features, at north side shuilerdeva chora (50m), Beratram (repatram) buddha temple (30m), Reju khal (30m), at south side Patabari playground (5m), Ukhiya Degree college (10m), Adarshagram Mosque (5m); at east side Sharif nursery (5m), T&T graveyard (5m) and at west side Army camp (20m) will face potential disturbances. 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 experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 1 no. 7.30m long Cross Drain (dimension: 0.750mmX 0.750mm) at Ch. 1555m of chainage will be constructed at the subproject area. Some small hills or high land is found beside the road. As part of protective measures, 164.0m L-Drain works at different chainage will be constructed for draining mountain eel water during rainy season. Due to the presence of low land in different chainage of the road 132.0m RCC U-Drain works at different chainage and some protective works of 53.0m Toe wall (height 1.5m) as well as 283.0m Brick Palisading work at different chainage are included in design and estimation. As part of preventive measures during storm surge, proper design of slope and stability/compactness on both the shoulder and slope area is to be ensured. 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 and Social Management Plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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 0ot 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 component, a set of items are included in the BOQ of this sub-project. Cost for engaging a Safeguard Personnel for overseeing the Environmental and Social Management Works under the Package EMCRP/W26 has been added to the BOQ. Environmental quality enhancement works such as grass turfing, tree plantation, and dust suppression measures are included in the estimation. In order to ensure health safety and sanitary measures for workers PPE, First Aid Box, labor shed with appropriate facilities, drinking water facility with water tests, temporary latrine for male and female as well as waste disposal systems have been accounted for. For ensuring safe and environmentally sound work practices and prevailing conditions in the site motivational training on environmental and social considerations has been taken into account. An overview of the estimation is given in **Appendix-3**.

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 situations 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 and 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: **Strengthening and widening of 5 nos. roads under Cox's Bazar Districts (Package:** EMCRP/W26).

Name of the component: Rajapalong Asrayon Road (ID: 422944056).

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

Estimated total cost of sub-project (in Taka): 174,570,459.46 Tk.

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): **21,468,755.85 Tk.**

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Cox's Bazar **Upazila** : Ukhiya **Union**: Rajapalong

Name of Community/Local Area: Patabari, Sailerdeva, Muhuripara & Adarshagram.

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 with a proposed design of BC from Ch.00 to Ch. 2235m. Proposed safety and service providing structures include 1 no. 7.30m long Cross Drain (dimension: 0.750mmX 0.750mm) at Ch. 1555m, 132.0m RCC U-Drain works at different chainage, 164.0m L-Drain at different chainage and some additional protective works such as 53.0m Toe wall (height 1.5m) as well as 283.0m Brick Palisading work at different chainage, that are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Estimated footprint / land area for this sub-project is 12,292.5 sq m.

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

This proposed Rajapalong Asrayon Road belongs to Rajapalong union, Ward 9 under Ukhiya Upazila. This road starts from Ukhiya-Teknaf highway at west side of Patabari road point stretching 2235m to Ukhiya-Teknaf highway on Adarshaygram at west. Several connecting roads fall within the road chainage. This sub-project passes through boundary fences, culverts, x-drain, ditches, patches of vegetation, agricultural fields, homestead garden, uplands, mosques, Buddha Bihar, shops, electric pole etc. on its way to the other end of the road. No other significant environmental or socioeconomic features are found near the road component.

However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

Chainage (m)	Left	Right	Features
000-300	L		Trees, shop, culvert, Buddha bihar
		R	Settlements, paddy lands, brick boundary wall, electric pole
300-600	L		Uplands/tila, Patabari GPS, bamboo fences, trees, electric pole
		R	Ext. x-drain, bamboo fences, tin shed households
600-900	L		Tin shed household, bamboo fences, trees
		R	Ext. x-drain, tin shed households, open field
900-1200	L		Bamboo fences, open field, tin shed households, bamboo bushes
		R	Household connecting roads, trees, bamboo fences
1200-1500	L		Brick boundary wall, trees, electric pole, settlements, Buddha temple
		R	Trees, bamboo bushes, brick boundary wall, open field, bamboo fences
1500-1800	L		Bushes, Connecting road
		R	Bushes, Mosque, graveyard
1800-2235	L		Bamboo fences, mosques, trees
		R	Connecting road, graveyard, bushes

Figure: Starting point of Rajapalong Asrayon Road

Overall Comments

The proposed component of the sub-project (Road strengthening & widening) is not located within any remarkable environmentally sensitive or reserved area of any kind and will not cause any severe affect to the environmental settings 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, though local people pointed out about the problem with waterlogging during the rainy season. Eight to ten trees may need to clear out during the construction period, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for this improvement works. In order to minimize the risk of potential sliding or slipping of soil mass, earth will be compacted for stabilization and necessary cut and fill operation along the hill slope is to be ensured. All these inputs will be mainly at construction phase and limited within project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed during the consultation session with local stakeholders that this project's scope of works does not intend to overtake any area of physical lodgment and funding entity has no intention to do so. Some other issues have also been brought to their attention including construction of drainage and protective structures at different chainages on the road.

Different types of nearly 800 motorized and non-motorized vehicles and at least 2,000 people pass through the road in a typical day. 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. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation. 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 project component.

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 etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as at north side shuilerdeva chora (50m), Beratram (repatram) buddha temple (30m), shuilerdeva crematory(500m), Shuilerdeva-Typalong hamida dhakil madrasah (800m), Reju khal (30m), Ukhiya GPS (900m), Ukhiya Bazar (500m), Patabari buddha mondir (200m), Patabari GPS(180), patabari ashram (200m), patabari mosque (180m), shuilerdeva Buddha Mondir (200m), Kushalian kindergarten (170m); at south side Patabari playground (5m), Ukhiya Degree college (10m), Adarshagram Mosque (5m); at east side Sharif nursery (5m), T&T graveyard (5m) and at west side Nurul islam technical school & college (100m), Army camp (20m). The project road crosses

through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 5-6 km away from this sub-project.

Figure 3: District Map with project location

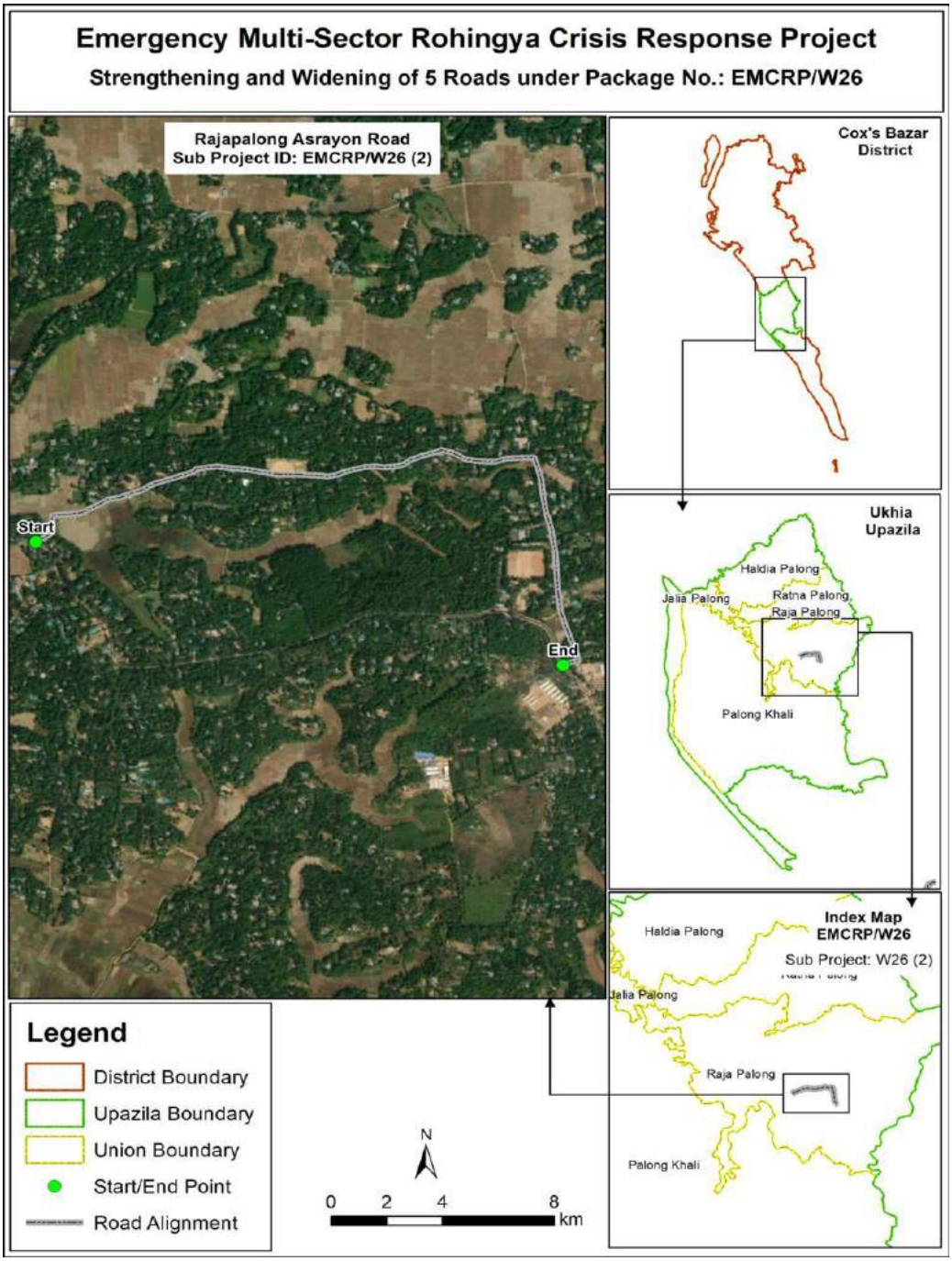


Figure 4: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 2235m. Proposed safety and service providing structures include 1 no. 7.30m long Cross Drain, 132.0m RCC U-Drain works & 164.0m L-Drain at different chainage, protective works of 53.0m Toe wall (height 1.5m) & 283.0m Brick Palisading work at different chainage that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Sub-project Location:

Important Features	
ID	422944056
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
WARD	9
Proposed Chainage	2235m
Road Type	Village Road
Proposed Intervention Type	BC
Road Starting Point Coordinates	Latitude Value: 21.241333 N Longitude Value: 92.144167 E
Road Ending Point Coordinates	Latitude Value: 21.237941 N Longitude Value: 92.157775 E

Land ownership

Land area covering the road length is owned by the Government.

Expected construction period: 1 Year

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 Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 2235m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected but a number of trees will be planted during the post-construction phase.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: There are several sites containing bio/ecological niches including patches of vegetation, ponds, ditches or other type of water bodies, which are in closer proximity along the road length and may receive some extent of detrimental impacts during the construction period; but no elephant corridor was identified in the areas. Construction induced impacts may also affect numbers of socio-economic features along the road length; therefore a well-planned ESMP has been prepared to follow in the field.

Section B: Environmental Screening

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

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as at north side shuilerdeva chora (50m), Beratram(repatram) buddha temple (30m), shuilerdeva crematory(500m), Shuilerdeva-Typalong hamida dhakil madrasah (800m), Reju khal (30m), Ukhiya GPS (900m), Ukhiya Bazar (500m), Patabari buddha mondir (200m), Patabari GPS (180), patabari ashram (200m), patabari mosque (180m), shuilerdeva Buddha Mondir (200m), Kushalian kindergarten (170m); at south side Patabari playground (5m), Ukhiya Degree college (10m), Adarshagram Mosque (5m); at east side Sharif nursery (5m), T&T graveyard (5m) and at west side Nurul islam technical school & college (100m), Army camp (20m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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 in figure B.1.1

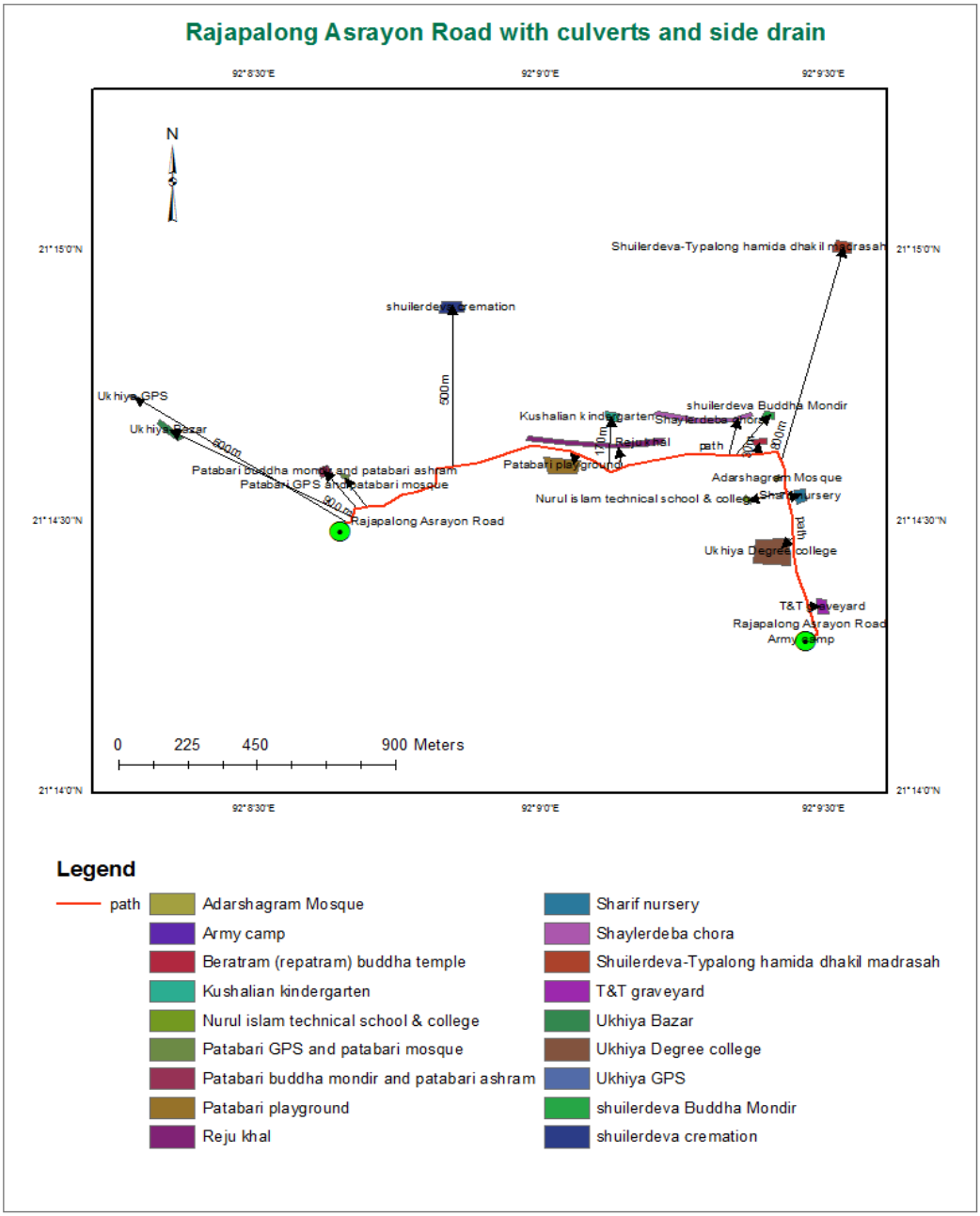


Figure B.1.1: A sketch of the project intervention/influence area

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, graveyards, 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 throughout an existing alignment and be limited within a designated Right of Ways (ROW), 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 has been checked on the basis of elephant migration route map, established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.   **(2) Potential impacts on remaining forests in/around camps Yes/No**   N/A (This activity will be confined within the existing subproject boundary)   **(3) Other issues:**   No more mentionable issues raised.   *This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN
Baseline air quality and noise levels: Ascertaining distinctively the baseline air and noise quality level in respect to any sites in Ukhiya and Teknaf upazilas under Cox's Bazar district is nearly impossible because of the huge burden of physical developmental works including roads, bridges, culverts, building structures, markets, jetties, etc. being carried out simultaneously across the areas. Therefore, the apparent baseline of the pre-development period can only be anticipated and results of visual observation are worth to be presented here.   **Dust:**   Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of pedestrians. Natural air action over the road surface is very prevailing in the area which causes dust circulation.   **Noise:**   Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads 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 manageable 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 40-50 feet and deep tubewell depth is 300 feet in the area. 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 300-800ft (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. Many shallow tube wells (40ft. to 50 ft.) are fitted in local area and most of the water usage is sufficed from these sources. *Data source: 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): Shailerdeba - Typalong connecting road and T&T Lambaguna connecting road can be used as access road for transportation. It is possible to carry construction materials on these roads to the construction site with limited traffic flow to avoid congestion.
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 and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. Shailerdeba -Typalong connecting road and T&T Lambaguna connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 30 kg during the pre-construction phase.

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.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): ***Solid waste:*** Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 42 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi) Bitumen are the most common type of raw materials to be used in construction period. **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. However, the local people has informed during the consultation meeting that the area has no water logging troubles (except in monsoon, sometimes) at present and possibilities of stagnation of water in the long run is unlikely. They also 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) Medium. Shuilerdeva chora (50m) and Reju khal (30m) are located very closely to the subproject area. So these water bodies can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by

induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities; though a limited scale of short-periodical impact may come across. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by 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 moderate to high 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, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable.
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 creating new stagnant water bodies that can encourage 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) Shuilerdeva chora (50m) and Reju khal (30m) are located very closely to the subproject area, and if dust is generated from frequent vehicle movement it may deposit on the still water level and any type of slope/soil movement could be triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.
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. However, vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Concentrated outflow will be carried by proposed drains and culvert.
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, 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 (>1 sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5 sqkm)

Section D: Environmental Screening Summary

The results of Environmental Screening are summarized in following table as per guidance given in the Project ESMF, Section 8.2:

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**.	• 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	• 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.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers	Construction Contractor monitored by Consultant and PIU	• No visible degradation to nearby drainages, • *Canals (khals)* or water bodies due to soil erosion. • Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	• 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	• 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	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
					nearby drainages, khals or water 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**.	• 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	• 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.**	• Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• 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**.	• Train concerned person and team assigned for the construction work to ensure items are stored properly and away from steep slopes.	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials	During implementation phase, as necessary through discussion with PIU, Consultant
3: Construction Phase	**Wastes**	Under the sub-project intervention the overall score is **low.**	• 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	• Complaints from community; • Regular inspection of waste management activity; • Waste disposal record.	weekly as work 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.	• 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&S.	• 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
			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.**	With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration: • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials; • Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. • Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	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.**	• 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&S.	• Complaints from community	Daily
	Noise pollution	Under the subproject intervention the overall score is	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm.	Construction Contractor and monitored by Consultant and PIU	• Number of complaints from stakeholders; • Use of silencers in	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
		low.	• Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.		noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required.	
	Air pollution	Under the subproject intervention the overall score is **low.**	• 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	• 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.**	• 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. • The contractor shall provide, erect and maintain informatory/safety signs written in local language,	Construction Contractor, environmental specialist of D&SC.	• 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
			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**.	• 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. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • 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&S.	Construction Contractor, environmental specialist of D&S.	• Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Tree plantation	Under the issue the overall score is **low**.	• Plantation 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.	• 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**.	• 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	• 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) (site specific)

ESMP for Access and evacuation Roads: Rajapalong Asrayon Road (ID: 422944056)

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• 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	• 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	• 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	• All Sites must avoid the low land near the water bodies or natural flow path to avoid the flash flood or any kind or 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 the site shall be restored as before. • This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place. • Sub project intervention must avoid natural disturbance to existing slop and natural drainage. • The contractor must ensure sound environment for the local residents near the sub project site.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipment (PPEs) must be available at sites before starting any kinds of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• 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. • Dust generation must be limited as a result of clearing,	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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	• Unauthorized entry is completely prohibited in construction site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidance 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	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before	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
		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.		
Construction Activity	Increase in road accidents	• 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	• 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. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site • Wastes 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	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and	• 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	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
	musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have 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 this		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		awareness training shall be kept on site. • 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	• 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
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed	• Contractor must prepare a waste management plan including relevant directives from “Waste Management Plan Principles” 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
	in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community			
Operation & Maintenance	Noise disturbances to fauna and traffic safety	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Putting proper signing and signaling, bumping /breakers, smooth & spacious bending, if and wherever required and as observed during the operational period. • 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, Cox's Bazar)	UNO, PSC

Waste Management Plan Principles:

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.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	2235.0m	@ 2.56 BDT	5,721.60
2.	**Water Supply and Sanitation** 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
3.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	1 no.	LS @5000 Tk. Per box	5,000

Sl no.	Description of item	Quantity	Unit price	Total amount
4.	**Drinking Water Facilities** 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.	2 no.	LS @ Tk. 30,000	60,000
5.	**Traffic Management** 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
6.	**Personal Protection Equipment for Workers** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
7.	**Tree plantation** Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area preferably at both sides of Road where space is available including protection, fencing and conservation during project defects liability period as required by and as per direction of E-I-C. Tree like Dumur, Amla, Parul, Coconut, Jackfruit, Mango etc. to be planted. The payment is to be made only when trees are fully grown.	180 nos.	@ Tk. 1000	180,000
8.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C.	1 no.	LS @ Tk. 10,000	10,000
9.	**Waste disposal facility** 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
10.	**Water Test (Drinking Water samples)** 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
11.	**Working labour shed:** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
12.	**Environmental management** Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C. **[One person to be appointed for W26(1), W26(2), W26(3), W26(4) & W26(5)]**	1 person	Monthly basis @Tk. 35,000.00 for 12 months. One person covering 5 roads i.e.,35,000Tk.*12months*(1/5 one road). (Net payment excluding Tax &VAT).	84,000.00
	Subtotal Bill: Environmental facilities			**455,367.32**

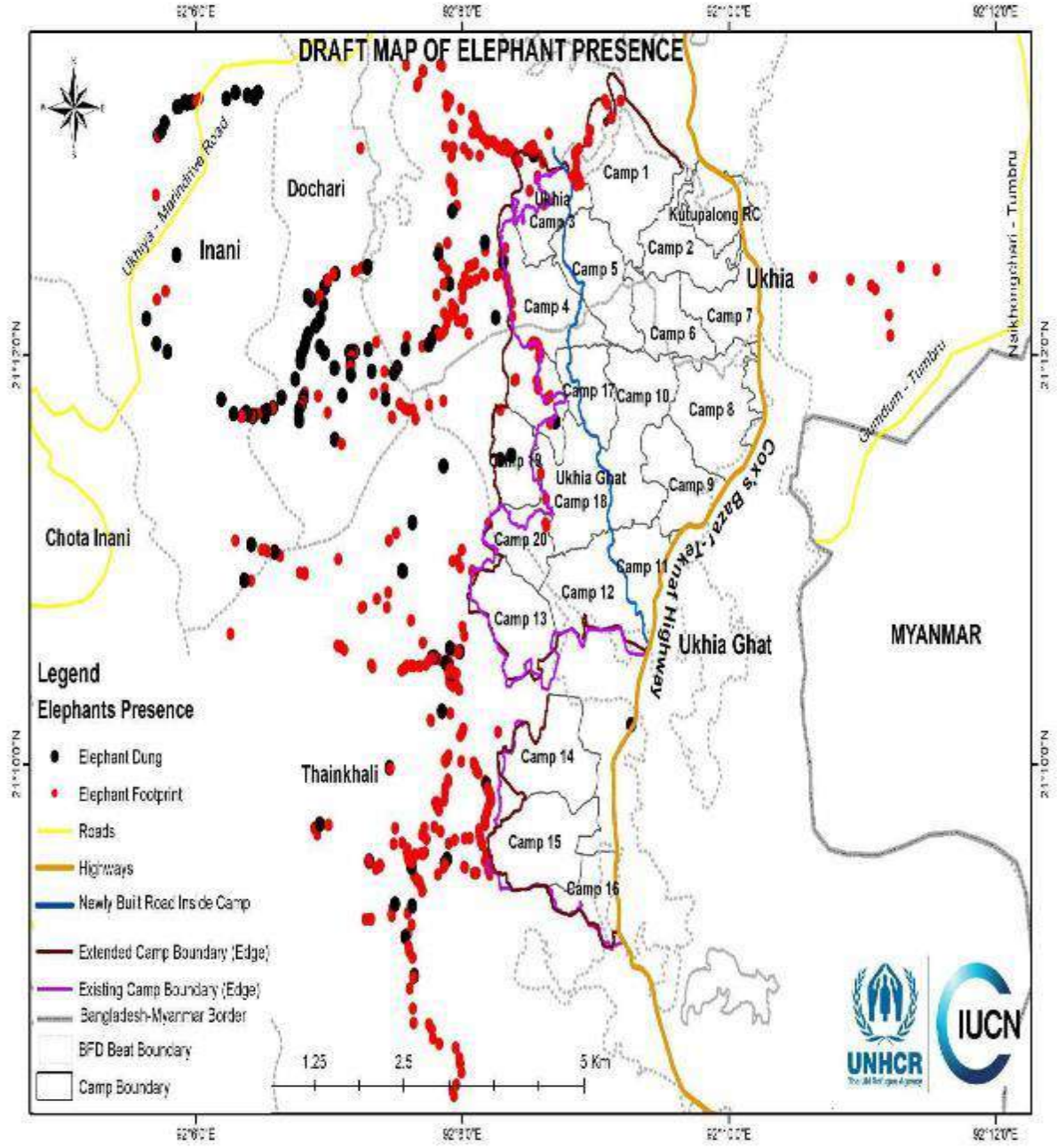
Cost of H&S Measures under COVID 19 Situations

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 45 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-26.2).

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)	122		152	50.00	274	13,700.00	To be placed in a case/holder on the basin, for washing hands for max. 50 people a day and showering of 45 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	25 nos. for each site		N/A	400.00	25	10,000.00	For labors who work in close contact, 25 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	45 nos. for each labor camp		35.00	810	28,350.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	3 Can	N/A	4 Can	250.00	7	1,750.00	
10.	Detergent Cleaner	N/A	2.5 kg in each camp/month		400.00	22.5	9,000.00	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						**129,100.00**	

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W26.02, Road ID No.- 422944056

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

Focus Group Discussion

সময়: 10 AM তারিখ: 12/12/2020

উপ-প্রকল্প/কম্পোনেন্ট এর নাম: Widening of Rajapalong Asrayan Road

মত বিনিময় স্থান: Rumon store, shoulderdeba

ইউনিয়ন: Rajapalong ওয়ার্ড নং: 09 ডাকঘর: Ukhiya উপজেলা: Ukhiya জেলা: কক্সবাজার

সাব প্যাকেজ নং: W26/(02)

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	জিতেন্দ্র	৬৮	পুরুষ	মেলাঘি ডেরা	জিতেন্দ্র
০২	[illegible]	৩৬	"	"	[illegible]
০৩	কিশোর বড়ুয়া	৬৮	"	কৈলাঘোনা	কিশোর বড়ুয়া
০৪	[illegible]	৫০	"	[illegible]	[illegible]
০৫	[illegible]	০২	"	[illegible]	[illegible]
০৬	বকুল বড়ুয়া	৭৫	"	কৈলাঘোনা	বকুল বড়ুয়া
০৭	[illegible]	৩৭	"	কৈলাঘোনা	[illegible]
০৮	প্রিয়দর্শী বড়ুয়া	৫৫	"	কৈলাঘোনা	প্রিয়দর্শী
০৯	[illegible]	৭০	"	[illegible]	[illegible]
১০	Helal Uddin	২৪	M	Kutupalong	Helal
১১	[illegible]	৪২	"	কৈলাঘোনা	[illegible]
১২	সুবন	৬৯	"	"	সুবন

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-Project Component site

Overview of surrounding features of different sections of the Sub-Project Site

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 Teknaf Bazar to Khangar Dail Sharif Bari Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W26

Development Design Consultants Ltd.

April-2021

ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bricks
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

Contents

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 services. Nevertheless, to aid into the condition and improve the symbiotic relation between Hosting Community and Displaced Rohingya Population (DRP), different interventions are taking place. Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) aided by World Bank holds one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among several 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 is a fundamental motive. In order to take these matters into consideration, screening and assessment of these elements has been adopted 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 sub-project is situated within the localities of Kulalpara, Shilboniapara, Chokbazar, Nazirpara, Moulovipara and Boro Habibpara. Different types of nearly 600 motorized and non-motorized vehicles and at least 1,600 people pass through the road in a typical day. There are some community's property resources, environmental components and other features located within 1km from the sub project, like that North side Thanar Mosque (50m), Hindu Mondir (100m). At south side Degree College (500m). At East side Jaliapara Mosque (125m), Jamia Boro Mosque (100m), Post Office (100m), Kulalpara Graveyard (15m), Jaliapara Graveyard (50m), Furkania Madrassa (10m), Islamia Madrassa (60m). At West side Kulalpara Mosque (15m), Shilbonia para-Mosque (10m), Teknaf Thana (10m), Lamar Bazar Mosque (150m), Small Gov't Clinic (150m), Oliabad GPS (500m). Apart from these, no other important socio-environmental features are present near the sub-project location. Several water bodies though are located in the vicinity; water logging is not a regular phenomenon. No other sensitive environmental, cultural, archaeological, religious sites were found in the area. 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 may affect several trees. All these impacts are site-specific and manageable 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 or affect any sensitive areas of any kind and sufficient numbers of structures are included in proposed implementation works for the enhancement of ecosystem services in the area, 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 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change 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. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the socio-economic condition of the host communities 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

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

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Widen access to the government support system including health, education and emergency evacuation and sheltering
- ✓ 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-project components under the package name **'Strengthening and widening of 5 nos. roads under Cox's Bazar Districts.'** with the bid package no. **EMCRP/W26**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W26

Description of Sub-project: Strengthening and widening of 5 nos. roads under Cox's Bazar Districts. i, e., **Improvement of widening and Maintenance of** (1) Teknaf kochubonia to Sabrang Noapara Bazar Road (ID: 422902003); (2) Rajapalong Asrayon Road (ID: 422944056); (3) Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005); (4) Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002); and (5) Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)10

Sub-project Component no. (3) Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005)

Component's Location:

i. ID. 422902005	ii. Ward No.: 03	iii. Mouza: Teknaf
iv. Village: Kulalpara, Shilboniapara, Chokbazar, Nazirpara, Moulovipara and Boro Habibpara		v. Name of Union: Teknaf sadar
vi. Upazila: Teknaf	vii. Sub-Project construction period: 1 year	
viii. Construction Year: 2021	ix. Design Width (m): 5.5 Pavement-4.3m and Shoulder-1.2m (0.6m+0.6m)	x. Length (m): 1634
xi. Distance from UZHQ: 1.8 Km.		
GPS Coordinates	Latitude Value: 20.863400 N Longitude Value: 92.299930 E	Starting Point
	Latitude Value: 20.849228 N Longitude Value: 92.301642 E	Ending Point
Present Condition of Road	BC	
Communication Source	Radio & Mobile Networks	

Subproject interventions:

- Bituminous Carpeting options.
- 1 no. Box culvert (Dimension:4.5mX4.5m) at Ch. 745m
- 1 no. of Cross drain (Dimension:0.975mX0.975m) at Ch. 1530m
- 60.0m Guide Wall (height 1.5m) at different chainage

• Road safety works and • Environmental Mitigation and Enhancement works
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period (Component -1): 1 year
Estimated total cost of component: 17,402,172.44 (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. D&SC conducted the consultation meeting with local community on 14 December, 2020 at Thana More at passenger shed, Refer to Figure 2.1.1, and Public Consultation Participants' List is attached in Appendix-5 and sub-project pictorial overview is attached in Appendix-6. The local individuals of different ages participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.

Figure 2.1.1: Consultation meeting (FGD) with local community

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

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 improvement or 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 views and information from affected parties and inhabitants on social and environmental issues. (iii) Consultation with interest groups and the public.

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust and noise pollution that might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely to take place during the road construction, if proper measures are not followed.

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 issues have also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. 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. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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.
- Every possible measure should be taken to avoid any nuisance to public and surrounding inhabitants.

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 and this will help identifying the impacts and their extents. The screening data and information for this Sub-project component 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. 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.

Among the different socio-economic and environmental features within half a kilometer from the centerline of the proposed road, following are the important ones: on the north side Thanar Mosque (50m), Hindu Mondir (100m). At south side Degree College (500m). At East side Jaliapara Mosque (125m), Jamia Boro Mosque (100m), Post Office (100m), Kulalpara Graveyard (15m), Jaliapara Graveyard (50m), Furkania Madrassa (10m), Islamia Madrassa (60m). At West side Kulalpara Mosque (15m), Shilbonia para-Mosque (10m), Teknaf Thana (10m), Lamar Bazar Mosque (150m), Small Gov't Clinic (150m), and Oliabad GPS (500m) are located. Some features may face dust and noise pollution due to having a closer proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation or preparatory measures. Other features are located at places having sufficient distances from the road length; therefore, significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. 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, 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 Teknaf 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 Overview of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk[4] of hill collapse by destabilizing the terrain. Also deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones, as forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above-mentioned hazardous situation, again due to sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources. In this case, it is possible that a stationary position of the freshwater-saltwater transition zone can be established via proper management of pumping in the confined aquifer.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf
[4] "Implications of Climate Change for Fresh Groundwater Resources in Coastal Aquifers in Bangladesh", World Bank report.2010

The groundwater resource is seen to suffer more from the climate change impact. The impact on groundwater due to climate change impact include

- Sea-level rise could result in a transgression of the sea and a loss of land area. This could also lead to the secondary effect of population migration in the new coastal band due to migration of the coastal population from the encroaching sea, thereby increasing domestic water needs in the new coastal area.
- A higher sea-surface elevation would change the base level for all groundwater gradients in the basin. In many aquifers, this would lead to shifts in local hydraulic gradients, inland hydraulic heads, and the rate of groundwater flow.
- A higher sea level will result in an increase in pressure in the subsea aquifer, resulting in inland movement of saltwater (aquifer seawater intrusion).
- Transgression of the coast implies that saline storm surges of 1 or more meters depth would penetrate beyond the new coast to new land areas. Storm surges transport saline water far inland of the coast and much of this floodwater may infiltrate the ground in areas where the aquifer is not fully saturated. Even where the aquifer is saturated, denser saline water may sink into the aquifer during the flood and later from pools of saltwater that remain following the flood.

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

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time.

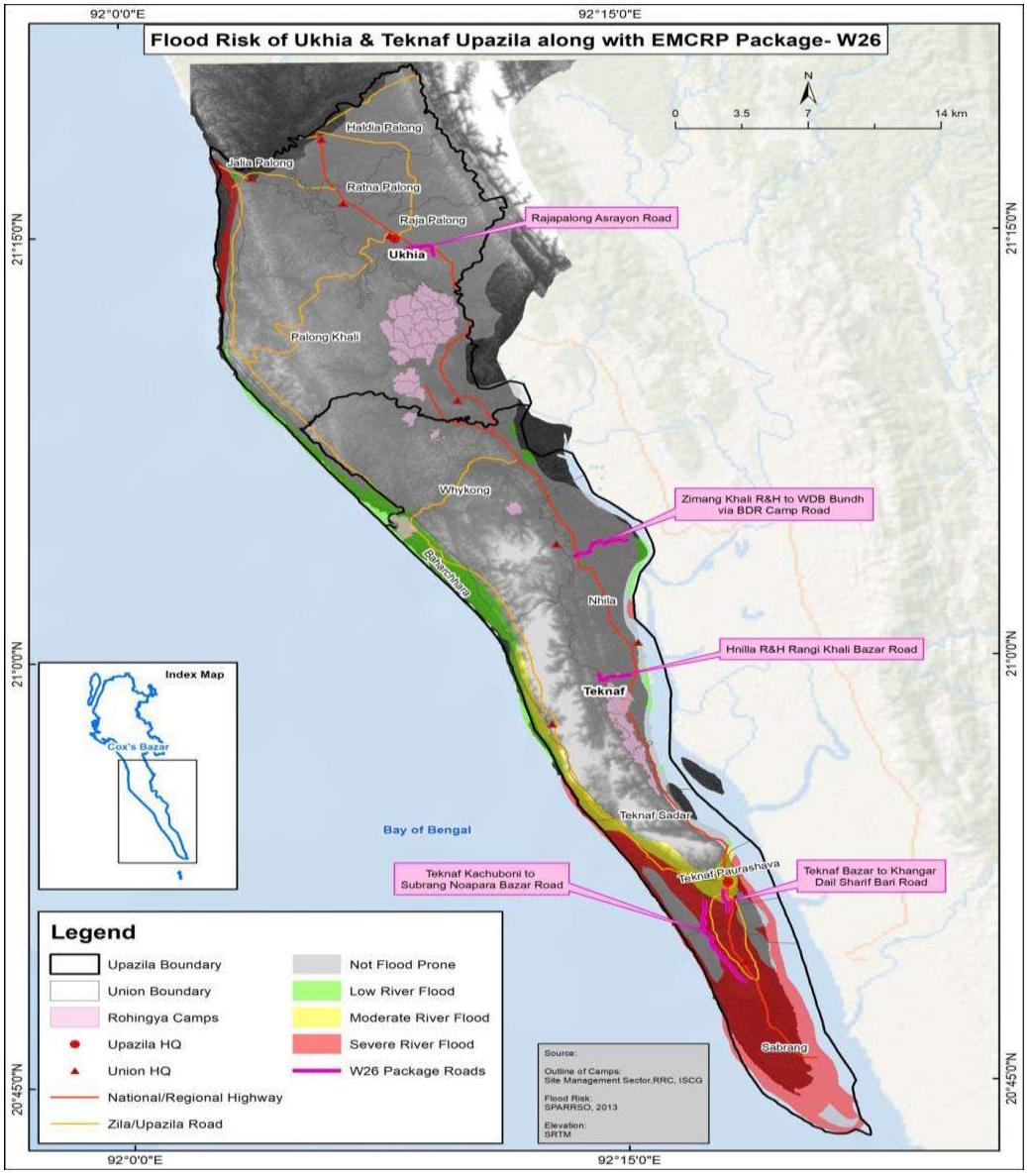


Figure3.3.2.1: Flood inundation risk map near the subprojects

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, and associated mitigation or offsetting measures are really hard to plot on the impact areas, though an overall set of measures are often considered in practical aspect. Fig: 3.3.2.1 shows the inundation risk map of the subprojects under W-26, the subproject is not in vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area.

However, as part of regular measures, proper design of slope and stability/compactness of both the shoulder and slope areas are to be ensured. Also tree planation on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

Considering the environmental settings of the sub-project area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good

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

The proposed road is on plain land. A number of small trees along the road side will be cut down during construction period and as a mitigation measure, 8 nos. trees will be planted for each tree fell in the periphery of the subproject. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Some features are very close to the subproject area that might get affected during construction period; those include at north side Thanar Mosque (50m), Hindu Mondir (100m), at East side Jamia Boro Mosque (100m), Post Office (100m), Kulalpara Graveyard (15m), Jaliapara Graveyard (50m), Furkania Madrassa (10m), Islamia Madrassa (60m), at West side Kulalpara Mosque (15m), Shilbonia para-Mosque (10m). Further, some settlements located adjacent to the sub-project area also 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 experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 1 no. Box culvert (Dimension: 4.5mX4.5m) at Ch. 745m and 1 no. of Cross drain (Dimension: 0.975mX0.975m) at Ch. 1530m will be constructed at the subproject area. Some low land is found beside the road. As part of preventive measures 60.0m Guide Wall (height 1.5m) will be constructed at different chainage. As part of preventive measures during storm surge, proper design of slope and stability/compactness on both the shoulder and slope area are to be ensured. 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 and Social Management Plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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 office.

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 have 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 component, a set of items are included in the BOQ of this sub-project. Cost for engaging a Safeguard Personnel for overseeing the Environmental and Social Management Works under the Package EMCRP/W26 has been added to the BOQ. Environmental quality enhancement

works such as grass turfing, tree plantation, and dust suppression measures are included in the estimation. In order to ensure health safety and sanitary measures for workers PPE, First Aid Box, labor shed with appropriate facilities, drinking water facility with water tests, temporary latrine for male and female as well as waste disposal systems have been accounted for. For ensuring safe and environmentally sound work practices and prevailing conditions in the site motivational training on environmental and social considerations has been taken into account. An overview of the estimation is given in **Appendix-3**.

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 situations 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 and 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: **Strengthening and widening of 5 nos. roads under Cox's Bazar Districts (Package:** EMCRP/W26).

Name of the component: Teknaf Bazar to Khangar Dail Sharif Bari Road (ID:422902005)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 174,570,459.46 Tk.
Estimated construction period duration: 1 year
Estimated total cost of the component (in Taka): **17,402,172.44 Tk.**
Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Cox's Bazar **Upazila**: Teknaf **Union**: Teknaf Sadar

Name of Community/Local Area: Kulalpara, Shilboniapara, Chokbazar, Nazirpara, Moulovipara and Boro Habibpara
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 with a proposed design of BC from Ch.00 to Ch. 1634m. Proposed safety and service providing structures include 1 no. Box culvert (Dimension: 4.5mX4.5m) at Ch. 745m of chainage and 1 no. of Cross drain (Dimension: 0.975mX0.975m) at Ch. 1530m as well as some protective works as 60.0m Guide Wall (height 1.5m) at different chainage will be constructed. As part of road safety works include barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Estimated footprint / land area for this sub-project is 8,987 sq m.

Brief description of sub-project site: (e.g., present land use, Important Environmental Features (IEFs) near site, etc.:
This proposed Teknaf Bazar to Khangar Dail Sharif Bari Road belongs to Teknaf Sadar unions under Teknaf Upazila. This road starts from Kunarpara Graveyard 3 no. ward. Several connecting roads fall within the road chainage and the road further passes through mosques, madrasas, graveyards, schools and religious institutes, shops and bazars etc. No other significant environmental or socioeconomic features are found near the road component.

However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

Chainage (m)	Left	Right	Features
000-300	L		Graveyard, Household connecting road, shop, settlement, Brick wall, connecting road, tin fence, brick wall, brick wall,

Chainage (m)	Left	Right	Features
			connecting road, brick wall, tin fence,
		R	Shop, Electric Pole, Shop, brick wall, shop, tin fence, brick wall, household, brick wall, Drain, brick wall,
300-600	L		Brick wall, household, electric pole, household, brick wall, shops, drain, brick wall, households, brick wall, households
		R	Brick wall, household, drain, connecting road, brick wall, connecting road, household, brick wall, drain, brick wall, household,
600-900	L		Brick wall, shop, household, trees, tin fence, culvert, shop, brick wall, household, brick wall, electric pole, brick wall, tin fence, tree, broken pitch of the road, household,
		R	Brick wall, electric pole, household, electric pole, shop, drain, electric pole, brick wall, household, tin fence, drain, tin fence, household, brick wall, settlements, households, brick wall, tin fence, shop, brick wall,
900-1200	L		Brick wall, electric pole, brick wall, tin fence,
		R	Brick wall, tin fence, mosque, household, brick wall, tin fence,
1200-1634	L		Tin fence, brick wall, tin fence, wired fence with RCC Pole, garden, tin fence, open field, wired fence with RCC Pole, Paan boroz, tin fence, household, tree, open space, brick wall, open space, Brick wall, electric pole, shop
		R	Bamboo fence, bush, trees, shop, tin fence, shop, tin fence, bush, brick wall, shop, tin fence, household, open space, brick wall, tree, tin fence

Figure: Starting point of Teknaf Bazar to Khangar Dail Sharif Bari Road

Overall Comments

The proposed component of the sub-project (Road Strengthening and Widening) is not located within any remarkable environmentally sensitive or reserved area of any kind and will not cause any severe affect to the environmental settings 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, though local people pointed out about the problem with waterlogging during the rainy season. Eight trees may need to clear out during the construction period, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for this improvement works. In order to minimize the risk of potential sliding or slipping of soil mass, earth will be compacted for stabilization and necessary cut and fill operation along the hill slope is to be ensured. All these inputs will be mainly at construction phase and limited within project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed during the consultation session with local stakeholders that this project's scope of works does not intend to overtake any area of physical lodgment and funding entity has no intention to do so. Some other issues have also been brought to their attention including construction of drainage and protective structures at different chainages on the road.

Different types of nearly 600 motorized and non-motorized vehicles and at least 1,600 people pass through the road in a typical day. 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. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation. 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 project component.

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 etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as at north side Thanar Mosque (50m), Hindu Mondir (100m); at south side Degree College (500m); at East side Jaliapara Mosque (125m), Jamia Boro Mosque (100m), Post Office (100m), Kulalpara Graveyard (15m), Jaliapara Graveyard (50m), Furkania Madrassa (10m), Islamia Madrassa (60m) and at West side Kulalpara Mosque (15m), Shilbonia para-Mosque (10m), Teknaf Thana (10m), Lamar Bazar Mosque (150m), Small Gov't Clinic (150m), Oliabad GPS (500m) are located. The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated. In this sub-project area, no elephant migration routes exist (ref. IUCN).

Figure 3: District Map with project location

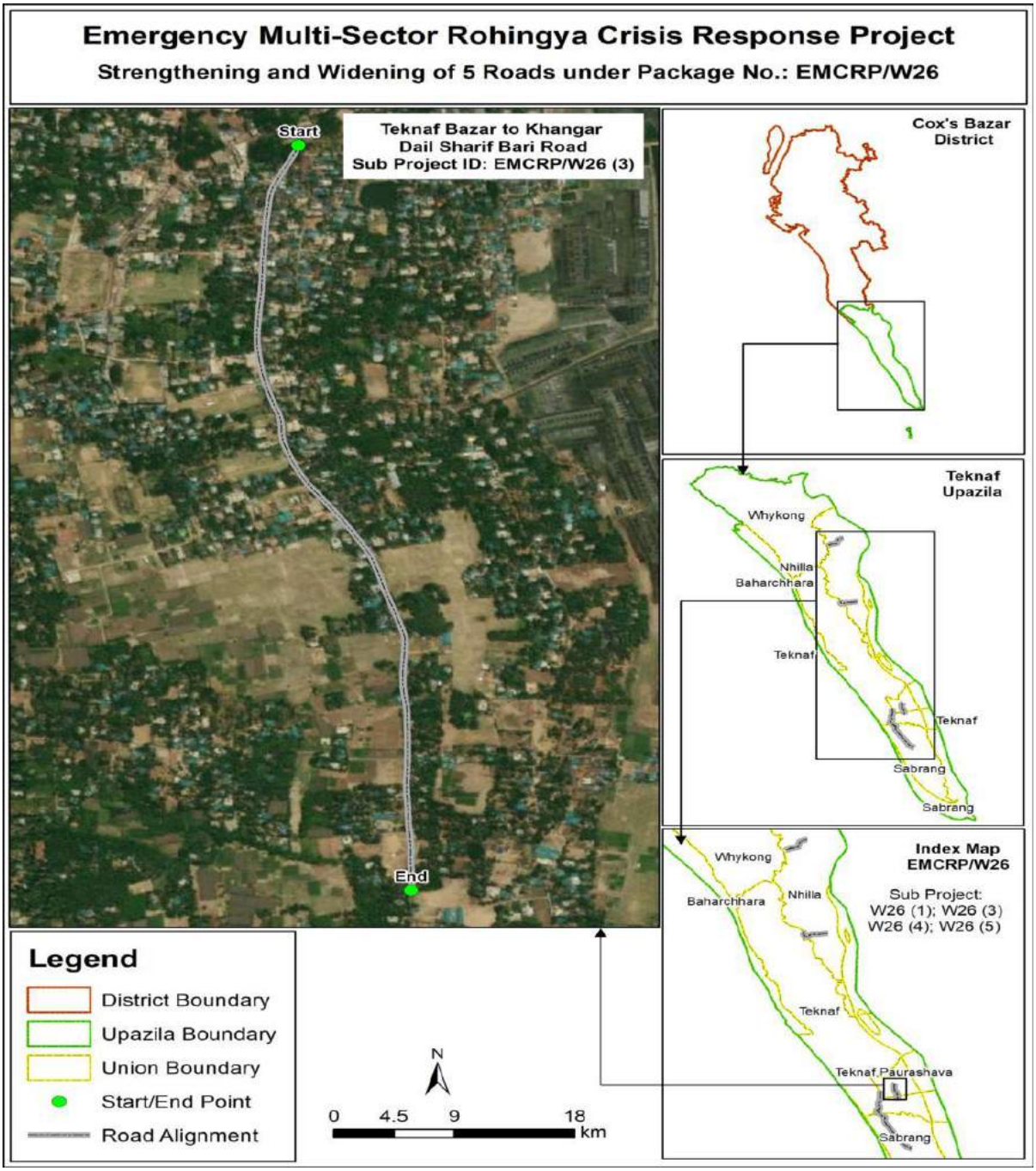


Figure 4: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1634m. Proposed safety and service providing structures include 1 no. Box culvert, 1 number cross drain and 60.0m Guide Wall in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Sub-project Location:

Important Features	
ID	422902005
District	Cox's Bazar
Upazila	Teknaf
Union	Teknaf sadar
WARD	03
Proposed Chainage	1634m
Road Type	Village Road
Proposed Intervention Type	BC
Road Starting Point Coordinates	Latitude Value: 20.863400 N Longitude Value: 92.299930 E
Road Ending Point Coordinates	Latitude Value: 20.849228 N Longitude Value: 92.301642 E

Land ownership

Land area covering the road length is owned by the Government.

Expected construction period: 1 Year

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 Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1634m.

i) Some water bodies like ponds, chorra, ditches etc. were identified during visiting time.
ii) No historical sites were identified.
iii) Not required to relocate local community.
iv) Some trees may be affected but a number of trees will be planted during post-construction phase.
v) No chance to lose of agricultural land.
vi) Some Household Boundary made of bamboo and tin may need adjustments.
vii) Environmental Sensitivity: There are several sites containing bio/ecological niches including patches of vegetation and low lying lands, which are in closer proximity along the road length and may receive some extent of detrimental impacts during the construction period; but no elephant corridor was identified in the areas. Construction induced impacts may also affect numbers of socio-economic features along the road length; therefore a well-planned ESMP has been prepared to follow in the field.

Section B: Environmental Screening

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

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

There are some community properties, environmental-religious-and-sociocultural components located

within 1km from the sub project, such as at the north side Thanar Mosque (50m), Hindu Mondir (100m); at south side Degree College (500m); at East side Jaliapara Mosque (125m), Jamia Boro Mosque (100m), Post Office (100m), Kulalpara Graveyard (15m), Jaliapara Graveyard (50m), Furkania Madrassa (10m), Islamia Madrassa (60m) and at West side Kulalpara Mosque (15m), Shilbonia para-Mosque (10m), Teknaf Thana (10m), Lamar Bazar Mosque (150m), Small Gov't Clinic (150m), and Oliabad GPS (500m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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 in figure B.1.1

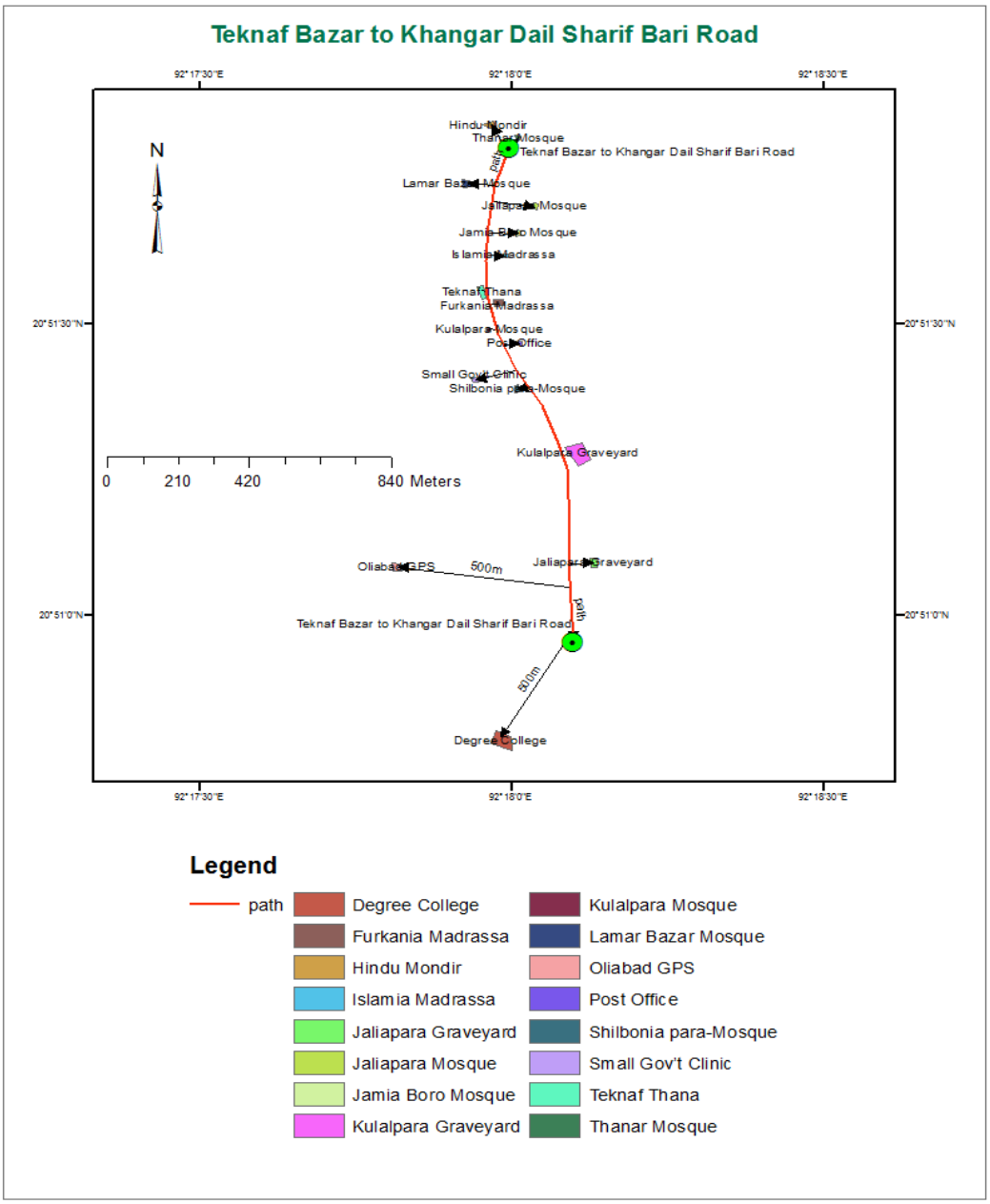


Figure B.1.1: A sketch of the project intervention/influence area

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, graveyard, 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 throughout an existing alignment and be limited within a designated Right of Ways (ROW), 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 has been checked on the basis of elephant migration route map, established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

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

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

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

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

Baseline air quality and noise levels:

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

Dust:

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

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads 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

30-40 feet and deep tubewell depth is 300 feet in the area. 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 300-600ft (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. Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources. *Data source: 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 220m 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): Shahporir dwip connecting road can be used as access road for transportation. It is possible to carry construction materials over this road to the construction site with limited traffic flow to avoid congestion.
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, and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. Shahporir dwip connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 25 kg during the pre-construction phase.

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.3: Construction Phase

Solid waste: Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 40 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi) Bitumen are the most common type of raw materials to be used in construction period. **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. However, the local people has informed during the consultation meeting that the area has no water logging troubles (except in monsoon, sometimes) at present and possibilities of stagnation of water in the long run is unlikely. They also 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) Existing canals, ponds and ditches can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.

Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities; though a limited scale of short-periodical impact may come across. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by 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 moderate to high 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, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable.
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 creating new stagnant water bodies that can encourage 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) Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.
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. However, vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Concentrated outflow will be carried by proposed drains and culvert.
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, 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 (>1 sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5 sqkm)

Section D: Environmental Screening Summary

The results of Environmental Screening are summarized in following table as per guidance given in the Project ESMF, Section 8.2:

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**.	• 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	• 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.**	• 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.	Construction Contractor monitored by Consultant and PIU	• No visible degradation to nearby drainages, • *Canals (khals)* or water bodies due to soil erosion. • Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	• 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	Construction Contractor and monitored by Consultant and PIU	• Areas for stockpiles, storage of fuels and lubricants and waste materials; • Records of water quality	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
			the environmental management plan.		inspection; Water Quality Test • (National Drinking Water Quality Standard Parameters)if requires; • No visible degradation to nearby drainages, *canals* or water 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**.	• 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	Construction Contractor and monitored by Consultant and PIU	• Site-specific H&S Plan; • Records of supply of uncontaminated water; • Record of Health &Safety	Visual inspection by PIU and supervision consultants on monthly basis

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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.		orientation trainings; • Condition of sanitation facilities for workers	
	Transportation	Under the subproject intervention the overall score is **low.**	• Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents.	Monthly monitoring.
	Storage of construction materials	Under the subproject intervention the overall score is **low**.	• Train concerned person and team assigned for the construction work to ensure items are stored properly and away from steep slopes.	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials	During implementation phase, as necessary through discussion with PIU, Consultant
3: Construction Phase	**Wastes**	Under the sub-project intervention the overall score is **low.**	• 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	Construction Contractor and monitored by Consultant and PIU	• Complaints from community; • Regular inspection of waste	weekly as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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.		management activity; • Waste disposal record.	
	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.	• 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&S.	• Location of road alignment and slope.	Daily as work progresses
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not	With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials; • Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary through the

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
		interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	of requirements shall be taken into consideration: • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury.			discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			• Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	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.**	• 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&S.	• Complaints from community	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• 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 ESMP.	Construction Contractor and monitored by Consultant and PIU	• Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
					meter (dB), if required.	
	Air pollution	Under the subproject intervention the overall score is **low.**	• 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	• 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.**	• 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. • The contractor shall provide, erect and maintain informatory/safety signs written in local language,	Construction Contractor, environmental specialist of D&SC.	• 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
			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**.	• 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. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • 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&S.	Construction Contractor, environmental specialist of D&S.	• Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Tree plantation	Under the issue the overall score is **low**.	• Plantation of trees during monsoon period • Maintain of trees properly	Construction Contractor, environmental	• Number of complaints from stakeholders;	Immediately after the construction

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			• Check survival of trees and replant the dead trees	specialist of D&S.	• Records of trees number and tree plantation inspection.	work is over.
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**.	• 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	• 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) (site specific)

ESMP for Access and evacuation Roads: Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005);

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• 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	• 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	• 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	• All Sites must avoid the low land near the water bodies or natural flow path to avoid the flash flood or any kind or 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 the site shall be restored as before. • This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place. • Sub project intervention must avoid natural disturbance to existing slop and natural drainage. • The contractor must ensure sound environment for the local residents near the sub project site.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipment (PPEs) must be available at sites before starting any kinds of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• 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. • Dust generation must be limited as a result of clearing,	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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	• Unauthorized entry is completely prohibited in construction site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidance 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	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from	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
		the appropriate department need to be collected 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.		
Construction Activity	Increase in road accidents	• 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	• 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. • Labor code of conduct is to be disclosed through	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		consultation.		
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site • Wastes 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	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities	• 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.	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
	such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• 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 will have 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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		stroke, and dehydration. Written records of this awareness training shall be kept on site. • 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	• 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
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration	• Contractor must prepare a waste management plan including relevant directives from “Waste Management Plan Principles” 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
	after the construction). The impacts are similar to those listed in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community			
Operation & Maintenance	Noise disturbances to fauna and traffic safety	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Putting proper signing and signaling, bumping /breakers, smooth & spacious bending, if and wherever required and as observed during the operational period. • 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, Cox's Bazar)	UNO, PSC

Waste Management Plan Principles:

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, IC, 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.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	1634.0m	@ 2.56 BDT	4183.04
2.	**Water Supply and Sanitation** 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
3.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	1 no.	LS @5000 Tk. Per box	5,000

Sl no.	Description of item	Quantity	Unit price	Total amount
4.	**Drinking Water Facilities** 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.	2 no.	LS @ Tk. 30,000	60,000
5.	**Traffic Management** 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
6.	**Personal Protection Equipment for Workers** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
7.	**Tree plantation** Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area preferably at both sides of Road where space is available including protection, fencing and conservation during project defects liability period as required by and as per direction of E-I-C. Tree like Dumur, Amla, Parul, Coconut, Jackfruit, Mango etc. to be planted. The payment is to be made only when trees are fully grown.	100 nos.	@ Tk. 1000	100,000
8.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C.	1 no.	LS @ Tk. 10,000	10,000
9.	**Waste disposal facility** 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
10.	**Water Test (Drinking Water samples)** 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
11.	**Working labour shed:** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
12.	**Environmental management** Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C. **[One person to be appointed for W26(1), W26(2), W26(3), W26(4) & W26(5)]**	1 person	Monthly basis @Tk. 35,000.00 for 12 months. One person covering 5 roads i.e.,35,000Tk.*12months*(1/5 one road). (Net payment excluding Tax &VAT).	84,000.00
	Subtotal Bill: Environmental facilities			**373,828.76**

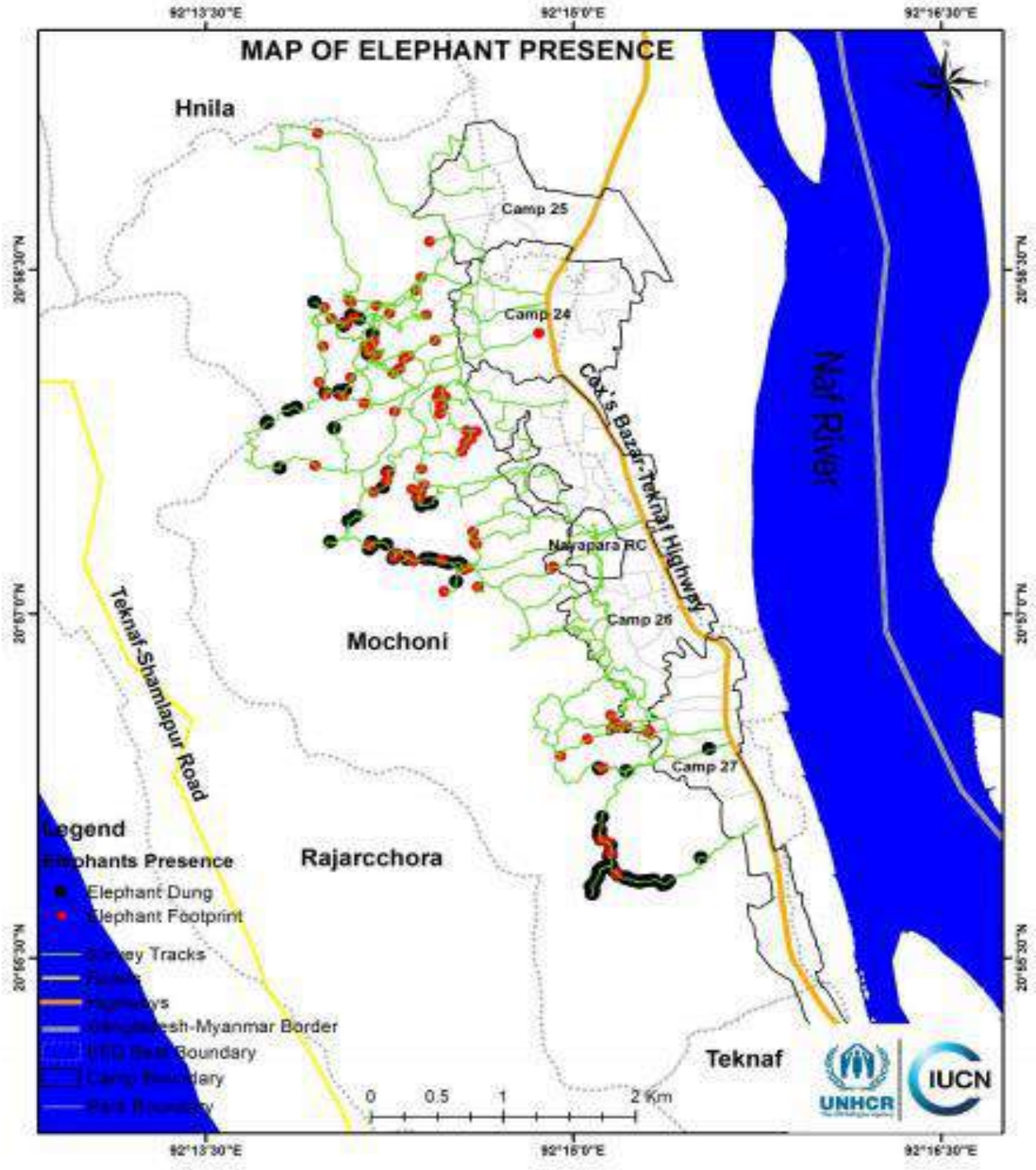
Cost of H&S Measures under COVID 19 Situations

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 33 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-26.3).

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)	90		111	50.00	201	10,050	To be placed in a case/holder on the basin, for washing hands for max. 55 people a day and showering of 50 workers in each labor camp.
5.	Hand Sanitizer (2 nos. 250 ml bottle	2 bottles and 1 Can	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 litre can for each Site office

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
	and 5 liter Can for Refill)	for each site						
6.	Face Shield/ Protective Safety Goggles	19 nos. for each site		N/A	400.00	19	7,600.00	For labors who work in close contact, 28 in each site
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	33 nos. for each labor camp		35.00	594	20,790.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	3 Can	N/A	4 Can	250.00	7	1,750.00	
10.	Detergent Cleaner	N/A	2.5 kg in each camp/month		400.00	22.5	9,000.00	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						**115,490.00**	

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W26.03, Road ID No.- 422902005

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

Focus Group Discussion

সময়: 12:50 PM তারিখ: ১৪/১২/2020

উপ-প্রকল্প/কমপোনেন্ট এর নাম: Improvement of Teknaf Bazar to Khangar Dail Sharif Bari Road.

মত বিনিময় স্থান: Kulalpara Gip station, Passenger shade

ইউনিয়ন: [illegible] ওয়ার্ড নং: 03. ডাকঘর: Teknaf উপজেলা: Teknaf জেলা: কক্সবাজার

সাব প্যাকেজ নং: 26/03

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রঃ নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
১	আবুল গফুর	[illegible]	পুরুষ	কুলালপাড়া	আবদুল গফুর
২	আবদুল আমিন	৬০	"	"	[illegible]
৩	রবি আলম	৬২	"	"	রবি আলম
৪	রাশেদ আহমদ	৪৫	"	"	রাশেদ আহ:
৫	[illegible]	৬২	"	[illegible]	[illegible]
৬	মুজাহের আহমেদ	৫৫	"	কুলালপাড়া	মুজাহের আহমদ
৭	মোঃ ইউনুস	৬০	"	[illegible]	ইউনুস
৮	আবদুস সালাম	২২	"	কুলাল পাড়া	সালাম
৯	হাসান শরিফ	৫৯	"	[illegible]	[illegible]
১০	ফরিদ আলম	৫৪	"	কুলালপাড়া	ফরিদ আলম

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-Project Component site

Overview of surrounding features of the Sub-Project Site

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 Zimang Khali R&H to WDB Bundh via BDR Camp Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W26

Development Design Consultants Ltd.

April-2021

ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bricks
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

Contents

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 services. Nevertheless, to aid into the condition and improve the symbiotic relation between Hosting Community and Displaced Rohingya Population (DRP), different interventions are taking place. Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) aided by World Bank holds one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among several 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 is a fundamental motive. In order to take these matters into consideration, screening and assessment of these elements has been adopted 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 sub-project is situated within the localities of Zimangkhali under Whykong union, Ward 6 of Teknaf Upazila, Cox's Bazar. Different types of nearly 1050 motorized and non-motorized vehicles and at least 2,200 people pass through the road in a typical day. There are some community property resources, environmental components and other features located within 1km from the sub project, such as on north side Zimangkhali purbapara mosque (10m), BGB camp mosque (20m), pond (30m); on south side Zimangkhali khal (5m), Zimangkhali Mina Bazar (100m), Zimangkhali Forkania madrasah (20m), Zimangkhali BGB camp (20m); on east side Fish farm (100m), Naf river (1km) and on west side Zimangkhali station jame mosque (10m), Zimangkhali GPS cum cyclone shelter (100m), Noapara graveyard (500m), pond (10m), Middle Hnilla forest bit (500m), Zimankhali Purbapara Hasan Bin Ali mosque (5m). Apart from these, no other important socio-environmental features are present near the sub-project location. Several water bodies though are located in the vicinity; water logging is not a regular phenomenon. No other sensitive environmental, cultural, archaeological, religious sites were found in the area. 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 may affect several trees. All these impacts are site-specific and manageable 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 or affect any sensitive areas of any kind and sufficient numbers of structures are included in proposed implementation works for the enhancement of ecosystem services in the area, 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 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change 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. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the socio-economic condition of the host communities 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

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

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Widen access to the government support system including health, education and emergency evacuation and sheltering
- ✓ 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-project components under the package name **'Strengthening and widening of 5 nos. roads under Cox's Bazar Districts.'** with the bid package no. **EMCRP/W26**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W26

Description of Sub-project: Strengthening and widening of 5 nos. roads under Cox's Bazar Districts. i, e., **Improvement of widening and Maintenance of** (1) Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003); (2) Rajapalong Asrayon Road (ID: 422944056); (3) Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005); (4) Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002); and (5) Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)

Sub-project Component no. (4) Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002)

Component's Location:

i. ID. 422904002	ii. Ward No.: 6	iii. Mouza: Middle Hnilla
iv. Village: Zimangkhali	v. Name of Union: Whykong	
vi. Upazila: Teknaf	vii. Sub-Project construction period: 1 year	
viii. Construction Year: 2021	ix. Design Width (m): 5.5 Pavement-4.3m and Shoulder-1.2m (0.6m+0.6m)	x. Length (m): 3500
xi. Distance from UZHQ: 26 Km.		
GPS Coordinates	Latitude Value: 21.060017 N Longitude Value: 92.226488 E	Starting Point
	Latitude Value: 21.068809 N Longitude Value: 92.240965 E	Ending Point
Present Condition of Road	BC (Broken)	
Communication Source	Radio & Mobile Networks	

Subproject interventions:

- Bituminous Carpeting options.
- 1 no. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 638m
- 126m Toe wall (height 3m) at different chainage
- 30m Brick Palisading work (height 2m) at different chainage

• Road safety works and • Environmental Mitigation and Enhancement works
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period (Component -1): 1 year
Estimated total cost of component: 50,656,641.45 (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. D&SC conducted the consultation meeting with local community on 14 December, 2020 in front of Mr. Jamal Ahmed Kuli corner's shop on Zimangkhali, Refer to Figure 2.1.1, and Public Consultation Participants' List is attached in Appendix-5 and sub-project pictorial overview is attached in Appendix-6. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.

Figure 2.1.1: Consultation meeting (FGD) with local community

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

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 improvement or 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 views and information from affected parties and inhabitants on social and environmental issues. (iii) Consultation with interest groups and the public.

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust and noise pollution that might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely to take place during the road construction, if proper measures are not followed.

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 issues have also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. 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. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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.
- Every possible measure should be taken to avoid any nuisance to public and surrounding inhabitants.

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 and this will help identifying the impacts and their extents. The screening data and information for this Sub-project component 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. 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.

Among the different socio-economic and environmental features within half a kilometer from the centerline of the proposed road, following are the important ones: on north side Zimangkhali purbapara mosque (10m), BGB camp mosque (20m), pond (30m); on south side Zimangkhali khal (5m), Zimangkhali Mina Bazar (100m), Zimangkhali Forkania madrasah (20m), Zimangkhali BGB camp (20m); on east side Fish farm (100m), Naf river (1km) and on west side Zimangkhali station jame mosque (10m), Zimangkhali GPS cum cyclone shelter (100m), Noapara graveyard (500m), pond (10m), Middle Hnilla forest bit (500m), Zimankhali Purbapara Hasan Bin Ali mosque (5m). Some features may face dust and noise pollution due to having a closer proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation or preparatory measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. 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, 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 Teknaf 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 Overview of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk[4] of hill collapse by destabilizing the terrain. Also deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones, as forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above-mentioned hazardous situation, again due to sudden extraction of huge amount of groundwater, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources. In this case, it is possible that a stationary position of the freshwater-saltwater transition zone can be established via proper management of pumping in the confined aquifer.

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf
[4] "Implications of Climate Change for Fresh Groundwater Resources in Coastal Aquifers in Bangladesh", World Bank report.2010

The groundwater resource is seen to suffer more from the climate change impact. The impact on groundwater due to climate change impact include

- Sea-level rise could result in a transgression of the sea and a loss of land area. This could also lead to the secondary effect of population migration in the new coastal band due to migration of the coastal population from the encroaching sea, thereby increasing domestic water needs in the new coastal area.
- A higher sea-surface elevation would change the base level for all groundwater gradients in the basin. In many aquifers, this would lead to shifts in local hydraulic gradients, inland hydraulic heads, and the rate of groundwater flow.
- A higher sea level will result in an increase in pressure in the subsea aquifer, resulting in inland movement of saltwater (aquifer seawater intrusion).
- Transgression of the coast implies that saline storm surges of 1 or more meters depth would penetrate beyond the new coast to new land areas. Storm surges transport saline water far inland of the coast and much of this floodwater may infiltrate the ground in areas where the aquifer is not fully saturated. Even where the aquifer is saturated, denser saline water may sink into the aquifer during the flood and later from pools of saltwater that remain following the flood.

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

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time.

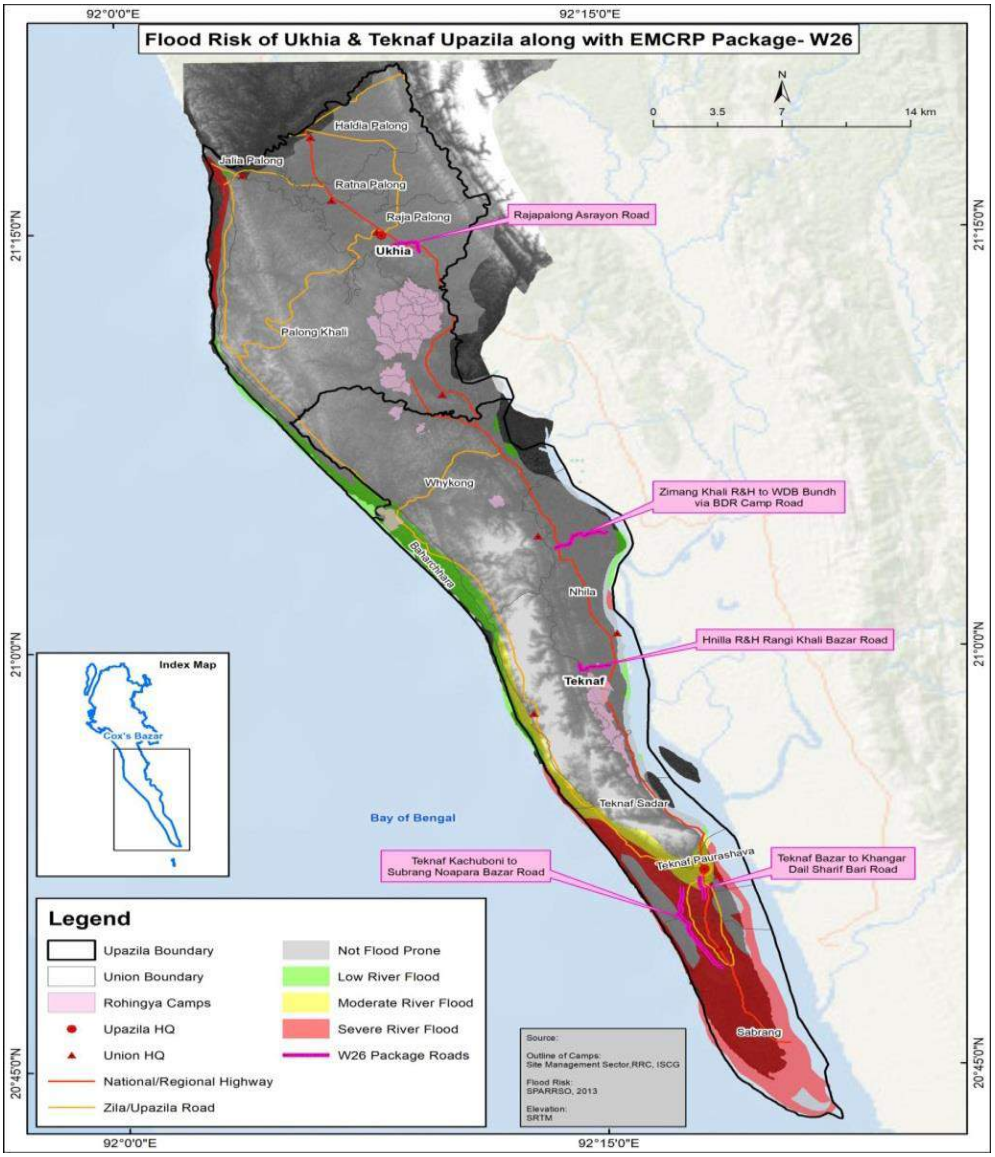


Figure3.3.2.1: Flood inundation risk map near the subprojects

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, and associated mitigation or offsetting measures are really hard to plot on the impact areas, though an overall set of measures are often considered in practical aspect. Fig: 3.3.2.1 shows the inundation risk map of the subprojects under W-26, the subproject is not in vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area.

However, as part of regular measures, proper design of slope and stability/compactness of both the shoulder and slope areas are to be ensured. Also tree planation on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be planted for each tree fell in the periphery of the subproject. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Some features are very close to the subproject area that might get affected during construction period; those include- on north side Zimangkhali purbapara mosque (10m), BGB camp mosque (20m), pond (30m); on south side Zimangkhali khal (5m), Zimangkhali BGB camp (20m); on east side Fish farm (100m), on west side Zimangkhali station jame mosque (10m), Zimangkhali GPS cum cyclone shelter (100m), pond (10m), Middle Hnilla forest bit (500m), Zimankhali Purbapara Hasan Bin Ali mosque (5m). Further, some settlements located adjacent to the sub-project area might also 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 experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 1 no. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 638m will be constructed at the subproject area. Due to the presence of low land along different chainages of the road some protective works of 126m Toe wall (height 3m) and 30m Brick Palisading work (height 2m) at different chainage are included in design and estimation. As part of preventive measures during storm surge, proper design of slope and stability/compactness on both the shoulder and slope area are to be ensured. 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 and Social Management Plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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 component, a set of items are included in the BOQ of this sub-project. Cost for engaging a Safeguard Personnel for overseeing the Environmental and Social Management Works under the Package EMCRP/W26 has been added to the BOQ. Environmental quality enhancement works such as grass turfing, tree plantation, and dust suppression measures are included in the estimation. In order to ensure health safety and sanitary measures for workers PPE, First Aid Box, labor shed with appropriate facilities, drinking water facility with water tests, temporary latrine for male and female as well as waste disposal systems have been accounted for. For ensuring safe and environmentally sound work practices and prevailing conditions in the site motivational training on environmental and social considerations has been taken into account. An overview of the estimation is given in **Appendix-3**.

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 situations 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 and 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: **Strengthening and widening of 5 nos. roads under Cox's Bazar Districts (Package:** EMCRP/W26).

Name of the component: Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002)

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

Estimated total cost of sub-project (in Taka): 174,570,459.46 Tk.

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): **50,656,641.45 Tk.**

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Cox's Bazar **Upazila**: Teknaf **Union**: Whykong

Name of Community/Local Area: Zimangkhali

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 with a proposed design of BC from Ch.00 to Ch. 2121m. Proposed safety and service providing structures include 1 no. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 638m of chainage and some additional protective works for 126m Toe wall (height 3m) and 30m Brick Palisading work (height 2m) at different chainage, which are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Estimated footprint / land area for this sub-project is 19,250 sq m.

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

This proposed Zimang Khali R&H to WDB Bundh via BDR Camp Road belongs to Whykong union under Teknaf Upazila. This road starts from Cox's Bazar-Teknaf highway on Zimangkhali Station mosque at west side stretching 3500m to WDB Bandh at east side. This targeted sub-project passes through Zimangkhali canal, ponds, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, religious institutes, shops, boundary fences etc. No other significant environmental or socioeconomic features are found near the road component.

However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

Chainage (m)	Left	Right	Features
000-300	L		Tin shed household, toilet, bamboo fences, tin shed fences, household connecting roads, shops, paddy land
		R	Shop, ext. palisading wall, Zimangkhali khal
300-600	L		Bamboo fences, brick boundary wall, mosque, electric pole, tin shed fences, household connecting roads, shop

		R	Ext. guide wall, pond, tin shed household, shop, RCC pole with wire fencing, tin shed fences, electric pole, open land
600-900	L		Tin shed fences, household connecting roads, agricultural lands, Eucalyptus trees, Akashi trees yard
		R	Shop, tin shed fences, agricultural lands, Eucalyptus trees, culvert, vegetable yard, bamboo fences, ext. guide wall
900-1200	L		Bamboo fences, shop, agricultural lands, Eucalyptus trees, tin shed households, household connecting roads
		R	Zimangkhali khal, ext. guide wall, vegetables yard, agricultural lands
1200-1500	L		agricultural lands
		R	agricultural lands
1500-1800	L		agricultural lands
		R	agricultural lands
1800-2100	L		agricultural lands, mosque
		R	Wire fencing, pond, BGB camp
2100-2400	L		agricultural lands
		R	agricultural lands
2400-2700	L		agricultural lands, local drain
		R	agricultural lands
2700-3000	L		Fish farms
		R	agricultural lands, fish farms
3000-3300	L		agricultural lands
		R	fish farms
3300-3500	L		fish farms
		R	fish farms

Figure: Starting point of Zimang Khali R&H to WDB Bundh via BDR Camp Road

Overall Comments

The proposed component of the sub-project (Road strengthening & widening) is not located within any remarkable environmentally sensitive or reserved area of any kind and will not cause any severe affect to the environmental settings 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, though local people pointed out about the problem with waterlogging during the rainy season. Six to eight trees may need to clear out during the construction period, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for this improvement works. In order to minimize the risk of potential sliding or slipping of soil mass, earth will be compacted for stabilization and necessary cut and fill operation along the hill slope is to be ensured. All these inputs will be mainly at construction phase and limited within project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.
It has been revealed during the consultation session with local stakeholders that this project's scope of works does not intend to overtake any area of physical lodgment and funding entity has no intention to do so. Some other issues have also been brought to their attention including construction of drainage and protective structures at different chainages on the road.

Different types of nearly 1050 motorized and non-motorized vehicles and at least 2,200 people pass through the road in a typical day. 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. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation. 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 project component.

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 etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as on the north side Zimangkhali purbapara mosque (10m), BGB camp mosque (20m), pond (30m); on south side Zimangkhali khal (5m), Zimangkhali Mina Bazar (100m), Zimangkhali Forkania madrasah (20m), Zimangkhali BGB camp (20m); on east side Fish farm (100m), Naf river (1km) and on west side Zimangkhali station jame mosque (10m), Zimangkhali GPS cum cyclone shelter (100m), Noapara graveyard (500m), pond (10m), Middle Hnilla forest bit (500m), Zimankhali Purbapara Hasan Bin Ali mosque (5m). The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated. In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 10-11 km away from this sub-project.

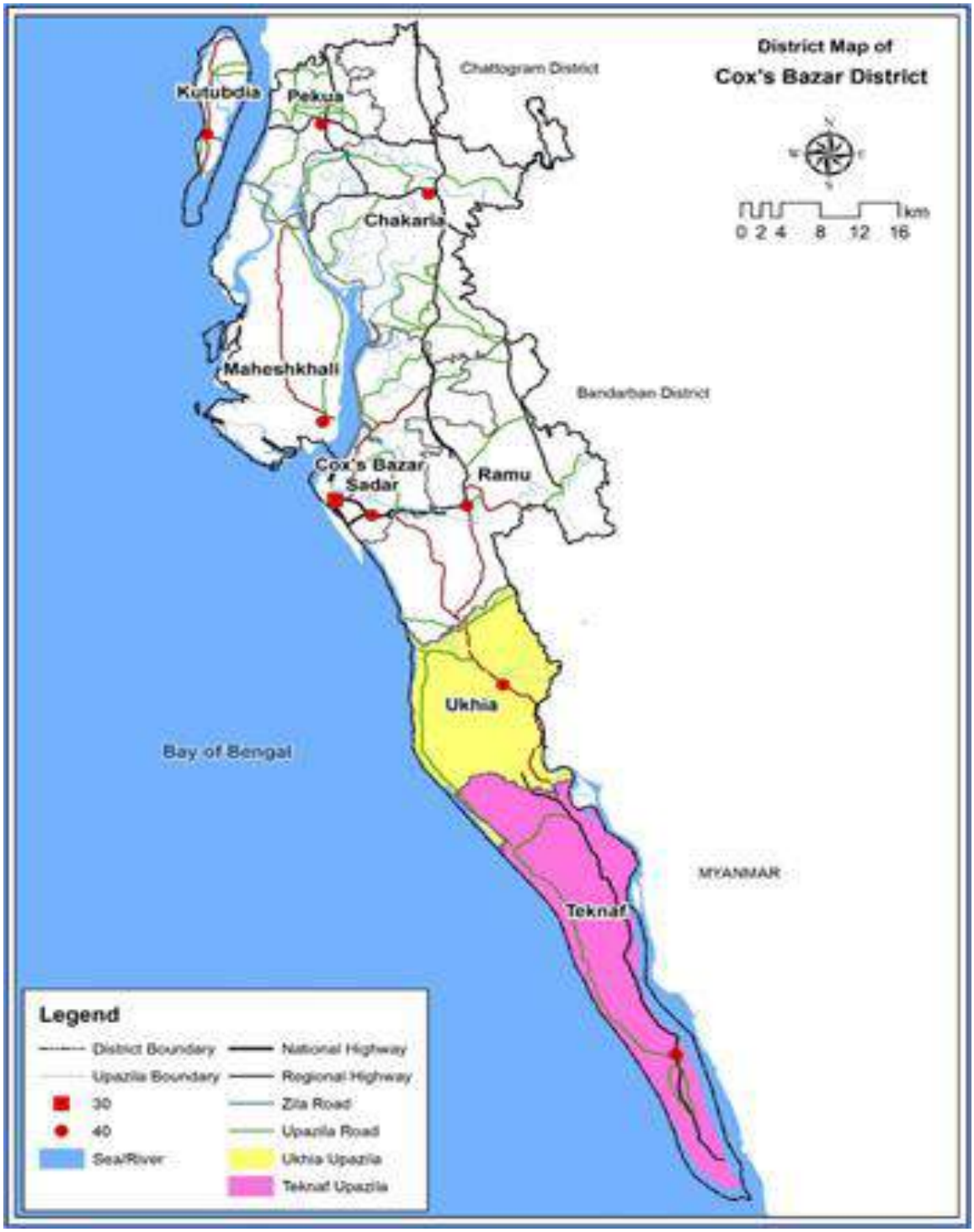


Figure 3: District Map with project location

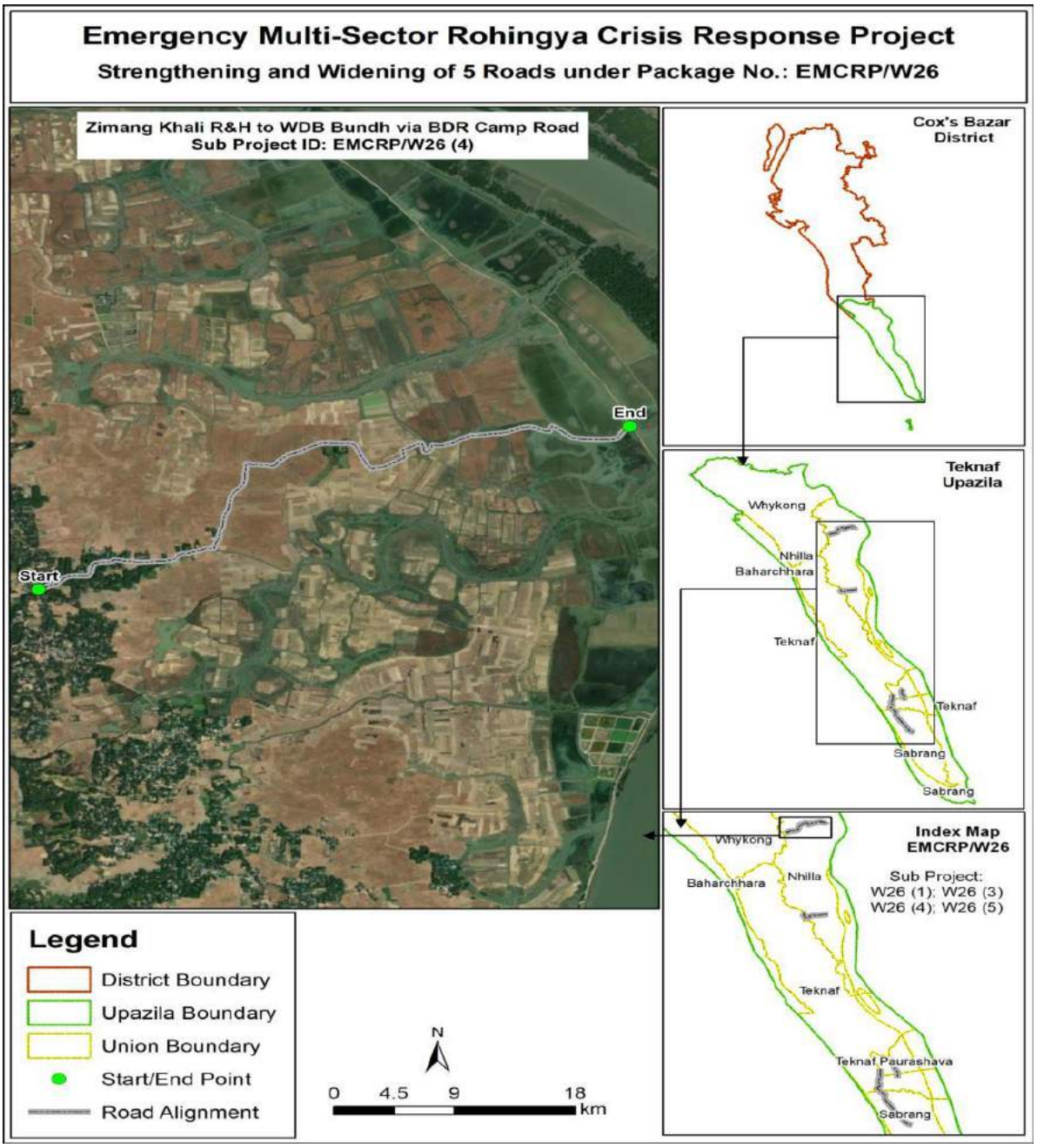


Figure 4: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 3500m. Proposed safety and service providing structures include 1 no. of Box Culvert, protective works for 126m Toe wall & 30m Palisading work at different chainage that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Sub-project Location:

Important Features	
ID	422904002
District	Cox's Bazar
Upazila	Teknaf
Union	Whykong
WARD	6
Proposed Chainage	3500m
Road Type	Village Road
Proposed Intervention Type	BC
Road Starting Point Coordinates	Latitude Value: 21.060017 N Longitude Value: 92.226488 E
Road Ending Point Coordinates	Latitude Value: 21.068809 N Longitude Value: 92.240965 E

Land ownership

Land area covering the road length is owned by the Government.

Expected construction period: 1 Year

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 Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 3500m.

i) Some water bodies like canal, pond, ditches etc. were identified during visiting time.
ii) No historical sites were identified.
iii) Not required to relocate local community.
iv) Some trees may be affected.
v) No chance to lose of agricultural land.
vi) Some Household Boundary made of bamboo and tin may need adjustments.
vii) Environmental Sensitivity: There are several sites containing bio/ecological niches including patches of vegetation, ponds, ditches or other type of water bodies, which are in closer proximity along the road length and may receive some extent of detrimental impacts during the construction period; but no elephant corridor was identified in the areas. Construction induced impacts may also affect numbers of socio-economic features along the road length; therefore a well-planned ESMP has been prepared to follow in the field.

Section B: Environmental Screening

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

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

including elephant migration routes and remaining forests:

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as on the north side Zimangkhali purbapara mosque (10m), BGB camp mosque (20m), pond (30m); on south side Zimangkhali khal (5m), Zimangkhali Mina Bazar (100m), Zimangkhali Forkania madrasah (20m), Zimangkhali BGB camp (20m); on east side Fish farm (100m), Naf river (1km) and on west side Zimangkhali station jame mosque (10m), Zimangkhali GPS cum cyclone shelter (100m), Noapara graveyard (500m), pond (10m), Middle Hnilla forest bit (500m), Zimankhali Purbapara Hasan Bin Ali mosque (5m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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 in figure B.1.1.

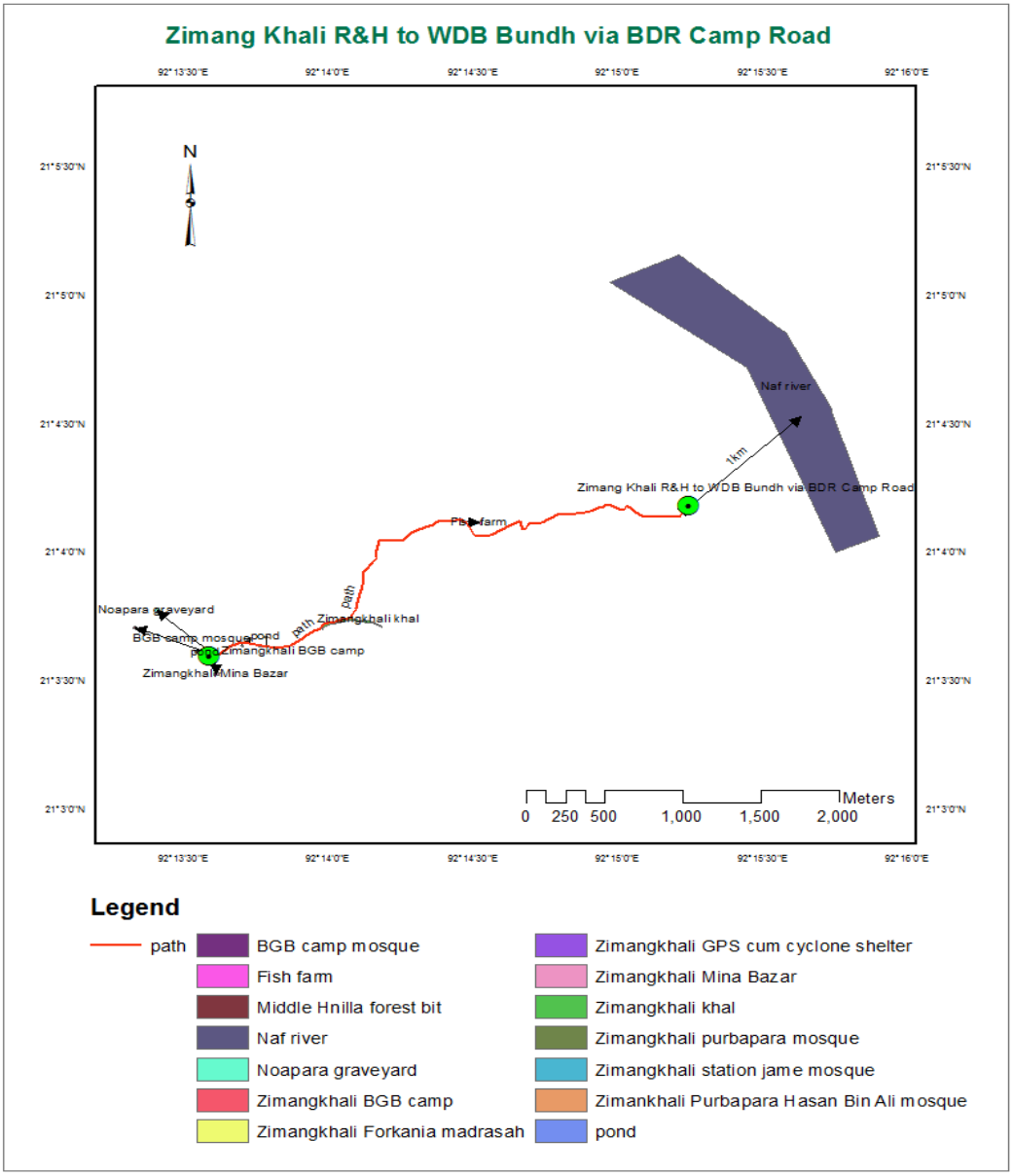


Figure B.1.1: A sketch of the project intervention/influence area

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, shops, religious institutes and human settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out throughout an existing alignment and be limited within a designated Right of Ways (ROW), 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 has been checked on the basis of elephant migration route map, established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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

Dust:

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

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads 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 50-60 feet and deep tubewell depth is 400 feet in the area. 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 300-600ft (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. Many shallow tube wells (50ft. to 60 ft.) are fitted in local area and most of the water usage is sufficed from these sources. *Data source: 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 250m 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): Cox's Bazar-Teknaf connecting road can be used as access road for transportation. It is possible to carry construction materials over this road to the construction site with limited traffic flow to avoid congestion.
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, and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. Cox's Bazar-Teknaf connecting road can be used as access road for transportation. Pickup,

dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 27 kg during the pre-construction phase.

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.3: Construction Phase

Solid waste: Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 40 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi) Bitumen are the most common type of raw materials to be used in construction period. **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. However, the local people has informed during the consultation meeting that the area has no water logging troubles (except in monsoon, sometimes) at present and possibilities of stagnation of water in the long run is unlikely. They also 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) Medium. A pond is located at 30m north from the subproject, Zimangkhali khal is located at 5m

south and on west side a pond is also found at 10m; these water bodies can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities; though a limited scale of short-periodical impact may come across. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by 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 moderate to high 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, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable.
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 creating new stagnant water bodies that can encourage 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) Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.
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. However, vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Concentrated outflow will be carried by proposed drains and culvert.
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, 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 (>1 sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5 sqkm)

Section D: Environmental Screening Summary

The results of Environmental Screening are summarized in following table as per guidance given in the Project ESMF, Section 8.2:

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**.	• 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	• 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.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers	Construction Contractor monitored by Consultant and PIU	• No visible degradation to nearby drainages, • *Canals (khals)* or water bodies due to soil erosion. • Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	• 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	• 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	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
					nearby drainages, *canals* or water 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**.	• 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	• 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.**	• Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• 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**.	• Train concerned person and team assigned for the construction work to ensure items are stored properly and away from steep slopes.	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials	During implementation phase, as necessary through discussion with PIU, Consultant
3: Construction Phase	**Wastes**	Under the sub-project intervention the overall score is **low.**	• 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	• Complaints from community; • Regular inspection of waste management activity; • Waste disposal record.	weekly as work 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.	• 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&S.	• 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
			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.**	With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration: • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials; • Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. • Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	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.**	• 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&S.	• Complaints from community	Daily
	Noise pollution	Under the subproject intervention the overall score is	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm.	Construction Contractor and monitored by Consultant and PIU	• Number of complaints from stakeholders; • Use of silencers in	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
		low.	• Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.		noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required.	
	Air pollution	Under the subproject intervention the overall score is **low.**	• 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	• 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.**	• 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. • The contractor shall provide, erect and maintain informatory/safety signs written in local language,	Construction Contractor, environmental specialist of D&SC.	• 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
			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**.	• 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. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • 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&S.	Construction Contractor, environmental specialist of D&S.	• Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Tree plantation	Under the issue the overall score is **low**.	• Plantation 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.	• 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**.	• 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	• 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) (site specific)

ESMP for Access and evacuation Roads: Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002)

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• 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	• 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	• 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	• All Sites must avoid the low land near the water bodies or natural flow path to avoid the flash flood or any kind or 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 the site shall be restored as before. • This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place. • Sub project intervention must avoid natural disturbance to existing slop and natural drainage. • The contractor must ensure sound environment for the local residents near the sub project site.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipment (PPEs) must be available at sites before starting any kinds of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• 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. • Dust generation must be limited as a result of clearing,	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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	• Unauthorized entry is completely prohibited in construction site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidance 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	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before	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
		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.		
Construction Activity	Increase in road accidents	• 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	• 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. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site • Wastes 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	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and	• 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	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
	musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have 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 this		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		awareness training shall be kept on site. • 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	• 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
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed	• Contractor must prepare a waste management plan including relevant directives from “Waste Management Plan Principles” 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
	in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community			
Operation & Maintenance	Noise disturbances to fauna and traffic safety	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Putting proper signing and signaling, bumping /breakers, smooth & spacious bending, if and wherever required and as observed during the operational period. • 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, Cox's Bazar)	UNO, PSC

Waste Management Plan Principles:

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, IC, 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.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggrega tes/unpaved roads, in and around the work site and as per direction of E-I-C	2121.0m	@ 2.56 BDT	5,429.76
2.	**Water Supply and Sanitation** 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
3.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	1 no.	LS @5000 Tk. Per box	5,000

Sl no.	Description of item	Quantity	Unit price	Total amount
4.	**Drinking Water Facilities** 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.	2 no.	LS @ Tk. 30,000	60,000
5.	**Traffic Management** 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
6.	**Personal Protection Equipment for Workers** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
7.	**Tree plantation** Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area preferably at both sides of Road where space is available including protection, fencing and conservation during project defects liability period as required by and as per direction of E-I-C. Tree like Dumur, Amla, Parul, Coconut, Jackfruit, Mango etc. to be planted. The payment is to be made only when trees are fully grown.	170 nos.	@ Tk. 1000	170,000
8.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C.	1 no.	LS @ Tk. 10,000	10,000
9.	**Waste disposal facility** 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
10.	**Water Test (Drinking Water samples)** 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
11.	**Working labour shed:** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
12.	**Environmental management** Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C. **[One person to be appointed for W26(1), W26(2), W26(3), W26(4) & W26(5)]**	1 person	Monthly basis @Tk. 35,000.00 for 12 months. One person covering 5 roads i.e.,35,000Tk.*12months*(1/5 one road). (Net payment excluding Tax &VAT).	84,000.00
	Subtotal Bill: Environmental facilities			**445,075.48**

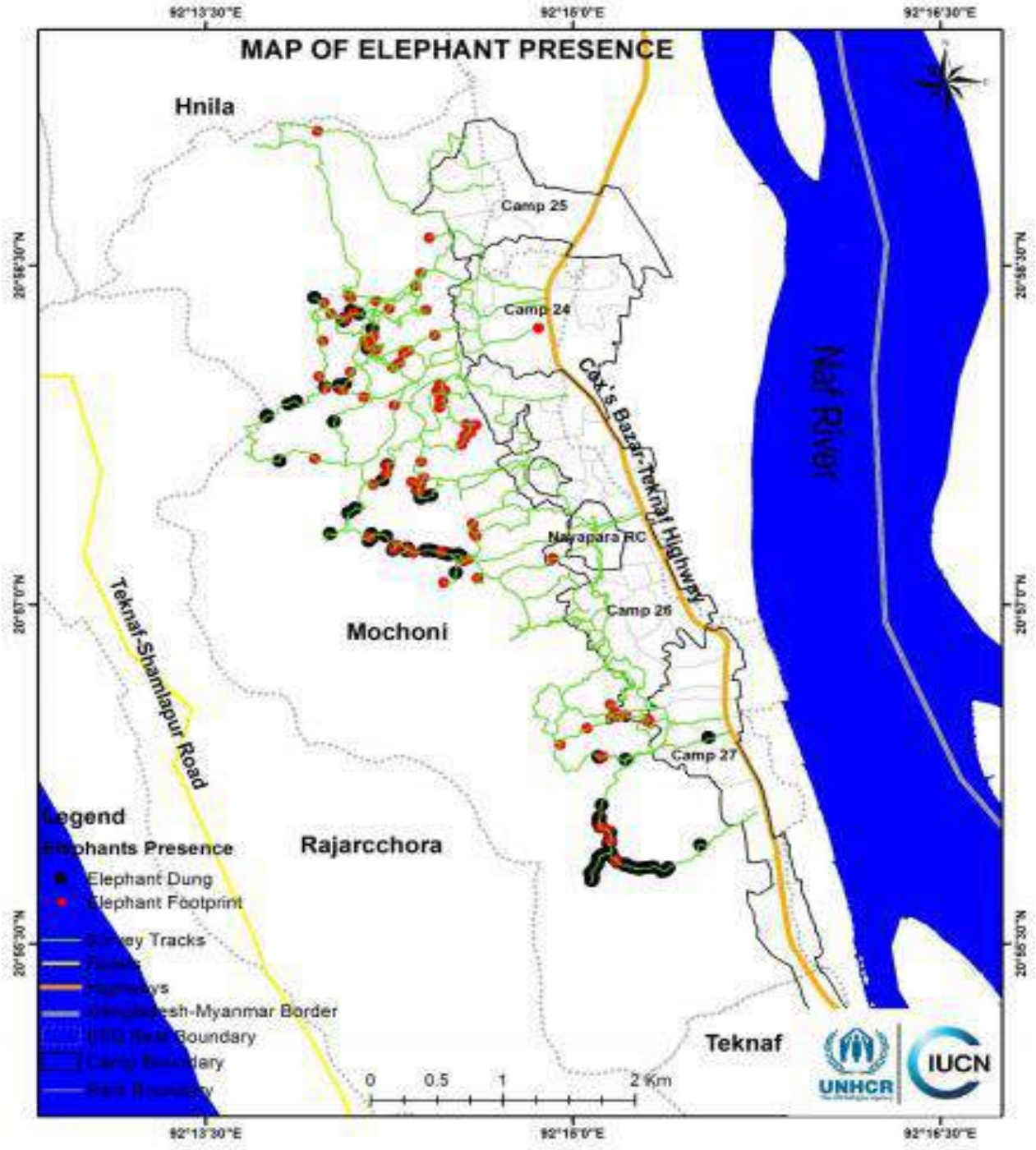
Cost of H&S Measures under COVID 19 Situations

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 43 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-26.4).

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)	116		145	50.00	261	13,050.00	To be placed in a case/holder on the basin, for washing hands for max. 48 people a day and showering of 43 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 liter can for each Site office

6	Face Shield/ Protective Safety Goggles	30 for this site	N/A	400.00	30	12,000.00	For labors who work in close contact, 30 in each site
7	One-time Mask (Disposable) for Contractors' Staffs	05 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	43 nos. of labor for this site	35.00	774	27,090.00	A worker will use a mask for 15 days with everyday washing
9	Floor Cleaner (1 liter Can)	1.5 Can	N/A	2.5 can	250.00	4	1,000.00	
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 (BDT)						**126,640.00**	

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W26.04, Road ID No.- 422904002

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

Focus Group Discussion

সময়: 04:30 PM তারিখ: 28/12/2020

উপ-প্রকল্প/কমপোনেন্ট এর নাম: Improvement of Zimang Khali Rail to WDB Bundh via BDR Camp Road

মত বিনিময় স্থান: [illegible]

ইউনিয়ন: [illegible] ওয়ার্ড নং: 06 ডাকঘর: [illegible] উপজেলা: [illegible] জেলা: কক্সবাজার

সাব প্যাকেজ নং: W26/04

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
01	[illegible]	48	পুরুষ	ঝিঙ্গাখালী	[illegible]
02	[illegible]	38	〃	〃	[illegible]
03	[illegible]	42	〃	〃	[illegible]
04	[illegible]	32	〃	〃	[illegible]
05	[illegible]	40	পুরুষ	ঝিঙ্গাখালী	[illegible]
06	[illegible]	36	〃	〃	[illegible]
07	[illegible]	47	〃	〃	[illegible]
08	[illegible]	32	〃	〃	[illegible]
09	[illegible]	42	〃	〃	[illegible]
10	[illegible]	38	〃	〃	[illegible]
11	[illegible]	47	〃	〃	[illegible]
12	[illegible]	45	〃	〃	[illegible]

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-Project Component site

Overview of surrounding features of different sections of the Sub-Project Site

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 Hnilla R&H Rangi Khali Bazar Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W26

Development Design Consultants Ltd.

April-2021

ACRONYMS

BOQ	Bill of Quantities
D&SC	Design and Supervision Consultant
DoE	Department of Environment
DRP	Displaced Rohingya people
EA	Environmental Assessment
EC	Electrical Conductivity
EMCRP	Emergency Multi-Sector Rohingya Crisis Response Project
ESMP	Environmental and Social Management Plan
ERP	Emergency Response Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bricks
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

Contents

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 services. Nevertheless, to aid into the condition and improve the symbiotic relation between Hosting Community and Displaced Rohingya Population (DRP), different interventions are taking place. Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) aided by World Bank holds one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among several 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 is a fundamental motive. In order to take these matters into consideration, screening and assessment of these elements has been adopted 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 sub-project is situated within the localities of East Rangikhali, Suparibagan para, Gazipara, Jummapara, Schoolpara, South Rangikhali & Alikhali villages under Hnilla union, Ward 7 of Teknaf Upazila, Cox's Bazar. Different types of nearly 850 motorized and non-motorized vehicles and at least 1,800 people pass through the road in a typical day. There are some community property resources, environmental components and other features located within 1km from the sub project, like that on north side Moinuddin Memorial College (200m), Chowdhurypara khal (400m), Gazi Kindergarten (10m), Konarpara jame mosque (500m), post office (5m), Konarpara graveyard (5m), Rangikhali Darul-ulum Fazil Degree madrasah (100m); on south side Alikhali solar plant (500m), Thanda mia mosque (5m), Rangikhali khal (200m), salt factory (10m), Al-oyalidayen mosque (8m), Rangikhali central mosque & graveyard (5m), Eidgah (5m), Rangikhali GPS (500m), Rangikhali mosque (500m); on east side Salt field (20m), shrimp project, Jummapara ring well (5m), Naf river (400m) and on west side Rangikhali Khadizatul Kubra (Ra.) women Dakhil madrasah (5m), Rangikhali hill (500m), Jummapara Majherpara mosque (10m), Jummapara Uttarpara mosque (5m). Apart from these, no other important socio-environmental features are present near the sub-project location. Several water bodies though are located in the vicinity; water logging is not a regular phenomenon. No other sensitive environmental, cultural, archaeological, religious sites were found in the area. 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 may affect several trees. All these impacts are site-specific and manageable 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 or affect any sensitive areas of any kind and sufficient numbers of structures are included in proposed implementation works for the enhancement of ecosystem services in the area, 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 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change 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. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

In order to uplift the socio-economic condition of the host communities 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

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

- ✓ Support to rural development along with education, business, agriculture, farming etc.
- ✓ Widen access to the government support system including health, education and emergency evacuation and sheltering
- ✓ 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-project components under the package name **'Strengthening and widening of 5 nos. roads under Cox's Bazar Districts.'** with the bid package no. **EMCRP/W26**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W26

Description of Sub-project: Strengthening and widening of 5 nos. roads under Cox's Bazar Districts. i, e., **Improvement of widening and Maintenance of** (1) Teknaf Kachubonia to Subrang Noapara Bazar Road (ID: 422902003); (2) Rajapalong Asrayon Road (ID: 422944056); (3) Teknaf Bazar to Khangar Dail Sharif Bari Road (ID: 422902005); (4) Zimang Khali R&H to WDB Bundh via BDR Camp Road (ID: 422904002); and (5) Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)

Sub-project Component no. (5) Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)

Component's Location:

i. ID. 422904007	ii. Ward No.: 7	iii. Mouza: South Hnilla
iv. Village: East Rangikhali, Suparibagan para, Gazipara, Jummapara, Schoolpara, South Rangikhali & Alikhali		v. Name of Union: Hnilla
vi. Upazila: Teknaf	vii. Sub-Project construction period: 1 year	
viii. Construction Year: 2021	ix. Design Width (m): 5.5 Pavement-4.3m and Shoulder-1.2m (0.6m+0.6m)	x. Length (m): 2250
xi. Distance from UZHQ: 20 Km.		
GPS Coordinates	Latitude Value: 20.990181 N Longitude Value: 92.254904 E	Starting Point
	Latitude Value: 20.991076 N Longitude Value: 92.238072 E	Ending Point
Present Condition of Road	BC, HBB & Earthen	
Communication Source	Radio & Mobile Networks	

Subproject interventions:

- Bituminous Carpeting options.
- 4 nos. of Box Culvert (dimension: 2.5mx2.5m) at Ch. 185m & Ch. 424m, (dimension: 4.5mx4.5m) at Ch. 1668m and (dimension: 3.5mx3.5m) at Ch. 1841m
- 22.0m Guide wall (height 2.5m) at different chainage
- 92.0m Toe wall (height 3m) and 987m Brick Palisading (height 1m) works at different chainage

• Road safety works and • Environmental Mitigation and Enhancement works
Implementing Agency: Local Government Engineering Department (LGED)
Expected construction period (Component -1): 1 year
Estimated total cost of component: 35,789,124.58 (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. D&SC conducted the consultation meeting with local community on 13 December, 2020 in front of Mr. Jamal Uddin's house at Jummapara, Refer to Figure 2.1.1, and Public Consultation Participants' List is attached in Appendix-5 and sub-project pictorial overview is attached in Appendix-6. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.

Figure 2.1.1: Consultation meeting (FGD) with local community

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

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 improvement or 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 views and information from affected parties and inhabitants on social and environmental issues. (iii) Consultation with interest groups and the public.

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust and noise pollution that might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely to take place during the road construction, if proper measures are not followed.

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 issues have also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. 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. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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.
- Every possible measure should be taken to avoid any nuisance to public and surrounding inhabitants.

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 and this will help identifying the impacts and their extents. The screening data and information for this Sub-project component 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. 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.

Among the different socio-economic and environmental features within half a kilometer from the centerline of the proposed road, following are the important ones: on north side Moinuddin Memorial College (200m), Chowdhurypara khal (400m), Gazi Kindergarten (10m), Konarpara jame mosque (500m), post office (5m), Konarpara graveyard (5m), Rangikhali Darul-ulum Fazil Degree madrasah (100m); on south side Alikhali solar plant (500m), Thanda mia mosque (5m), Rangikhali khal (200m), salt factory (10m), Al-oyalidayen mosque (8m), Rangikhali central mosque & graveyard (5m), Eidgah (5m), Rangikhali GPS (500m), Rangikhali mosque (500m); on east side Salt field (20m), shrimp project, Jummapara ring well (5m), Naf river (400m) and on west side Rangikhali Khadizatul Kubra (Ra.) women Dakhil madrasah (5m), Rangikhali hill (500m), Jummapara Majherpara mosque (10m), and Jummapara Uttarpara mosque (5m). Some features may face dust and noise pollution due to having a closer proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation or preparatory measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. 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, 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 Teknaf 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 Overview of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy soil structure, not of any rocky formation and the stability comes from the roots of the trees. Also rainfall, proximity to the sea, elevation, and land cover are very important factors for analyzing the risk of cyclone. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk[4] of hill collapse by destabilizing the terrain. Also deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones, as forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

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

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/28723/9781464811555.pdf
[4] "Implications of Climate Change for Fresh Groundwater Resources in Coastal Aquifers in Bangladesh", World Bank report.2010

some places may cause salt water to contaminate freshwater resources. In this case, it is possible that a stationary position of the freshwater-saltwater transition zone can be established via proper management of pumping in the confined aquifer.

The groundwater resource is seen to suffer more from the climate change impact. The impact on groundwater due to climate change impact include

- Sea-level rise could result in a transgression of the sea and a loss of land area. This could also lead to the secondary effect of population migration in the new coastal band due to migration of the coastal population from the encroaching sea, thereby increasing domestic water needs in the new coastal area.
- A higher sea-surface elevation would change the base level for all groundwater gradients in the basin. In many aquifers, this would lead to shifts in local hydraulic gradients, inland hydraulic heads, and the rate of groundwater flow.
- A higher sea level will result in an increase in pressure in the subsea aquifer, resulting in inland movement of saltwater (aquifer seawater intrusion).
- Transgression of the coast implies that saline storm surges of 1 or more meters depth would penetrate beyond the new coast to new land areas. Storm surges transport saline water far inland of the coast and much of this floodwater may infiltrate the ground in areas where the aquifer is not fully saturated. Even where the aquifer is saturated, denser saline water may sink into the aquifer during the flood and later from pools of saltwater that remain following the flood.

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

3.3.2 Site Specific Screening and outcome

Climate Change impact on a particular subproject is tough to deduce as the highest resolution of climate model simulation done over Bangladesh is 50km. Depending on the simulation ensemble of Cox's Bazar district, the temperature and precipitation are likely to increase with time.

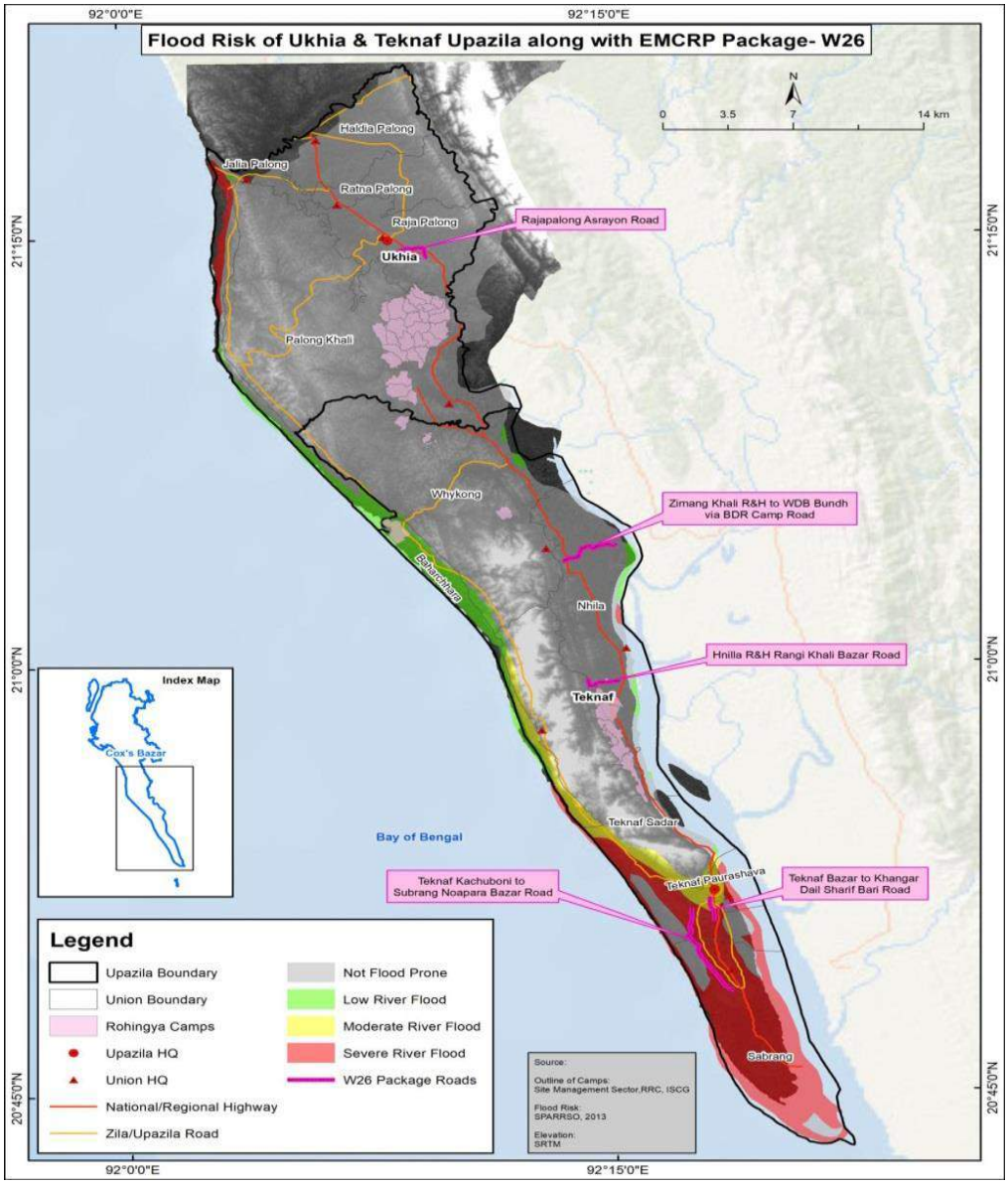


Figure3.3.2.1: Flood inundation risk map near the subprojects

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, and associated mitigation or offsetting measures are really hard to plot on the impact areas, though an overall set of measures are often considered in practical aspect. Fig: 3.3.2.1 shows the inundation risk map of the subprojects under W-26, the subproject is not in vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area.

However, as part of regular measures, proper design of slope and stability/compactness of both the shoulder and slope areas are to be ensured. Also tree planation on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be planted for each tree fell in the periphery of the subproject. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Some features are very close to the subproject area that might get affected during construction period; those include on north side Gazi Kindergarten (10m), Konarpara jame mosque (500m), post office (5m), Konarpara graveyard (5m), on south side Thanda mia mosque (5m), salt factory (10m), Al-oyalidayen mosque (8m), Rangikhali central mosque & graveyard (5m), Eidgah (5m); on east side Salt field (20m), shrimp project, Jummapara ring well (5m) and on west side Rangikhali Khadizatul Kubra (Ra.) women Dakhil madrasah (5m), Jummapara Majherpara mosque (10m), and Jummapara Uttarpara mosque (5m). Further, some settlements located adjacent to the sub-project area might also 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 experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 4 nos. of Box Culvert (dimension: 2.5mx2.5m) at Ch. 185m & Ch. 424m, (dimension: 4.5mx4.5m) at Ch. 1668m and (dimension: 3.5mx3.5m) at Ch. 1841m will be constructed at the subproject area. Due to the presence of low land at different chainage of the road some protective works of 22.0m Guide wall (height 2.5m) at different chainage, 92.0m Toe wall (height 3m) and 987m Brick Palisading (height 1m) works at different chainage are included in design and estimation. As part of preventive measures during storm surge, proper design of slope and stability/compactness on both the shoulder and slope area are to be ensured. 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 and Social Management Plan has been outlined in Appendix-2. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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 component, a set of items are included in the BOQ of this sub-project. Cost for engaging a Safeguard Personnel for overseeing the Environmental and Social Management Works under the Package EMCRP/W26 has been added to the BOQ. Environmental quality enhancement works such as grass turfing, tree plantation, and dust suppression measures are included in the estimation. In order to ensure health safety and sanitary measures for workers PPE, First Aid Box, labor shed with appropriate facilities, drinking water facility with water tests, temporary latrine for male and female as well as waste disposal systems have been accounted for. For ensuring safe and environmentally sound work practices and prevailing conditions in the site motivational training on environmental and social considerations has been taken into account. An overview of the estimation is given in **Appendix-3**.

5 MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measure delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety

(OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in 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 situations 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 and 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: **Strengthening and widening of 5 nos. roads under Cox's Bazar Districts (Package:** EMCRP/W26).

Name of the component: Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)
Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 174,570,459.46 Tk.
Estimated construction period duration: 1 year
Estimated total cost of the component (in Taka): **35,789,124.58 Tk.**
Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in the areas.

District: Cox's Bazar **Upazila**: Teknaf **Union**: Hnilla

Name of Community/Local Area: East Rangikhali, Suparibagan para, Gazipara, Jummapara, Schoolpara, South Rangikhali & Alikhali.
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 with a proposed design of BC from Ch.00 to Ch. 2250m. Proposed safety and service providing structures include 4 nos. of Box Culvert (dimension: 2.5mx2.5m) at Ch. 185m & Ch. 424m, (dimension: 4.5mx4.5m) at Ch. 1668m and (dimension: 3.5mx3.5m) at Ch. 1841m and some additional protective works for 22.0m Guide wall (height 2.5m) at different chainage, 92.0m Toe wall (height 3m) and 987m Brick Palisading (height 1m) works at different chainage, which are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Estimated footprint / land area for this sub-project is 12,375 sq m.

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
This proposed Hnilla R&H Rangi Khali Bazar Road belongs to Hnilla union, Ward 7 under Teknaf Upazila. This road has starts from Cox's Bazar-Teknaf highway on Rangikhali Madrasah gate at east side stretching 2250m to Uluchamari to Hnilla Bazar road on South Rangikhali at North side. Several connecting roads fall within the road chainage. This sub-project passes through Chorra, ponds, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, madrasas, graveyards, schools, religious institutes, shops, boundary fences, connecting roads etc. No other significant environmental or socioeconomic features are found near the road component.

However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

Chainage (m)	Left	Right	Features
000-300	L		Bill board, mosque, salt fields, tin shed fences, brick boundary wall, salt factory
		R	Electric pole, bill board, salt fields, culvert (broken)
300-600	L		Salt fields, shop, bamboo fences, brick boundary wall, household connecting roads
		R	Salt fields, tin shed fences, brick boundary walls, shop, agricultural lands, connecting roads
600-900	L		Brick boundary walls, bamboo fences, mosque, shops, trees, building under construction, tin shed fences, connecting roads, tin shed household
		R	Agricultural land, household connecting roads, bamboo fences, shops, bill board, brick boundary wall, connecting roads
900-1200	L		Tin shed fences, brick boundary walls, building under construction, bamboo fences, pond, mosque, graveyard
		R	Tin shed fences, agricultural lands, household connecting roads, shops, vegetables yard, shops, post office, connecting road, brick boundary walls, graveyard
1200-1500	L		Tin shed fences, bamboo fences, brick boundary walls, Eidgah ground, Rangikhali bazar, connecting road, shops, brick boundary wall
		R	Tin shed fences, building, bamboo fences, Rangikhali bazar, connecting road, shop, brick boundary wall
1500-1800	L		Tin shed fences, brick boundary wall, connecting roads, shop, bamboo bushes, Jummapara chorra, agricultural lands, big trees, pond, mosque
		R	Brick boundary walls, bridge on Jummapara Chorra, shop, tin shed fences, ext. x-drain, vegetables yard, household connecting roads, culvert
1800-2100	L		Brick boundary walls, tin shed fences, RCC pole with wire fencing, bamboo fences, solar lamp post, bamboo shaft household, agricultural lands, shop, mosque, household connecting roads, bamboo bushes
		R	Tin shed fences, electric pole, bamboo fences, bamboo bushes, ring well, household connecting roads, agricultural lands, culvert, bamboo fences
2100-2250	L		Tin shed fences, household connecting roads, agricultural lands
		R	Tin shed fences, shops, bamboo fences, Akashi trees yard, agricultural lands

Figure: Starting point of Hnilla R&H Rangi Khali Bazar Road

Overall Comments

The proposed component of the sub-project (Road strengthening & widening) is not located within any remarkable environmentally sensitive or reserved area of any kind and will not cause any severe affect to the environmental settings 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, though local people pointed out about the problem with waterlogging during the rainy season. Seven/eight trees may need to clear out during the construction period, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for this improvement works. In order to minimize the risk of potential sliding or slipping of soil mass, earth will be compacted for stabilization and necessary cut and fill operation along the hill slope is to be ensured. All these inputs will be mainly at construction phase and limited within project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed during the consultation session with local stakeholders that this project's scope of works does not intend to overtake any area of physical lodgment and funding entity has no intention to do so. Some other issues have also been brought to their attention including construction of drainage and protective structures at different chainages on the road.

Different types of nearly 850 motorized and non-motorized vehicles and at least 1,800 people pass through the road in a typical day. 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. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation. 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 project component

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 etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as on the north side Moinuddin Memorial College (200m), Chowdhurypara khal (400m), Gazi Kindergarten (10m), Konarpara jame mosque (500m), post office (5m), Konarpara graveyard (5m), Rangikhali Darul-ulum Fazil Degree madrasah (100m); on south side Alikhali solar plant (500m), Thanda mia mosque (5m), Rangikhali khal (200m), salt factory (10m), Al-oyalidayen mosque (8m), Rangikhali central mosque & graveyard (5m), Eidgah (5m), Rangikhali GPS (500m), Rangikhali mosque (500m); on east side Salt field (20m), shrimp project, Jummapara ring well (5m), Naf river (400m) and on west side Rangikhali Khadizatul Kubra (Ra.) women Dakhil madrasah (5m), Rangikhali hill (500m), Jummapara Majherpara mosque (10m), Jummapara Uttarpara mosque (5m). The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated. 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. route

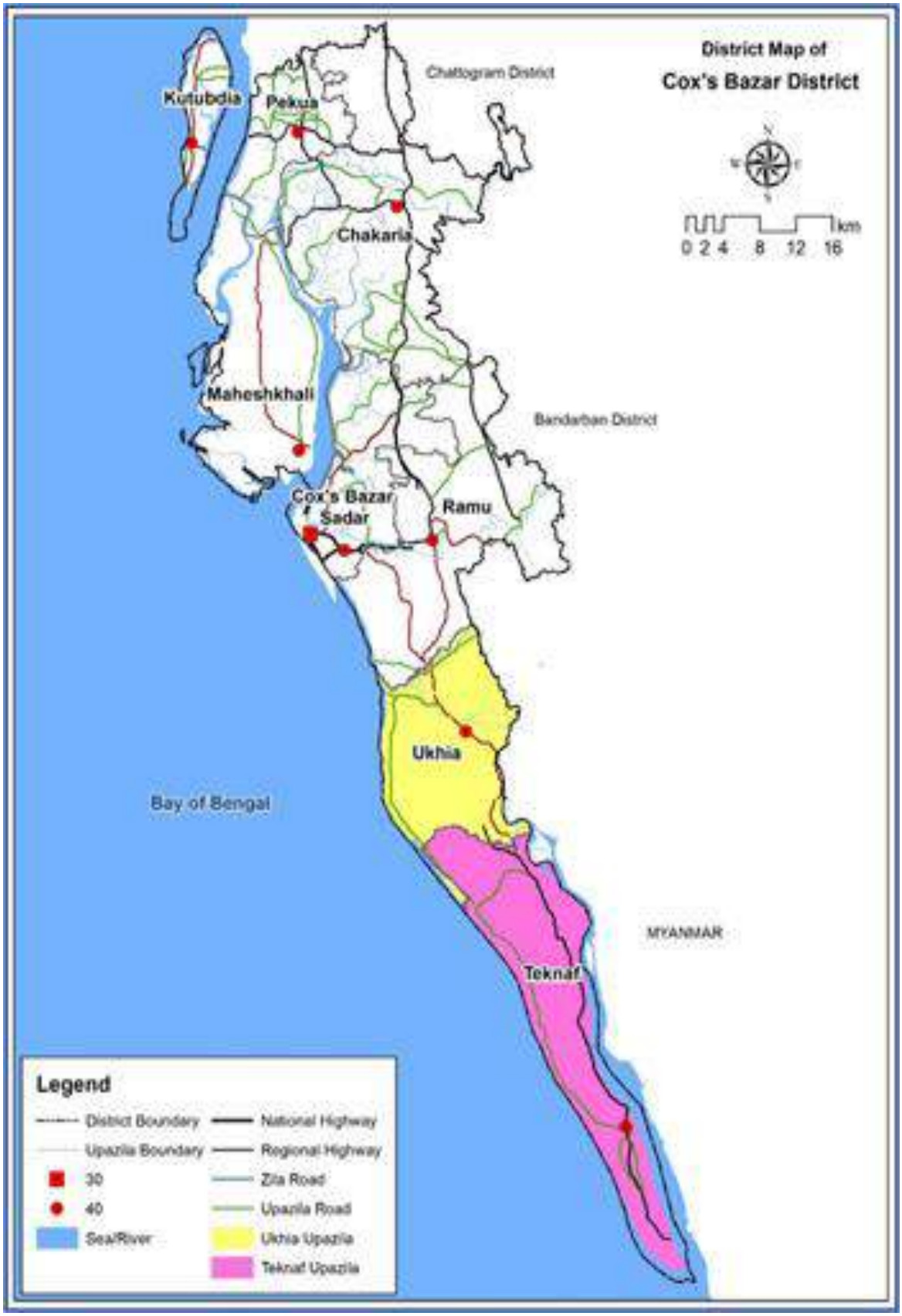


Figure 3: District Map with project location

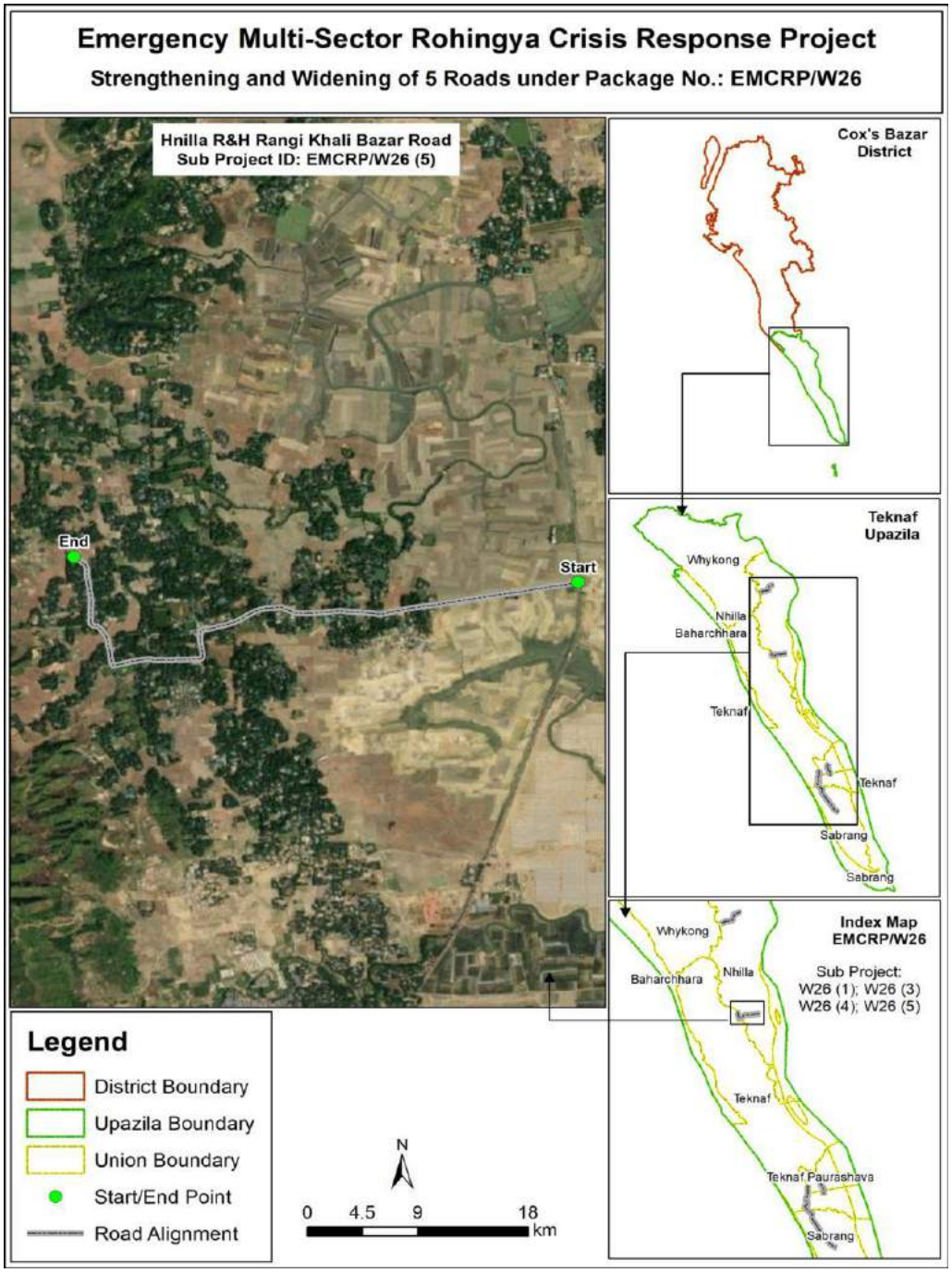


Figure 4: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 2250m. Proposed safety and service providing structures include 3 nos. of Box Culvert, protective works for 22.0m Guide wall (2.5m height), 92.0m Toe wall (3m height) & 987.0m Brick Palisading (1m height) works at different chainage that are included in the design and estimation, and as part of road safety works include barricades, speed bumps, warning signs/lights, guide signs, flagmen etc. and Environmental Mitigation and Enhancement works are included in the estimation.

Sub-project Location:

Important Features	
ID	422904007
District	Cox's Bazar
Upazila	Teknaf
Union	Hnilla
WARD	07
Proposed Chainage	2250m
Road Type	Village Road
Proposed Intervention Type	BC
Road Starting Point Coordinates	Latitude Value: 20.990181 N Longitude Value: 92.254904 E
Road Ending Point Coordinates	Latitude Value: 20.991076 N Longitude Value: 92.238072 E

Land ownership

Land area covering the road length is owned by the Government.

Expected construction period: 1 Year

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 Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 2250m.

i) Some water bodies like ponds, chorras, ditches etc. were identified during visiting time.
ii) No historical sites were identified.
iii) Not required to relocate local community.
iv) Some trees may be affected.
v) No chance to lose of agricultural land.
vi) Some Household Boundary made of bamboo and tin may need adjustments.
vii) Environmental Sensitivity: There are several sites containing bio/ecological niches including patches of vegetation, ponds, ditches or other type of water bodies, which are in closer proximity along the road length and may receive some extent of detrimental impacts during the construction period; but no elephant corridor was identified in the areas. Construction induced impacts may also affect numbers of socio-economic features along the road length; therefore a well-planned ESMP has been prepared to follow in the field.

Section B: Environmental Screening

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

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

There are some community properties, environmental-religious-and-sociocultural components

located within 1km from the sub project, such as on the north side Moinuddin Memorial College (200m), Chowdhurypara khal (400m), Gazi Kindergarten (10m), Konarpara jame mosque (500m), post office (5m), Konarpara graveyard (5m), Rangikhali Darul-ulum Fazil Degree madrasah (100m); on south side Alikhali solar plant (500m), Thanda mia mosque (5m), Rangikhali khal (200m), salt factory (10m), Al-oyalidayen mosque (8m), Rangikhali central mosque & graveyard (5m), Eidgah (5m), Rangikhali GPS (500m), Rangikhali mosque (500m); on east side Salt field (20m), shrimp project, Jummapara ring well (5m), Naf river (400m) and on west side Rangikhali Khadizatul Kubra (Ra.) women Dakhil madrasah (5m), Rangikhali hill (500m), Jummapara Majherpara mosque (10m), Jummapara Uttarpara mosque (5m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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 in figure B.1.1

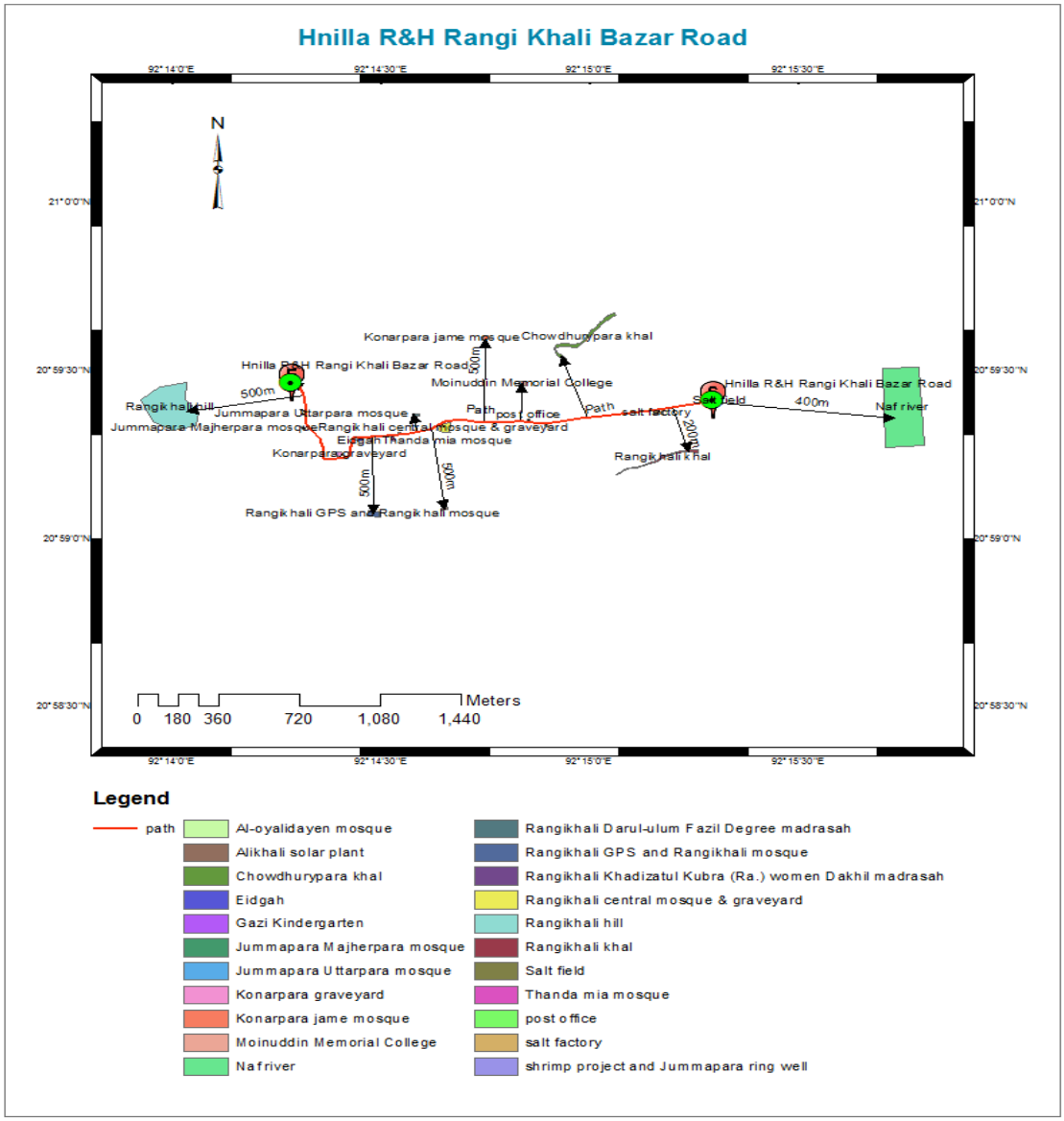


Figure B.1.1: A sketch of the project intervention/influence area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, madrasah, 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 throughout an existing alignment and be limited within a designated Right of Ways (ROW), 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 has been checked on the basis of elephant migration route map, established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018) and was further confirmed by the stakeholders presented in the consultation meeting.

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

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

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

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

Dust:

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

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads 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 manageable 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 40-50 feet and deep tubewell depth is 400 feet in the area. 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 300-600ft (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. Many shallow tube wells (40ft. to 50 ft.) are fitted in local area and most of the water usage is sufficed from these sources. *Data source: 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 220m 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): Lamarpara connecting road, Suparibagan para connecting road, Hnilla bazar connecting road, Leda connecting road and Gazipara connecting road can be used as access road for transportation. It is possible to carry construction materials over these roads to the construction site with limited traffic flow to avoid congestion.
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, and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.

Identification of access road for transportation (Yes/No): Yes. Lamarpara connecting road, Suparibagan para connecting road, Hnilla bazar connecting road, Leda connecting road and Gazipara connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 30 kg during the pre-construction phase.

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.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): ***Solid waste:*** Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 45 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi) Bitumen are the most common type of raw materials to be used in construction period. **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. However, the local people has informed during the consultation meeting that the area has no water logging troubles (except in monsoon, sometimes) at present and possibilities of stagnation of water in the long run is unlikely. They also 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) Medium. On north side Chowdhurypara khal (400m), on east side Jummapara ring well located at 5m distance from the subproject area and A river named Naf river located at 400m south from the subproject. These water bodies could be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities; though a limited scale of short-periodical impact may come across. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by 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 moderate to high 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, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable.

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 creating new stagnant water bodies that can encourage 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) Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.
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. However, vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Concentrated outflow will be carried by proposed drains and culvert.
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, 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 (>1 sqkm); Medium = Likely to cause temporary damage or over moderate area (0.5 to 1 sqkm); Low = Likely to cause little, short-term damage and over small area (<0.5 sqkm)

Section D: Environmental Screening Summary

The results of Environmental Screening are summarized in following table as per guidance given in the Project ESMF, Section 8.2:

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**.	• 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	• 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.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers	Construction Contractor monitored by Consultant and PIU	• No visible degradation to nearby drainages, • *Canals (khals)* or water bodies due to soil erosion. • Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			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. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.			
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	• 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	• 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	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
					nearby drainages, *khals* or water 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**.	• 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	• 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.**	• Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• 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**.	• Train concerned person and team assigned for the construction work to ensure items are stored properly and away from steep slopes.	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials	During implementation phase, as necessary through discussion with PIU, Consultant
3: Construction Phase	**Wastes**	Under the sub-project intervention the overall score is **low.**	• 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	• Complaints from community; • Regular inspection of waste management activity; • Waste disposal record.	weekly as work 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.	• 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&S.	• 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
			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.**	With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration: • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials; • Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
			water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. • Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	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.**	• 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&S.	• Complaints from community	Daily
	Noise pollution	Under the subproject intervention the overall score is	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm.	Construction Contractor and monitored by Consultant and PIU	• Number of complaints from stakeholders; • Use of silencers in	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	Frequency
		low.	• Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.		noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required.	
	Air pollution	Under the subproject intervention the overall score is **low.**	• 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	• 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.**	• 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. • The contractor shall provide, erect and maintain informatory/safety signs written in local language,	Construction Contractor, environmental specialist of D&SC.	• 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
			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**.	• 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. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • 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&S.	Construction Contractor, environmental specialist of D&S.	• Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Tree plantation	Under the issue the overall score is **low**.	• Plantation 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.	• 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**.	• 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	• 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) (site specific)

ESMP for Access and evacuation Roads: Hnilla R&H Rangi Khali Bazar Road (ID: 422904007)

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• 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	• 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	• 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	• All Sites must avoid the low land near the water bodies or natural flow path to avoid the flash flood or any kind or 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, the site shall be restored as before. • This site is in the local community, so continuous need-based discussion with the local community to avoid any conflicts will be taking place. • Sub project intervention must avoid natural disturbance to existing slop and natural drainage. • The contractor must ensure sound environment for the local residents near the sub project site.	PIU & Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities mostly will finish at day time within 05 PM, and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipment (PPEs) must be available at sites before starting any kinds of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• 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. • Dust generation must be limited as a result of clearing,	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		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	• Unauthorized entry is completely prohibited in construction site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidance 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	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before	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
		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.		
Construction Activity	Increase in road accidents	• 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	• 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. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site • Wastes 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	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and	• 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	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
	musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have 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 this		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		awareness training shall be kept on site. • 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	• 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
Construction Activity	Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed	• Contractor must prepare a waste management plan including relevant directives from “Waste Management Plan Principles” 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
	in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community			
Operation & Maintenance	Noise disturbances to fauna and traffic safety	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Putting proper signing and signaling, bumping /breakers, smooth & spacious bending, if and wherever required and as observed during the operational period. • 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, Cox's Bazar)	UNO, PSC

Waste Management Plan Principles:

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, IC, 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.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C	2250.0m	@ 2.56 BDT	5,760.00
2.	**Water Supply and Sanitation** Providing and maintaining adequate portable water supply, sanitation, and 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
3.	**First Aid Box** Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge.	1 no.	LS @5000 Tk. Per box	5,000

Sl no.	Description of item	Quantity	Unit price	Total amount
4.	**Drinking Water Facilities** 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.	2 no.	LS @ Tk. 30,000	60,000
5.	**Traffic Management** 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
6.	**Personal Protection Equipment for Workers** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
7.	**Tree plantation** Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area preferably at both sides of Road where space is available including protection, fencing and conservation during project defects liability period as required by and as per direction of E-I-C. Tree like Dumur, Amla, Parul, Coconut, Jackfruit, Mango etc. to be planted. The payment is to be made only when trees are fully grown.	180 nos.	@ Tk. 1000	180,000
8.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C.	1 no.	LS @ Tk. 10,000	10,000
9.	**Waste disposal facility** 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
10.	**Water Test (Drinking Water samples)** 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
11.	**Working labour shed:** 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

Sl no.	Description of item	Quantity	Unit price	Total amount
12.	**Environmental management** Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C. **[One person to be appointed for W26(1), W26(2), W26(3), W26(4) & W26(5)]**	1 person	Monthly basis @Tk. 35,000.00 for 12 months. One person covering 5 roads i.e.,35,000Tk.*12months*(1/5 one road). (Net payment excluding Tax &VAT).	84,000.00
	Subtotal Bill: Environmental facilities			**455,405.72**

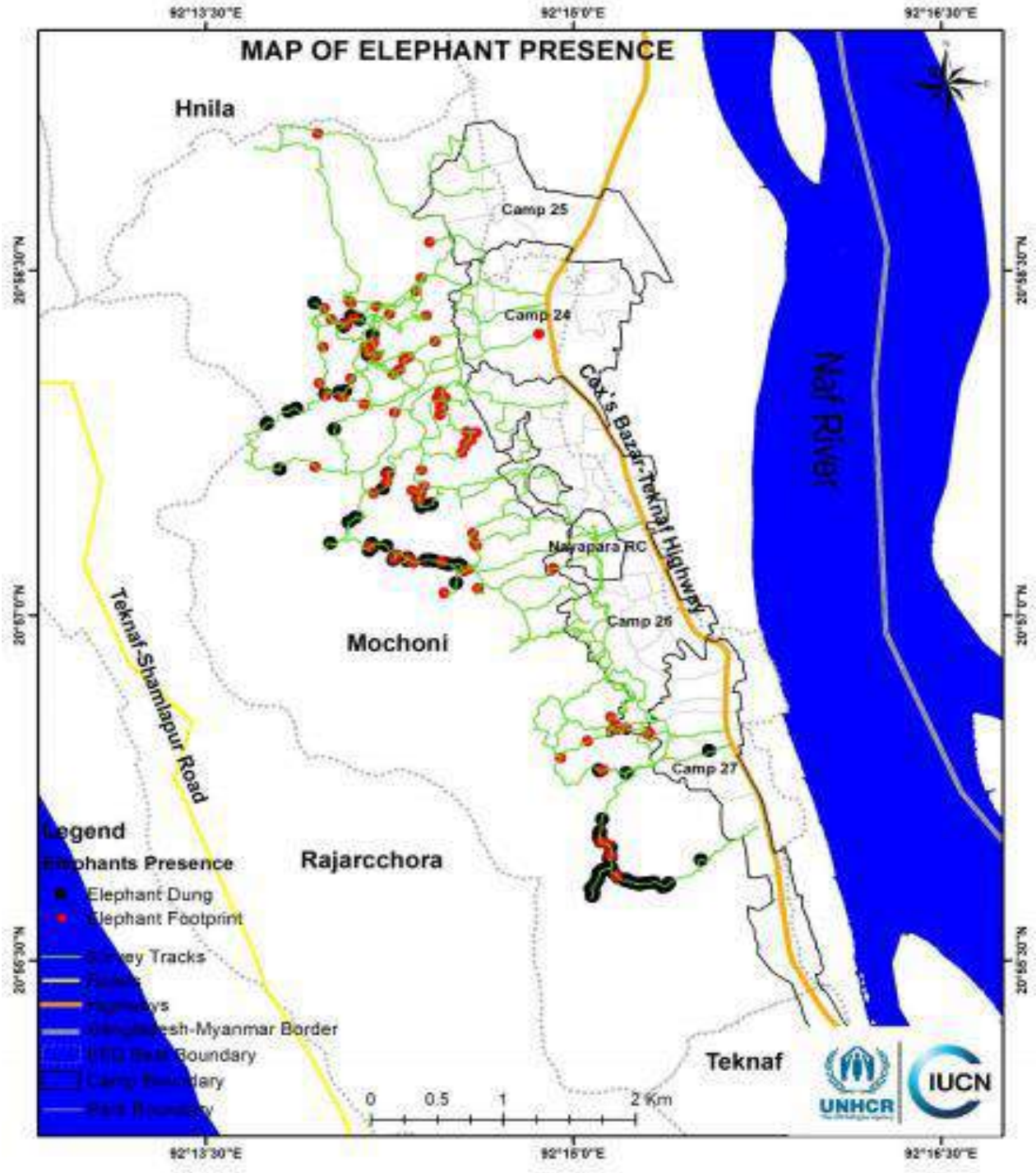
Cost of H&S Measures under COVID 19 Situations

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 46 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-26.5).

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)	124		155	50.00	279	13,950.00	To be placed in a case/holder on the basin, for washing hands for max. 51 people a day and showering of 46 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	30 nos. for each site		N/A	400.00	30	12,000.00	For labors who work in close contact, 30 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	46 nos. for each labor camp		35.00	828	28,980.00	A worker will use a mask for 15 days with everyday washing
9.	Floor Cleaner (1 litre Can)	1.5 Can	N/A	5 Can	250.00	6.5	1,625.00	
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						**130,055.00**	

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W26.05, Road ID No.- 422904007

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

সময়: 12:30 PM তারিখ: 13/12/2020

উপ-প্রকল্প/কম্পোনেন্ট এর নাম: Improvement of Hnilla RAH Rangikhali Bazar Road

মত বিনিময় স্থান: [illegible]

ইউনিয়ন: Nhila ওয়ার্ড নং: 07 ডাকঘর: Rangikhali 4761 উপজেলা: Teknaf জেলা: কক্সবাজার

সাব প্যাকেজ নং: W26/05

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	মোঃ জামাল উদ্দিন	৫০	পুরুষ	ঝুনাপাড়া	জামালউদ্দিন
০২	মোঃ হেলাল উদ্দিন	৪২	"	"	হেলালউদ্দিন
০৩	মোছাঃ [illegible] বেগম	৪০	নারী	"	[illegible]
০৪	মোছাঃ [illegible] খাতুন	৪২	"	"	[illegible]
০৫	মোছাঃ [illegible] বেগম	৩০	"	"	[illegible]
০৬	মোছাঃ খুরশিদা বেগম	২৬	"	"	খুরশিদা
০৭	হেলাল উদ্দিন	৬০	পুরুষ	"	Heladuddin
০৮	আলী [illegible]	20	"	"	[illegible]
০৯	মোঃ ইউনুস	৬৮	"	"	ইউনুস
১০	মোছাঃ মনোয়ারা	২৫	নারী	"	মনোয়ারা
১১	ফাতেমা বেগম	২৮	"	"	[illegible]
১২	[illegible]	৪৫	"	"	[illegible]
১৩	সানজিদা বেগম	৩৫	"	"	সানজিদা
১৪	মোছাঃ ইয়াসমিন	৩০	"	"	
১৫	মোছাঃ আনোয়ারা বেগম	৩২	"	"	
১৬	মোছাঃ [illegible]	৩০	"	"	
১৭	জামাল হোসেন	৫০	পুরুষ	"	জামাল

EMCRP/W26.05, Road ID No.- 422904007

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

Focus Group Discussion

সময়: 12:30 PM তারিখ: 13/12/2020

উপ-প্রকল্প/কম্পোনেন্ট এর নাম: Improvement of Nhila RSH Rangikhali Bazar Road

মত বিনিময় স্থল: উপজেলা চেয়ারম্যান বাড়ীর সামনে, চুক্কাপাড়া

ইউনিয়ন: Nhila ওয়ার্ড নং: 07 ডাকঘর: Rangikhali 4761 উপজেলা: Teknaf জেলা: কক্সবাজার

সাব প্যাকেজ নং: W26 (5)

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রম নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর / টিপসই
২৮	আবিদ হোসেন	৫০	পুরুষ	চুক্কাপাড়া	
২৯	আবুল কাশিম	৭০	"	পাহাড়ীপাড়া	
২০	আবুল তাহের	৫২	"	চুক্কাপাড়া	
২৭	শাহীন	৬৪	"	"	
২২	মোঃ হাসান	৫৮	"	পাহাড়ীপাড়া	
২৩	মোঃ জলিল	৬২	"	"	

Public Consultation Participants' List

Appendix-6: Pictorial View of the Sub-Project Component site

Overview of surrounding features of different sections of the Sub-Project Site