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 Shaha parir dip North South para jalia para wapda Embk Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Shahaporir dwip uttarpara, Mogfurapara & Camp para under Sabrang union, Ward 8 & 9 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at north side Salt field (15m), Boro Khal (200m), Naf river (300m); at south side Shahaporir dwip uttarpara health complex (200m), Shahaporir dwip uttarpara GPS (200m), Shahaporir dwip uttarpara mosque & graveyard (250m), Shahaporir dwip Gabtoli more (300m), Shahaporir dwip bazar (350m); at east side Shahaporir dwip uttarpara Abu Bakor Siddik mosque (10m), Fateme mosque (200m), Mogfura mosque (400m), Jaliapara mosque (500m), Camp para mosque & panjegana (5m), BGB Tower (100m), Naf river (320m); and at west side salt field, Darun Chakkafah Al Islamia mosque & madrasah (5m), Bay of Bengal (900m). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (1) Shaha parir dwip North South para jalia para wapda Embk Road, Id: 422904032

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904032 | ii. Ward No.: 8 & 9 | iii. Mouza: Shahaporir dwip |
| iv. Village: Shahaporir dwip uttarpara, Mogfurapara & Camp para | | v. Name of Union: Sabrang |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 1640 |
| xi. Distance from UZHQ: 13 Km. | | |
| **GPS Coordinates** | Latitude Value: 20.775205 N<br>Longitude Value: 92.324914 E | Starting Point |

| | | | |
|---|---|---|---|
| | | Latitude Value: 20.787130 N<br>Longitude Value: 92.332260 E | Ending Point |
| | **Present Condition of Road** | HBB & Earthen | |
| | **Communication Source** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 3 nos. Box Culvert (dimension: 2.0mx2.0m) at Ch. 670m of chainage, (dimension: 3.5mx3.5m) at Ch. 456m of chainage and (dimension: 2 vent 4.5mx4.5m) at Ch. 1270m of chainage
- 3 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 240m, Ch. 545m & Ch. 830m on the proposed road.
- 450m Protective work by Palisading (5.0m long pre-cast RCC post) at different chainage
- Road safety work 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: 34,466,474.43 (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 consultation meeting with local community on 09 December, 2020, in front of Zahir Ahmed's shop, 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 along with 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 views 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 Salt field (15m), Boro Khal (200m), Naf river (300m); at south side Shahaporir dwip uttarpara health complex (200m), Shahaporir dwip uttarpara GPS (200m), Shahaporir dwip uttarpara mosque & graveyard (250m), Shahaporir dwip Gabtoli more (300m), Shahaporir dwip bazar (350m); at east side Shahaporir dwip uttarpara Abu Bakor Siddik mosque (10m), Fateme mosque (200m), Mogfura mosque (400m), Jaliapara mosque (500m), Camp para mosque & panjegana (5m), BGB Tower (100m), Naf river (320m); and at west side salt field, Darun Chakkafah Al Islamia mosque & madrasah (5m), Bay of Bengal (900m) 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 that 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[4] to the risk of hill collapse by destabilizing the terrain. Also deforestation at a rapid speed uncovers the land and raise the risk of occurrence of cyclones, as forests protect land from high wind and storm surges where demolishing the trees would make the area vulnerable.

Together with the above-mentioned hazardous situation, 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.

[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

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.

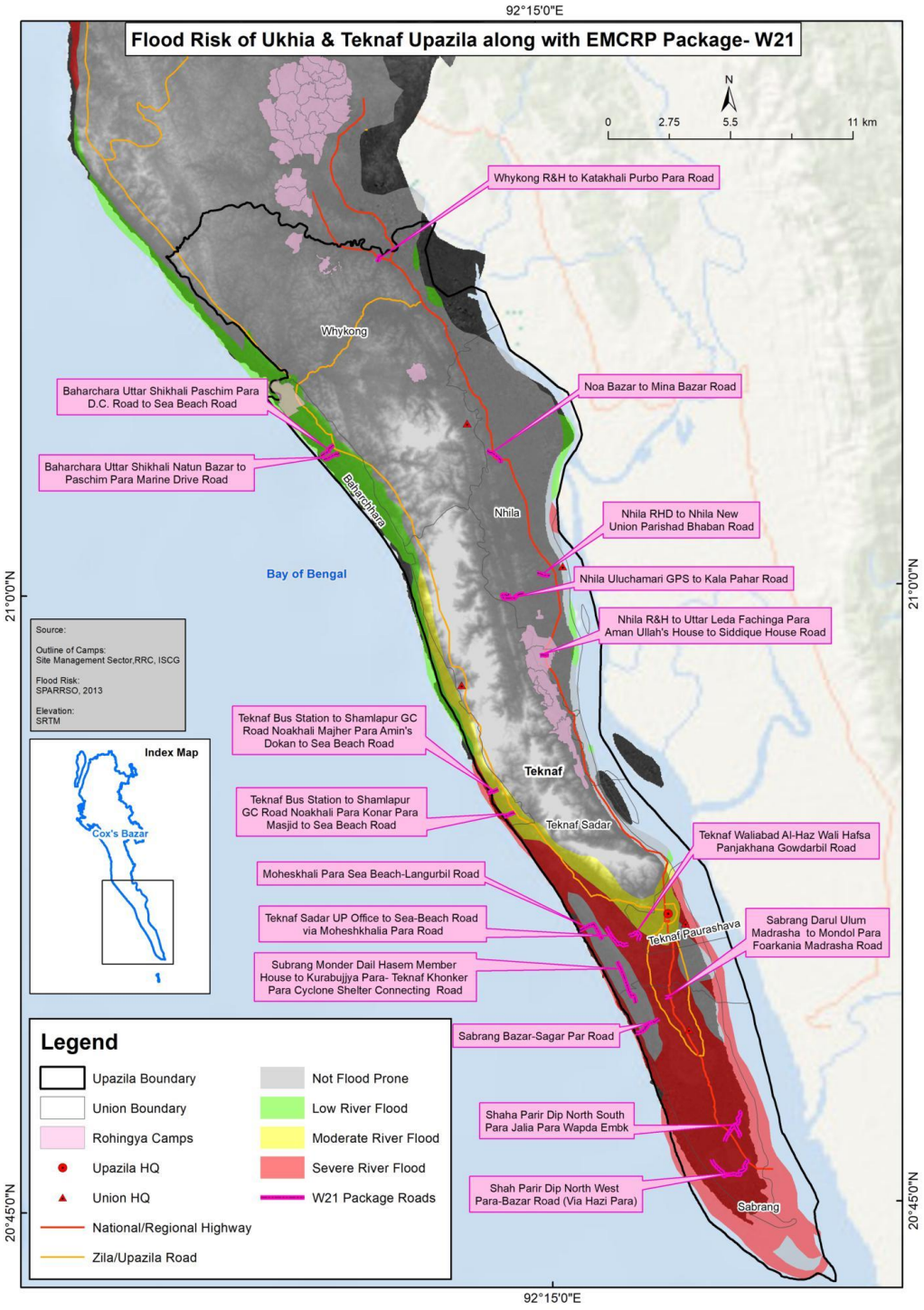



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, 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 the subprojects are on top of embankments natural slope protection can be adhered and tree plantation

along the road specifically is suggested for the subprojects. Tree planation will sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 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.

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, 3 nos. Box Culvert (dimension: 2.0mx2.0m) at Ch. 670m of chainage, (dimension: 3.5mx3.5m) at Ch. 456m of chainage and (dimension: 2 vent 4.5mx4.5m) at Ch. 1270m of chainage and 3 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 240m, Ch. 545m & Ch. 830m of chainage will be constructed at the subproject area. Due to the presence of low land along different chainage of the road some 450m Protective work by Palisading (5.0m long pre-cast RCC post) at different chainage are included in design and estimation. 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/W21 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 measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around

the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

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

## 6 LIMITATIONS OF THIS STUDY

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

## 7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Shaha parir dwip North South para jalia para wapda Embk Road Id: 422904032.

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **34,466,474.43 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Shahaporir dwip uttarpara, Mogfurapara & Camp para.

**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. 1640m. Proposed safety and service providing structures include 3 nos. Box Culvert (dimension: 2.0mx2.0m) at Ch. 670m of chainage, (dimension: 3.5mx3.5m) at Ch. 456m of chainage and (dimension: 2 vent 4.5mx4.5m) at Ch. 1270m of chainage and 3 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 240m, Ch. 545m & Ch. 830m of chainage and some additional 450m Protective work by Palisading (5.0m long pre-cast RCC post) 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 8,036 sq m.

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

This proposed Shaha parir dwip North South para jalia para wapda Embk Road belongs to Sabrang union under Teknaf Upazila. This road starts from Zahir Ahmed's shop of Shahaporir dwip Uttarpara on south side stretching 1640m to Beri bandh at camp para on north side. Two connecting roads fall within the road chainage. This sub-project passes along different important features, such as, boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 | | Open space, tin shed fences, tin shed household, vegetables yard, electric pole |
| | | R | Shops, tin shed fences, vegetables yard, household connecting road, brick boundary walls, net fencing, mosque, shop, bushes |
| 300-600 | L | | Paddy field, salt field, ext. cross drain |
| | | R | Betelnut trees cum vegetables yard, betel leaf yard, paddy field |
| 600-900 | L | | Salt field, tin shed fences, shop, open space, bamboo fencing, vegetables yard |
| | | R | Betel leaf yard, shop, Tubewell, vegetables yards, ditches, bushes, settlements, tin shed fences, connecting road, bamboo bushes |
| 900-1200 | L | | Tin shed fences, shops, salt field, settlements |
| | | R | Tin shed fences, bamboo shaft household, open space, vegetables yard, ditches |
| 1200-1500 | L | | Salt field, open space |
| | | R | Shop, open space, tin shed fences, trees, bamboo fences, brick boundary wall |
| 1500-1800 | L | | Open space, salt field, bamboo shaft household, brick boundary wall, graveyard |
| | | R | Brick boundary walls, bamboo fences, trees, shop, mosque |




**Figure: Starting point of Shaha parir dwip North South para jalia para wapda Embk Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 Salt field (15m), Boro Khal (200m), Naf river (300m); at south side Shahaporir dwip uttarpara health complex (200m), Shahaporir dwip uttarpara GPS (200m), Shahaporir dwip uttarpara mosque & graveyard (250m), Shahaporir dwip Gabtoli more (300m), Shahaporir dwip bazar (350m); at east side Shahaporir dwip uttarpara Abu Bakor Siddik mosque (10m), Fateme mosque (200m), Mogfura mosque (400m), Jaliapara mosque (500m), Camp para mosque & panjegana (5m), BGB Tower (100m), Naf river (320m); and at west side salt field, Darun Chakkafah Al Islamia mosque & madrasah (5m), Bay of Bengal (900m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

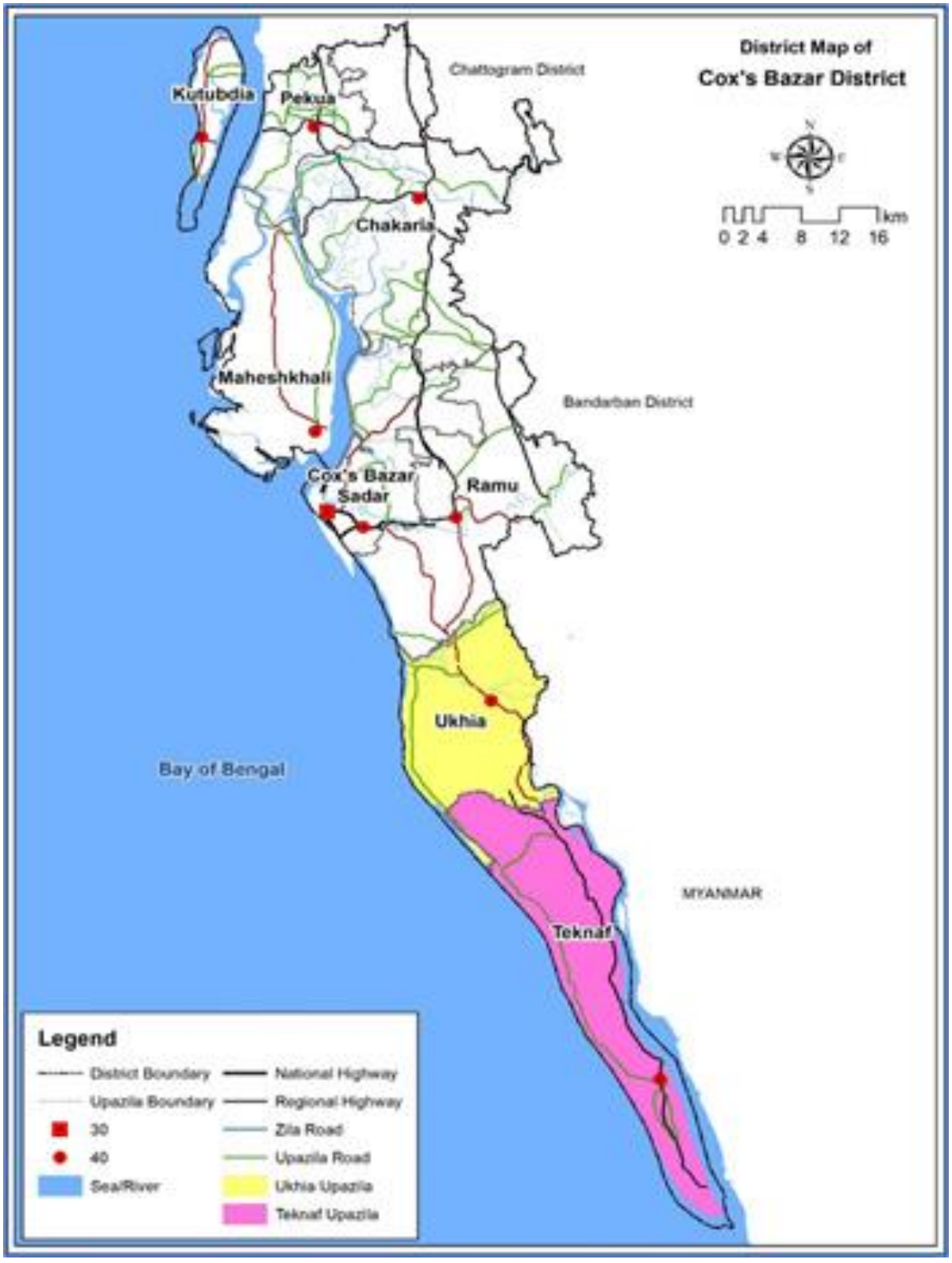



**Figure 3: District Map with project location**




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

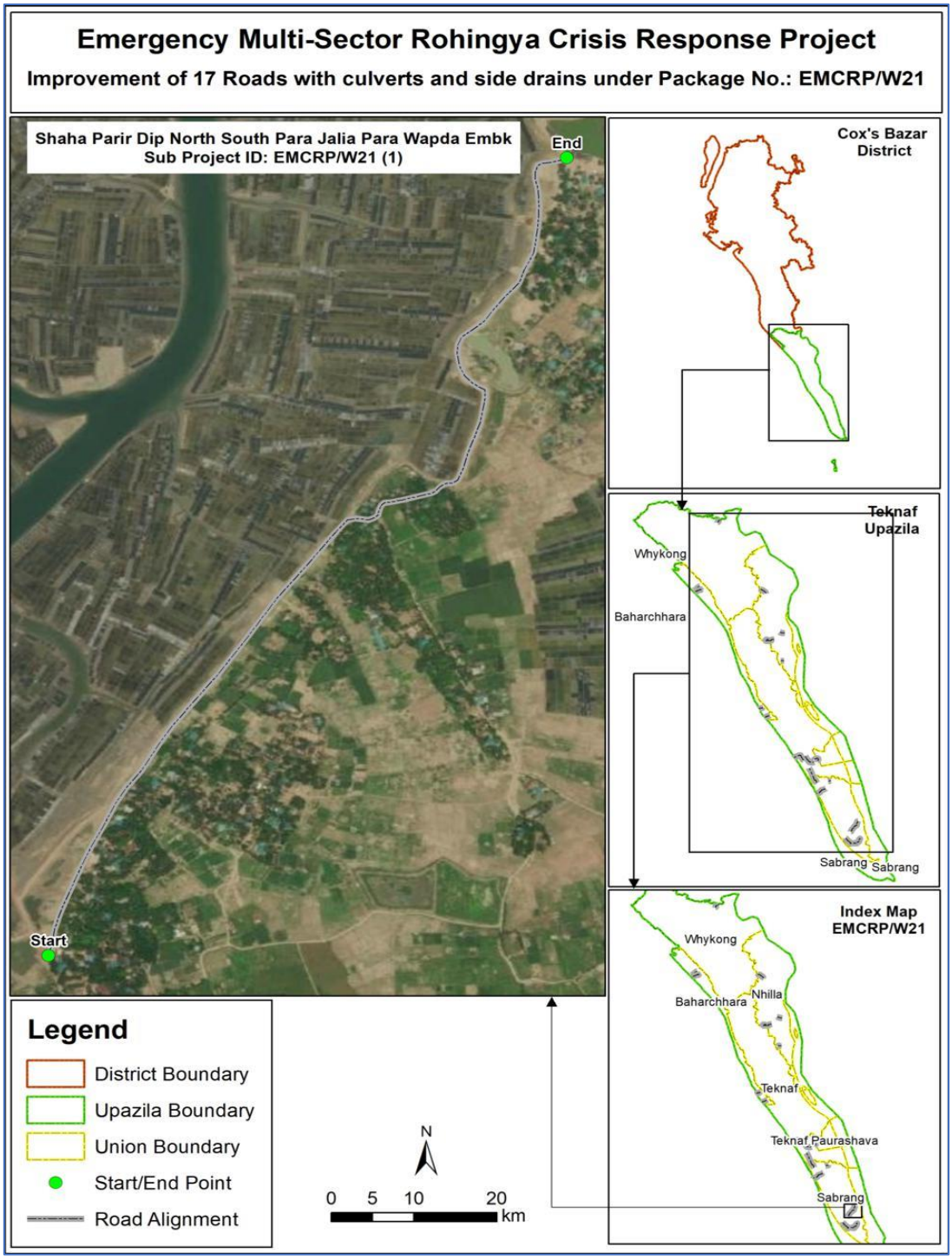



**Figure 5: Upazila Map with Sub-project location**

**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. 1640m. Proposed safety and service providing structures include 3 nos. of Box Culvert, 3 nos. Cross Drain, 450m protective works by Palisading 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 | 422904032 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Sabrang |
| WARD | 8 & 9 |
| Proposed Chainage | 1640m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.775205 N<br>Longitude Value: 92.324914 E |
| Road Ending Point Coordinates | Latitude Value: 20.787130 N<br>Longitude Value: 92.332260 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. 1640m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Salt field (15m), Boro Khal (200m), Naf river (300m); at south side Shahaporir dwip uttarpara health complex (200m), Shahaporir dwip

uttarpara GPS (200m), Shahaporir dwip uttarpara mosque & graveyard (250m), Shahaporir dwip Gabtoli more (300m), Shahaporir dwip bazar (350m); at east side Shahaporir dwip uttarpara Abu Bakor Siddik mosque (10m), Fateme mosque (200m), Mogfura mosque (400m), Jaliapara mosque (500m), Camp para mosque & panjegana (5m), BGB Tower (100m), Naf river (320m); and at west side salt field, Darun Chakkafah Al Islamia mosque & madrasah (5m), Bay of Bengal (900m). 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**

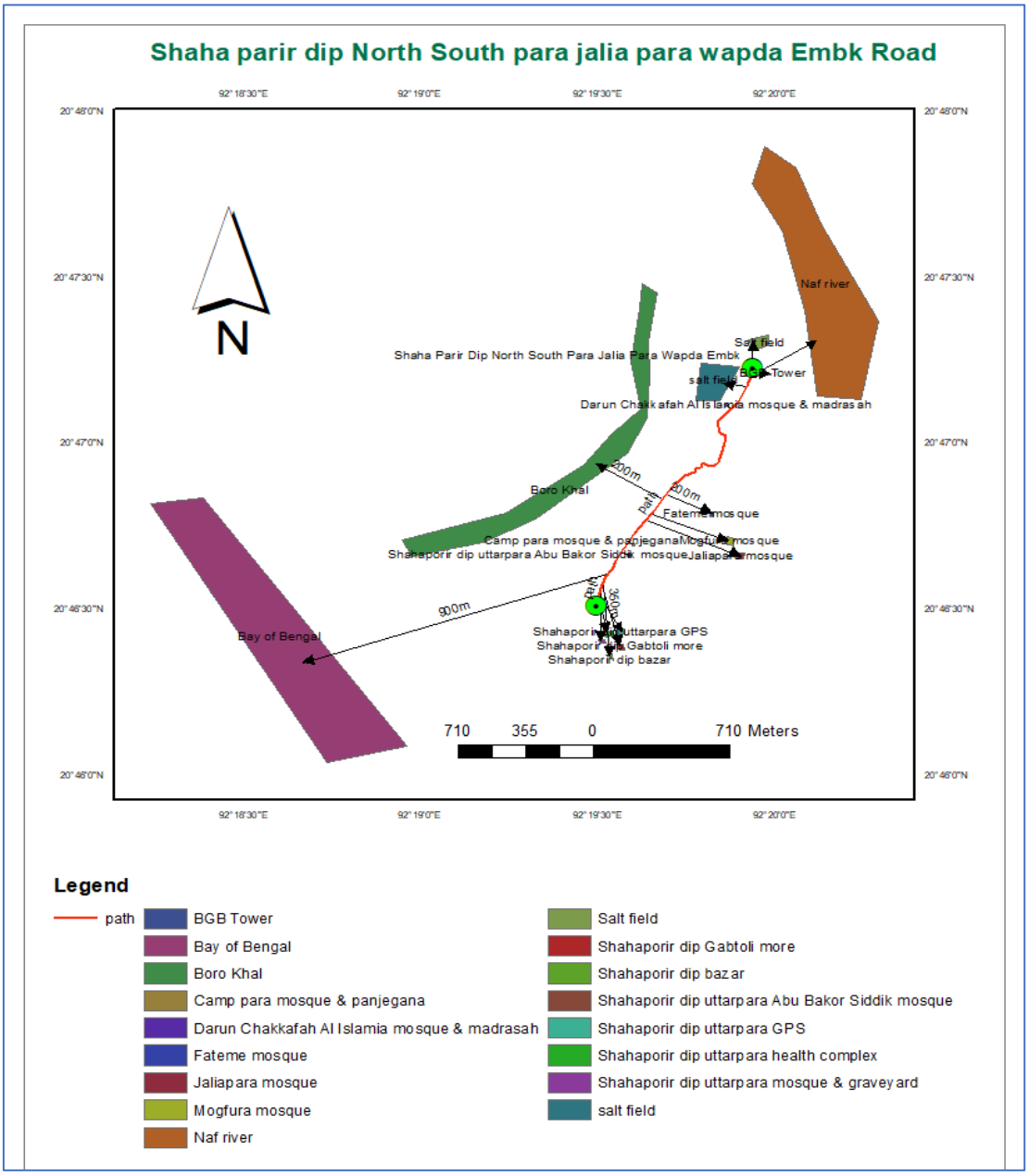



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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):**<br>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.<br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>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):**<br>Beri bandh connecting road and Shahaporir dwip bazar 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:**<br>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:**<br>Labor camp can be established along the road since there are available open private lands. Possible location of labor camps establishment will be private land of Ezahar Mia at Shahaporir dwip uttarpara. 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.):**<br>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):**<br>Yes. Beri bandh connecting road and Shahaporir dwip bazar 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:**<br>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.):**<br>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 50 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.):**<br>***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.<br><br>***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.):**<br>**Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most common type of road materials used in construction.<br>**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:**<br>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)**<br>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 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)**<br>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)**<br>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:**<br>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)**<br>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:**<br>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:**<br>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)**<br>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)**<br>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)**<br>There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding |

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| and other disease vectors, during the operation phase. |
| **Likely direct and indirect impacts on economic development in the project areas by the sub-project:**<br>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)**<br>Boro Khal (200m) and Naf river (300m) located around the subproject site used as a local drainage system but no such effect can be anticipated. |
| **Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)**<br>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:**<br>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)**<br>Low. Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Shaha parir dwip North South para jalia para wapda Embk Road Id: 422904032

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 4,876.5 Sq.m | @38.15 Tk. Per sqm | 186,038.48 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1640.0m | @ 2.56 BDT | 4,198.40 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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 |
|---|---|---|---|---|
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 130 nos. | @ Tk. 1000 | 130,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 8 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **558,382.60** |

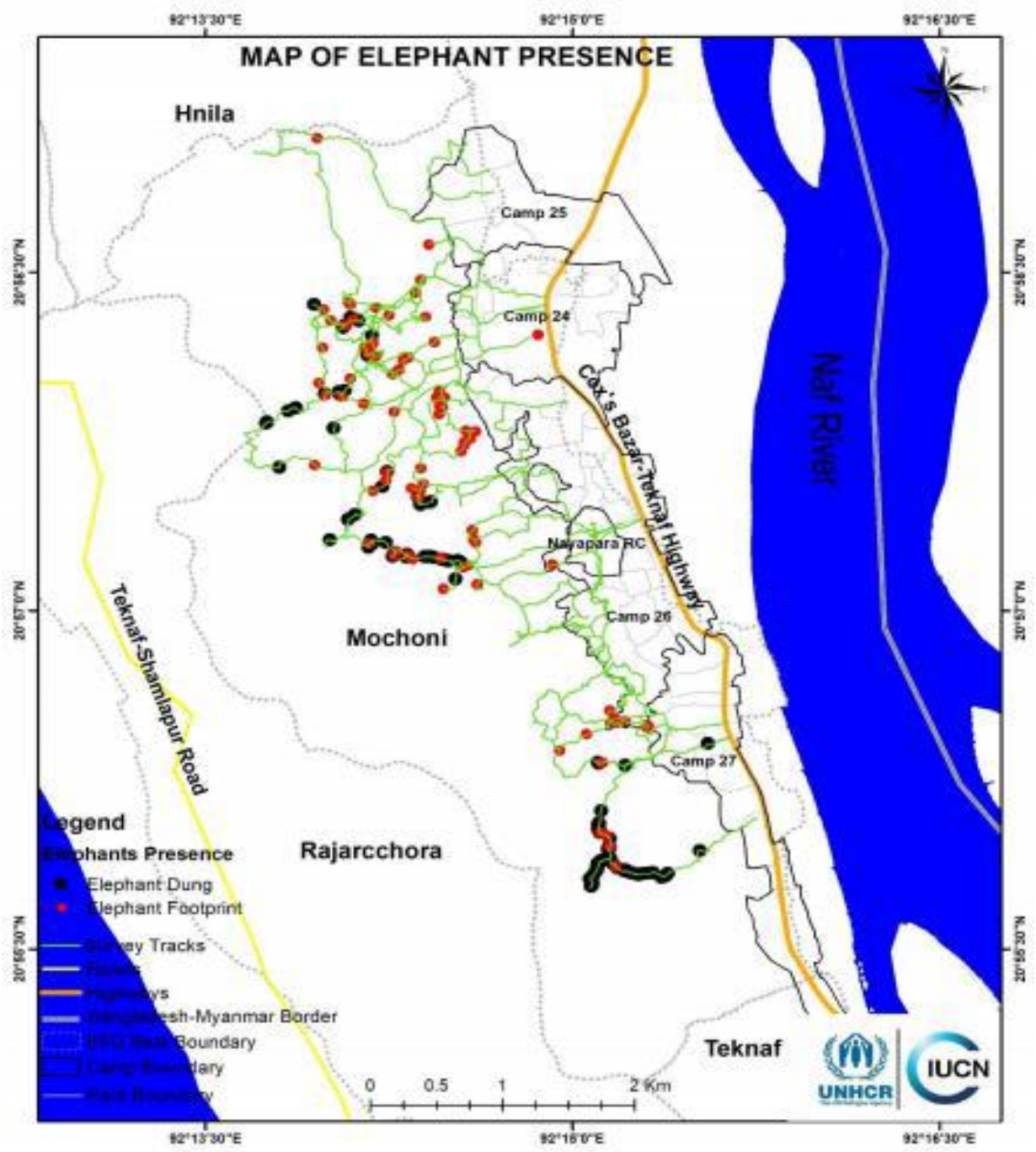
**Cost of H&S Measures under COVID 19 Situations**

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 34 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.1).

| 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) | 92 | | 115 | 50.00 | 207 | 10,350.00 | To be placed in a case/holder on the basin, for washing hands for max. 39 people a day and showering of 34 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

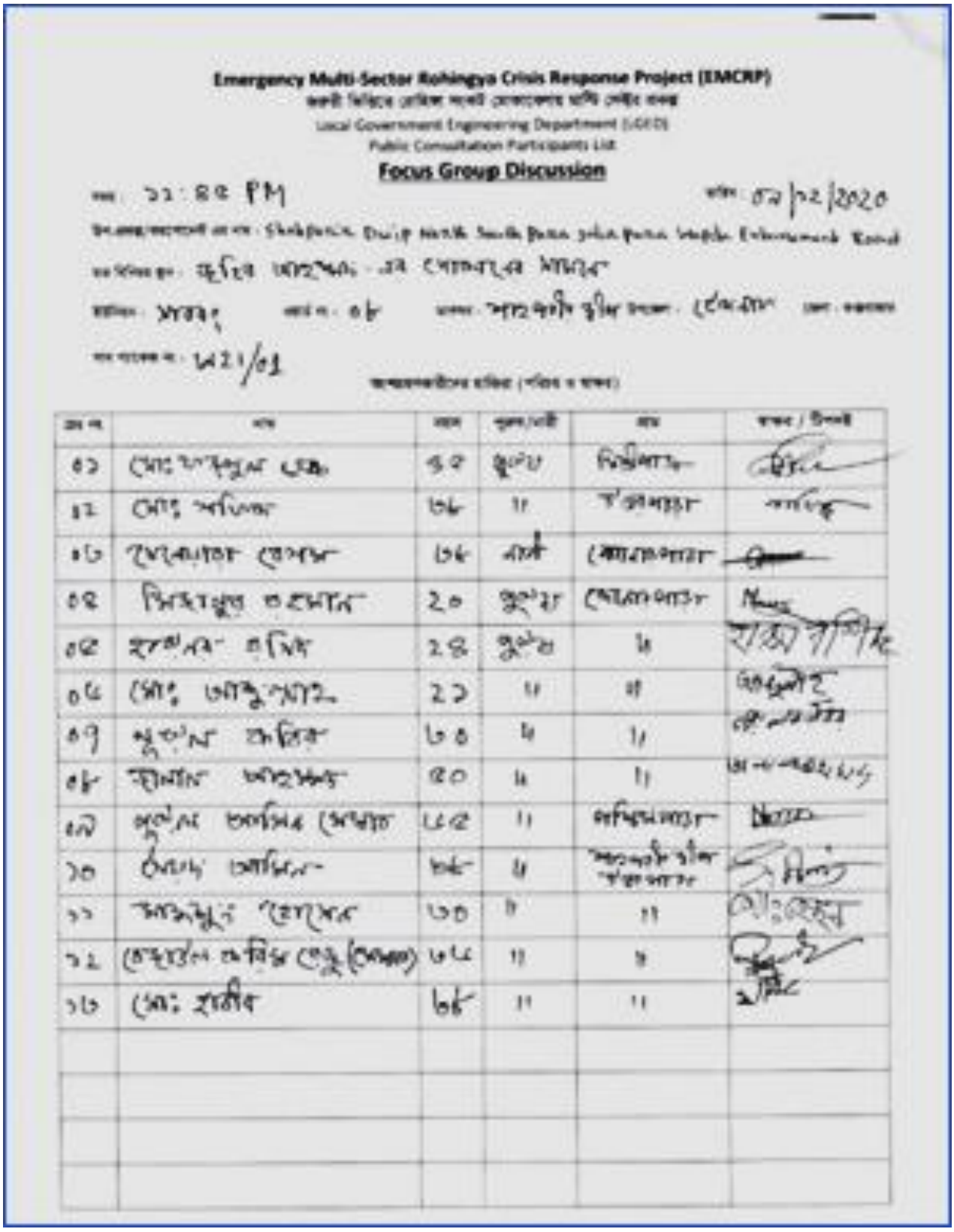
| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 22 nos. for each site | | N/A | 400.00 | 22 | 8,800.00 | For labors who work in close contact, 22 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 | 34 nos. for each labor camp | | 35.00 | 612 | 21,400.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 4 Can | 250.00 | 5.5 | 1,375.00 | |
| 10. | Detergent Cleaner | N/A | 1.750 kg in each camp/month | | 400.00 | 15.75 | 6,300.00 | 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** | | | | | | **114,525.00** | |

**Appendix-4: Elephant Presence Map**




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

**Appendix-5: List of Participants in the Consultation Meeting**



Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

| | | | | | |
|---|---|---|---|---|---|
| ০১ | মোঃ [illegible] | ৪৫ | মুসলিম | ব্যবসা | |
| ০২ | মোঃ [illegible] | ৩৮ | " | চাকরি | |
| ০৩ | [illegible] | ৩৮ | [illegible] | [illegible] | |
| ০৪ | [illegible] | ২০ | মুসলিম | [illegible] | |
| ০৫ | [illegible] | ২৪ | মুসলিম | " | |
| ০৬ | মোঃ [illegible] | ২১ | " | " | |
| ০৭ | [illegible] | ৩৪ | " | " | |
| ০৮ | [illegible] | ৪০ | " | " | |
| ০৯ | [illegible] | ৫২ | " | [illegible] | |
| ১০ | [illegible] | ৩৮ | " | [illegible] | |
| ১১ | [illegible] | ৩৩ | " | " | |
| ১২ | [illegible] | ৩৫ | " | " | |
| ১৩ | মোঃ [illegible] | ৩৮ | " | " | |

**Public Consultation Participants' List**

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








**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Shah Parir dip North West Para-Bazar (Via Hazi Para) road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Shahaporir dwip majher para, Hazirpara, Dokhin para, Mistripara, Bazar para, Golarpara & Pochim para villages under Sabrang Union, Ward 7 & 9 of Teknaf Upazila, Cox's Bazar. There are some community's property resources, environmental components and other features located within 1km from the sub project, such as at north side Dangorpara GPS (100m), salt field (300m), Nurani Talimul Quaran Madrasah (15m), Mistripara mosque (5m), Old bazar mosque & graveyard (10m); at south side Jaliagoda mosque (5m), Hazirpara mosque (5m), Mistripara Heda-e-tul Islam madrasah (15m), Sahaporir graveyard (350m); at east side Majherpara graveyard (5m), Majherpara mosque (3m), Majherpara GPS (150m), Majherpara boro graveyard (5m), Hazirpara graveyard (8m), Mistripara bazar (5m), bazarpara graveyard (5m); and at west side Mvi. Moqbul Ahmed mosque (20m), Majherpara Boat Malik Somobay Samiti (100m), Beri bandh (200m), Bazar para new mosque (10m), Bazarpara Eidgah ground (10m). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para) Id:422904034; (3) Sabrang bazar-sagar par Road Id:422904036; (4) Moheskhali para sea beach-Langurbil Rd.Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id: 422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road. Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road Id:422905181; (11) Whykong R&H to katakhali purbo para Road Id:422905132; (12) Noa Bazar to Mina Bazar Road Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach road; Road Id:422905061 with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (2) Shah Parir dwip North West Para-Bazar road (Via Hazi Para) Id: 422904034

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904034 | ii. Ward No.: 7 & 9 | iii. Mouza: Shahaporir dwip |
| iv. Village: Shahaporir dwip majher para, Hazirpara, Dokhin para, Mistripara, Bazar para, Golarpara & Pochim para | | v. Name of Union: Sabrang |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 2700 |
| xi. Distance from UZHQ: 15 Km. | | |

| | | | |
|---|---|---|---|
| | **GPS Coordinates** | Latitude Value: 20.767934 N<br>Longitude Value: 92.319183 E | Starting Point |
| | | Latitude Value: 20.767486 N<br>Longitude Value: 92.334040 E | Ending Point |
| | **Present Condition of Road** | BC, HBB, BFS & Earthen | |
| | **Communication Source** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 4 nos. Box Culvert (dimension: 1.5mx1.5m) at Ch. 568m & Ch. 893m of chainage, (dimension: 2.0mx2.0m) at Ch. 1115m of chainage and (dimension: 2 vent 4.0mx4.0m) at Ch. 1827m of chainage
- 4 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 372m, Ch. 870m, Ch. 1505m & Ch.2510m of chainage
- 142.0m Surface drain at different chainage
- 118.0m Brick Palisading work at different chainage
- Road safety work 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: 34,222,949.64 (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 consultation meeting with local community on 09 December, 2020 at Mistripara bazar of Shahaporir dwip, 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 pollution and noise pollution might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely 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 Dangorpara GPS (100m), salt field (300m), Nurani Talimul Quaran Madrasah (15m), Mistripara mosque (5m), Old bazar mosque & graveyard (10m); at south side Jaliagoda mosque (5m), Hazirpara mosque (5m), Mistripara Heda-e-tul Islam madrasah (15m), Sahaporir graveyard (350m); at east side Majherpara graveyard (5m), Majherpara mosque (3m), Majherpara GPS (150m), Majherpara boro graveyard (5m), Hazirpara graveyard (8m), Mistripara bazar (5m), bazarpara graveyard (5m); and at west side Mvi. Moqbul Ahmed mosque (20m), Majherpara Boat Malik Somobay Samiti (100m), Beri bandh (200m), Bazar para new mosque (10m), Bazarpara Eidgah ground (10m) 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, and but that 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.

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

[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 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.

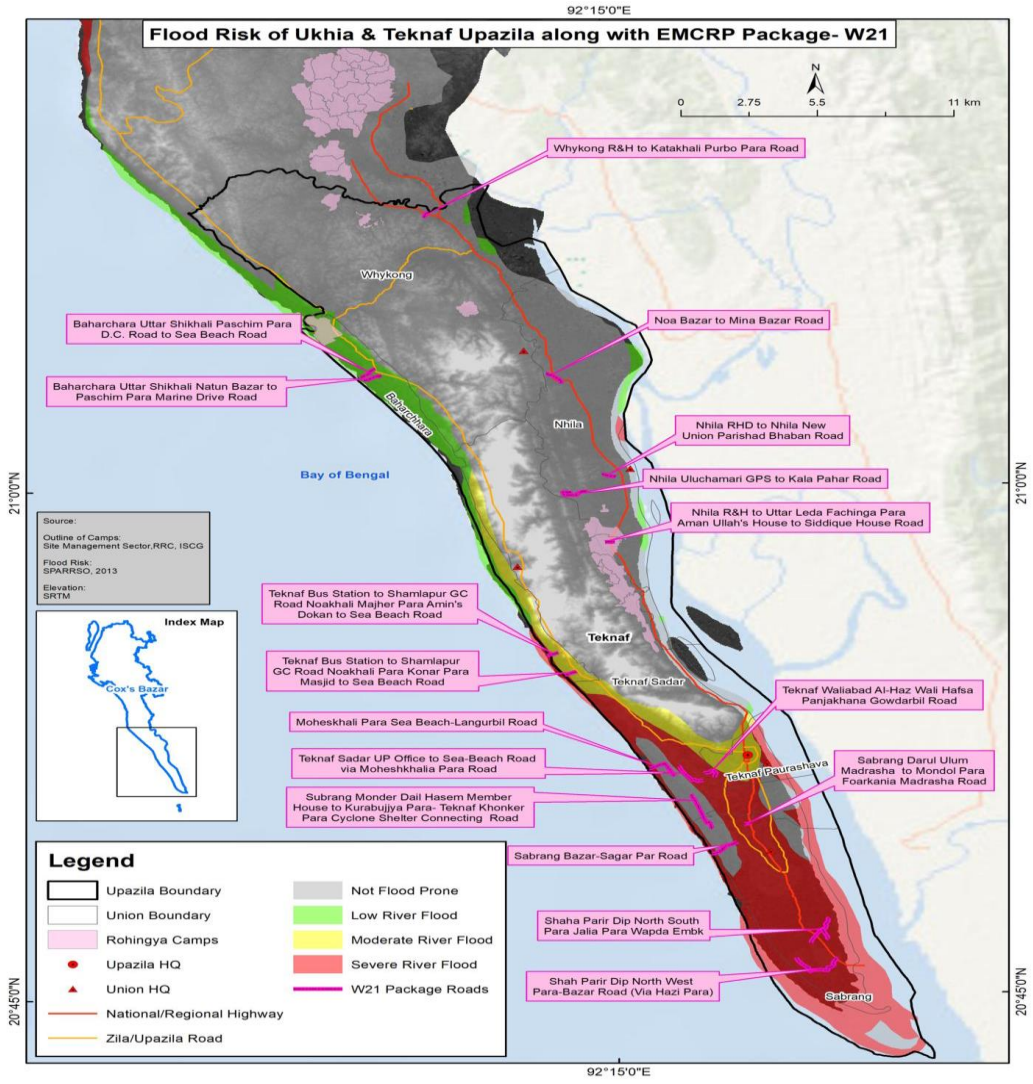



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, the roads are found to be in 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 the subprojects are on top of embankments natural slope protection can be adhered and tree plantation along the road specifically is suggested for the subprojects. Tree planation will sooth the temperature effect and increase the water retaining capacity of soil at the same time.

**ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS**

### 3.4 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.

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: 1.5mx1.50m) at Ch. 568m & Ch. 893m of chainage, (dimension: 2.0mx2.0m) at Ch. 1115m of chainage and (dimension: 2 vent 4.0mx4.0m) at Ch. 1827m of chainage and 4 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 372m, Ch. 870m, Ch. 1505m & Ch. 2510m of chainage will be constructed at the subproject area. Due to the low land in different chainage of the road 142.0m Surface drain at different chainage and some protective works as 118.0m Brick Palisading work at different chainage are included in design and estimation. 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.

### 3.5 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.

### 3.6 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/W21 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**.

## 4 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.

## 5 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Shah Parir dwip North West Para-Bazar road (Via Hazi Para) Id: 422904034

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **34,222,949.64 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Shahaporir dwip majher para, Hazirpara, Dokhin para, Mistripara, Bazar para, Golarpara & Pochim para.

**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. 2700m. Proposed safety and service providing structures include 4 nos. Box Culvert- (dimension: 1.5mx1.50m) at Ch. 568m & Ch. 893m of chainage, (dimension: 2.0mx2.0m) at Ch. 1115m of chainage and (dimension: 2 vent 4.0mx4.0m) at Ch. 1827m of chainage and 4 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 372m, Ch. 870m, Ch. 1505m & Ch.2510m of chainage, 142.0m Surface drain at different chainage and some additional protective works as 118.0m Brick Palisading work 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 13,230 sq m.

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

This proposed Shah Parir dwip North West Para-Bazar (Via Hazi Para) road belongs to Sabrang union, Ward 7 & 9 under Teknaf Upazila. This road starts from Sahaporir dwip seabeach road at Majherpara on west side stretching 2700m to R&H road on north side. Several connecting roads fall within the road chainage. This sub-project passes along different features, such as graveyards, mosques, madrasas, shops and bazar, electric poles, fences, and tubewells, drains and culverts, ditches, patches of vegetation and agricultural and vegetable fields, 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 | | Brick boundary wall, graveyard, tin shed fences, shops, cross drain, trees |
| | | R | Bamboo fences, mosque, household connecting road, tin shed fences, shops, Tubewell |
| 300-600 | L | | Tin shed fences, RCC pole with wire fencing, graveyard, brick boundary walls, mosque |
| | | R | Tin shed fences, trees, open space, bamboo fences, culvert |
| 600-900 | L | | Tin shed fences, bamboo fences, connecting road, shop, brick boundary walls, net fencing, open space, graveyard |
| | | R | Tin shed fences, shop, household connecting road, vegetables yard, electric pole, bamboo fences, ditch, culvert |
| 900-1200 | L | | Bill board, tin shed fences, electric pole, shops, bamboo fences, electric pole, mosque, culvert (broken), connecting road, bushes, vegetables yard, brick boundary wall |
| | | R | Beri bandh under construction, tin shed fences, ext. guide wall, bamboo fences, mosque, paddy land, bushes, electric pole |
| 1200-1500 | L | | Brick boundary wall, tin shed fences, bamboo fences, trees, shop |
| | | R | Vegetables yard, tin shed fences, trees, Akashi trees yard, brick boundary walls, mosque |
| 1500-1800 | L | | Tin shed fences, household connecting road, madrasah, cross drain, bamboo fences, bushes, ditch, local drains, ext. guide wall |
| | | R | Tin shed fences, electric pole, shop, bushes, paddy lands, ditches, culvert, electric pole |
| 1800-2100 | L | | Ext. guide wall, culvert, tin shed fences, household connecting roads, brick boundary wall, Mistripara bazar |
| | | R | Paddy land, bill board, vegetables yard, electric pole, tin shed fences, Mistripara bazar |
| 2100-2400 | L | | Shops, connecting road, tin shed fences, trees, household connecting road, brick boundary walls, tin shed household, open space |
| | | R | Shops, tin shed fences, madrasah, brick boundary walls, tin shed fences, tin shed household, household connecting roads, connecting road |
| 2400-2700 | L | | Tin shed fences, shops, brick boundary walls, mosque, ext. u drain, ext. guide wall, cow shed |
| | | R | Tin shed fences, electric pole, shops, graveyard, connecting roads, brick boundary wall |




**Figure: Starting point of Shah Parir dwip North West Para-Bazar (Via Hazi Para) road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

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.

The proposed construction of village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. 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 Dangorpara GPS (100m), salt field (300m), Nurani Talimul Quaran Madrasah (15m), Mistripara mosque (5m), Old bazar mosque & graveyard (10m); at south side Jaliagoda mosque (5m), Hazirpara mosque (5m), Mistripara Heda-e-tul Islam madrasah (15m), Sahaporir graveyard (350m); at east side Majherpara graveyard (5m), Majherpara mosque (3m), Majherpara GPS (150m), Majherpara boro graveyard (5m), Hazirpara graveyard (8m), Mistripara bazar (5m), bazarpara graveyard (5m); and at west side Mvi. Moqbul Ahmed mosque (20m), Majherpara Boat Malik Somobay Samiti (100m), Beri bandh (200m), Bazar para new mosque (10m), Bazarpara Eidgah ground (10m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

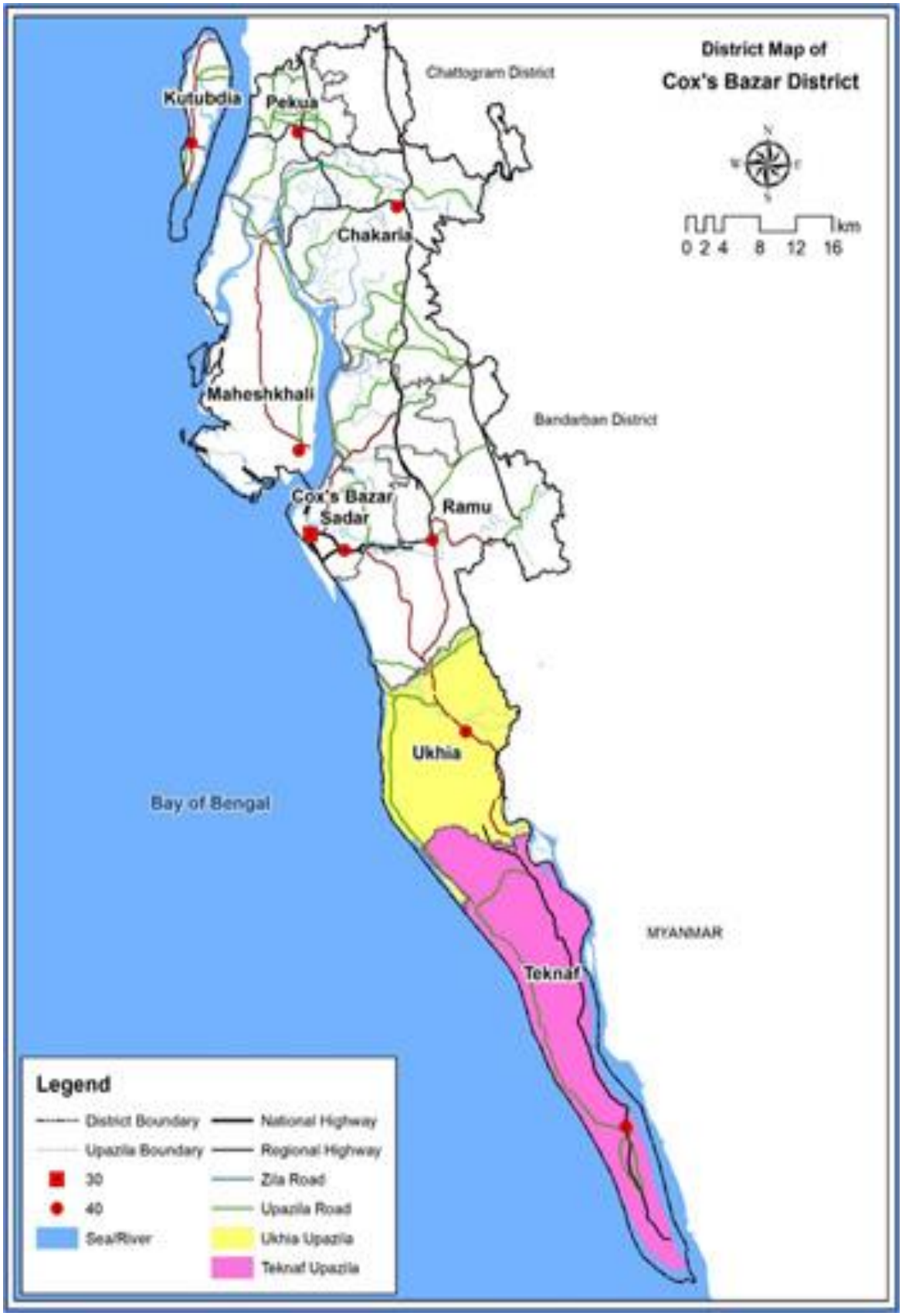



**Figure 3: District Map with project location**




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

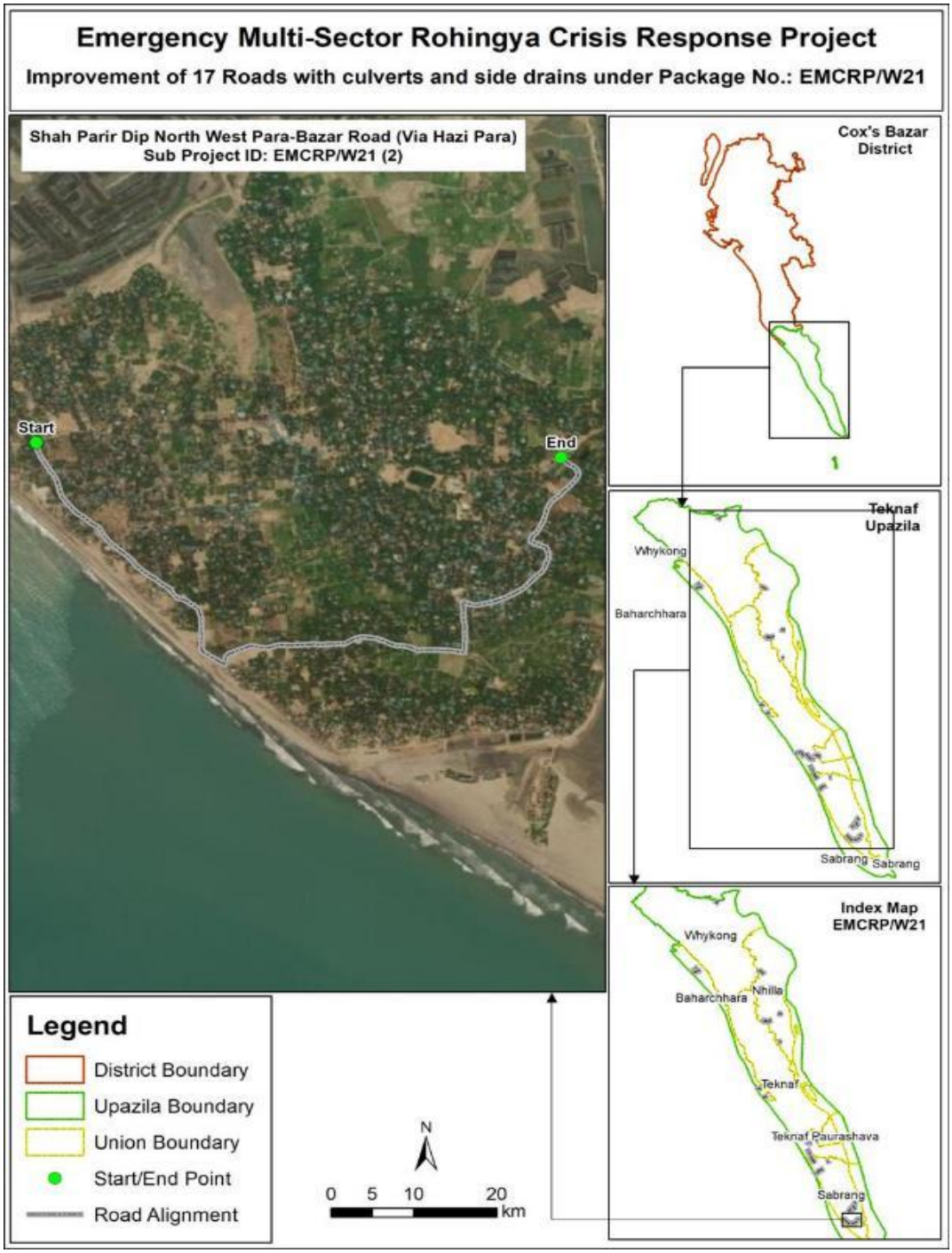



**Figure 5: Upazila Map with Sub-project location**

**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. 2700m. Proposed safety and service providing structures include 4 nos. of Box Culvert, 4 nos. Cross Drain, 142.0m Surface drain at different chainage, protective works as 118.0m Palisading work 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 | 422904034 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Sabrang |
| WARD | 7 & 9 |
| Proposed Chainage | 2700m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.767934 N<br>Longitude Value: 92.319183 E |
| Road Ending Point Coordinates | Latitude Value: 20.767486 N<br>Longitude Value: 92.334040 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. 2700m.

i) Some water bodies like canals, 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 due to construction activities
v) No chance to lose of agricultural land.
vi) Some Household Boundary made of bamboo and tin may need adjustments.
vii) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 as at north side Dangorpara GPS (100m), salt field

(300m), Nurani Talimul Quaran Madrasah (15m), Mistripara mosque (5m), Old bazar mosque & graveyard (10m); at south side Jaliagoda mosque (5m), Hazirpara mosque (5m), Mistripara Heda-e-tul Islam madrasah (15m), Sahaporir graveyard (350m); at east side Majherpara graveyard (5m), Majherpara mosque (3m), Majherpara GPS (150m), Majherpara boro graveyard (5m), Hazirpara graveyard (8m), Mistripara bazar (5m), bazarpara graveyard (5m); and at west side Mvi. Moqbul Ahmed mosque (20m), Majherpara Boat Malik Somobay Samiti (100m), Beri bandh (200m), Bazar para new mosque (10m), Bazarpara Eidgah ground (10m). 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**

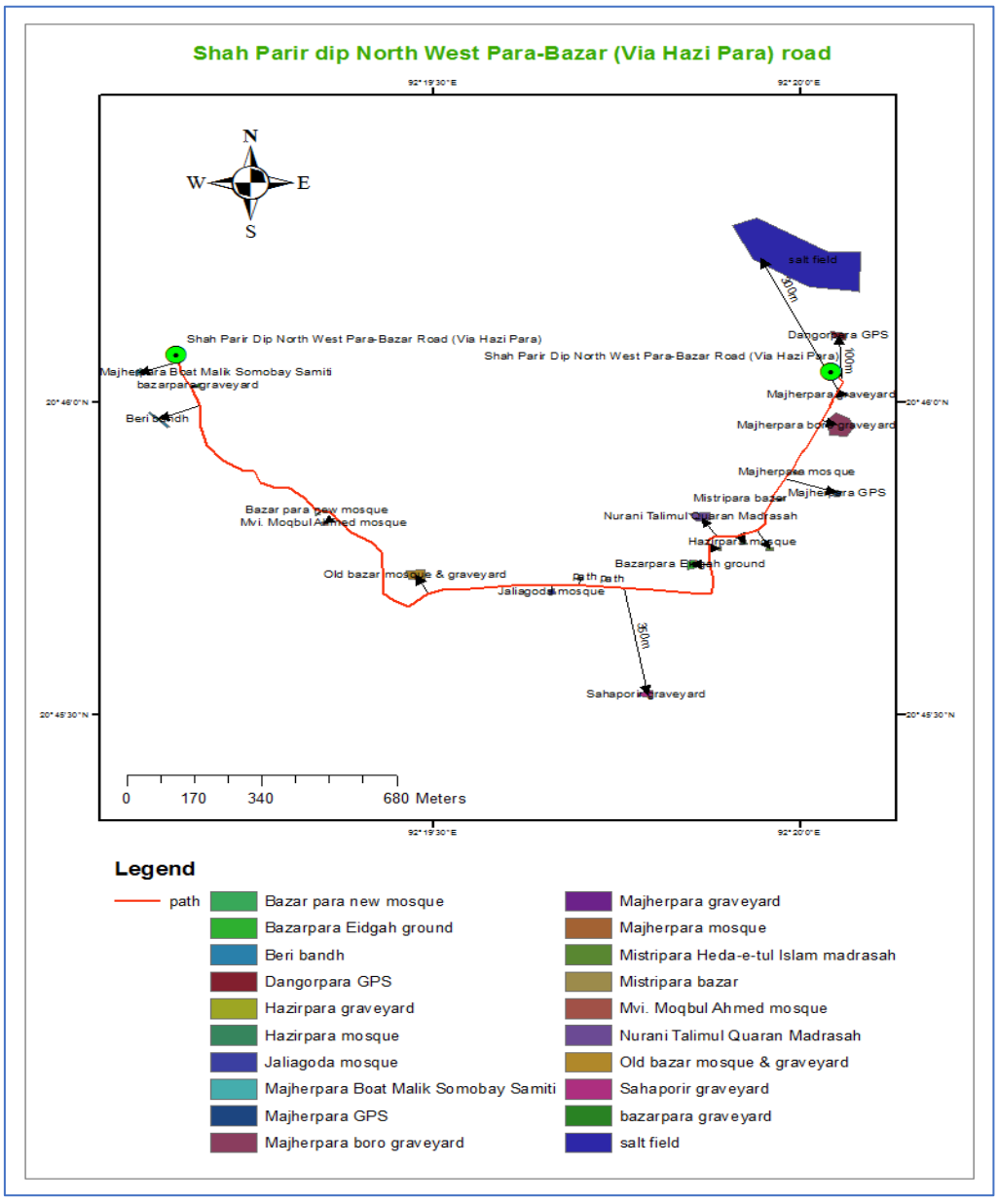



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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.<br><br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Hazipara Dakhinpar connecting road, Mistripara connecting road and Bazarpara/graveyard 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Hazipara Dakhinpar connecting road, Mistripara connecting road and Bazarpara/graveyard connecting road can be used as access road for transportation. Pickup, dumper trucks could be used |

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| as material transportation vehicles. Manual head load from unloading point to different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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. |

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

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding |

| |
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| and other disease vectors, during the operation phase. |
| **Likely direct and indirect impacts on economic development in the project areas by the sub-project:**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• Monitor water quality according to | Construction Contractor and monitored by Consultant and PIU | • Areas for stockpiles, storage of fuels and lubricants and waste materials;<br>• 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<br>• (National Drinking Water Quality Standard Parameters)if requires;<br>• No visible degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• 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.<br>• Records for any type of training or awareness building sessions must be kept at site. | | orientation trainings;<br>• 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.<br>• 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 | • Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. | Construction Contractor and monitored by Consultant and PIU | • Complaints from community;<br>• Regular inspection of | weekly as work progresses |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | | **low.** | • 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.<br>• All waste must be removed from the site and transported to a disposal site. | | waste management activity;<br>• 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<br>• 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 | 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 | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• Storage areas for materials and | Monthly basis during implementation phase, as necessary |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | | storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.** | consultants. However, following sets of requirements shall be taken into consideration:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• 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 | | equipment. | through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | | | avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• Noise Level | 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 |
| | | | | | 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• 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.<br>• 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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• 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.<br>• Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• 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:** Shah Parir dwip North West Para-Bazar road (Via Hazi Para) Id: 422904034

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 4,246.0 Sq.m | @38.15 Tk. Per sqm | 161,984.90 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 2700.0m | @ 2.56 BDT | 6,912.00 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 160 nos. | @ Tk. 1000 | 160,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 8 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **567,042.62** |

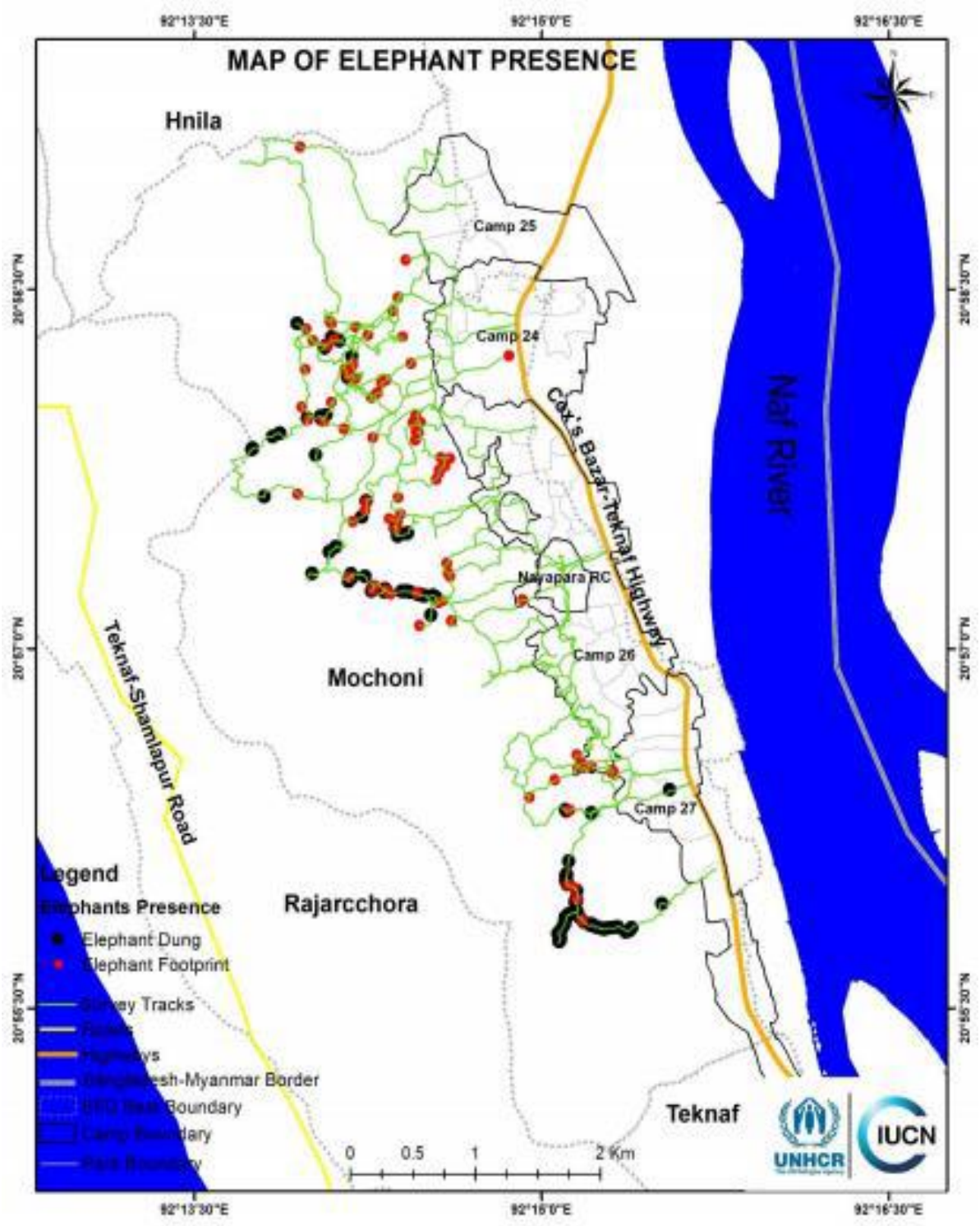
## Cost of H&S Measures under COVID 19 Situations

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 54 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.2).

| 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) | 145 | | 182 | 50.00 | 327 | 16,350.00 | To be placed in a case/holder on the basin, for washing hands for max. 59 people a day and showering of 54 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 | 54 nos. for each labor camp | | 35.00 | 972 | 34,020.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 3.5 Can | N/A | 5 Can | 250.00 | 8.5 | 2,125.00 | |
| 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** | | | | | | **139,795.00** | |

**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/W21.02, Road ID No.- 422904034

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**
Local Government Engineering Department (LGED)
Public Consultation Participants List

**Focus Group Discussion**

সময়: 4:15 PM তারিখ: ০৫/১২/2020

W21/02

| ক্রম নং | নাম | বয়স | শিক্ষাগত যোগ্যতা | পেশা | স্বাক্ষর / টিপসই |
|---|---|---|---|---|---|
| ০১ | মোঃ নাছির উদ্দিন চেয়ারম্যান | ৪৩ | ডিগ্রী | সিভিল সার্ভেন্ট | |
| ০২ | আবদুল্লাহ আল হাসিব | ২৮ | ৮ | ঐ | |
| ০৩ | রেহানা তাসলিমা | ৩৭ | ৮ | ঐ | |
| ০৪ | রেহানা মোঃ হাসান | ৩৪ | ৮ | ঐ | |
| ০৫ | মোঃ শাহাদ | ৫০ | ঐ | ঐ | |
| ০৬ | আবদুল করিম | ৭৪ | ৮ | ঐ | |
| ০৭ | মোহাম্মদ আমিন | ৩২ | ৮ | ঐ | |
| ০৮ | সিরাজুল ইসলাম | ৩৮ | ৯ | ঐ | |
| ০৯ | হাজী মোহাম্মদ উল্লাহ | ৭০ | ১১ | ঐ | |
| ১০ | মোঃ সাবির হোসেন | ৪২ | ৮ | ঐ | |
| ১১ | মোহাম্মদ আলী | ৪৮ | ১১ | ৪ | |
| ১২ | মোঃ মোস্তাফা | ৪৯ | ১১ | ঐ | |
| ১৩ | মোঃ শরিফুল | ২১ | ৮ | ঐ | |
| ১৪ | নুরুল আমিন | ২৫ | ৮ | ব্যবসা | |

**Public Consultation Participants' List**

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










**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Sabrang bazar-sagar par Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Alirdil, Kulermukh & Hadurchorra villages under Sabrang union, Ward 2 of Teknaf Upazila, Cox's Bazar. There are some community's property resources, environmental components and other features located within 1km from the sub project, such as, at north side North Alirdil mosque & madrasah (300m), North Alirdil graveyard (300m), cyclone shelter (5m); at south side Alirdil mosque & graveyard (10m), Alirdil GPS & community clinic (500m); at east side Sabrang High School & GPS (1km), Sabrang bazar mosque & graveyard (1km); at north-east side a WFS (30m); at south-east side a Technical school (30m); and at west side Sabrang general crematorium (300m), BGB camp (300m), Adarsha mosque & Madrasah (500m), Hader chorra (10m), Bay of Bengal (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 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (3) Sabrang bazar-sagar par Road, Id: 422904036

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904036 | ii. Ward No.: 2 | iii. Mouza: Sabrang |
| iv. Village: Alirdil, Kulermukh & Hadurchorra | | v. Name of Union: Sabrang |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 1875 |
| xi. Distance from UZHQ: 6 Km. | | |
| ***GPS Coordinates*** | Latitude Value: 20.825167 N<br>Longitude Value: 92.297111 E | Starting Point |
| | Latitude Value: 20.819417 N | Ending Point |

| | | | |
|---|---|---|---|
| | | Longitude Value: 92.287056 E | |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 2 nos. of Box Culvert (dimension: 1 vent 4.5mx4.5m) at Ch. 1072m & Ch. 1780m of chainage
- 7 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 271m, Ch. 565m, Ch. 646m, Ch. 930m, Ch. 1050m, Ch. 1610m & Ch. 1630m of chainage
- 353m Brick Palisading work at different chainage
- Road safety work 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: 31,667,953.77 (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 09 December, 2020 in Monsur Ali's shop at Alirdil, 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 and 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 pollution and noise pollution might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely 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 North Alirdil mosque & madrasah (300m), North Alirdil graveyard (300m), cyclone shelter (5m); at south side Alirdil mosque & graveyard (10m), Alirdil GPS & community clinic (500m); at east side Sabrang High School & GPS (1km), Sabrang bazar mosque & graveyard (1km); at north-east side a WFS (30m); at south-east side a Technical school (30m); and at west side Sabrang general crematorium (300m), BGB camp (300m), Adarsha mosque & Madrasah (500m), Hader chorra (10m), Bay of Bengal (20m) 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, and but that 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.

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).

[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

- 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.

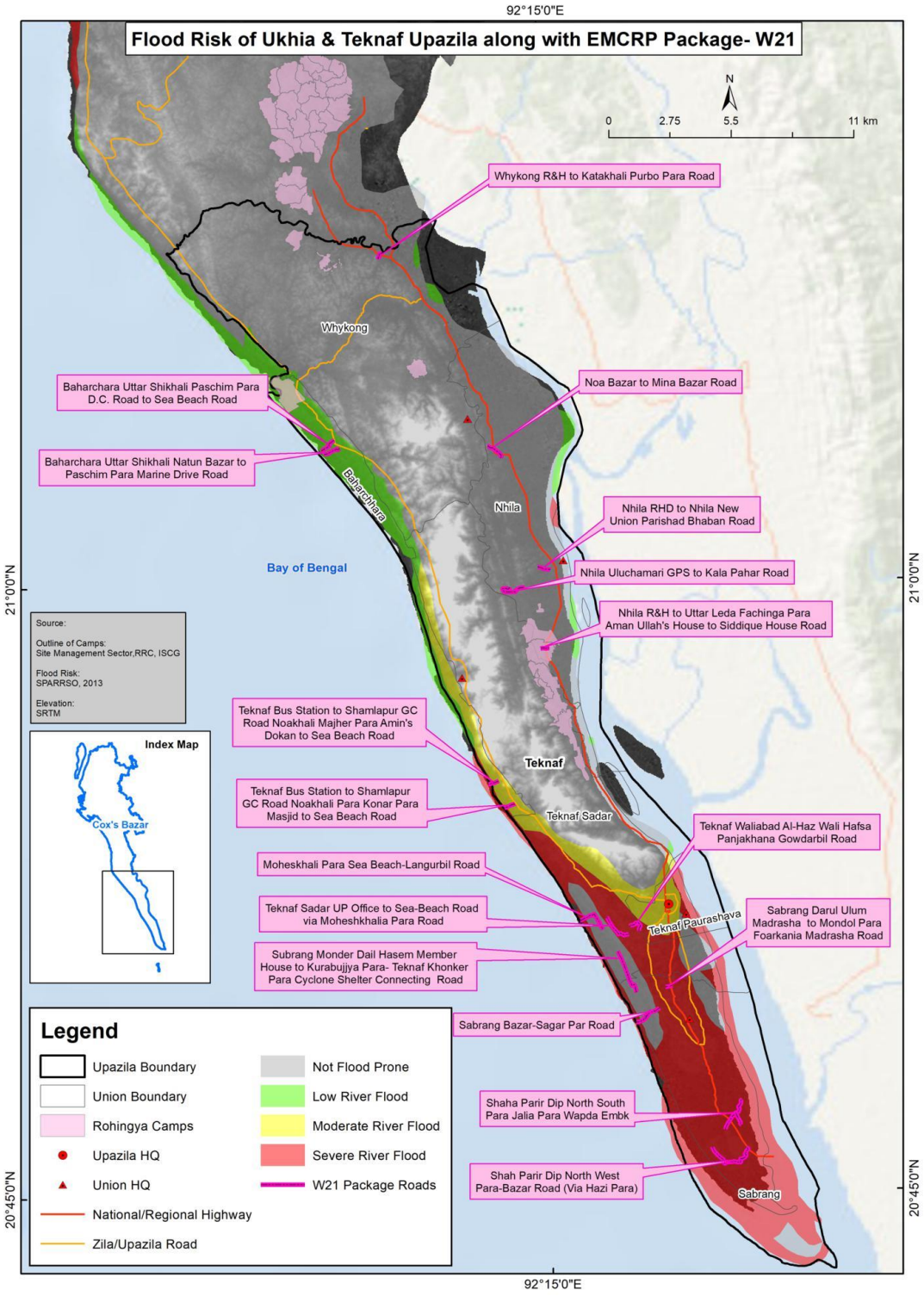



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, none of the bridges are in vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. However, tree planation on the road slope/ within the premises is

suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

# 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.

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, 2 nos. of Box Culvert (dimension: 1 vent 4.5mx4.5m) at Ch. 1072m & Ch. 1780m of chainage and 7 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 271m, Ch. 565m, Ch. 646m, Ch. 930m, Ch. 1050m, Ch. 1610m & Ch. 1630m will be constructed at the subproject area. Due to the low land in different chainage of the road some protective works as 353m Brick Palisading work at different chainage are included in design and estimation. 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/W21 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 measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around

the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

Widespread COVID 19 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Sabrang bazar-sagar par Road Id: 422904036

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **31,667,953.77 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Alirdil, Kulermukh & Hadurchorra.

**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. 1875m. Proposed safety and service providing structures include 2 nos. of Box Culvert (dimension: 1 vent 4.5mx4.5m) at Ch. 1072m & Ch. 1780m of chainage and 7 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 271m, Ch. 565m, Ch. 646m, Ch. 930m, Ch. 1050m, Ch. 1610m & Ch. 1630m of chainage and some additional protective works as 353m Brick Palisading work 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 9,187.5 sq m.

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

This proposed Sabrang bazar-sagar par Road belongs to Sabrang union under Teknaf Upazila. This road has started from Shaporir dip R&H on Sabrang bazar (Alirdil) at east side stretching 1875m to Marine drive road (Sagor par) at west side. Several connecting roads fall within the road chainage. The targeted sub-project passes along different features, such as, boundary fences, electric poles, pond, connecting roads, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, religious institutes, shops 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 | | Culvert, connecting road, ext. cross drain, tin shed fences |
| | | R | Tin shed fences, bamboo fences, open field, trees, electric pole |
| 300-600 | L | | Homestead garden, bamboo fences, connecting road, cross drain |
| | | R | Tin shed fences, trees, electric pole, cross drain, bamboo fences, open land |
| 600-900 | L | | Open space, paddy land, pond, trees, bamboo fences, brick boundary wall |
| | | R | Trees, open space, tin shed household, bamboo fences, tin shed fences |
| 900-1200 | L | | Connecting road, damage culvert, low land, ditch |
| | | R | Low land, paddy land, bamboo fences, tin shed fences, trees |
| 1200-1500 | L | | Homestead garden, bamboo bushes, bamboo fences, open space, tin shed household |
| | | R | Trees, electric pole, bamboo fences, tin shed household |
| 1500-1875 | L | | Trees, connecting road, tin shed fences, paddy land |
| | | R | Open land, paddy land |




**Figure: Starting point of Sabrang bazar-sagar par Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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 do not intend to overtake any area of physical lodgment and funding entity has no intention to do so. Moreover other issue has also been brought to their attention that drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

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.

The proposed construction of village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. 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 North Alirdil mosque & madrasah (300m), North Alirdil graveyard (300m), cyclone shelter (5m); at south side Alirdil mosque & graveyard (10m), Alirdil GPS & community clinic (500m); at east side Sabrang High School & GPS (1km), Sabrang bazar mosque & graveyard (1km); at north-east side a WFS (30m); at south-east side a Technical school (30m); and at west side Sabrang general crematorium (300m), BGB camp (300m), Adarsha mosque & Madrasah (500m), Hader chorra (10m), Bay of Bengal (20m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

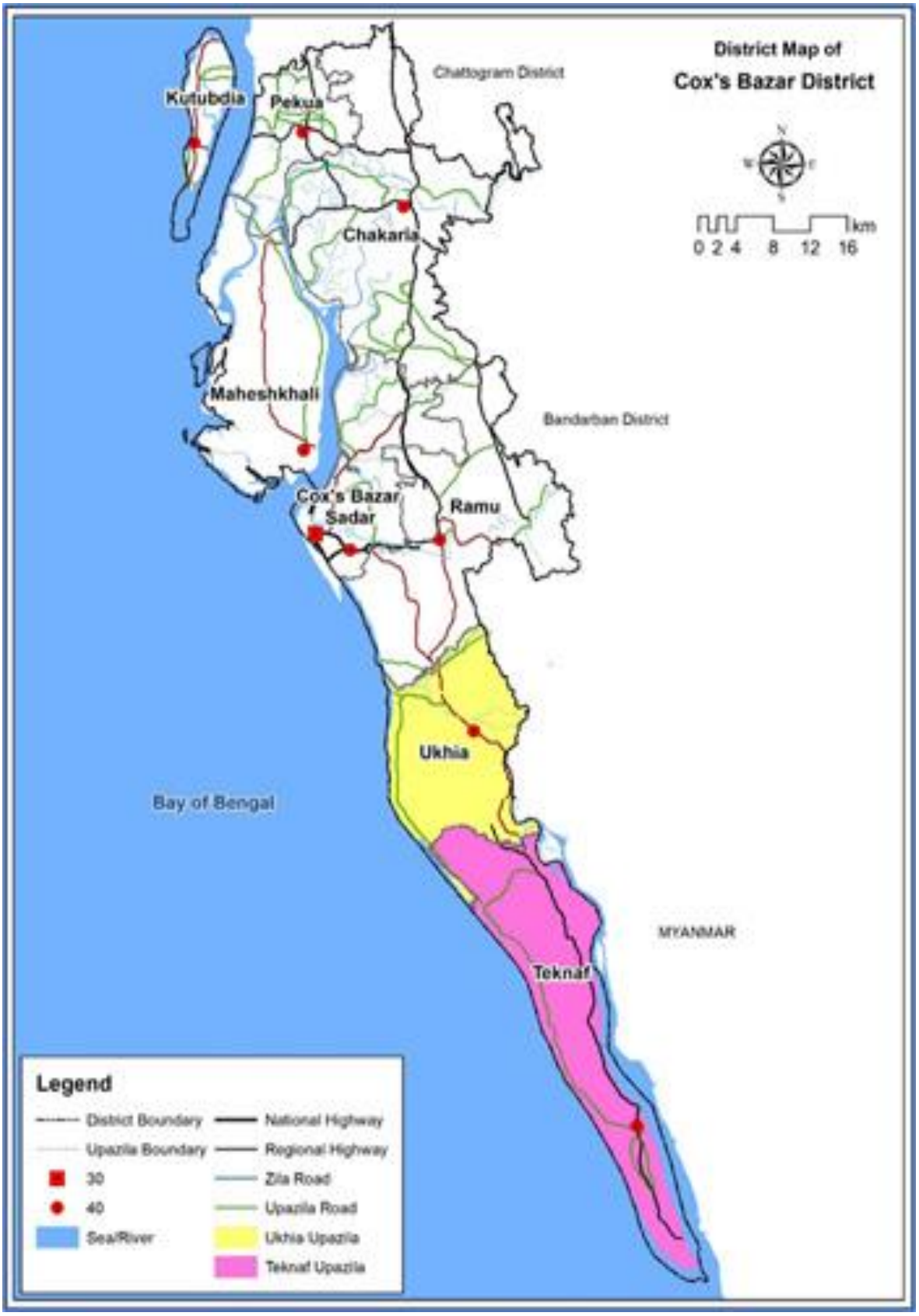



**Figure 3: District Map with project location**




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

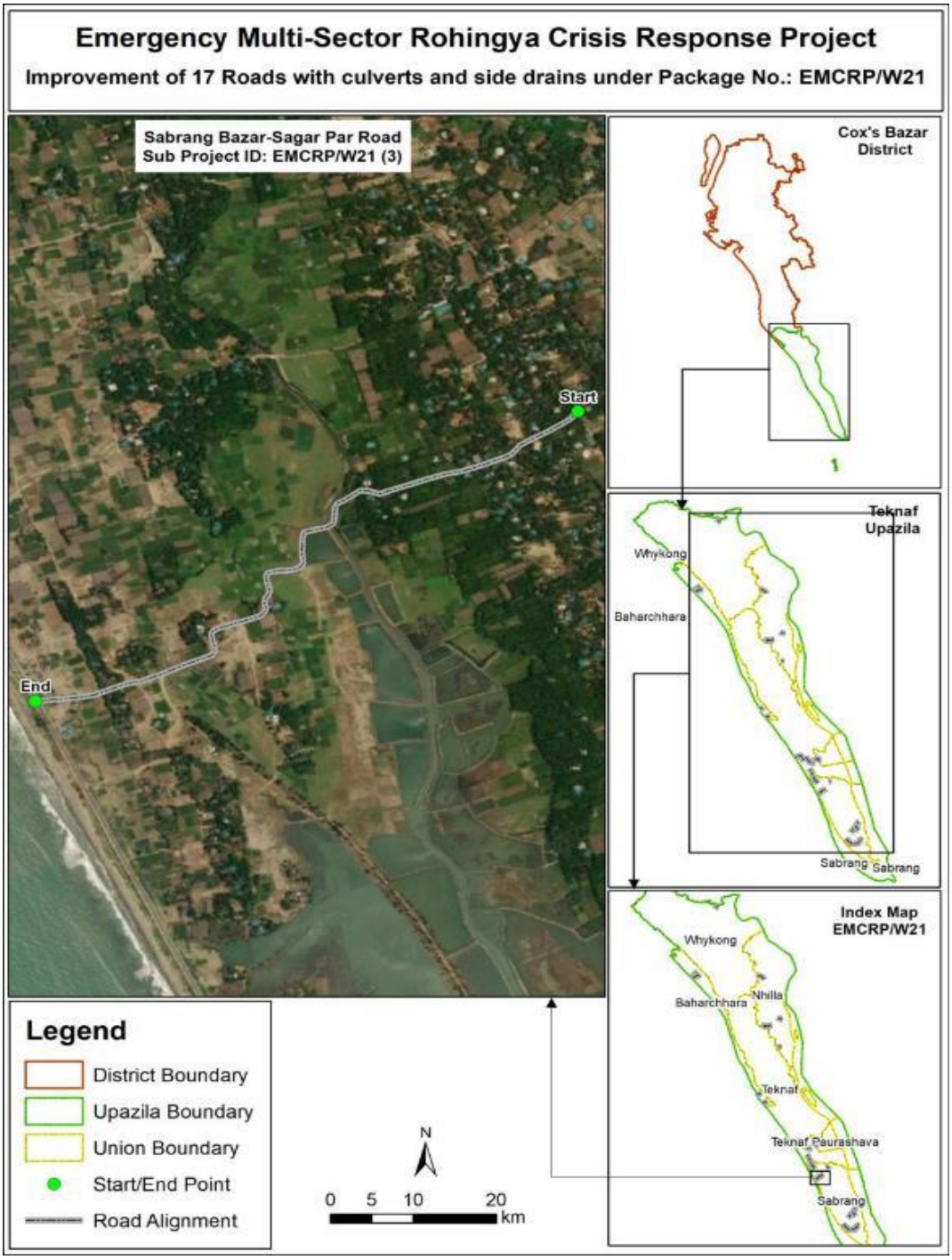



**Figure 5: Upazila Map with Sub-project location**

**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. 1875m. Proposed safety and service providing structures include 2 nos. of Box Culvert, 7 nos. Cross Drain, protective works as 353m Brick Palisading work 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 | 422904036 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Sabrang |
| WARD | 2 |
| Proposed Chainage | 1875m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.825167 N<br>Longitude Value: 92.297111 E |
| Road Ending Point Coordinates | Latitude Value: 20.819417 N<br>Longitude Value: 92.287056 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. 1875m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 North Alirdil mosque & madrasah (300m), North Alirdil graveyard (300m), cyclone shelter (5m); at south side Alirdil mosque & graveyard (10m), Alirdil GPS & community clinic (500m); at east side Sabrang High School & GPS

(1km), Sabrang bazar mosque & graveyard (1km); at north-east side a WFS (30m); at south-east side a Technical school (30m); and at west side Sabrang general crematorium (300m), BGB camp (300m), Adarsha mosque & Madrasah (500m), Hader chorra (10m), Bay of Bengal (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**

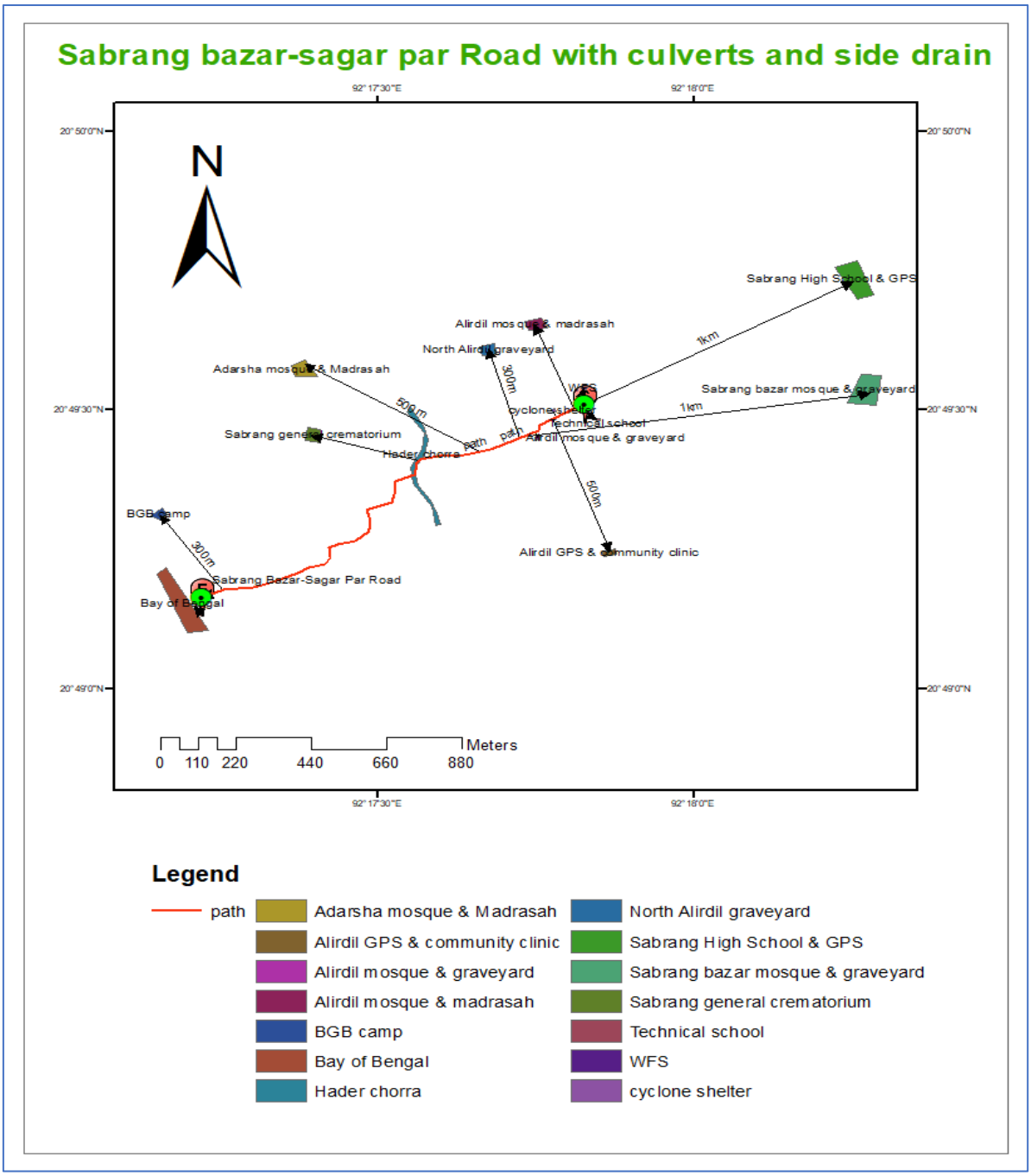



**Figure B.1.1: A sketch of the project intervention area**

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| **Location of environmentally important and sensitive areas:**<br>There are no environmentally important or sensitive areas found in the areas, except some matured vegetation around the site. Several mosques, school and human settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out 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.<br>**(1) Within/near Elephant Migration Routes Yes/No***<br>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.<br>**(2) Potential impacts on remaining forests in/around camps Yes/No**<br>N/A (This activity will be confined within an existing subproject boundary)<br>**(3) Other issues:**<br>No more mentionable issues raised.<br>*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN |
| **Baseline air quality and noise levels:**<br>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.<br><br>**Dust:**<br>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.<br><br>**Noise:**<br>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:**<br>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):**<br>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 |

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| relatively small area and adjustable by mitigation measures. |
| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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 300-5 00ft (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.<br><br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g., status of access road or any other facility required for sub-project to be viable):**<br>Hindupara connecting road, South Alirdil connecting road, Surerpara connecting road and Educhorra 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:**<br>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:**<br>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.):**<br>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. |

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| **Identification of access road for transportation (Yes/No):**<br>Yes. Hindupara connecting road, South Alirdil connecting road, Surerpara connecting road and Educhorra 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:**<br>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.):**<br>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 50 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**

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| ***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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. |

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

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)<br>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)**<br>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)**<br>There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding |

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| and other disease vectors, during the operation phase. |
| **Likely direct and indirect impacts on economic development in the project areas by the sub-project:**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• Monitor water quality according to | Construction Contractor and monitored by Consultant and PIU | • Areas for stockpiles, storage of fuels and lubricants and waste materials;<br>• 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<br>• (National Drinking Water Quality Standard Parameters)if requires;<br>• No visible degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• 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.<br>• Records for any type of training or awareness building sessions must be kept at site. | | orientation trainings;<br>• 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.<br>• 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.<br>• Wastes must be placed in the designated bins which must be | Construction Contractor and monitored by Consultant and PIU | • Complaints from community;<br>• 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.<br>• All waste must be removed from the site and transported to a disposal site. | | activity;<br>• 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<br>• 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;<br>• 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• 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.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• 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 | |
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| | | | | | Indicator | Frequency |
| | | | D&SC.<br>• 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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree | Immediately after the construction work is over. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
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| | | | | | Indicator | Frequency |
| | | | | | 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.<br>• Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• 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:** Sabrang bazar-sagar par Road, Id: 422904036

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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 |
| 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. | PIU & Contractor | Environmental Consultant of PIU, PSC |

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| | | • Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• The contractor must ensure sound environment for the local residents near the sub project site. | | |
| 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.<br>• 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.<br>• Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• Dust generation due to vehicle movement on connecting road shall be controlled by watering the | Contractor | Environmental Consultant of PIU, PSC |

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| | | path at limited level | | |
| Construction Activity | Safety Issues | • Unauthorized entry is completely prohibited in construction site and take necessary measures for preventing this problem<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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.<br>• If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any | PIU & Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

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| | | construction works starts. | | |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces.<br>• Labor code of conduct is to be disclosed through consultation. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable. | Contractor | Environmental Consultant of PIU, PSC |

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| | | • Proper consents for hazardous waste management. | | |
| 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.<br>• 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:<br>• 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.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• 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.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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 | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

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| | | be trained and drilled to test and ensure the coherence with the plan.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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 | | |

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| | | 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.<br>• 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 in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | • 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 |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 5,502.0 Sq.m | @38.15 Tk. Per sqm | 209,901.30 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1875.0m | @ 2.56 BDT | 4,800.00 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 150 nos. | @ Tk. 1000 | 150,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 8 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **602,847.02** |

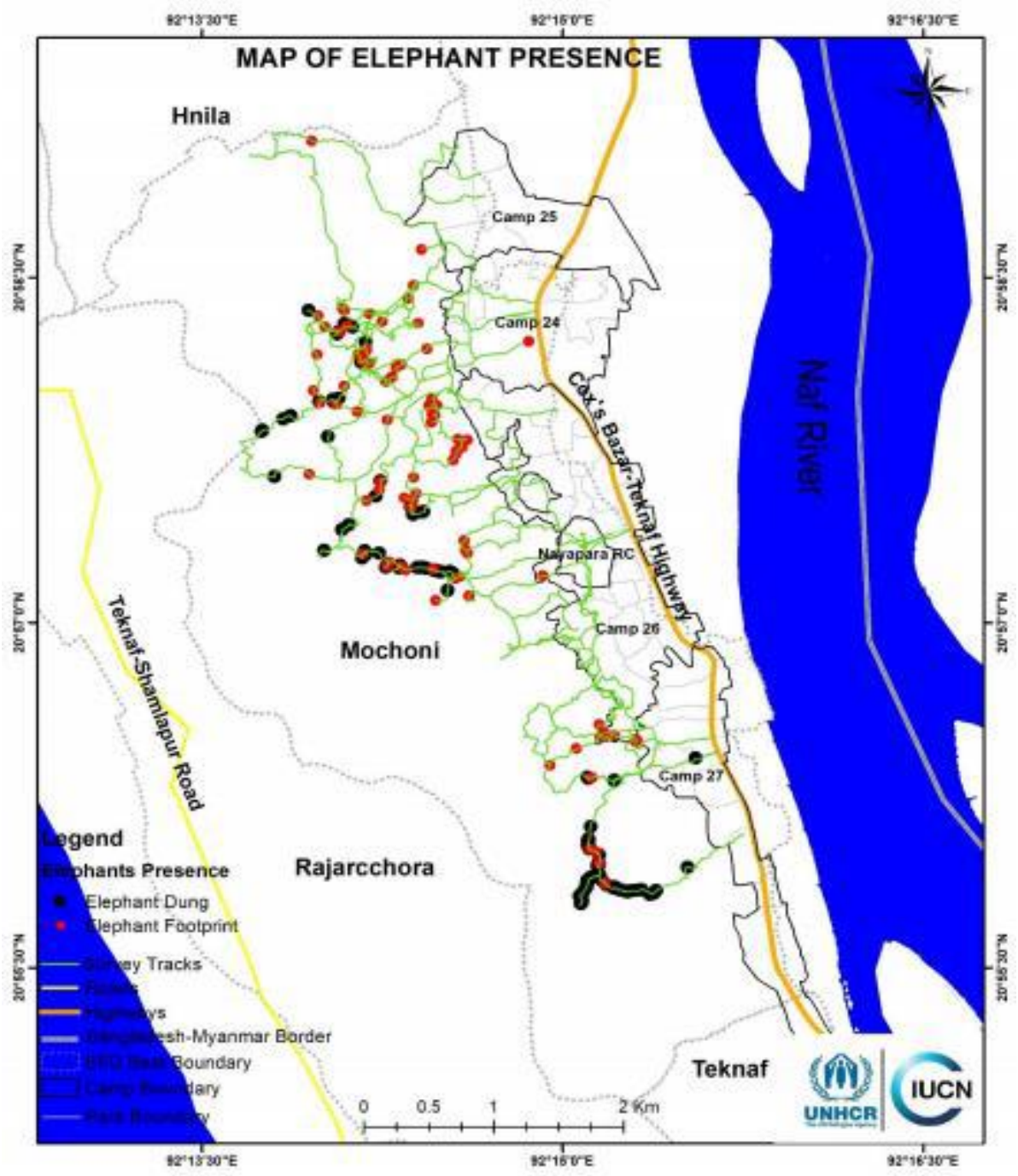
## Cost of H&S Measures under COVID 19 Situations

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 38 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.3).

| 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) | 103 | | 128 | 50.00 | 231 | 11,550.00 | To be placed in a case/holder on the basin, for washing hands for max. 43 people a day and showering of 38 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 | 22 nos. for each site | | N/A | 400.00 | 22 | 8,800.00 | For labors who work in close contact, 28 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 | 38 nos. for each labor camp | | 35.00 | 684 | 23,940.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 2 Can | N/A | 3 Can | 250.00 | 5 | 1,250.00 | |
| 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** | | | | | | **119,040.00** | |

## 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/W21.03, Road Id No.- 422904036

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

Time: 02:30 PM Date: 09/12/2020

Sabrang Bazar - Sagarpar Road

Mr. Monsur Ali's Shop, Alenakrill

Sabrang 02 Sabrang Teknaf

W21(03)

| | | | | | |
|---|---|---|---|---|---|
| ১ | | ৪৭ | মুসলিম | | |
| ২ | | ৮৪ | মুসলিম | | |
| ৩ | | ৩১ | | | |
| ৪ | | ২৯ | | | |
| ৫ | | ৪৫ | | | |
| ৬ | | ৩১ | | | |
| ৭ | | ২৮ | | | |
| ৮ | | ২৫ | | | |
| ৯ | | ৫৫ | | | |
| ১০ | | ৩৫ | | | |
| ১১ | | ৫৩ | | | |
| ১২ | | ২৯ | | | |
| ১৩ | | ২৭ | | | |
| ১৪ | | ৩২ | | | |
| ১৫ | | ৪৮ | | | |

**Public Consultation Participants' List**

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



**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Moheskhali para sea beach-Langurbil Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Moheshkhaliapara, Tulatoli, Lengurbil & Pallanpara villages under Teknaf Sadar union, Ward 3&5 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other other features located within 1km from the sub project, such as on north side several settlements (50m), vegetable yards (30m); on south side Moheshkhaliapara graveyard (500m), Moheshkhaliapara GPS (1km), Chowmuhoni mosque & madrasah (500m); on east side Bottoli bazar (500m), Teknaf sadar UP (500m), Tulatoli GPS cum cyclone shelter (700m), Moheshkhaliapara (Ra) mosque & madrasah (5m); and on west side North Moheshkhaliapara mosque & madrasah (5m), a pond (5m), Moheshkhaliapara canal (5m), Marine drive (1km), Bay of Bengal (1km). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (4) Moheskhali para sea beach-Langurbil Rd, Id: 422904037

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904037 | ii. Ward No.: 3 & 5 | iii. Mouza: Teknaf |
| iv. Village: Moheshkhaliapara, Tulatoli, Lengurbil & Pallanpara | v. Name of Union: Teknaf Sadar | |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 1487m |
| xi. Distance from UZHQ: 3 Km. | | |
| **GPS Coordinates** | Latitude Value: 20.857767 N<br>Longitude Value: 92.273309 E | Starting Point |

| | | | |
|---|---|---|---|
| | | Latitude Value: 20.861496 N<br>Longitude Value: 92.263707 E | Ending Point |
| | **Present Condition of Road** | BFS & Earthen | |
| | **Communication Source** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 2 nos. of Box Culvert (dimension: 3.0mx3.0m) at Ch. 244m and (dimension: 1 vent 4.5mx4.5m) at 1445m of chainage
- 2 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 335m & Ch. 1211m of the proposed road
- 83.0m Surface drain at different chainage
- 167.0m Brick Palisading work at different chainage
- Road safety work 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: 23,240,039.60 (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 10 December, 2020 in front of Farid Alom's shop at Moheshkhaliapara, 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 and 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 might occur as well. Discussion was also made on other potential hazards like air and water pollution, which are very likely 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 of the proposed site several settlements (50m), vegetable yards (30m); on south side Moheshkhaliapara graveyard (500m), Moheshkhaliapara GPS (1km), Chowmuhoni mosque & madrasah (500m); on east side Bottoli bazar (500m), Teknaf sadar UP (500m), Tulatoli GPS cum cyclone shelter (700m), Moheshkhaliapara (Ra) mosque & madrasah (5m); and on west side North Moheshkhaliapara mosque & madrasah (5m), pond (5m), Moheshkhaliapara canal (5m), Marine drive (1km), Bay of Bengal (1km) 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, and but that 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.

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.

[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

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.

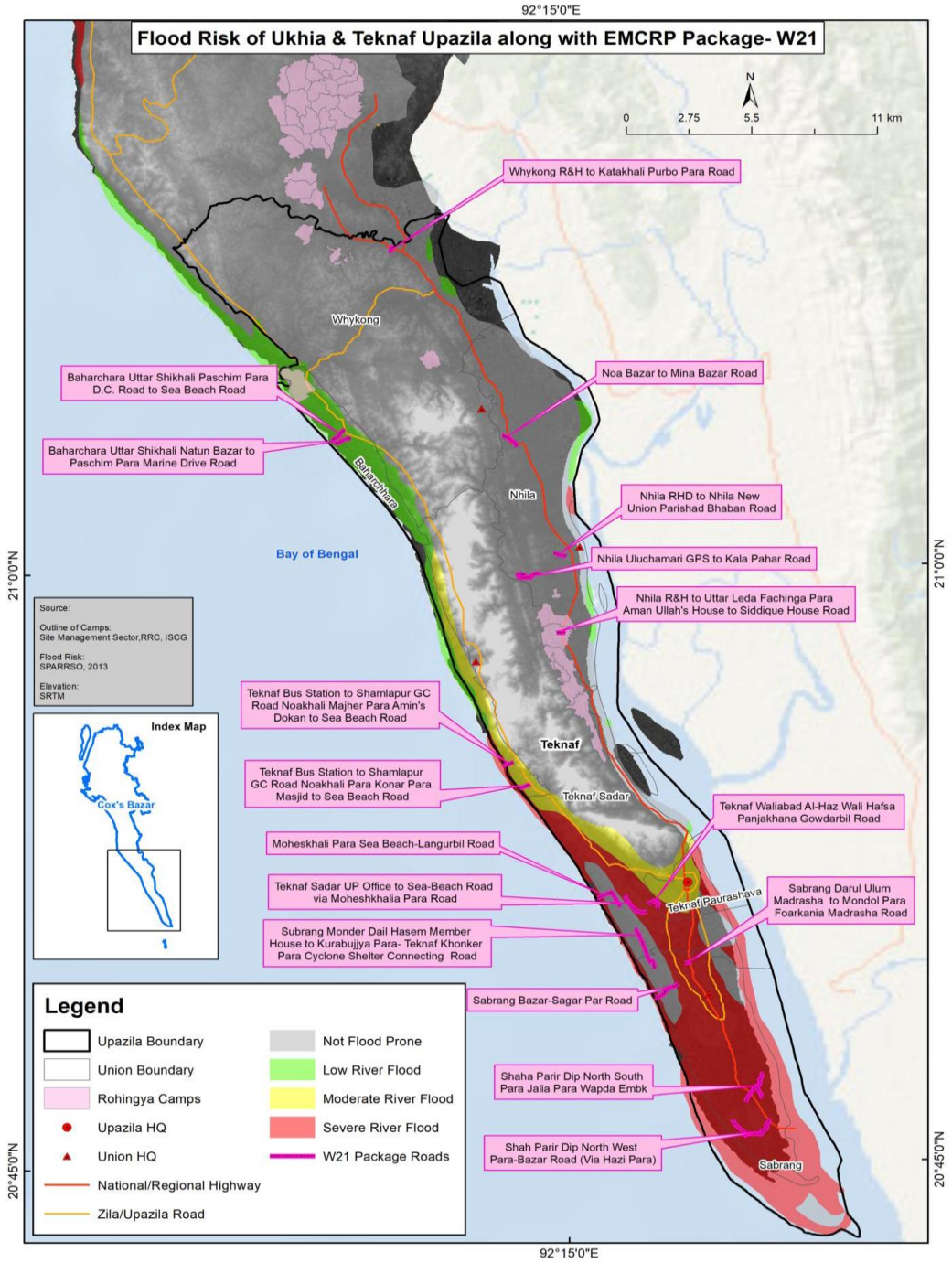



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW fall in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area.

As part of regular environmental enhancement works, tree planation on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 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.

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, 2 nos. of Box Culvert (dimension: 3.0mx3.0m) at Ch. 244m and (dimension: 1 vent 4.5mx4.5m) at 1445m of the road and 2 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 335m & Ch. 1211m will be constructed at the subproject area. Due to the presence of low land along different chainage of the road 83.0m Surface drain at different chainage and some protective works as 167.0m Brick Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Moheskhali para sea beach-Langurbil Road. Id: 422904037

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **23,240,039.60 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Moheshkhaliapara, Tulatoli, Lengurbil & Pallanpara.

**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. 1487m. Proposed safety and service providing structures include 2 nos. of Box Culvert (dimension: 3.0mx3.0m) at Ch. 244m and (dimension: 1 vent 4.5mx4.5m) at 1445m of chainage and 2 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 335m & Ch. 1211m of chainage, 83.0m Surface drain at different chainage and some additional protective works as 167.0m Brick Palisading work 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 7,286.30 sq m.

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

This proposed Moheskhali para sea beach-Langurbil Road belongs to Teknaf Sadar union under Teknaf Upazila. This road starts from Maheshkhaliapara seabeach road, from the house of UP member named Goni at east side stretching 1487m to Marine drive at west side. Several connecting roads fall within the road chainage. This targeted sub-project passes along different features, such as, pond, canal, chorra, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, betel leaf yard, electric poles, 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 | | Shop, electric pole, bamboo fences, betelnut yard, tin shed fences, household connecting road, betel nut trees |
| | | R | Shop, household connecting road, ditch, chorra, bushes, electric pole |
| 300-600 | L | | Culvert, pond, brick boundary wall, mosque, shop, betelnut yards, bamboo fences, trees, RCC pole with wire fencing, household connecting road |
| | | R | Betel leaf yards, open space, cross drain, connecting road, brick boundary wall, betelnut yards, RCC pole with wire fencing, mosque, connecting road |
| 600-900 | L | | Bamboo fences, bushes, cross drain, betelnut yards, shop, tin shed fences, tin shed household, bamboo fencing, bamboo bushes |
| | | R | Ditches, electric pole, betelnut yards, ext. guide wall, open spaces, shop, connecting road, paddy land, bamboo fences |
| 900-1200 | L | | Betelnut yards, bamboo shaft household, brick boundary wall, paddy land |
| | | R | Bamboo fences, RCC bridge on Moheshkhaliapara khal, paddy land, bushes |
| 1200-1487 | L | | Ext. cross drain, paddy land, RCC pole with wire fencing |
| | | R | Brick boundary wall, paddy land, bushes |




**Figure: Starting point of Moheskhali para sea beach-Langurbil Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

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.

The proposed construction of village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. 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 north side several settlements (50m), vegetable yards (30m); on south side Moheshkhaliapara graveyard (500m), Moheshkhaliapara GPS (1km), Chowmuhoni mosque & madrasah (500m); on east side Bottoli bazar (500m), Teknaf sadar UP (500m), Tulatoli GPS cum cyclone shelter (700m), Moheshkhaliapara (Ra) mosque & madrasah (5m); and on west side North Moheshkhaliapara mosque & madrasah (5m), pond (5m), Moheshkhaliapara canal (5m), Marine drive (1km), Bay of Bengal (1km). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).




**Figure 3: District Map with project location**




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

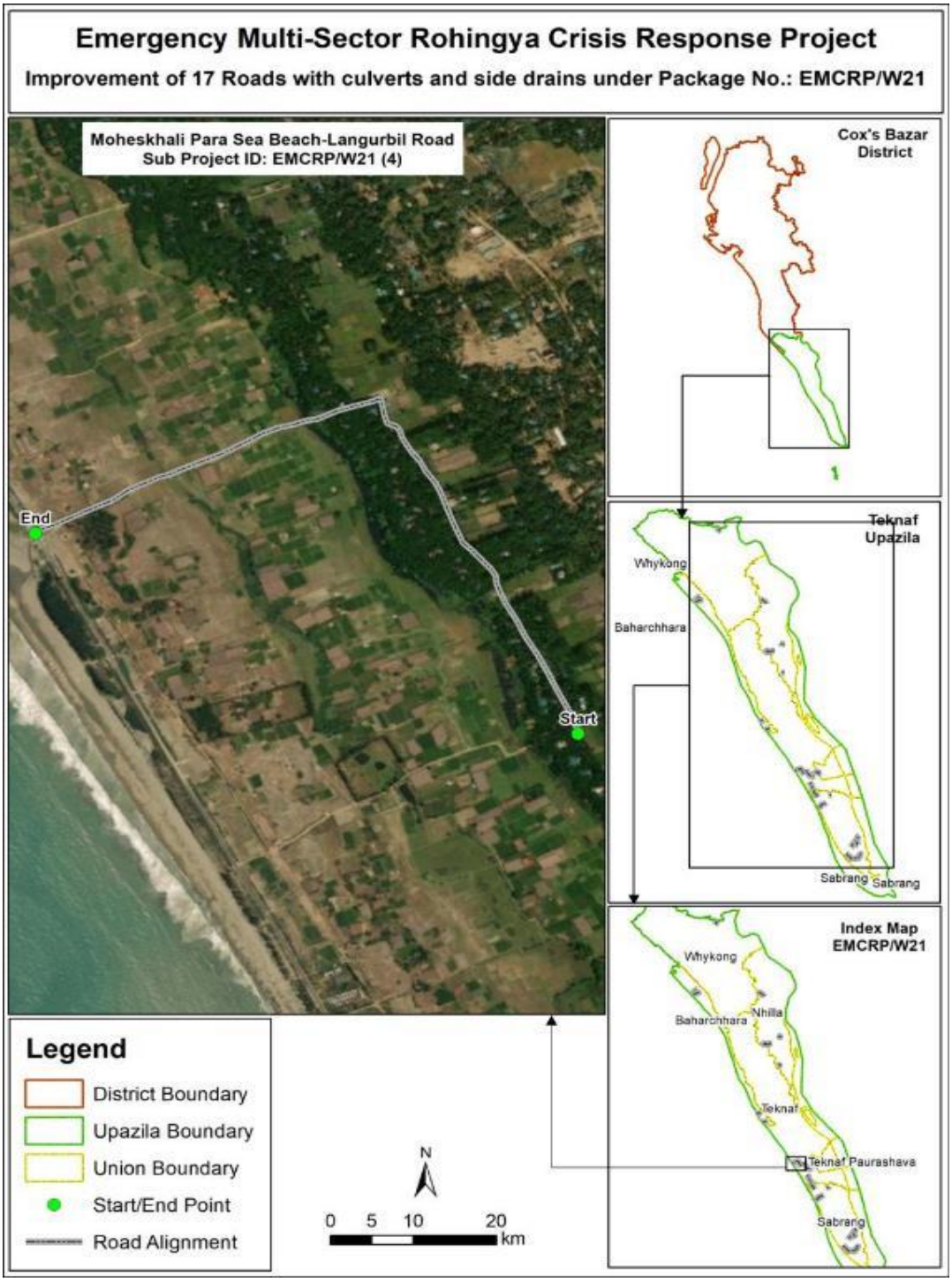



**Figure 5: Upazila Map with Sub-project location**

**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. 1487m. Proposed safety and service providing structures include 2 nos. of Box Culvert, 2 nos. Cross Drain, 83m Surface drain at different chainage, protective works as 167m Brick Palisading work that are included in the design and estimation, and as part of road safety works includes 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 | 422904037 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Teknaf Sadar |
| WARD | 3 & 5 |
| Proposed Chainage | 1487m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.857767 N<br>Longitude Value: 92.273309 E |
| Road Ending Point Coordinates | Latitude Value: 20.861496 N<br>Longitude Value: 92.263707 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. 1487m.

i) Some water bodies like ponds, chorra, canal, 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: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 north side settlements (50m), vegetables yard (30m); on south side Moheshkhaliapara graveyard (500m), Moheshkhaliapara GPS (1km), Chowmuhoni mosque & madrasah (500m); on east side Bottoli bazar (500m), Teknaf sadar UP (500m), Tulatoli GPS cum cyclone shelter (700m), Moheshkhaliapara (Ra) mosque & madrasah (5m); and on west side North Moheshkhaliapara mosque & madrasah (5m), pond (5m), Moheshkhaliapara canal (5m), Marine drive (1km), Bay of Bengal (1km). 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**

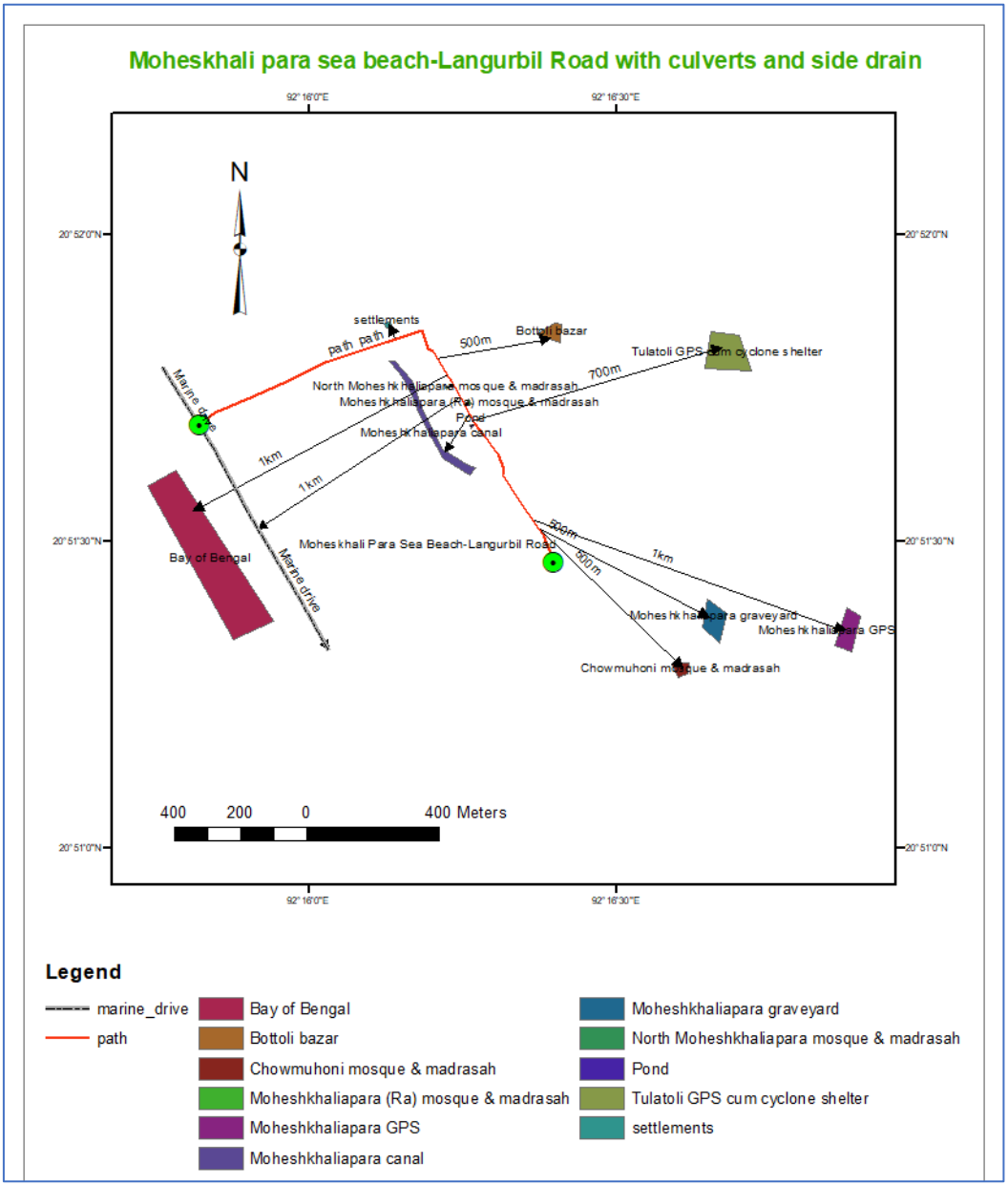



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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.<br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Moheshkhalia para sea beach connecting road and Teknaf Sadar UP 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Moheshkhalia para sea beach connecting road and Teknaf Sadar UP 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:** |

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| 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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>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. |

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| **Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)**<br>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 the close vicinity of the road, 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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>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:**<br>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, |

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| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• khals or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires;<br>• 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.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• 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 | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• Noise Level following decibel meter (dB), if required. | 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 |
| | **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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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** sign s, Post speed limits and suitable bending on the road.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due to higher number | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each 3 years. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | of vehicles using the roads at increased speeds) | | undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | |

* 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:** Moheskhali para sea beach-Langurbil Road. Id: 422904037

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development, the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• 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.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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.<br>• 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.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• 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.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces.<br>• 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:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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.<br>• Exposure to health events during construction activities such as manual handling and | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• 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.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• 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.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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 in construction stage: | • 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 |
|---|---|---|---|---|
| | ✓ Pollution from waste materials<br>Health & Safety risks to workers and local community | | | |
| Operation & Maintenance | Noise disturbances to fauna<br>✓ | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 4,393.5 Sq.m | @38.15 Tk. Per sqm | 167,612.03 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1487.0m | @ 2.56 BDT | 3,806.72 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 120 nos. | @ Tk. 1000 | 120,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 3 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **529,564.47** |

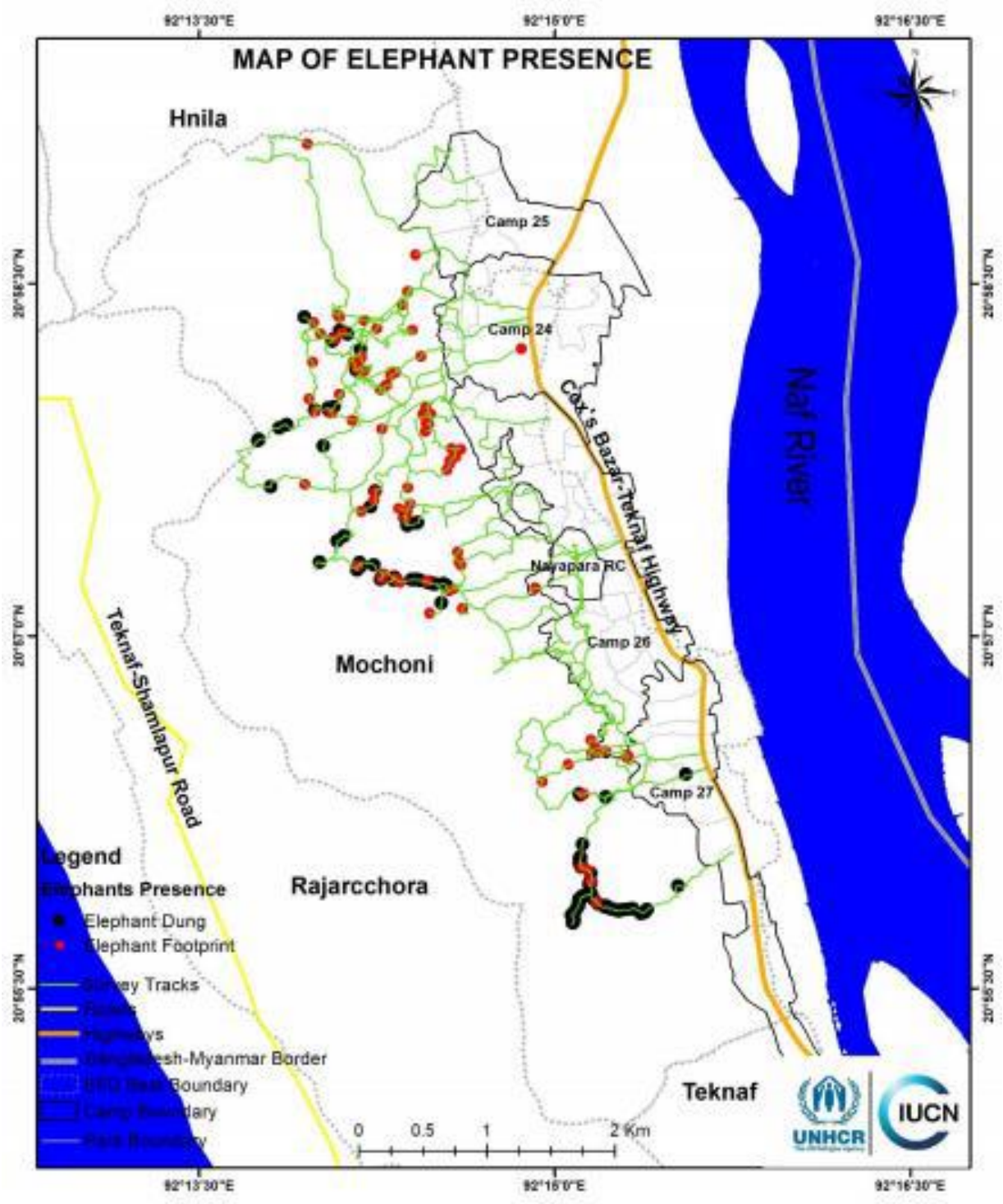
## Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 30 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.4).

| 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) | 81 | | 101 | 50.00 | 182 | 9,100.00 | To be placed in a case/holder on the basin, for washing hands for max. 35 people a day and showering of 30 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 | 18 nos. for each site | | N/A | 400.00 | 18 | 7,200.00 | For labors who work in close contact, 18 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 | 30 nos. for each labor camp | | 35.00 | 540 | 18,900.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 2 Can | 250.00 | 3.5 | 875.00 | |
| 10. | Detergent Cleaner | N/A | 1.5 kg in each camp/month | | 400.00 | 13.5 | 5,400.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | **Grand Total** | | | | | | **107,775.00** | |

**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/W21.04, Road ID No.- 422904037

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

**Public Consultation Participants' List**

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



**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Gowdarbeel, Pallanpara, Oliabad, Kulalpara, Moheshakaliapara, Thambapara under Teknaf Sadar union, Ward 06 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at north side Ansabin Malik Madrassa and Mosque(5m); at south side Eid Gah(5m), Mohammodia Riatul Jannah Dakhil Madrassa (20m), Teknaf Bazar(20m); at east side Teknaf Degree College (200m), Chora(5m), Pilot High School (150m), Pilot GPS (150m); and at west side Fire Station(500m), Gudara Beel Graveyard(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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road Id:422904038

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904038 | ii. Ward No.: 06 | iii. Mouza: Teknaf Mouza |
| iv. Village: Gowdarbeel, Pallanpara, Oliabad, Kulalpara, Moheshakaliapara, Thambapara | | v. Name of Union: Teknaf Sadar |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 782 |
| xi. Distance from UZHQ: 04 Km. | | |

| | | | |
|---|---|---|---|
| | **GPS Coordinates** | Latitude Value: 20.85924$^0$ N<br>Longitude Value: 92.28529$^0$ E | Starting Point |
| | | Latitude Value: 20.85695$^0$ N<br>Longitude Value: 92.28888$^0$ E | Ending Point |
| | **Present Condition of Road** | HBB & Earthen | |
| | **Communication Source** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 01 nos. RCC Box Culvert (dimension: 4.0mx4.0m) at Ch. 7m on the road
- Road safety work 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: 9,212,729.07 (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 front of Anas Bin Malik Madrassa, 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 and 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 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 Ansabin Malik Madrassa and Mosque(5m); at south side Eid Gah(5m), Mohammodia Riatul Jannah Dakhil Madrassa (20m), Teknaf Bazar(20m); at east side Teknaf Degree College (200m), Chora(5m), Pilot High School (150m), Pilot GPS (150m); and at west side Fire Station(500m), Gudara Beel Graveyard(5m) 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 prepartory 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, and but that 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.

[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.

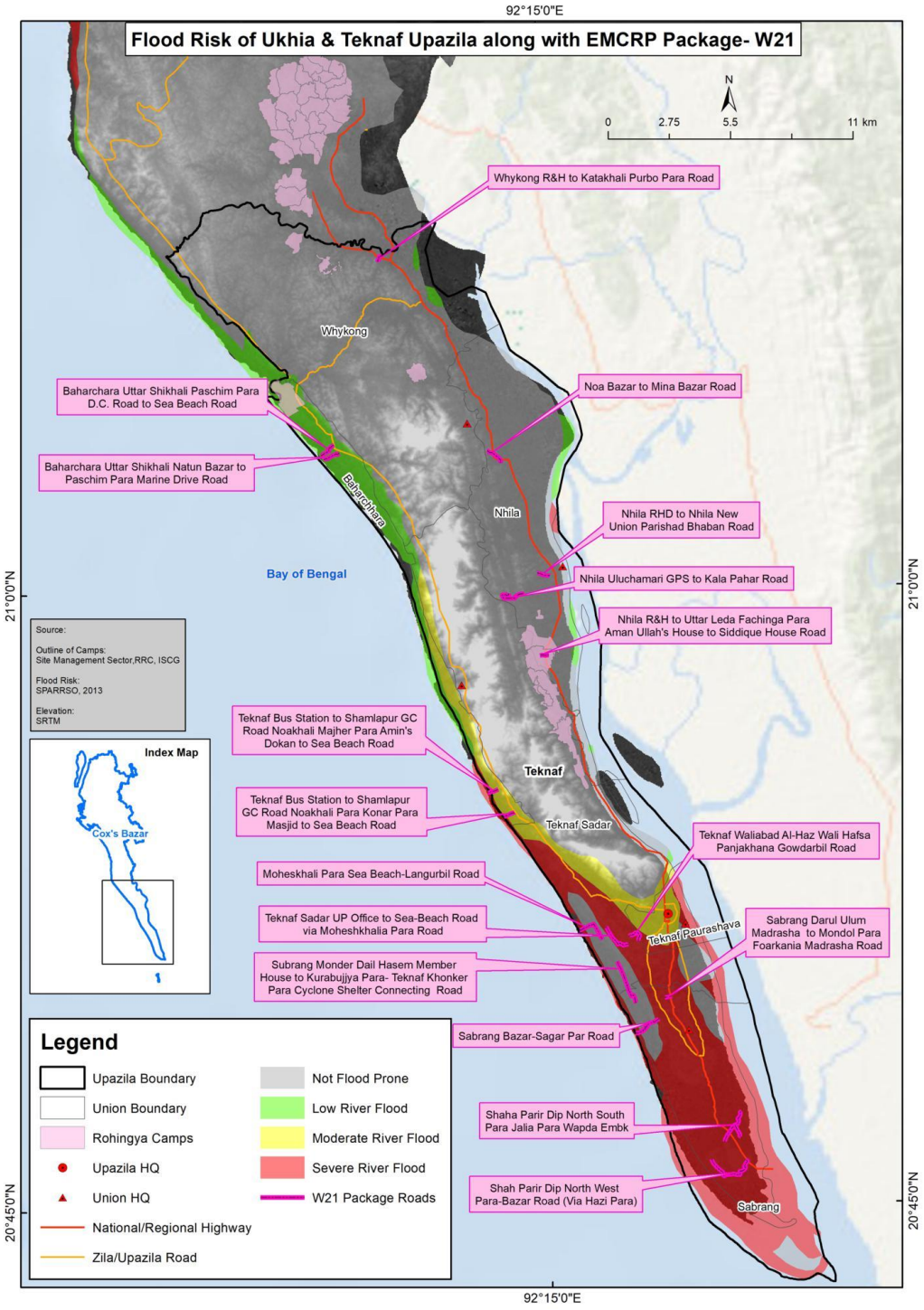



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, the roads are found to be in the vicinity of the severe river flood inundation area. Road erosion may occur depending on the intensity and the frequency of river flood and storm surge. So tree plantation along the roads is suggested specifically for certain conditions. And slope protection techniques can

be adhered. Tree planation will sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 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.

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, 01 nos. RCC Box Culvert (dimension: 4.0mx4.0m) at Ch. 7m will be constructed at the subproject area. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road Id: 422904038

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **9,212,729.07 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Gowdarbeel, Pallanpara, Oliabad, Kulalpara, Moheshakaliapara, Thambapara.

**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. 782m. Proposed safety and service providing structures include 01 nos. RCC Box Culvert (dimension: 4.0mx4.0m) at Ch. 7m of 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 3,831.8 sq m.

**Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:**
This proposed Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road belongs to Teknaf Sadar union under Teknaf Upazila. This road starts from East Godarbeel Bridge stretching 782m to East Godarbeel Graveyard. This sub-project passes along different features, such as, boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 | | Human Settlements, tin fences, household connecting road to the left, crop field |
| | | R | Human Settlement, tin fences, tree, electric pole, crop field |
| 300-600 | L | | Crop fields, electric pole, brick wall, Rahmania Mosque, open field, brick wall, human settlement, tin fence, brick wall |
| | | R | Cross drain, crop field, brick wall, tin fences, settlement, brick wall |
| 600-900 | L | | Shop, household connecting road to the left, guide wall, brick wall, tin fence, household connecting road to the left, tube well, guide wall |
| | | R | Tin fences, shops, trees, settlement, brick wall, household connecting road to the right, tree, guide wall, open field, grave yard |




**Figure: Starting point of Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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 funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that a culvert has also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

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 Ansabin Malik Madrassa and Mosque(5m); at south side Eid Gah(5m), Mohammodia Riatul Jannah Dakhil Madrassa (20m), Teknaf Bazar(20m); at east side Teknaf Degree College (200m), Chora(5m), Pilot High School (150m), Pilot GPS (150m); and at west side Fire Station(500m), Gudara Beel Graveyard(5m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

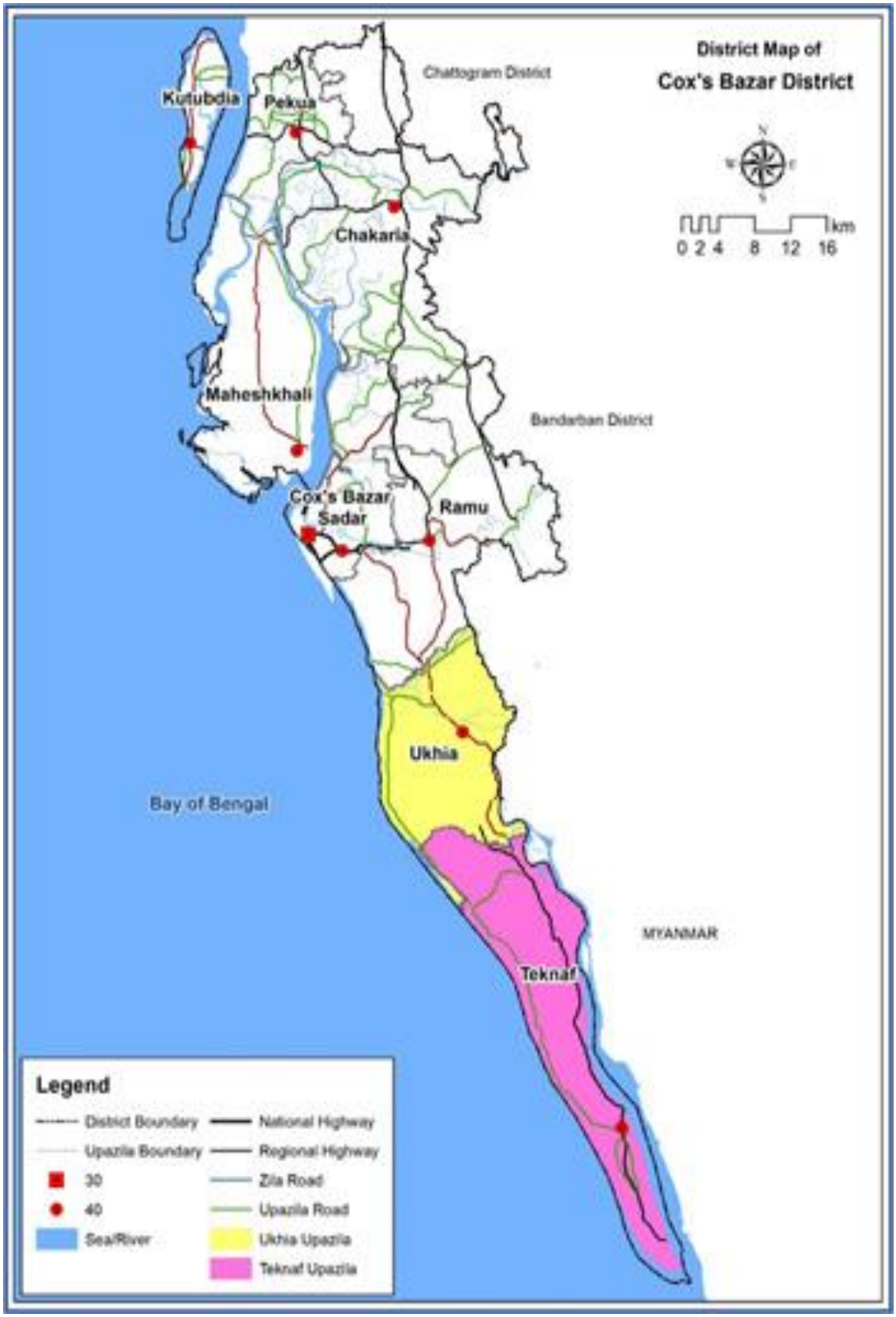



**Figure 3: District Map with project location**




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

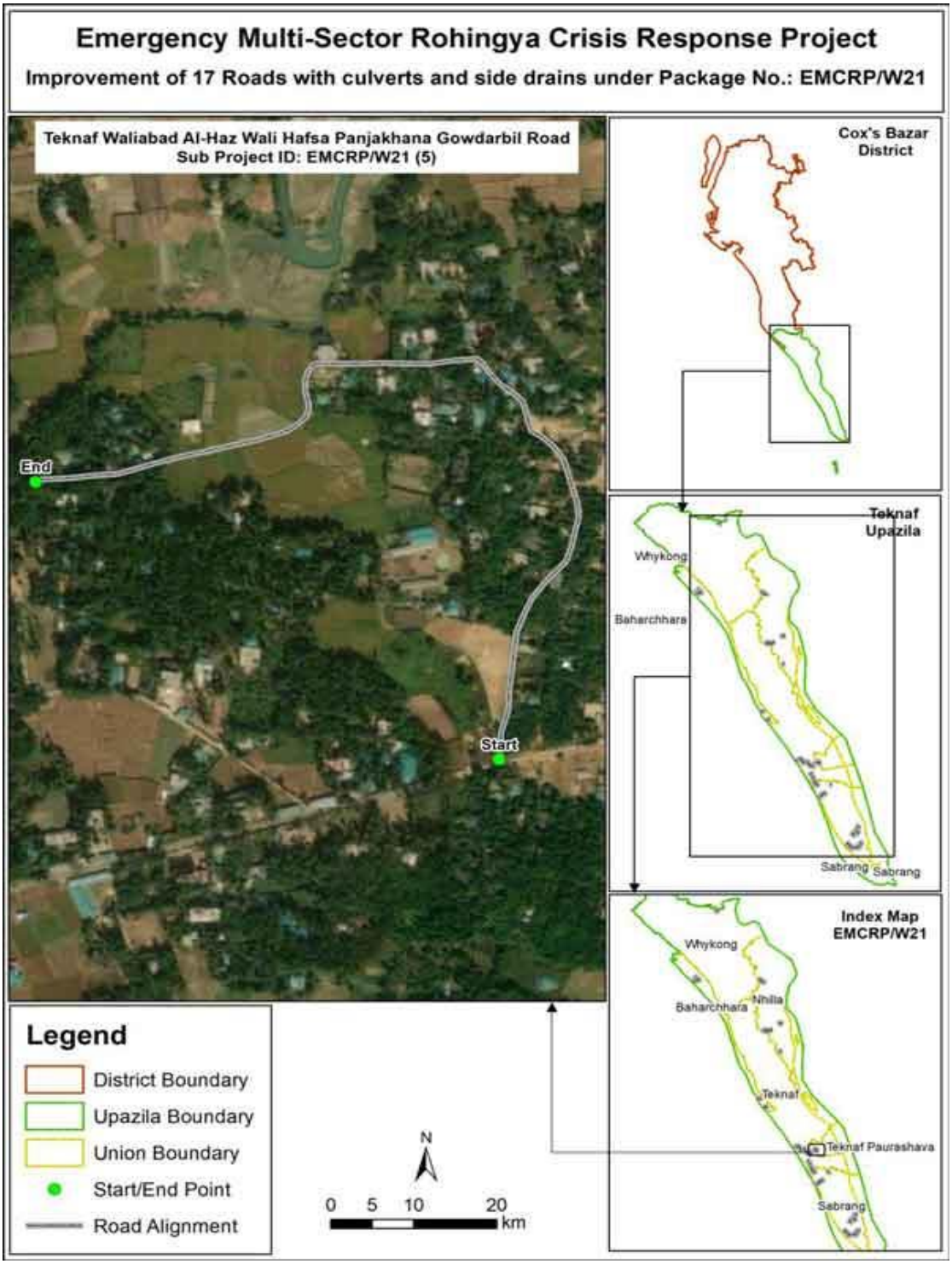



**Figure 5: Upazila Map with Sub-project location**

**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. 782m. Proposed safety and service providing structures include 01 nos. RCC Box Culvert (dimension: 4.0mx4.0m) at Ch. 7m is incorporated 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 | 422904038 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Teknaf Sadar |
| WARD | 06 |
| Proposed Chainage | 782m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $20.85924^0$ N<br>Longitude Value: $92.28529^0$ E |
| Road Ending Point Coordinates | Latitude Value: $20.85695^0$ N<br>Longitude Value: $92.28888^0$ 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. 1640m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Ansabin Malik Madrassa and Mosque(5m); at south side Eid Gah(5m), Mohammodia Riatul Jannah Dakhil Madrassa (20m),

Teknaf Bazar(20m); at east side Teknaf Degree College (200m), Chora(5m), Pilot High School (150m), Pilot GPS (150m); and at west side Fire Station(500m), Gudara Beel Graveyard(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**

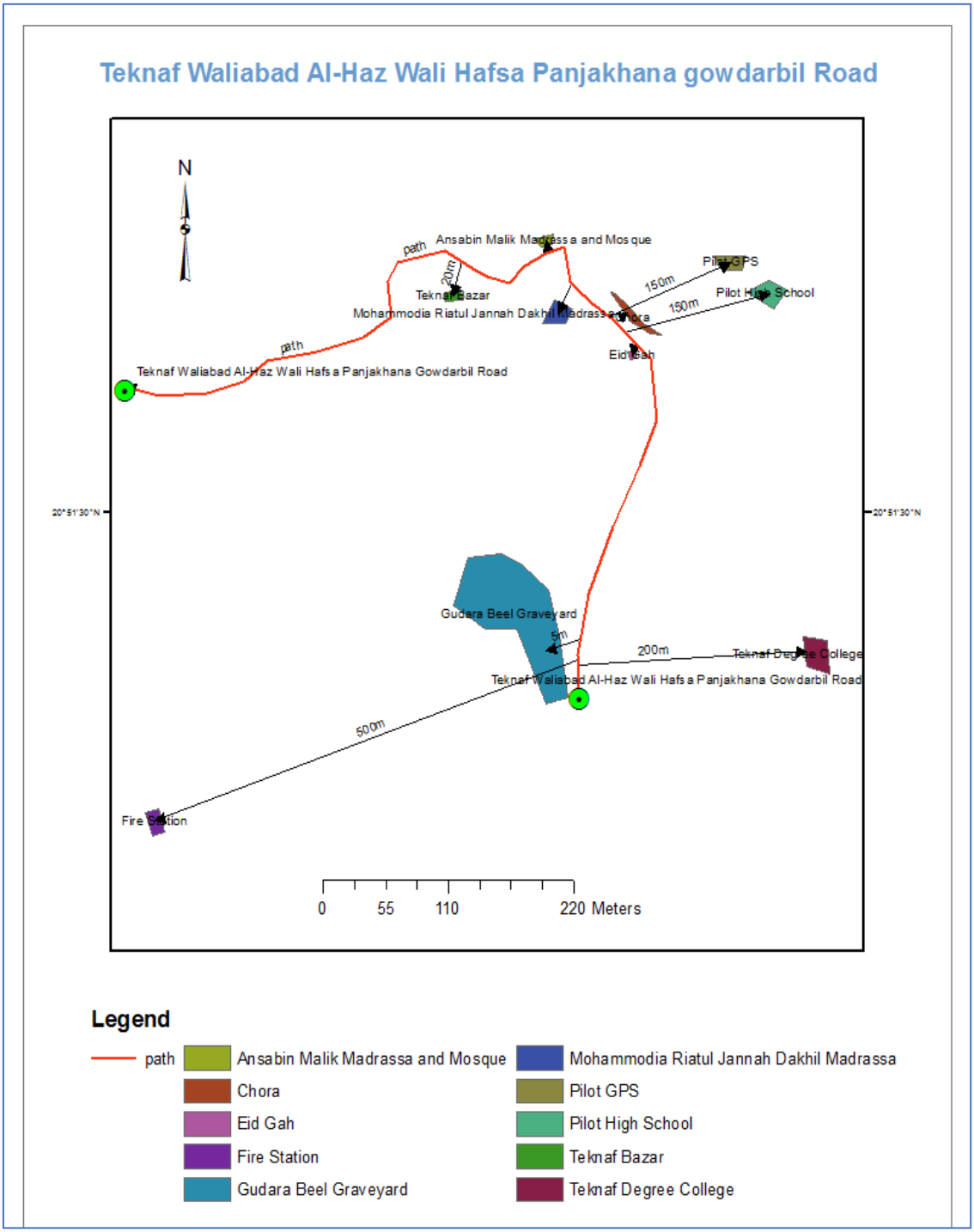



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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

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| about 50-100 feet and deep tube well depth is 500 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.<br><br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Teknaf Sea Beach 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:**<br>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:**<br>Labor camp can be established along the road since there are available open private lands. Possible location of labor camps establishment will be private land of Ezahar Mia at Shahaporir dip uttarpara. 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.):**<br>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):**<br>Yes. Teknaf Sea Beach 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 |

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| different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>Existing canals, ponds and ditches can be disturbed by the construction works, especially from the |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>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:** |

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|---|
| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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 Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id: 422904038

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 2335 Sq.m | @38.15 Tk. Per sqm | 89,080.25 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 782.0m | @ 2.56 BDT | 2001.92 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 70 nos. | @ Tk. 1000 | 70,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 8 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **399,227.89** |

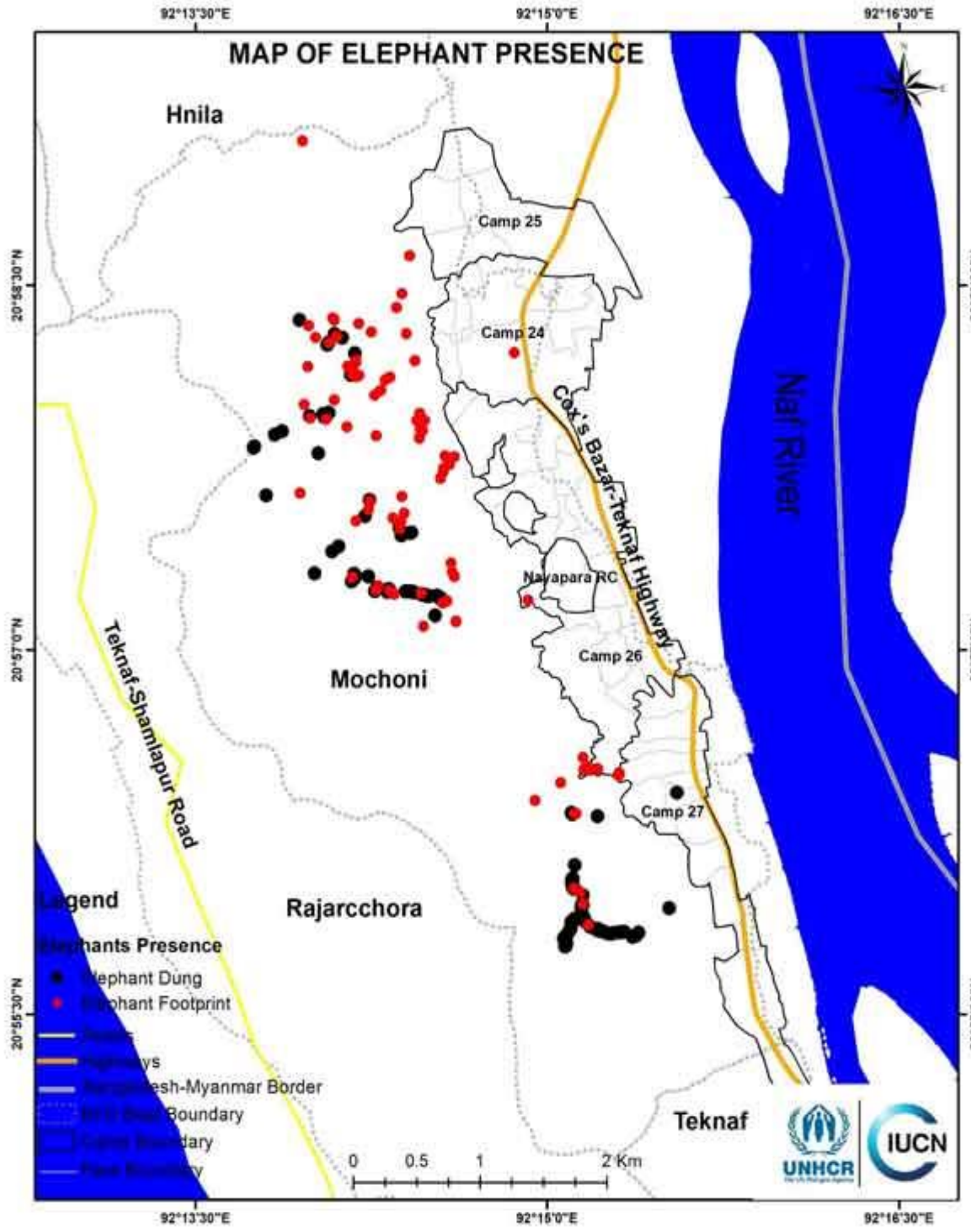
**Cost of H&S Measures under COVID 19 Situations**

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 16 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.5).

| 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) | 44 | | 54 | 50.00 | 98 | 4,900.00 | To be placed in a case/holder on the basin, for washing hands for max. 39 people a day and showering of 34 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 | 10 nos. for each site | | N/A | 400.00 | 10 | 4000.00 | For labors who work in close contact, 22 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 | 34 nos. for each labor camp | | 35.00 | 288 | 10,080.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 4 Can | 250.00 | 5.5 | 1,375.00 | |
| 10. | Detergent Cleaner | N/A | 1.750 kg in each camp/month | | 400.00 | 15.75 | 6,300.00 | 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** | | | | | | **92,955.00** | |

**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/W21.05, Road ID No.- 422904038

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**
Local Government Engineering Department (LGED)
Public Consultation Participants List

**Focus Group Discussion**

12:20 PM — 12/11/2020

W21(05)

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12/11/2020

# EMCRP/W21.05, Road Id No.- 422904038

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

সময়: 12:20 PM তারিখ: 12/12/2020

Walidhand Al-Hazwala Mahfil Pratyakhana.

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**Public Consultation Participants' List**

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



Overview of surrounding features of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Monder dail, Kurabujjyapara, Baharchorra, Phatealipara & Khonkerpara villages under Sabrang union, Ward 1&5 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as, on south side West Monder dail mosque (50m), Monder dail GPS (1km), Monder dail Ebtadayee Dakhil madrasah (1km); on east side Kurabujjapara new mosque (5m), Kurabujjapara Baitun Omor-Bin mosque & madrasah (5m), Rashidiya Foyjul Ulum madrasah, hefzakhana & orphanage (5m), Reju khal (100m); and on the west side Bay of Bengal (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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/ W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (6) Subrang Monder Dail Hasem Member house to Kurabujjya para-Teknaf khonker para cyclone shelter connecting Road Id: 422904042

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904042 | ii. Ward No.: 1 & 5 | iii. Mouza: Sabrang |
| iv. Village: Monder dail, Kurabujjyapara, Baharchorra, Phatealipara & Khonkerpara. | v. Name of Union: Sabrang | |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 1830 |
| xi. Distance from UZHQ: 8 Km. | | |
| **GPS Coordinates** | Latitude Value: 20.831806 N | Starting Point |

| | | | |
|---|---|---|---|
| | | Longitude Value: 92.287583 E | |
| | | Latitude Value: 20.840641 N<br>Longitude Value: 92.283174 E | Ending Point |
| | **Present Condition of Road** | HBB, BFS & Earthen | |
| | **Communication Source** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 4nos. of Box Culvert at Ch. 1577m (dimension: 2.50mx2.50m) and at Ch. 200m, Ch. 271m & Ch. 1228m (dimension: 1.50mx2.00m) on the proposed road
- 4 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 91m, Ch. 155m, Ch. 295m & Ch. 880m of chainage
- 125m Brick Palisading work at different chainage
- Road safety work 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: 26,876,255.44 (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 12 December, 2020 in Mr. Rasel's shop at Monder dail, 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 south side of the proposed site West Monder dail mosque (50m), Monder dail GPS (1km), Monder dail Ebtadayee Dakhil madrasah (1km); on east side Kurabujjapara new mosque (5m), Kurabujjapara Baitun Omor-Bin mosque & madrasah (5m), Rashidiya Foyjul Ulum madrasah, hefzakhana & orphanage (5m), Reju khal (100m); and on west side Bay of Bengal (500m) is 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 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, and but that 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.

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

[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 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.

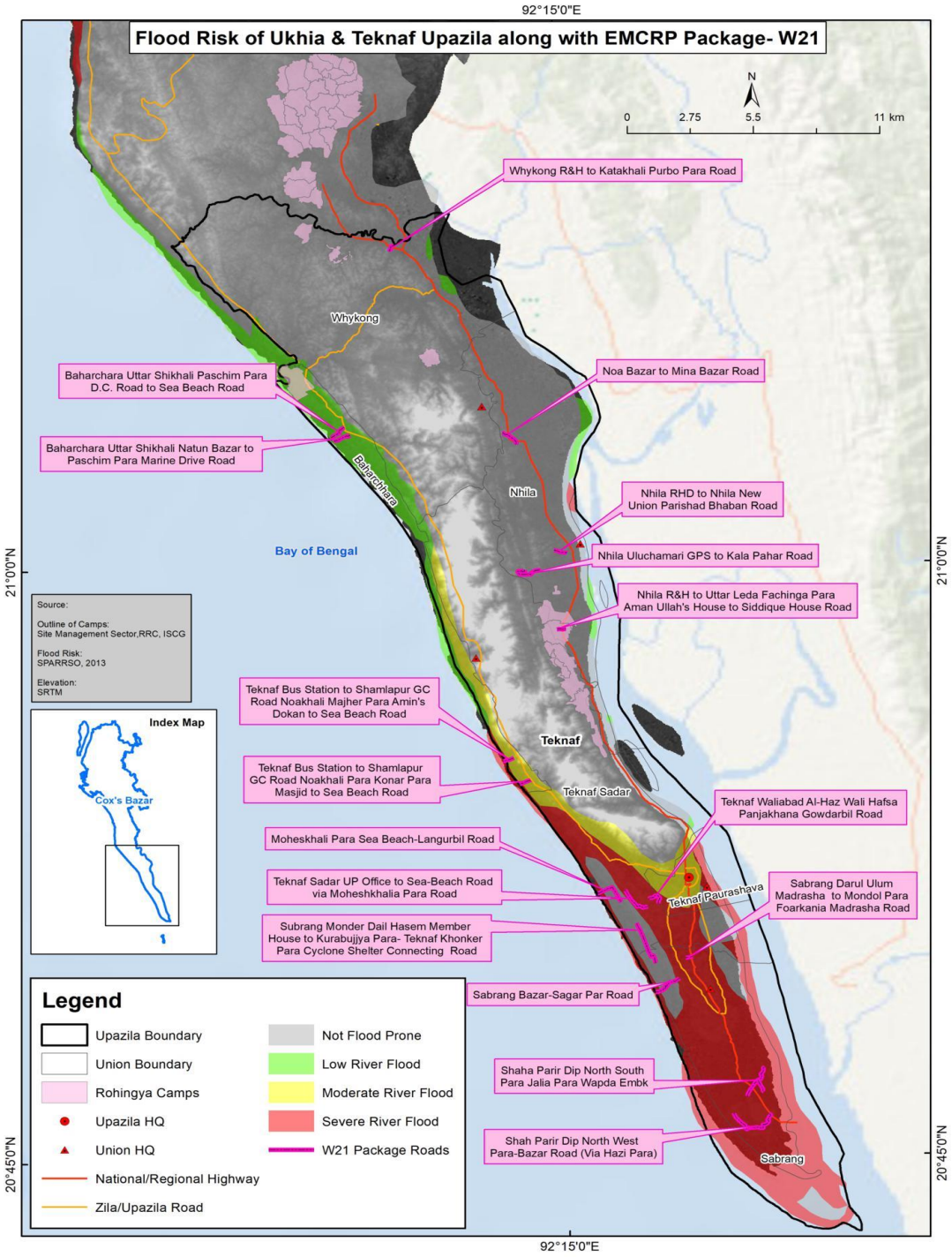



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, none of the sections of the road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area.

# 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.

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, 4nos. of Box Culvert (dimension: 2.50mx2.50m) at Ch. 1577m and (dimension: 1.50mx2.00m) at Ch. 200m, Ch. 271m & Ch. 1228m of chainage and 4 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 91m, Ch. 155m, Ch. 295m & Ch. 880m of chainage will be constructed at the subproject area. Due to the presence of low land along different chainage of the road some protective works, e.g., 125m Brick Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road Id: 422904042
**Implementing Agency/Agencies**: Local Government Engineering Department (LGED)
**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**
**Estimated construction period duration**: 1 year
**Estimated total cost of the component (in Taka)**: **26,876,255.44 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Monder dail, Kurabujjyapara, Baharchorra, Phatealipara & Khonkerpara.
**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. 1830m. Proposed safety and service providing structures include 4nos. of Box Culvert (dimension: 2.50mx2.50m) at Ch. 1577m and (dimension: 1.50mx2.00m) at Ch. 200m, Ch. 271m & Ch. 1228m and 4 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 91m, Ch. 155m, Ch. 295m & Ch. 880m on the road and some additional protective works, e.g., 125m Brick Palisading work 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 8,967 sq m.

**Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:**
This proposed Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road belongs to Sabrang union, Ward 1&5 under Teknaf Upazila. This road starts from Sabrang to Seabeach road at Monder dail on south side stretching 1830m and ends at the house of Bashir Uddin at Khonkerpara on north side. Several connecting roads fall within the road chainage. This sub-project passes along different features, such as, boundary fences, culverts, paddy land, patches of vegetation and agricultural fields, homestead garden, mosques, religious institutes, shops 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 lands, cross drains, tin shed household, trees, electric pole |
| | | R | Shop, tin shed fences, paddy lands |
| 300-600 | L | | Tin shed fences |
| | | R | Brick boundary wall, tin shed fences, poultry farm, open field |
| 600-900 | L | | Tin shed fences, marine drive, shop |
| | | R | Paddy land, tin shed fences, connecting road, cross drains, trees, electric pole |
| 900-1200 | L | | Tin shed fences, paddy land, bamboo fences, trees |
| | | R | Paddy lands, cross drain, tin shed fences, culvert, tin shed household |
| 1200-1500 | L | | Paddy lands, tin shed household, electric pole, mosque |
| | | R | Paddy lands, bamboo fences, trees, homestead garden |
| 1500-1830 | L | | Paddy lands, mosque, trees, tower, building |
| | | R | Paddy land trees, tin shed household, brick boundary wall |




**Figure: Starting point of Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 south side of the proposed site West Monder dail mosque (50m), Monder dail GPS (1km), Monder dail Ebtadayee Dakhil madrasah (1km); on east side Kurabujjapara new mosque (5m), Kurabujjapara Baitun Omor-Bin mosque & madrasah (5m), Rashidiya Foyjul Ulum madrasah, hefzakhana & orphanage (5m), Reju khal (100m); and on west side Bay of Bengal (500m). In this sub-project area, no elephant migration routes exist (ref. IUCN).




**Figure 3: District Map with project location**




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

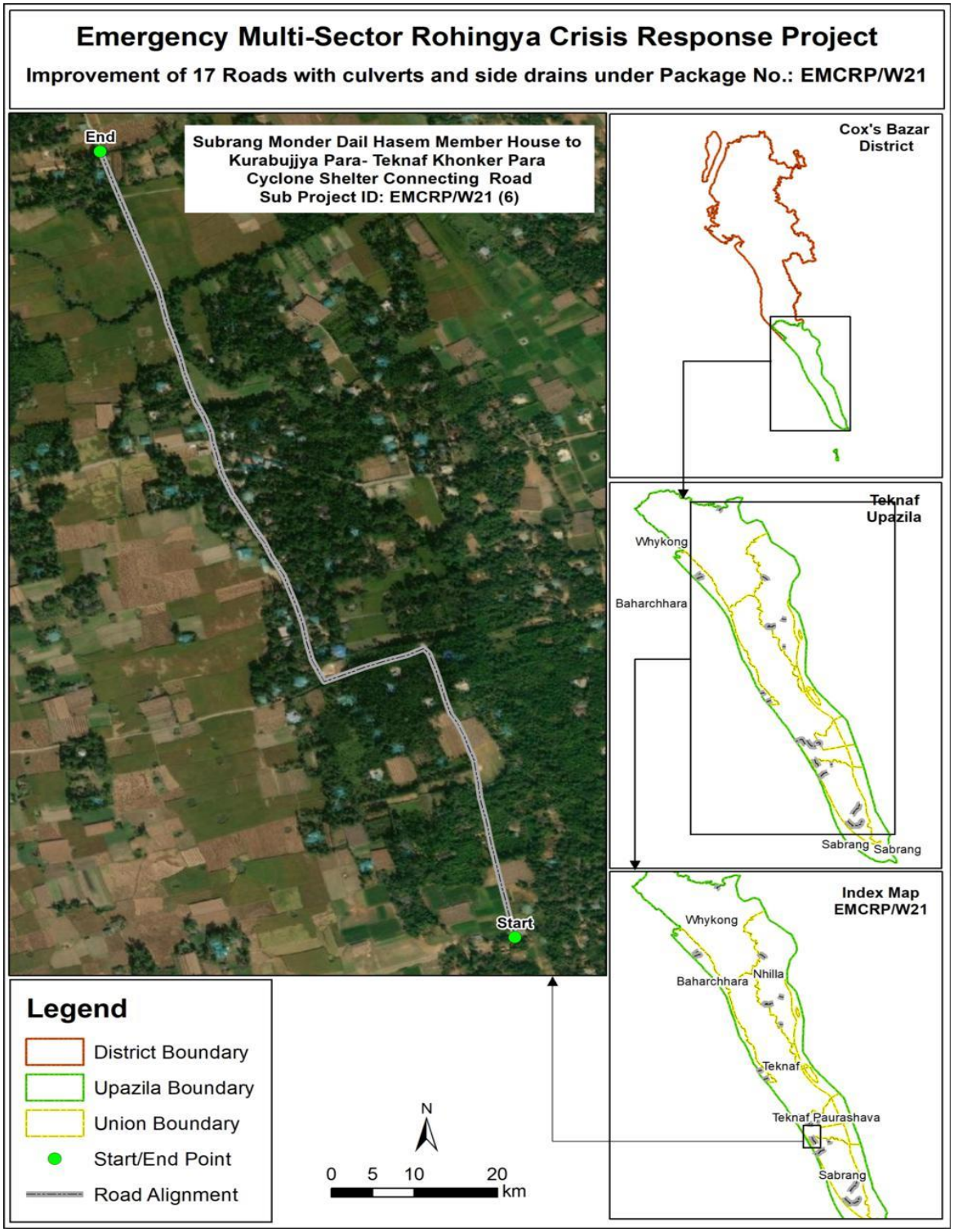



**Figure 5: Upazila Map with Sub-project location**

**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. 1830m. Proposed safety and service providing structures include 4 nos. of Box Culvert, 4 nos. Cross Drain, 125m Brick Palisading work that are included in the design and estimation, and as part of road safety works includes 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 | 422904042 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Sabrang |
| WARD | 1 & 5 |
| Proposed Chainage | 1830m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.831806 N<br>Longitude Value: 92.287583 E |
| Road Ending Point Coordinates | Latitude Value: 20.840641 N<br>Longitude Value: 92.283174 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. 1830m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 south side west Monder dail mosque (50m),

Monder dail GPS (1km), Monder dail Ebtadayee Dakhil madrasah (1km); on east side Kurabujjapara new mosque (5m), Kurabujjapara Baitun Omor-Bin mosque & madrasah (5m), Rashidiya Foyjul Ulum madrasah, hefzakhana & orphanage (5m), Reju khal (100m); and on west side Bay of Bengal (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**

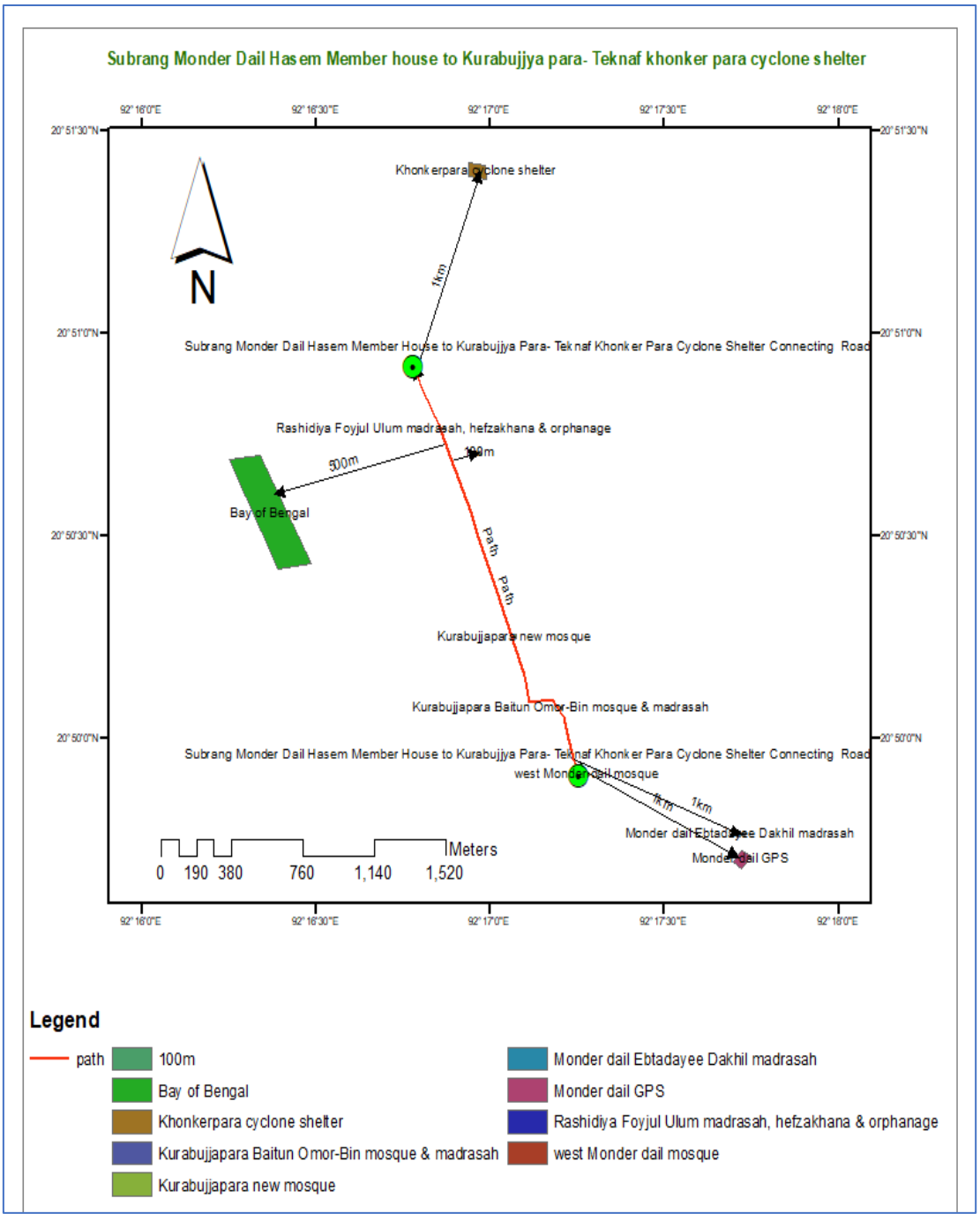



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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.<br>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.<br><br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Existing 12 ft. Sabrang to seabeach connecting road and cyclone shelter 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Sabrang to seabeach connecting road and cyclone shelter connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation |

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| vehicles. Manual head load from unloading point to different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>Existing canals, ponds and ditches can be disturbed by the construction works, especially from the |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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|---|
| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road Id: 422904042

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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 | • Selection of sub-project sites and all implementing interventions must take place outside of the elephant | PIU | Environmental Consultant of PIU, |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | conflict | corridor/influence area. | | PSC |
| 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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. | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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 | PIU & Contractor | Social Development Specialist and |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | taken.<br>• If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | forces.<br>• Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all | 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 |
|---|---|---|---|---|
| | plant and vehicles, and electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | walkways shall be provided with good conditions underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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. | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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 |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| Construction Activity | Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | • 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 |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 5,463.0 Sq.m | @38.15 Tk. Per sqm | 208,413.45 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1830.0m | @ 2.56 BDT | 4,684.80 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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 |
|---|---|---|---|---|
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 150 nos. | @ Tk. 1000 | 150,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 3 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **601,243.97** |

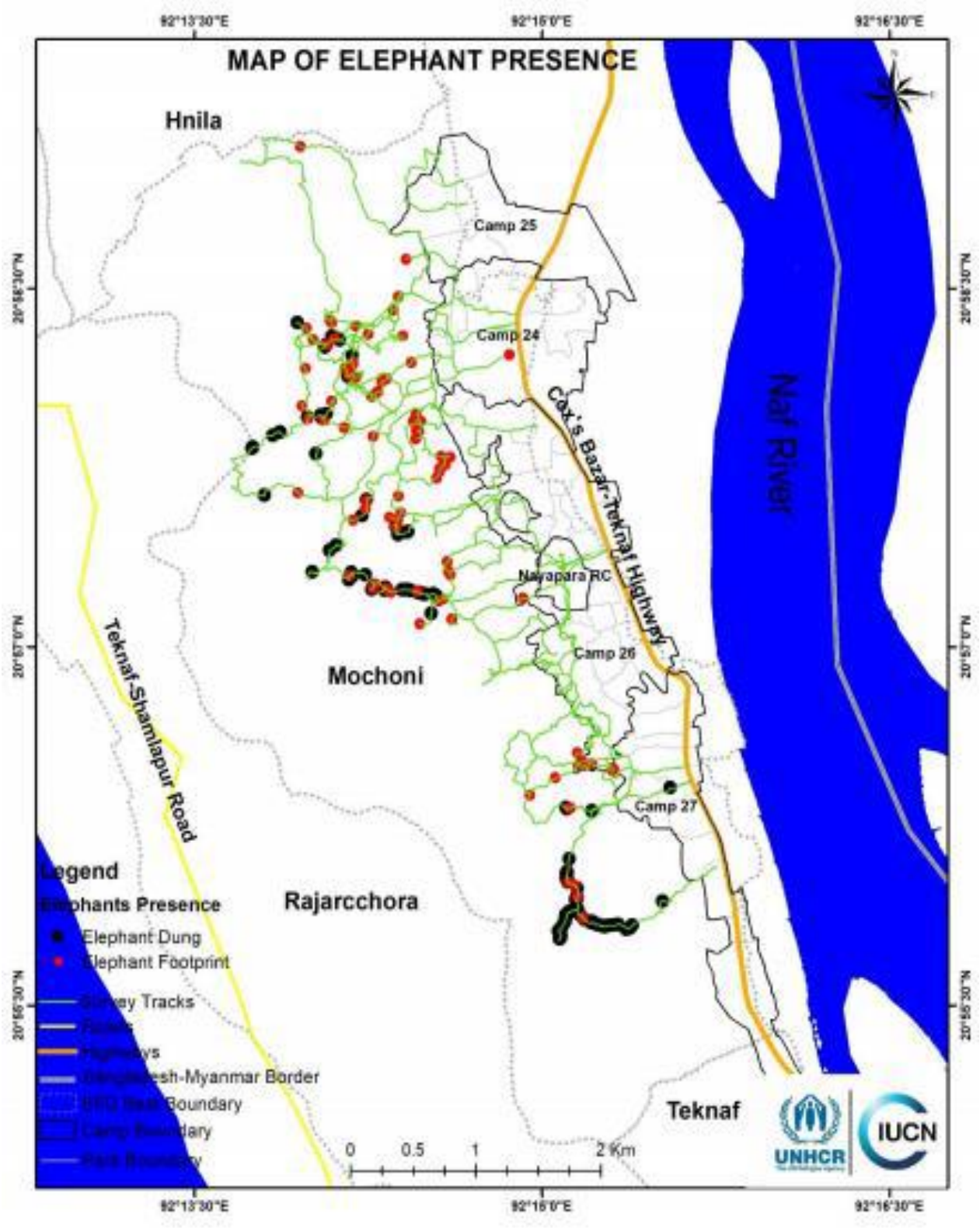
**Cost of H&S Measures under COVID 19 Situations**

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 38 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.6).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 103 | | 128 | 50.00 | 231 | 11,550.00 | To be placed in a case/holder on the basin, for washing hands for max. 43 people a day and showering of 38 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 | 22 nos. for each site | | N/A | 400.00 | 22 | 8,800.00 | 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 | 38 nos. for each labor camp | | 35.00 | 684 | 23,940.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 2 Can | N/A | 3 Can | 250.00 | 5 | 1,250.00 | |
| 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** | | | | | | **119,040.00** | |

**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/W21.06, Road Id No.- 422904042

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

Time: 3:45 PM Date: 12/12/2020

Sabrang Mondol Bazil Halder Para Kutubdia Upazila Teknaf Bandarban Cyclone Shelter Cum Link Road

Mr. Rachel's shop, Mondol Bazil para.

Sabrang 01 Sabrang Teknaf

W21(06)

| | | | | | |
|---|---|---|---|---|---|
| ১। | [illegible] | ২৮ | মুসলিম | [illegible] | [illegible] |
| ২। | [illegible] | ৩০ | হিন্দু | [illegible] | [illegible] |
| ৩। | [illegible] | ৩২ | " | [illegible] | [illegible] |
| ৪। | [illegible] | ২২ | মুসলিম | [illegible] | [illegible] |
| ৫। | [illegible] | ১৫ | " | [illegible] | [illegible] |
| ৬। | [illegible] | ২১ | " | [illegible] | [illegible] |
| ৭। | [illegible] | ২০ | " | [illegible] | [illegible] |
| ৮। | [illegible] | ৪২ | " | [illegible] | [illegible] |
| ৯। | [illegible] | ৭৫ | " | [illegible] | [illegible] |
| ১০। | [illegible] | ২৫ | " | [illegible] | [illegible] |
| ১১। | [illegible] | ৪৩ | " | [illegible] | [illegible] |

**Public Consultation Participants' List**

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



**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Sabrang, Mondolpara, Pasuripara, Mokpara, Lejirpara, Acharbonia, Pendapara, Deillabeel, Moulovipara, Habirpara under Sabrang union, Ward 04 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as- at North side Mogpara School (10m), Moulovipara Graveyard (850m), Jamia mosque (500m), Budhist Mondir (900m), Mogpara Mosque (20m), North Mondolpara (250). At South side Pochum para-Graveyard (500m), Pachum para-Mosque (500m), Lejur para-Mosque (900m), Acharbunia Mosque (850m), Deilarbeel Mosque (900m). At East side Mondol para-Graveyard (200m), Salt Yard (950m), Mondol para-Mosque (20m). At West side Sabrang Public School (400m), Sabrang High School (200m), Chowdhury para/ Mondol para–Petrol Pump (30m), Uttor Noyapara Mosque (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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road. Id: 422904045

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904045 | ii. Ward No.: 04 | iii. Mouza: Sabrang Mouza |
| iv. Village: Sabrang, Mondolpara, Pasuripara, Mokpara, Lejirpara, Acharbonia, Pendapara, Deillabeel, Moulovipara, Habirpara | | v. Name of Union: Sabrang |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 300 |
| xi. Distance from UZHQ: 06 Km. | | |

| | | | |
|---|---|---|---|
| | **GPS Coordinates** | Latitude Value: 20.83383$^0$ N<br>Longitude Value: 92.30005$^0$ E | Starting Point |
| | | Latitude Value: 20.83446$^0$ N<br>Longitude Value: 92.30292$^0$ E | Ending Point |
| | **Present Condition of Road** | HBB & Earthen | |
| | **Communication Source** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 01 nos. Box Culvert (dimension: 1.5mx2.0m) at Ch. 221m
- 21m Protective work by Palisading
- 69m Surface Drain
- Road safety work 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: 3,185,441.46 (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 09 December, 2020, in front of Zoshim's shop, 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 Mogpara School (10m), Moulovipara Graveyard (850m), Jamia mosque (500m), Budhist Mondir (900m), Mogpara Mosque (20m), North Mondolpara (250)m; at South side Pochum para-Graveyard (500m), Pachum para-Mosque (500m), Lejur para-Mosque (900m), Acharbunia Mosque (850m), Deilarbeel Mosque (900m); at East side Mondol para-Graveyard (200m), Salt Yard (950m), Mondol para-Mosque (20m) and at West side Sabrang Public School (400m), Sabrang High School (200m), Chowdhury para/ Mondol para–Petrol Pump (30m), Uttor Noyapara Mosque (500m). 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 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, and but that 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.

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

[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 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.

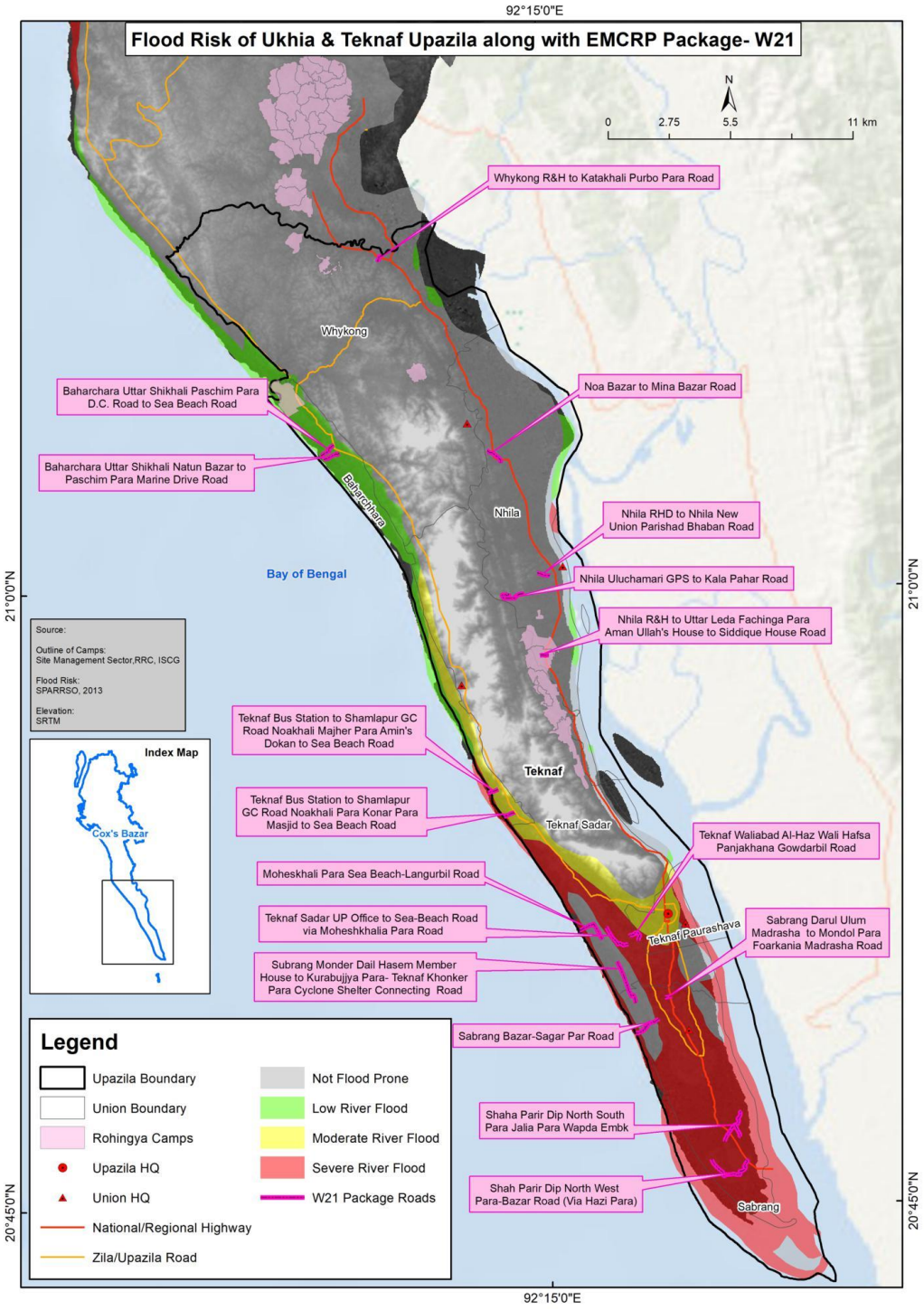



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, some sections of the road are found to be in the vicinity of the severe river flood inundation area. Road erosion may occur depending on the intensity and the frequency of river flood and storm surge. So tree plantation along the roads is suggested specifically for certain conditions. And slope protection techniques can be adhered.

# 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.

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, 01 nos. Box Culvert (dimension: 1.5mx2.0m) at Ch. 221m and 69m Surface Drain will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 21m Protective work by Palisading along those different chainage are included in design and estimation. 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/W21 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 measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors

cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

Widespread COVID 19 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road. Id: 422904045.

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **3,185,441.46 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Mondolpara, Pasuripara, Mokpara, Lejirpara, Acharbonia, Pendapara, Deillabeel, Moulovipara, Habirpara

**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. 300m. Proposed safety and service providing structures include 01 nos. Box Culvert (dimension: 1.5mx2.0m) at Ch. 221m, 21m Protective work by Palisading, 69m Surface Drain 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 1,470 sq m.**

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

This proposed Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road belongs to Sabrang union under Teknaf Upazila. This road stretches only 300m and is within the Sabrang Mondolpara. This sub-project passes along different features, such as boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 | | Shop, Tin fence, Brick wall, bamboo fence, shop, tin fence, open field, tin fence, bamboo fence, shop |
| | | R | Shop, Trees, Open Field, Brick wall, Chairman's house, brick wall, open field, bamboo fence, brick wall, Mosque |




**Figure: Starting point of Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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. 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 Mogpara School (10m), Moulovipara Graveyard (850m), Jamia mosque (500m), Budhist Mondir (900m), Mogpara Mosque (20m), North Mondolpara (250). At South side Pochum para-Graveyard (500m), Pachum para-Mosque (500m), Lejur para-Mosque (900m), Acharbunia Mosque (850m), Deilarbeel Mosque (900m). At East side Mondol para-Graveyard (200m), Salt Yard (950m), Mondol para-Mosque (20m). At West side Sabrang Public School (400m), Sabrang High School (200m), Chowdhury para/ Mondol para–Petrol Pump (30m), Uttor Noyapara Mosque (500m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

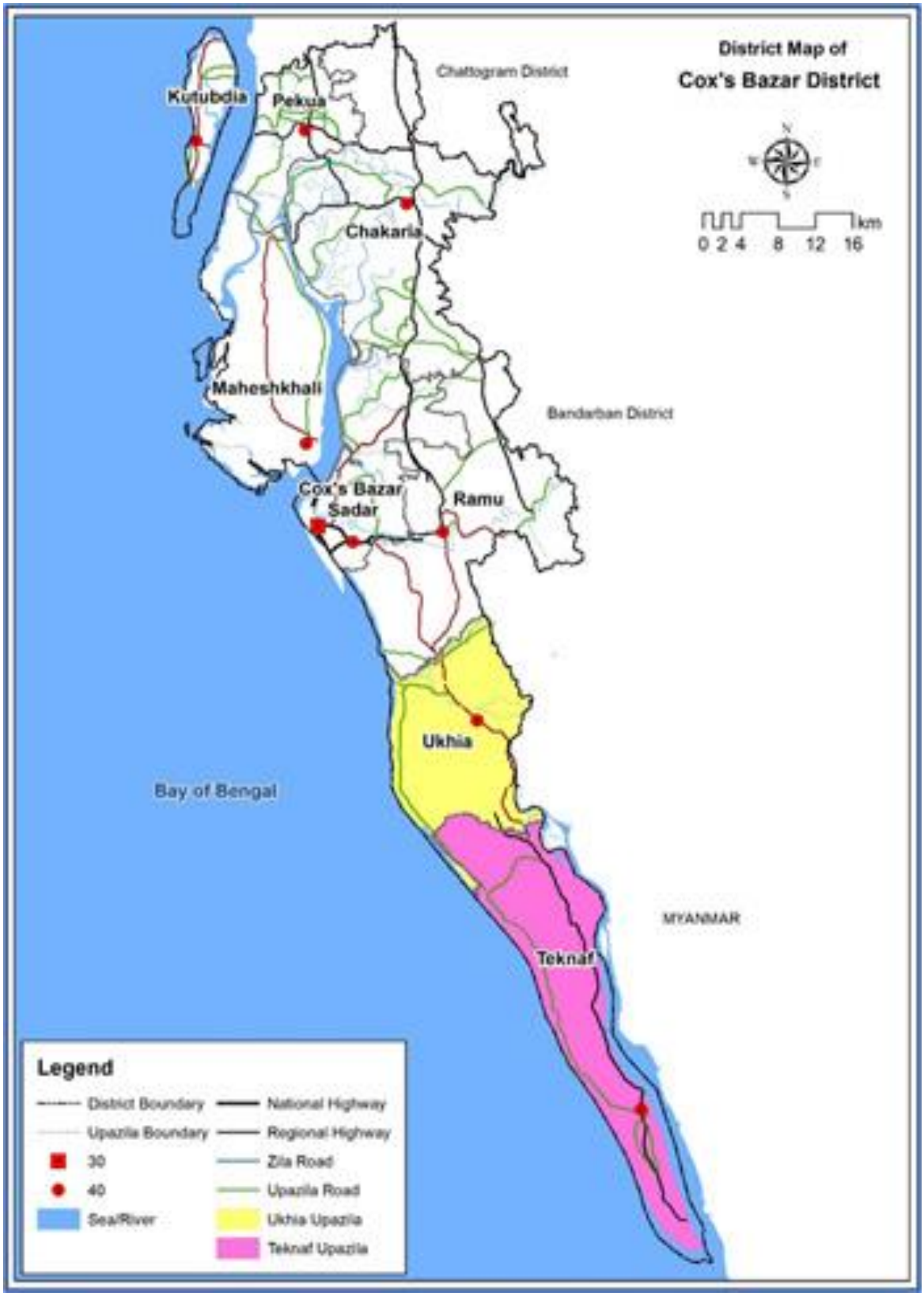



**Figure 3: District Map with project location**




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

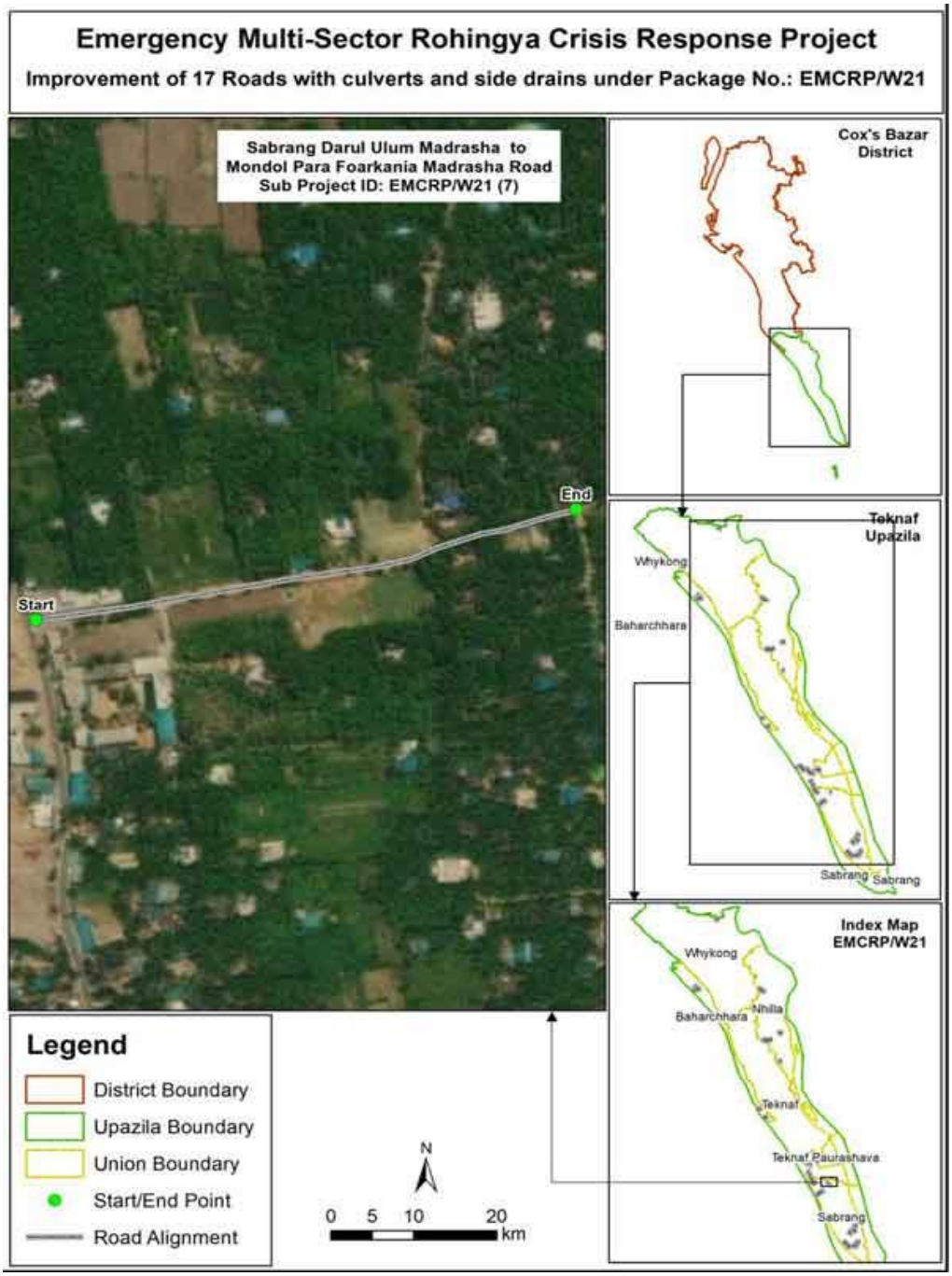



**Figure 5: Upazila Map with Sub-project location**

**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. 300m. Proposed safety and service providing structures include 01 nos. Box Culvert (dimension: 1.5mx2.0m) at Ch. 221m and 69m Surface Drain, 21m Palisading works 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 | 422904045 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Sabrang |
| WARD | 04 |
| Proposed Chainage | 300m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.833830 N<br>Longitude Value: 92.300050 E |
| Road Ending Point Coordinates | Latitude Value: 20.834460 N<br>Longitude Value: 92.302920 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. 300m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Mogpara School (10m), Moulovipara Graveyard (850m), Jamia mosque (500m), Budhist Mondir (900m), Mogpara Mosque (20m), North Mondolpara (250). At South side Pochum para-Graveyard (500m), Pachum para-Mosque (500m),

Lejur para-Mosque (900m), Acharbunia Mosque (850m), Deilarbeel Mosque (900m). At East side Mondol para-Graveyard (200m), Salt Yard (950m), Mondol para-Mosque (20m). At West side Sabrang Public School (400m), Sabrang High School (200m), Chowdhury para/ Mondol para–Petrol Pump (30m), Uttor Noyapara Mosque (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**

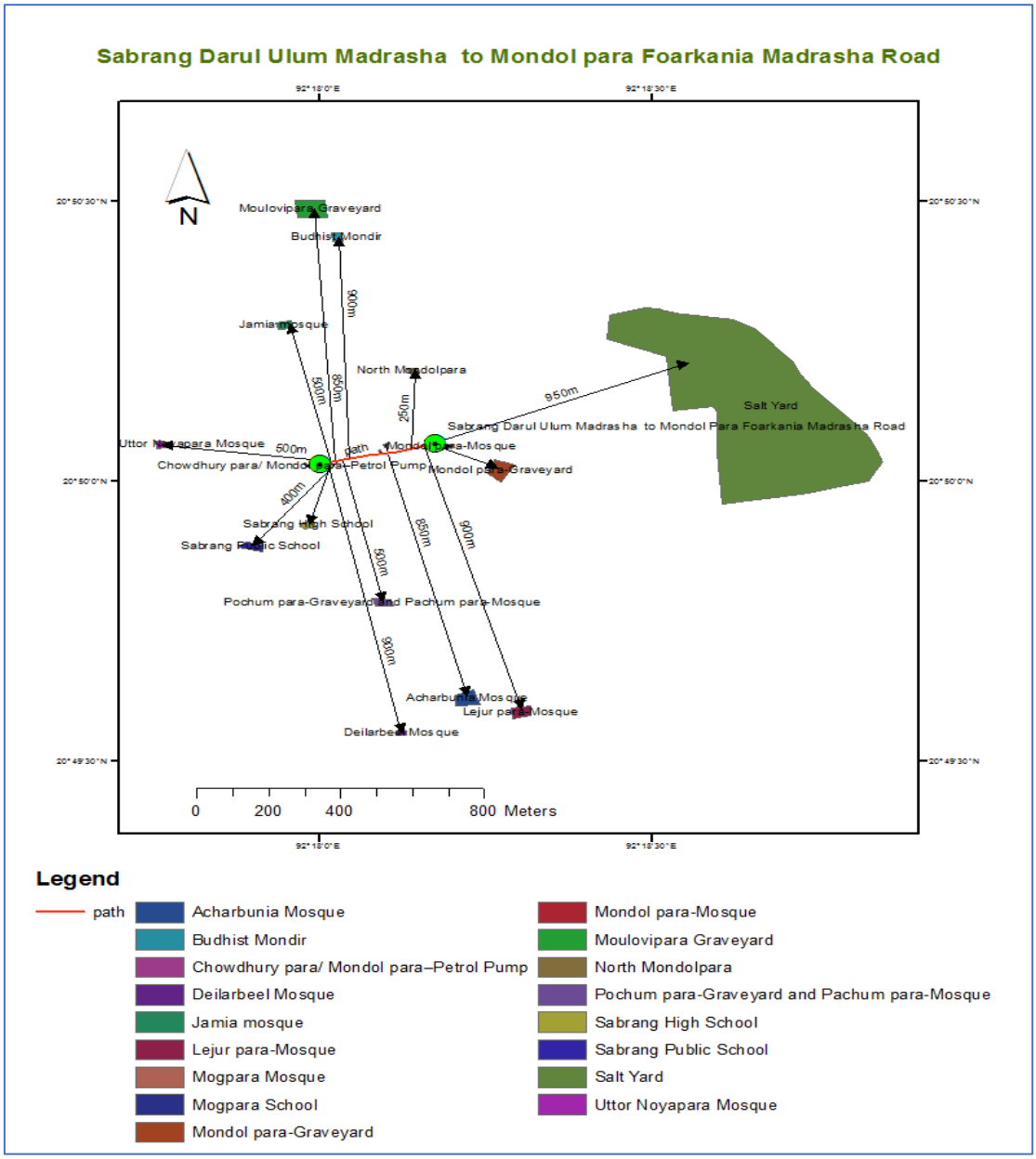



**Figure B.1.1: A sketch of the project intervention area**

**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, 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.<br>**(1) Within/near Elephant Migration Routes Yes/No***<br>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.<br>**(2) Potential impacts on remaining forests in/around camps Yes/No**<br>N/A (This activity will be confined within an existing subproject boundary)<br>**(3) Other issues:**<br>No more mentionable issues raised.<br><br>*This question needs to be answered by checking the elephant migration route map established by UNHCR/IUCN |
| **Baseline air quality and noise levels:**<br>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.<br><br>**Dust:**<br>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.<br><br>**Noise:**<br>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:**<br>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):**<br>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):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 50-80 feet and deep tube well depth is 400 feet in the area. But the shallow tube well is not |

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| 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.<br>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.<br><br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Teknaf-Sabrang 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Teknaf-Sabrang 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:** |

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| 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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>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. |

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| **Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)<br>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)**<br>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:**<br>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, |

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| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road. Id: 422904045

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 895.5 Sq.m | @38.15 Tk. Per sqm | 34,163.325 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 300.0m | @ 2.56 BDT | 768.00 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 40 nos. | @ Tk. 1000 | 40,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 8 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **313,077.04** |

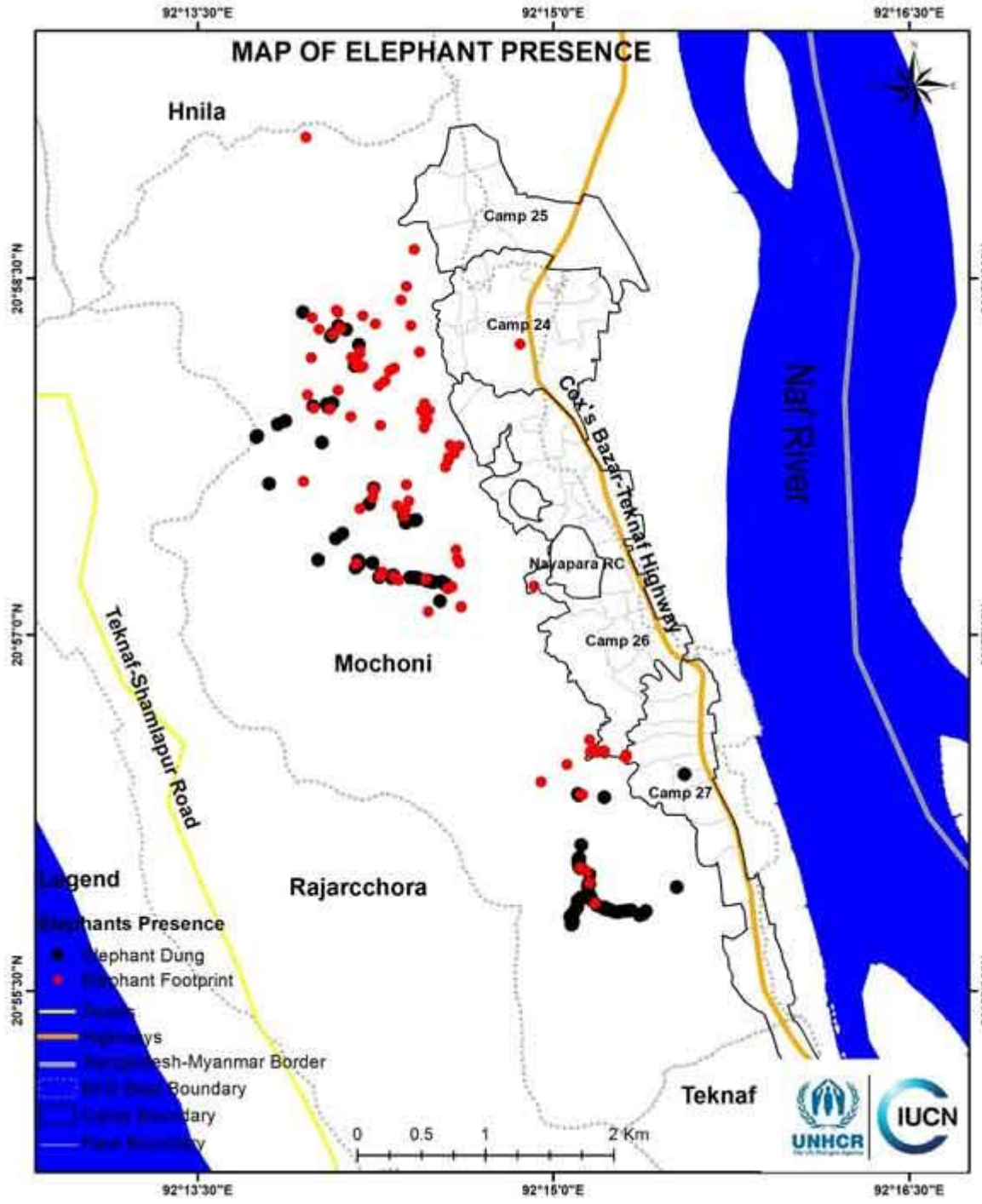
## Cost of H&S Measures under COVID 19 Situations

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 10 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.7).

| 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) | 27 | | 34 | 50.00 | 61 | 3,050.00 | To be placed in a case/holder on the basin, for washing hands for max. 13 people a day and showering of 10 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 6 nos. for each site | | N/A | 400.00 | 6 | 2,400.00 | For labors who work in close contact, 6 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | 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 | 10 nos. for each labor camp | | 35.00 | 180 | 6,300.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1 Can | N/A | 1 Can | 250.00 | 2 | 500.00 | |
| 10. | Detergent Cleaner | N/A | 1/2 kg in each camp/month | | 400.00 | 4.5 | 1,800.00 | 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** | | | | | | **73,870.00** | |

**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/W21.07, Road Id No.- 422904045

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

Focus Group Discussion

**Public Consultation Participants' List**

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



**An overview of the current condition of the road**

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 Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Kulatoli, Doinpara, Ponnampara, Gudarbeel under Teknaf Sadar union, Ward 05 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at North side Tulatoli Primary School(200m), Lengur Beel(800m), Tulatoli Graveyard(200m), Tolatoli Madrassa(20m), Bottoli Bazar Mosque(60m), Moheshkalia Barja mosque (400m NW), Azizul Haq Market(25m). At South side Moheshkaliapara GPS (50 feet), Moheshkaliapara Madrassa/hefzokhana(50m), Moheshkaliapara Graveyard(80m), Moheshkaliapara Old Mosque(60m), Belal Mosque (140feet SW). At East side Ponnampara GPS (500m), Ponnampara Graveyard(500m), Baitus Saraf Madrassa (900), Gudarbeel Graveyard (850m), Rahmania Mosque(150m). At West side Islami Research Center(80m), Azizur Rahman Market(10m), Hamza Mosque (500 feet), Moheshkaliapara playground(10m), South Moheshkaliapara Jaem Mosque and Madrassa (50 feet), Azimuddin's Poultry farm (200 feet). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road. Id: 422904047

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422904047 | ii. Ward No.: 05 | iii. Mouza: Teknaf Mouza |
| iv. Village: Kulatoli, Doinpara, Ponnampara, Gudarbeel | | v. Name of Union: Teknaf Sadar |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 1432 |
| xi. Distance from UZHQ: 2.8 Km. | | |

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 20.86266$^0$ N<br>Longitude Value: 92.27512$^0$ E | Starting Point |
| | | Latitude Value: 20.85578$^0$ N<br>Longitude Value: 92.28449$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 01 nos. Cross Drain (dimension: .975mx.975m) at Ch.1126m
- 154m Protective work by Palisading
- Road safety work 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: 13,180,382.64 (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 10 December, 2020, in front of Bottolo Bazar Complex Bhaban, 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).

**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: Tulatoli Primary School(200m), Lengur Beel (800m), Tulatoli Graveyard(200m), Tolatoli Madrassa(20m), Bottoli Bazar Mosque(60m), Moheshkalia Barja mosque (400m NW), Azizul Haq Market (25m) are at the north side, at South side Moheshkaliapara GPS (50 feet), Moheshkaliapara Madrassa/hefzokhana (50m), Moheshkaliapara Graveyard (80m), Moheshkaliapara Old Mosque (60m), Belal Mosque (140feet SW), at East side Ponnampara GPS (500m), Ponnampara Graveyard(500m), Baitus Saraf Madrassa (900), Gudarbeel Graveyard (850m), Rahmania Mosque(150m) and at West side Islami Research Center(80m), Azizur Rahman Market(10m), Hamza Mosque (500 feet), Moheshkaliapara playground(10m), South Moheshkaliapara Jaem Mosque and Madrassa (50 feet), Azimuddin's Poultry farm (200 feet). 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 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 that 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.

[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

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

- 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.

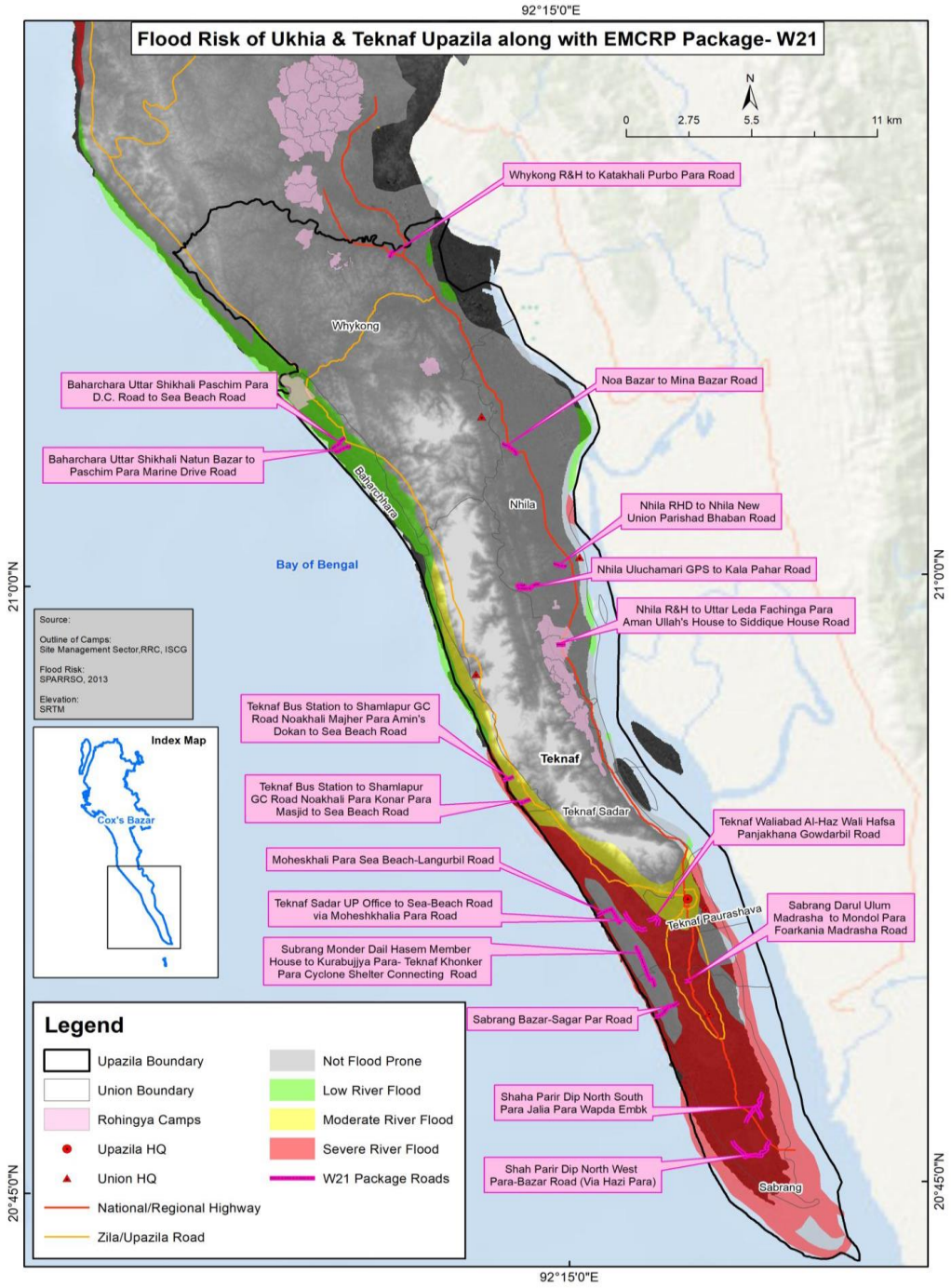



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. In addition, tree planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 4 ENVIRONMENTAL AND SOCIAL 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.

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, 01 nos. Cross Drain (dimension: .975mx.975m) at Ch.1126m will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 154m Protective work by Palisading at those respective chainage are included in design and estimation. 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/W21 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 measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors

cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

Widespread COVID 19 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road. Id: 422904047

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **13,180,382.64 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Kulatoli, Doinpara, Ponnampara, Gudarbeel

**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. 1432m. Proposed safety and service providing structures include 01 nos. Box Culvert (dimension: 1.5mx2.0m) at Ch. 221m, 21m Protective work by Palisading, 69m Surface Drain 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 1,470 sq m.**

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

This proposed Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road belongs to Sabrang union under Teknaf Upazila. This road starts from North Moheshkhaliapara via. Teknaf Sadar UP stretching 1432m to Moheshkhaliapara sea beach road. This sub-project passes along different important features, such as boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 | | Open spaces, shop, bamboo fences, tin shed fences, trees, household connecting roads, settlements, bridge |
| | | R | Trees, household connecting roads, bamboo fences, trees, electric pole, shops, settlements, open field |
| 300-600 | L | | Bamboo fences, tin shed fences, settlements, trees, homestead garden, paddy lands, bushes, shop, brick boundary wall |
| | | R | Wired fences, trees, homestead gardens, tin shed fences, settlements, shop, household connecting roads, graveyard, brick boundary wall, ext. guide wall, |
| 600-900 | L | | Shops, bamboo fences, bushes, brick boundary wall, paddy lands, tin shed fences |
| | | R | ext. x-drain, brick boundary walls, bushes, bamboo fences, open spaces, tin shed fences, Moheshkhaliapara GPS, playground |
| 900-1200 | L | | Brick boundary walls, tin shed fences, bushes, homestead gardens, bamboo fences, open spaces |
| | | R | Shops, bamboo fences, bushes, mosque, open field, paddy land, tin shed fences |
| 1200-1432 | L | | Shops, open field, bushes, trees, household connecting roads, settlements, bamboo fences, brick boundary walls, paddy lands, electric pole |
| | | R | Shops, bamboo fences, bushes, open field, paddy land, brick boundary wall, coconut trees, open space |




**Figure: Starting point of Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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. Moreover, other issues have also been brought to their attention that drainage structures have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

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 Tulatoli Primary School(200m), Lengur Beel(800m), Tulatoli Graveyard(200m), Tolatoli Madrassa(20m), Bottoli Bazar Mosque(60m), Moheshkalia Barja mosque (400m NW), Azizul Haq Market(25m); at South side Moheshkaliapara GPS (50 feet), Moheshkaliapara Madrassa/hefzokhana(50m), Moheshkaliapara Graveyard(80m), Moheshkaliapara Old Mosque(60m), Belal Mosque (140feet SW); at East side Ponnampara GPS (500m), Ponnampara Graveyard(500m), Baitus Saraf Madrassa (900), Gudarbeel Graveyard (850m), Rahmania Mosque(150m); at West side Islami Research Center(80m), Azizur Rahman Market(10m), Hamza Mosque (500 feet), Moheshkaliapara playground(10m), South Moheshkaliapara Jaem Mosque and

Madrassa (50 feet), Azimuddin's Poultry farm (200 feet). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

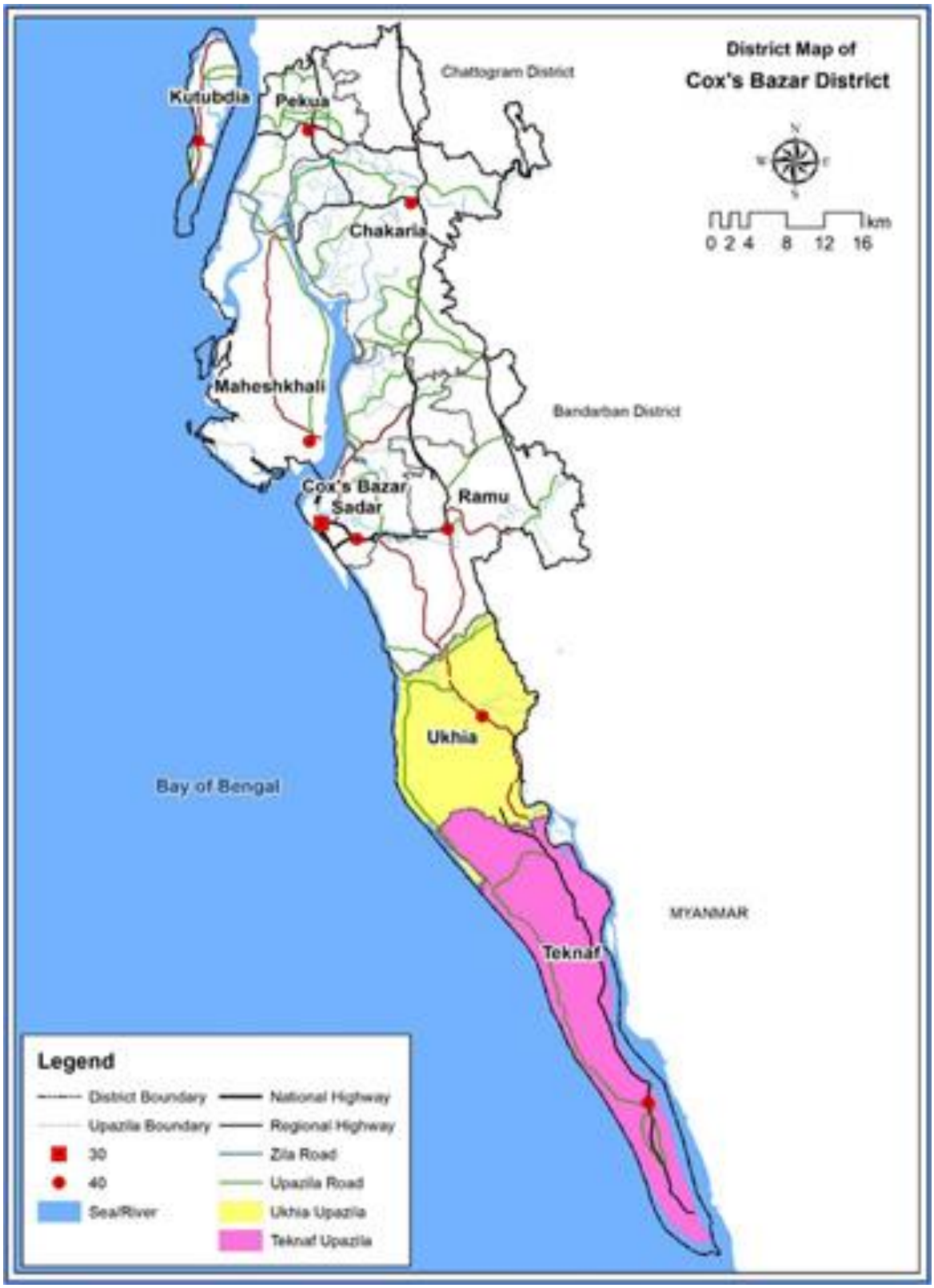



**Figure 3: District Map with project location**




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

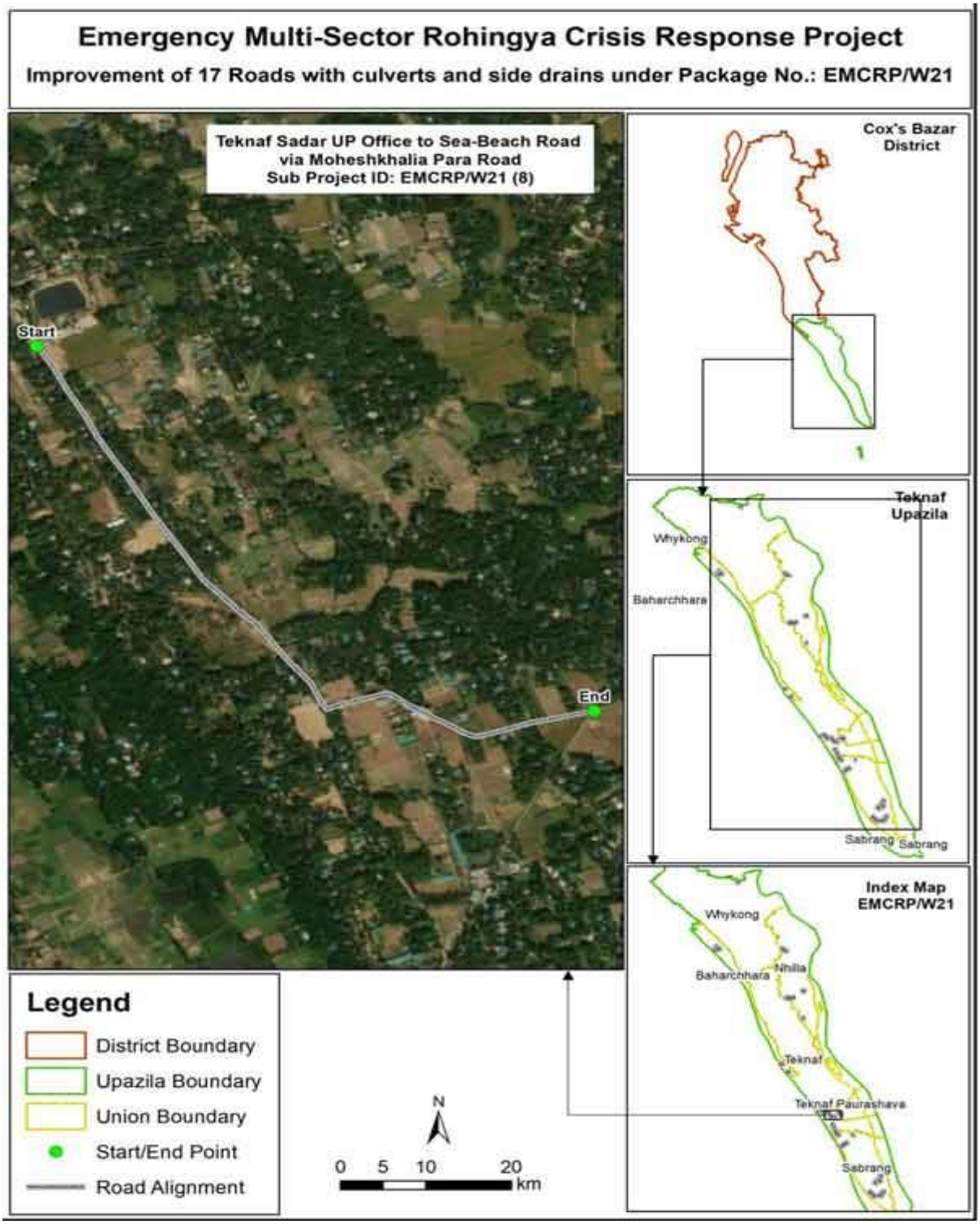



**Figure 5: Upazila Map with Sub-project location**

**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. 1432m. Proposed safety and service providing structures include 01 nos. Cross Drain (dimension: .975mx.975m) at Ch.1126m, 154m protective works by Palisading 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 | 422904047 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Teknaf Sadar |
| WARD | 05 |
| Proposed Chainage | 1432m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.862660 N<br>Longitude Value: 92.275120 E |
| Road Ending Point Coordinates | Latitude Value: 20.855780 N<br>Longitude Value: 92.284490 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. 1432m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Tulatoli Primary School(200m),

Lengur Beel(800m), Tulatoli Graveyard(200m), Tolatoli Madrassa(20m), Bottoli Bazar Mosque(60m), Moheshkalia Barja mosque (400m NW), Azizul Haq Market(25m). At South side Moheshkaliapara GPS (50 feet), Moheshkaliapara Madrassa/hefzokhana(50m), Moheshkaliapara Graveyard(80m), Moheshkaliapara Old Mosque(60m), Belal Mosque (140feet SW). At East side Ponnampara GPS (500m), Ponnampara Graveyard(500m), Baitus Saraf Madrassa (900), Gudarbeel Graveyard (850m), Rahmania Mosque(150m). At West side Islami Research Center(80m), Azizur Rahman Market(10m), Hamza Mosque (500 feet), Moheshkaliapara playground(10m), South Moheshkaliapara Jaem Mosque and Madrassa (50 feet), Azimuddin's Poultry farm (200 feet). 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**

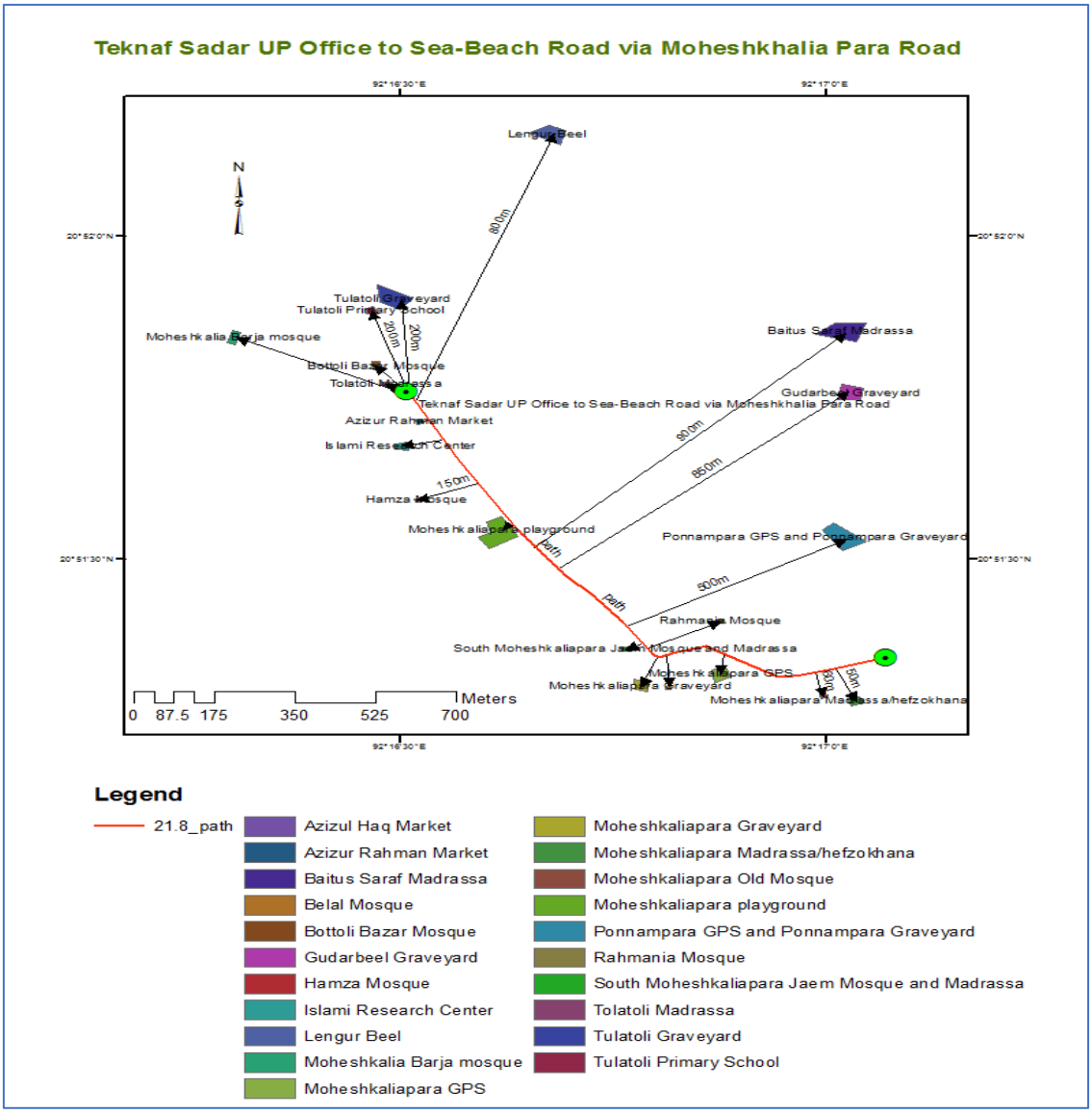



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-120 feet and deep tube well depth is 500 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.<br><br>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.<br><br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>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):**<br>Teknaf-Sea beach road and New Pollanpara 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Teknaf-Sea beach road and New Pollanpara road can be used as access road for transportation. |

| |
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| 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:**<br>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.):**<br>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 50 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.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>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:**<br>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)**<br>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:**<br>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:**<br>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)**<br>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)**<br>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)**<br>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:**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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 Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road. Id: 422904047

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 4296 Sq.m | @38.15 Tk. Per sqm | 163,892.4 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1432.0m | @ 2.56 BDT | 3665.92 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 120 nos. | @ Tk. 1000 | 120,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(1), W21(2), W21(3), W21(4), W21(5), W21(6) W21(7) & W21(8)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 8 roads i.e.,35,000Tk.*12months*(1/8 one road). (Net payment excluding Tax &VAT). | 52,500 |
| | **Subtotal Bill: Environmental facilities** | | | **525,704.04** |

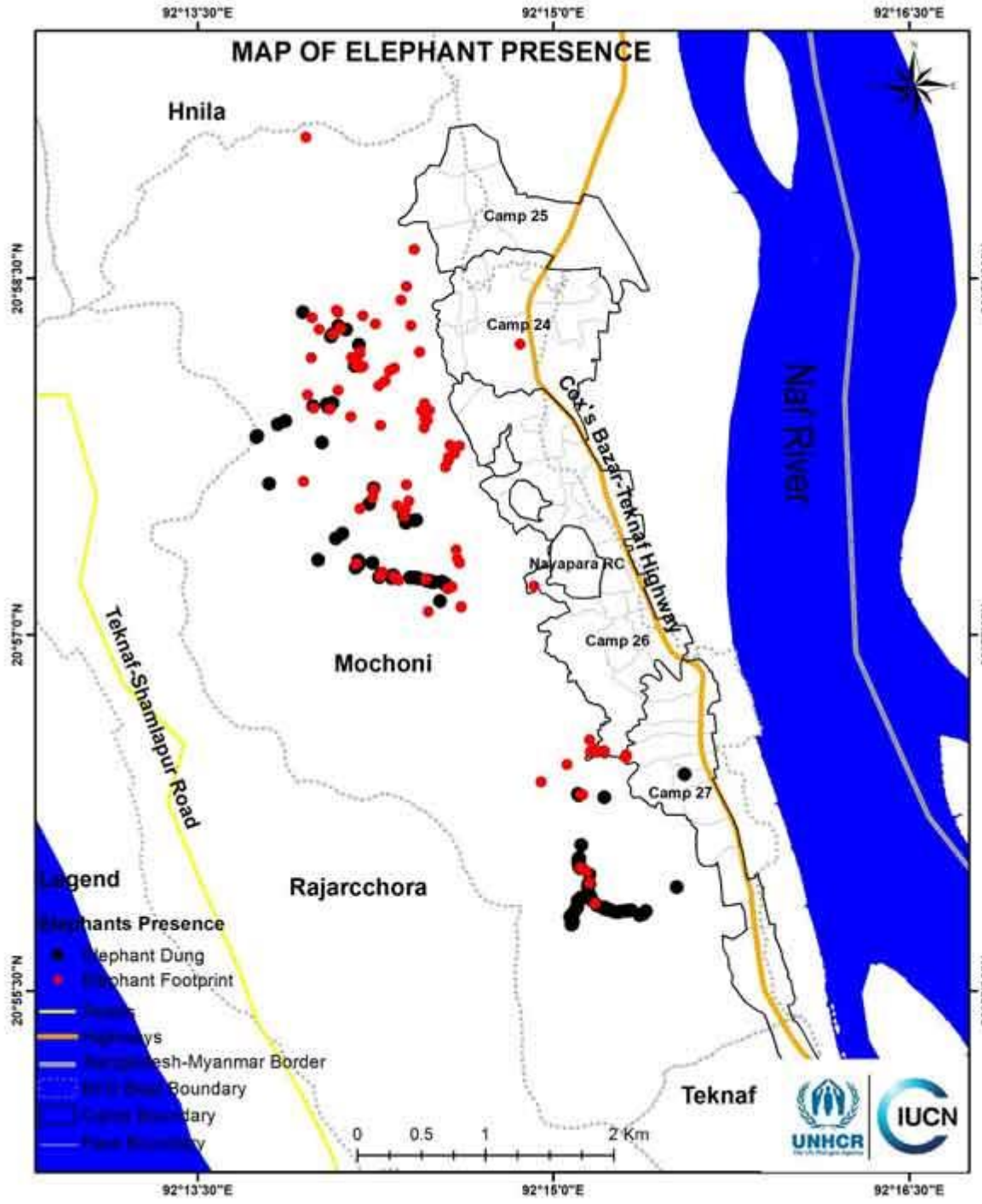
## Cost of H&S Measures under COVID 19 Situations

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 30 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.8).

| 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) | 81 | | 101 | 50.00 | 182 | 9,100.00 | To be placed in a case/holder on the basin, for washing hands for max. 35 people a day and showering of 30 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 16 nos. for each site | | N/A | 400.00 | 16 | 6,400.00 | For labors who work in close contact, 16 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 | 30 nos. for each labor camp | | 35.00 | 540 | 18,900.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 3 Can | 250.00 | 4.5 | 1,125.00 | |
| 10. | Detergent Cleaner | N/A | 1.5 kg in each camp/month | | 400.00 | 13.5 | 5,400.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | **Grand Total** | | | | | | **107,225.00** | |

**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/W21.08, Road ID No.- 422904047

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

সময়: 01:30 PM তারিখ: 10/12/2020

Technaf Sinha

Bottoli, Baizan Complex Bholaon

Technaf Sinha 05 Technaf Technaf

W21(08)

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**Public Consultation Participants' List**

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








**An overview of the current condition of the**

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 Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Fachingapara village under Hnilla union, Ward 8 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as on north side Ibne Abbas mosque (10m), Alikhali khal (400m), Alikhali solar power station (550m), Modumoti salt factory (500m), brick field (500m); on south side Ibne Abbas madrasah, hefjakhana & orphanage (5m), Leda Junior High School (200m), Forest bit (300m), Leda Lamarpara Boro mosque & graveyard (400m); on east side Leda khal (100m), Lamarpara mosque (300m), Naf river (1km), Shrimp project (1km); and on west side IOM Hospital (500m), Corona Hospital (500m), Leda tower market (10m), Brick field (500m), Lamonipara mosque & graveyard (300m), Leda GPS (400m), BGB Camp (400m), Leda community clinic (400m), Leda hill (1km), Leda reserve forest (1km). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road Id: 422905198

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905198 | ii. Ward No.: 8 | iii. Mouza: South Hnilla |
| iv. Village: Fachingapara | v. Name of Union: Hnilla | |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 430 |
| xi. Distance from UZHQ: 18 Km. | | |
| ***GPS Coordinates*** | Latitude Value: 20.973276 N<br>Longitude Value: 92.248317 E | Starting Point |

| | | | |
|---|---|---|---|
| | | Latitude Value: 20.973279 N<br>Longitude Value: 92.252041 E | Ending Point |
| | ***Present Condition of Road*** | HBB | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 1 no. of Box Culvert (dimension: 1.5mx2.0m) at Ch. 228m of chainage
- 3 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 54m, Ch. 122m & Ch. 305m on the proposed road
- 18m RCC U-Drain at different chainage
- 144m Palisading work (3.0m height brick masonry and 5.0m height precast RCC post) at different chainage
- Road safety work 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: 7,051,234.16 (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 on Opposite of Siddik's house at west Leda, 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 Ibne Abbas mosque (10m), Alikhali khal (400m), Alikhali solar power station (550m), Modumoti salt factory (500m), brick field (500m); on south side Ibne Abbas madrasah, hefjakhana & orphanage (5m), Leda Junior High School (200m), Forest bit (300m), Leda Lamarpara Boro mosque & graveyard (400m); on east side Leda khal (100m), Lamarpara mosque (300m), Naf river (1km), Shrimp project (1km); and on west side IOM Hospital (500m), Corona Hospital (500m), Leda tower market (10m), Brick field (500m), Lamonipara mosque & graveyard (300m), Leda GPS (400m), BGB Camp (400m), Leda community clinic (400m), Leda hill (1km), and Leda reserve forest (1km). 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 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 that 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.

[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

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

- 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.

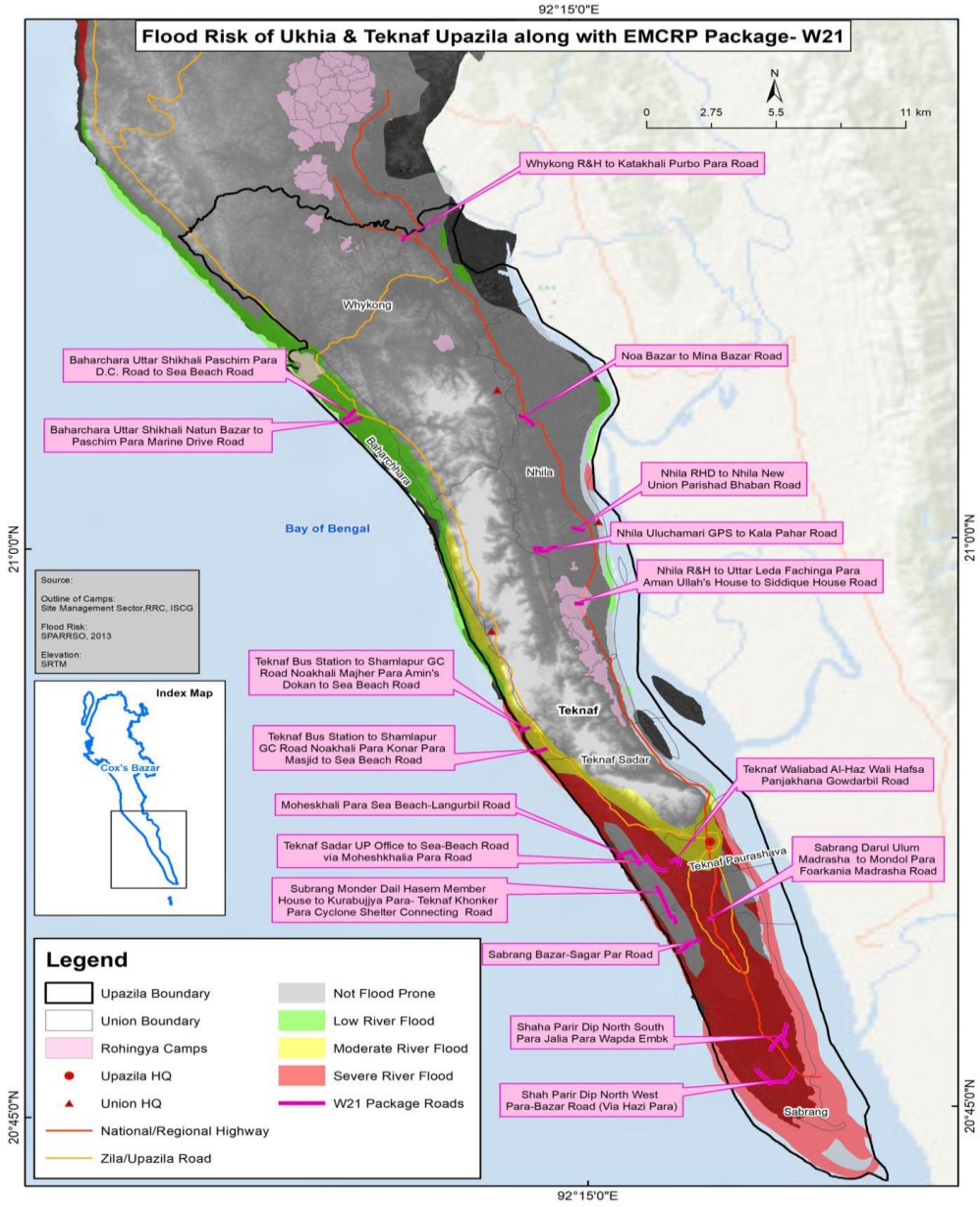



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. In addition, tree planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 4 ENVIRONMENTAL AND SOCIAL 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.

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. of Box Culvert (dimension: 1.5mx2.0m) at Ch. 228m of chainage and 3 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 54m, Ch. 122m & Ch. 305m of chainage will be constructed at the subproject area. Due to the presence of low land along different chainage of the road 18m RCC U-Drain at different chainage and some protective works of 144m Palisading work (3.0m height brick masonry and 5.0m height precast RCC post) at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road Id: 422905198

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **7,051,234.16 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Fachingapara

**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. 430m. Proposed safety and service providing structures include 1 no. of Box Culvert (dimension: 1.5mx2.0m) at Ch. 228m of chainage and 3 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 54m, Ch. 122m & Ch. 305m of chainage, 18m RCC U-Drain at different chainage and some additional protective works as 144m Palisading work (3.0m height brick masonry and 5.0m height precast RCC post) 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 2,107 sq m.

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

This proposed Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road belongs to Hnilla union under Teknaf Upazila. This road starts from Cox's Bazar-Teknaf highway on Leda tower market at west side stretching 430m to Fachingapara on Siddique's house at east side. Two connecting roads fall within the road chainage. Leda Medico Farmacy is the starting point on the left side of the road along with shops and further passes along different important features, such as boundary fences, pond, patches of vegetation and agricultural fields, culvert, homestead garden, mosques, religious institutes, shops 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 | | Leda Medico Pharmacy, shops, tin shed fences, paddy land, culvert, connecting road, pond Padma learning center, bamboo fences |
| | | R | Ext. u drain, hotel, shops, tin shed fences, madrasah, paddy land, connecting road, vegetables yard, household connecting road, trees |
| 300-430 | L | | Bamboo fences, bamboo shaft household, paddy land |
| | | R | Wire fencing, toilet, tin shed household, earthen household, tin shed fences |




**Figure: Starting point of Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 north side Ibne Abbas mosque (10m), Alikhali khal (400m), Alikhali solar power station (550m), Modumoti salt factory (500m), brick field (500m); on south side Ibne Abbas madrasah, hefjakhana & orphanage (5m), Leda Junior High School (200m), Forest bit (300m), Leda Lamarpara Boro mosque & graveyard (400m); on east side Leda khal (100m), Lamarpara mosque (300m), Naf river (1km), Shrimp project (1km); and on west side IOM Hospital (500m), Corona Hospital (500m), Leda tower market (10m), Brick field (500m), Lamonipara mosque & graveyard (300m), Leda GPS (400m), BGB Camp (400m), Leda community clinic (400m), Leda hill (1km), Leda reserve forest (1km). The project road crosses through several communities, agricultural lands and community level forests. 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**

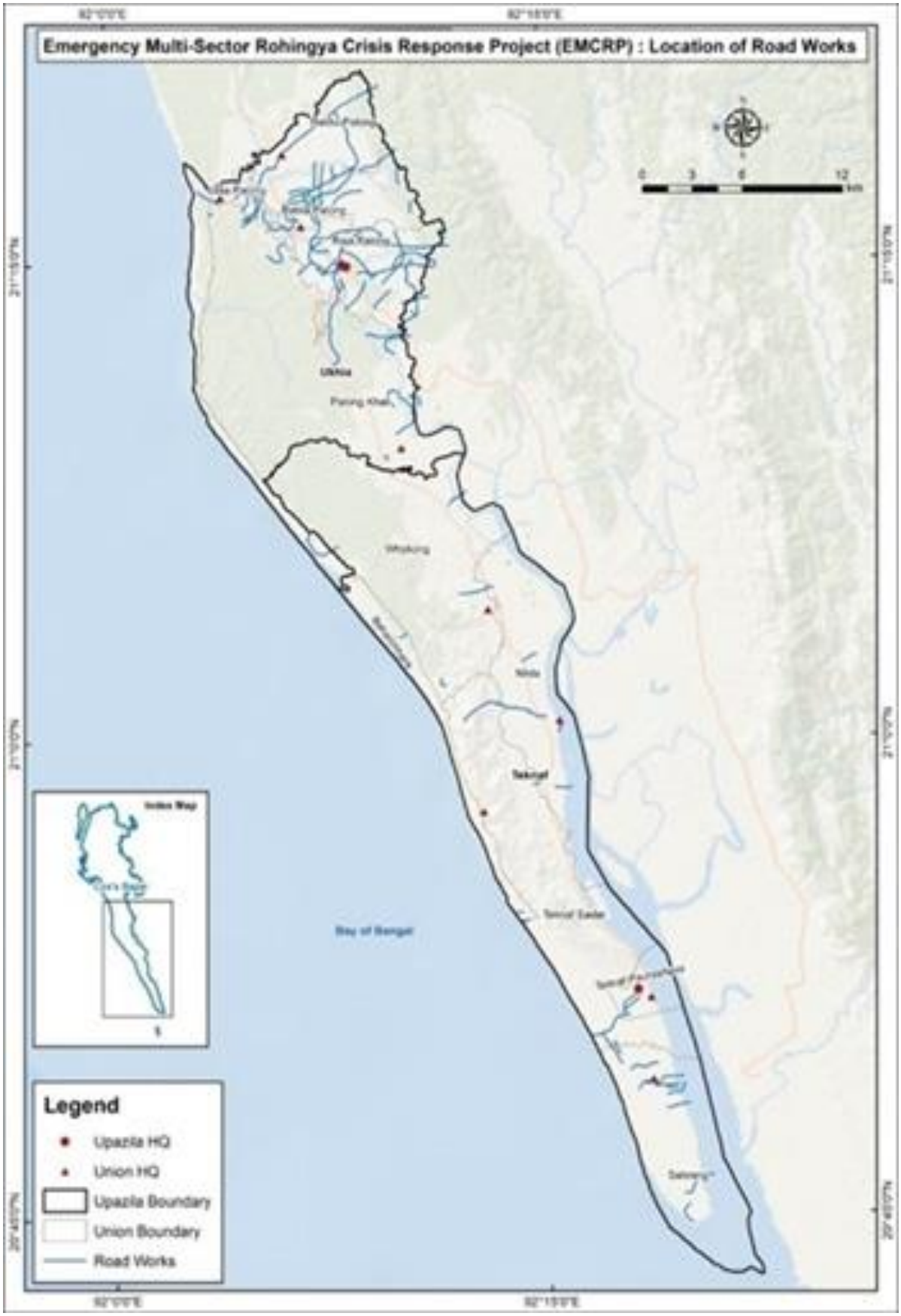



**Figure 4: Location Map of Access Road (Ukhiya & Teknaf)**

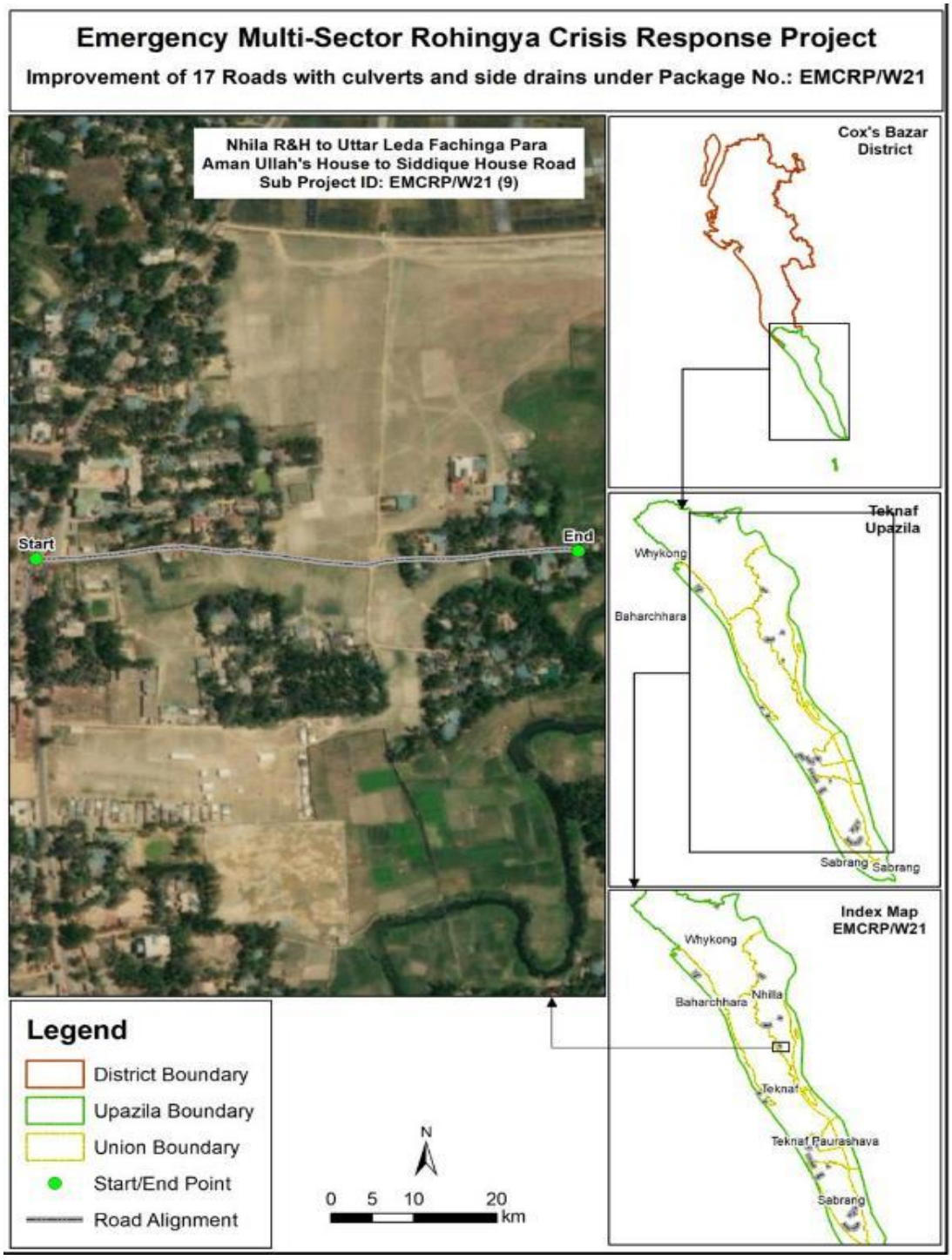



**Figure 5: Upazila Map with Sub-project location**

**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. 430m. Proposed safety and service providing structures include 1 no. of Box Culvert, 3 nos. Cross Drain, 18m U-Drain at different chainage, protective works of 144m Brick Palisading 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 | 422905198 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Hnilla |
| WARD | 8 |
| Proposed Chainage | 430m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.973276 N<br>Longitude Value: 92.248317 E |
| Road Ending Point Coordinates | Latitude Value: 20.973279 N<br>Longitude Value: 92.252041 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. 430m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 north side Ibne Abbas mosque (10m), Alikhali khal (400m), Alikhali solar power station (550m), Modumoti salt factory (500m), brick field (500m);

on south side Ibne Abbas madrasah, hefjakhana & orphanage (5m), Leda Junior High School (200m), Forest bit (300m), Leda Lamarpara Boro mosque & graveyard (400m); on east side Leda khal (100m), Lamarpara mosque (300m), Naf river (1km), Shrimp project (1km); and on west side IOM Hospital (500m), Corona Hospital (500m), Leda tower market (10m), Brick field (500m), Lamonipara mosque & graveyard (300m), Leda GPS (400m), BGB Camp (400m), Leda community clinic (400m), Leda hill (1km), Leda reserve forest (1km). 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**

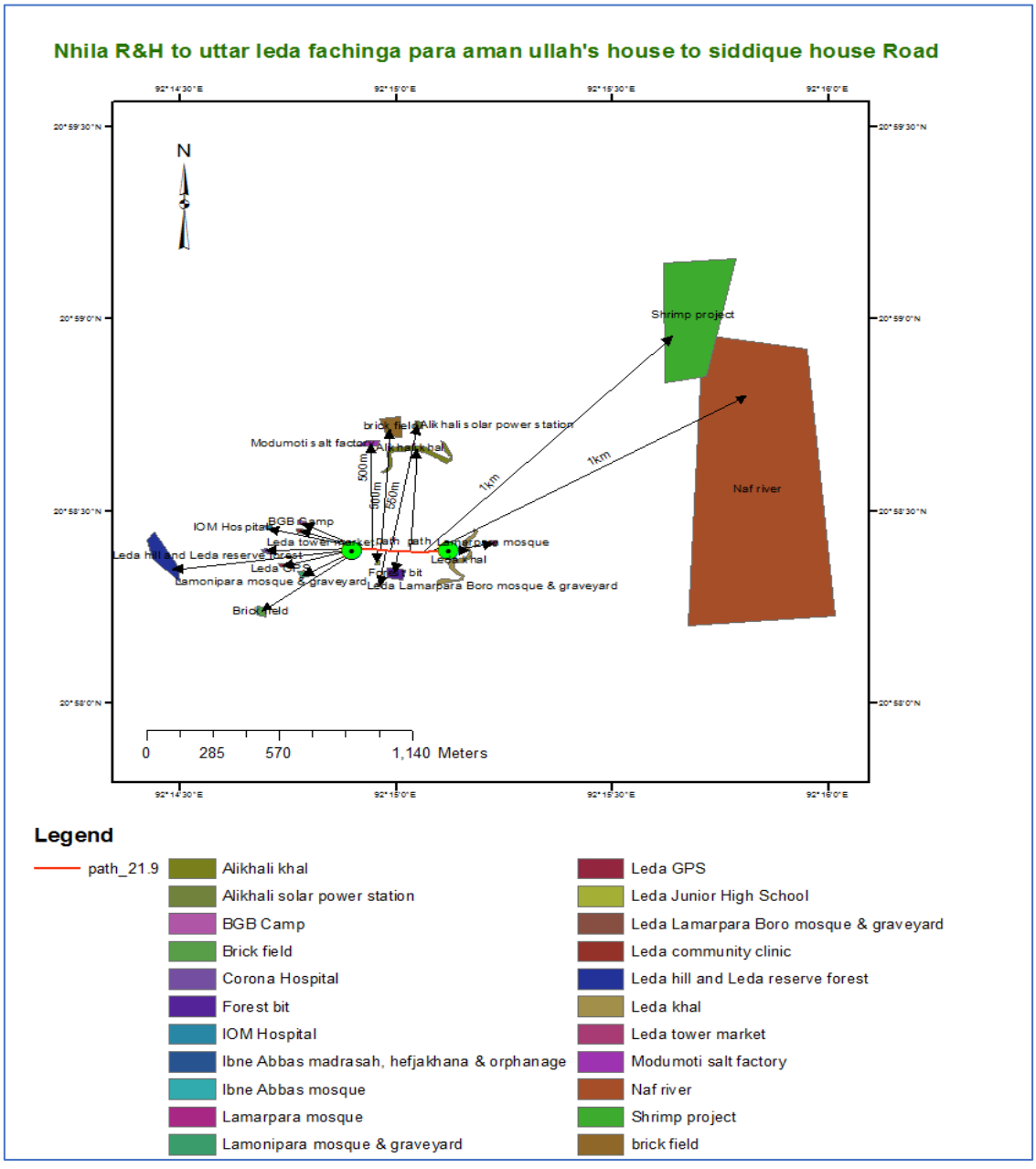



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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.<br>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.<br><br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Cox's Bazar-Teknaf highway connecting road and Lamarpara 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Cox's Bazar-Teknaf highway connecting road and Lamarpara connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation |

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| vehicles. Manual head load from unloading point to different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>Existing canals, ponds and ditches can be disturbed by the construction works, especially from the |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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|---|
| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)<br>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)**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road Id: 422905198

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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 |

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| 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. | Contractor | Environmental Consultant of PIU, PSC |

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| | | • 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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.<br>• If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. | PIU & Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

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| | | • 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.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces.<br>• Labor code of conduct is to be disclosed through consultation. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, | Contractor | Environmental Consultant of PIU, PSC |

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| | | recycling process is not applicable.<br>• Proper consents for hazardous waste management. | | |
| 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.<br>• 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:<br>• 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.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• 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.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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 | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

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| | | be trained and drilled to test and ensure the coherence with the plan.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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 | | |

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| | | 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.<br>• 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 in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | • 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 |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 1,285.5 Sq.m | @38.15 Tk. Per sqm | 49,041.83 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 430.0m | @ 2.56 BDT | 1,100.80 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 40 nos. | @ Tk. 1000 | 40,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.67 |
| | **Subtotal Bill: Environmental facilities** | | | **322,455.02** |

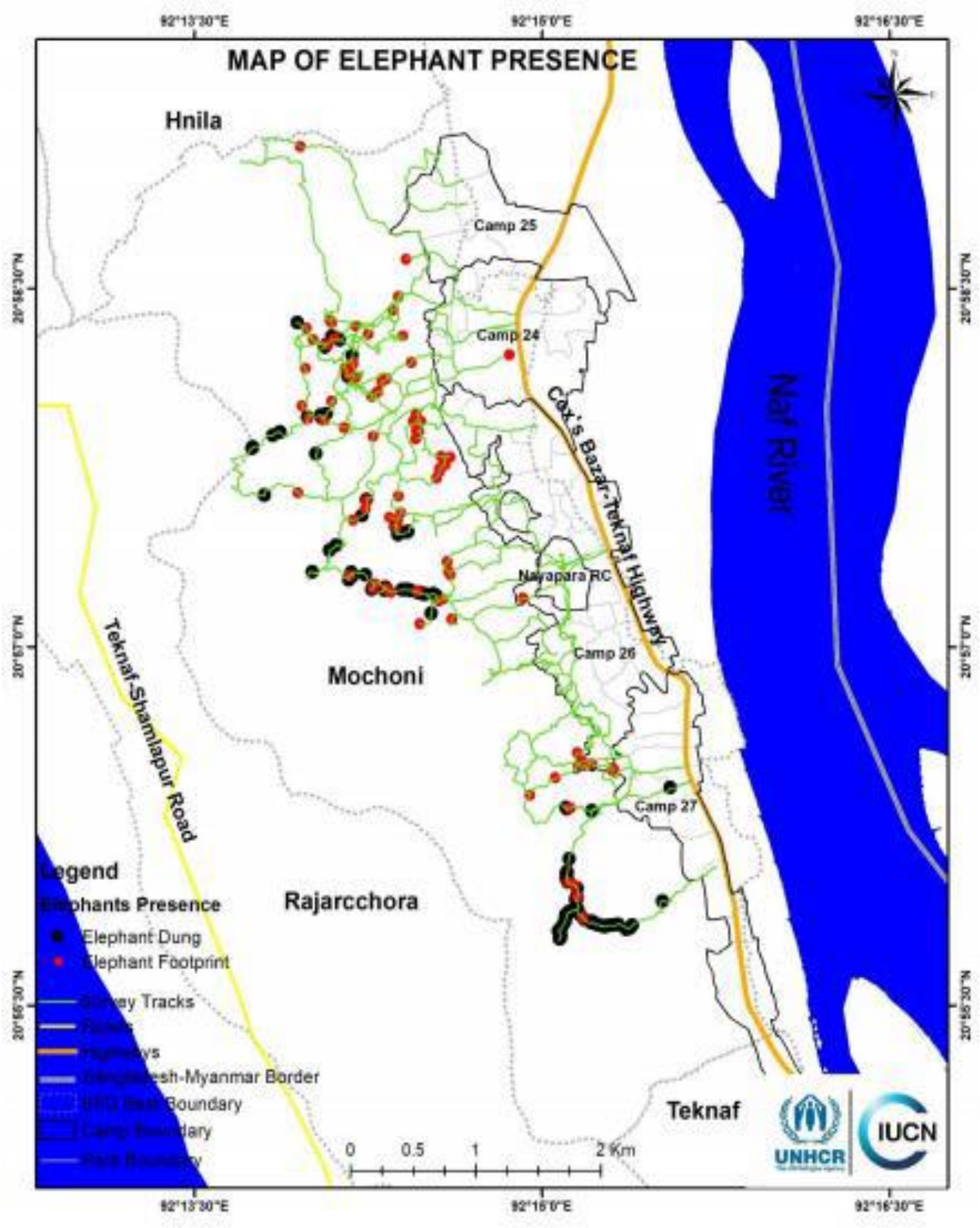
## Cost of H&S Measures under COVID 19 Situations

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 10 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.9).

| 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) | 27 | | 34 | 50.00 | 61 | 3,050.00 | To be placed in a case/holder on the basin, for washing hands for max. 13 people a day and showering of 10 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 | 6 nos. for each site | | N/A | 400.00 | 6 | 2,400.00 | For labors who work in close contact, 6 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | 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 | 10 nos. for each labor camp | | 35.00 | 180 | 6,300.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1 Can | N/A | 1 Can | 250.00 | 2 | 500.00 | |
| 10. | Detergent Cleaner | N/A | 1/2 kg in each camp/month | | 400.00 | 4.5 | 1,800.00 | 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** | | | | | | **73,870.00** | |

**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/W21.09, Road ID No.- 422905198

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**
Local Government Engineering Department (LGED)
Public Consultation Participants List

**Focus Group Discussion**

Time: 10:22 AM Date: 13/12/2020

Name/Address of Site: Nhilla Eid ul Adha Jame Mosque's house to Siddique's house road

Location: Nhilla Union: 04 Upazila: Bangladesh Village: Tekna Para

Road Number: W21/09

| Sl. No. | Name | Age | Gender | Occupation | Signature / Thumb |
|---|---|---|---|---|---|
| 01 | মুন্সুর রহমান (চেয়ারম্যান) | 60 | পুরুষ | কৃষিকাজ | [illegible] |
| 02 | মোঃ হাবিবুর রহমান | 30 | " | ব্যবসায়ী | [illegible] |
| 03 | আবুল কাশেম | 50 | " | " | [illegible] |
| 04 | সিদ্দিকুর রহমান | 46 | " | " | [illegible] |
| 05 | মোহাম্মদ আনোয়ার | 28 | " | " | [illegible] |
| 06 | মাইনুল ইসলাম | 32 | " | " | [illegible] |
| 07 | আবু বক্কর | 60 | " | কৃষিকাজ | [illegible] |
| 08 | ওসমান গনি | 38 | " | ব্যবসা (নিজ) | [illegible] |
| 09 | [illegible] | 30 | " | " | WORLA |
| 10 | [illegible] | 22 | " | ব্যবসা (নিজ) | [illegible] |
| 11 | [illegible] | 22 | " | " | [illegible] |
| 12 | [illegible] | 25 | " | " | [illegible] |

**Public Consultation Participants' List**

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



**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Nhila Uluchamari GPS to Kala Pahar Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 North Uluchamari, South Uluchamari, Konarpara, Murangpara, Lechuprang, Choto Lechuprang & Uluchamari Majherpara villages under Hnilla union, Ward 6 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as, on north side Choto Lechuprang mosque (500m), Boro Lechuprang mosque (1km), Lechuprang boro graveyard (1km), Lechuprang Nurani madrasah (200m), Hamzar chorra (500m), Pankhali GPS (1km), Choto Lechuprang Nurani Madrasah (500m); on south side Uluchamari central mosque (5m), Uluchamari GPS cum cyclone shelter (5m), pond (150m), Guyer chorra (5m), West Uluchamari mosque (5m); on east side Amri khal (1km), Chowdhurypara khal (500m), Salauddin Chander goda (500m), Rongikhali konapara mosque (500m), Rongikhali graveyard (500m); and on west side Khalek bin Olee madrasah (100m), Kala pahar (1km), Dan hater chorra (500m), Social forest (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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (10) Nhila Uluchamari GPS to Kala Pahar Road Id: 422905181

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905181 | ii. Ward No.: 6 | iii. Mouza: South Hnilla |
| iv. Village: North Uluchamari, South Uluchamari, Konarpara, Murangpara, Lechuprang, Choto Lechuprang & Uluchamari Majherpara | | v. Name of Union: Hnilla |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 1620 |
| xi. Distance from UZHQ: 18 Km. | | |

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 20.998159 N<br>Longitude Value: 92.241389 E | Starting Point |
| | | Latitude Value: 20.998444 N<br>Longitude Value: 92.235167 E | Ending Point |
| | ***Present Condition of Road*** | BFS (Broken) | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 2 nos. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 1303m and (dimension: 2.50mx2.50m) at Ch. 1564m on the road length.
- 2 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 620m & Ch. 919m
- 372m Brick Palisading work at different chainage
- Road safety work 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: 23,327,646.81 (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 at Uluchamari Govt. Primary School point, 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 Choto Lechuprang mosque (500m), Boro Lechuprang mosque (1km), Lechuprang boro graveyard (1km), Lechuprang Nurani madrasah (200m), Hamzar chorra (500m), Pankhali GPS (1km), Choto Lechuprang Nurani Madrasah (500m); on south side Uluchamari central mosque (5m), Uluchamari GPS cum cyclone shelter (5m), pond (150m), Guyer chorra (5m), West Uluchamari mosque (5m); on east side Amri khal (1km), Chowdhurypara khal (500m), Salauddin Chander goda (500m), Rongikhali konapara mosque (500m), Rongikhali graveyard (500m); and on west side Khalek bin Olee madrasah (100m), Kala pahar (1km), Dan hater chorra (500m), Social forest (500m). Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation 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 that 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

[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

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

- 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.

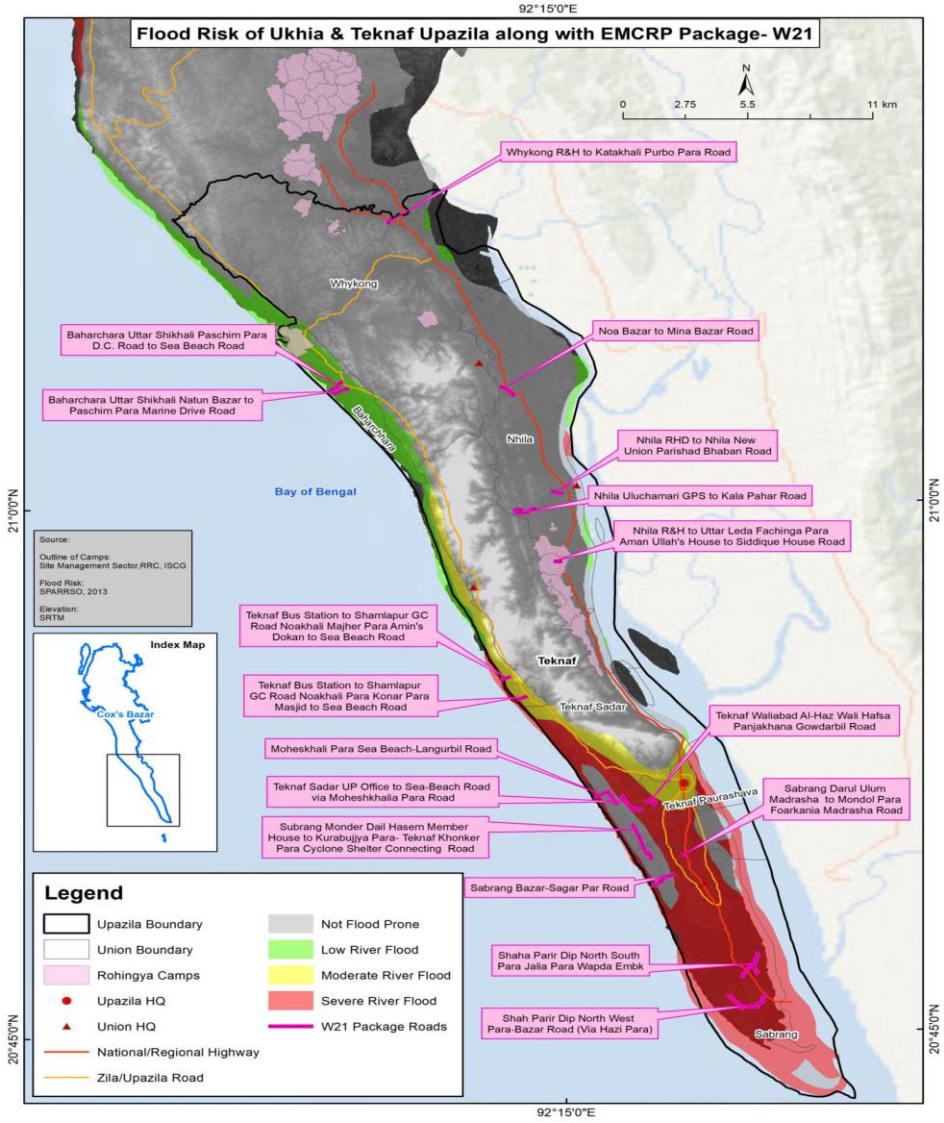



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the proposed road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. In addition, tree planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

## 4 ENVIRONMENTAL AND SOCIAL 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.

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, 2 nos. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 1303m and (dimension: 2.50mx2.50m) at Ch. 1564m of chainage and 2 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 620m & Ch. 919m of chainage will be constructed at the subproject area. Due to the presence of low land along different chainage of the road some protective works, e.g., 372m Brick Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Nhila Uluchamari GPS to Kala Pahar Road Id: 422905181.
**Implementing Agency/Agencies**: Local Government Engineering Department (LGED)

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **23,327,646.81 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/near the camps or in the areas.

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

**Name of Community/Local Area:** North Uluchamari, South Uluchamari, Konarpara, Murangpara, Lechuprang, Choto Lechuprang & Uluchamari Majherpara

**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. 1620m. Proposed safety and service providing structures include 2 nos. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 1303m and (dimension: 2.50mx2.50m) at Ch. 1564m of chainage and 2 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 620m & Ch. 919m of chainage and some additional protective works as 372m Brick Palisading work 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 7,938 sq m.

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

This proposed Nhila Uluchamari GPS to Kala Pahar Road belongs to Hnilla union, Ward 6 under Teknaf Upazila. This road starts from Hnilla bazar to Rongikhali road on Uluchamari GPS at east side stretching 1620m to Uluchamari Master Amir Hossain's house at north side. Several connecting roads fall within the road chainage. Uluchamari GPS is the starting point on the left side of the road and it further passes along different important features, such as, boundary fences, electric pole, paddy fields, ponds, local canals, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, graveyards, school and religious institutes, shops, 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 | | Ext. guide wall, tin shed fences, GPS cum cyclone shelter, uplands, electric pole, bamboo fences, paddy land |
| | | R | Ext. u drain, shops, settlement on upland, connecting road, open space, paddy land |
| 300-600 | L | | Paddy lands, culvert, bamboo fences, Akashi trees yard, mango trees yard |
| | | R | Paddy land, ext. guide wall, open space, bamboo fences, bamboo shaft household, Akashi trees yard |
| 600-900 | L | | Paddy lands, household connecting roads, open space, RCC pole with wire fencing, connecting road, tin shed fences, mango trees yard, shop |
| | | R | Tube well, open space, tin shed fences, household connecting road, paddy lands, bamboo fences, building, shop |
| 900-1200 | L | | Paddy land, household connecting roads, brick boundary walls, vegetables yard, mosque, tin shed fences, betelnut yard, shop |
| | | R | Paddy lands, tin shed fences, ponds, bamboo fences, connecting road, paddy land |
| 1200-1500 | L | | Paddy lands, ditches, brick boundary wall, graveyard |
| | | R | Pond, bamboo fences, ditches, paddy lands, culvert |
| 1500-1630 | L | | Paddy lands, vegetables yard, tin shed household, household connecting roads, uplands |
| | | R | Paddy lands, bushes |




**Figure: Starting point of Nhila Uluchamari GPS to Kala Pahar Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 north side Choto Lechuprang mosque (500m), Boro Lechuprang mosque (1km), Lechuprang boro graveyard (1km), Lechuprang Nurani madrasah (200m), Hamzar chorra (500m), Pankhali GPS (1km), Choto Lechuprang Nurani Madrasah (500m); on south side Uluchamari central mosque (5m), Uluchamari GPS cum cyclone shelter (5m), pond (150m), Guyer chorra (5m), West Uluchamari mosque (5m); on east side Amri khal (1km), Chowdhurypara khal (500m), Salauddin Chander goda (500m), Rongikhali konapara mosque (500m), Rongikhali graveyard (500m); and on west side Khalek bin Olee madrasah (100m), Kala pahar (1km), Dan hater chorra (500m), Social forest (500m). The project road crosses through several communities, agricultural

lands and community level forests. 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.

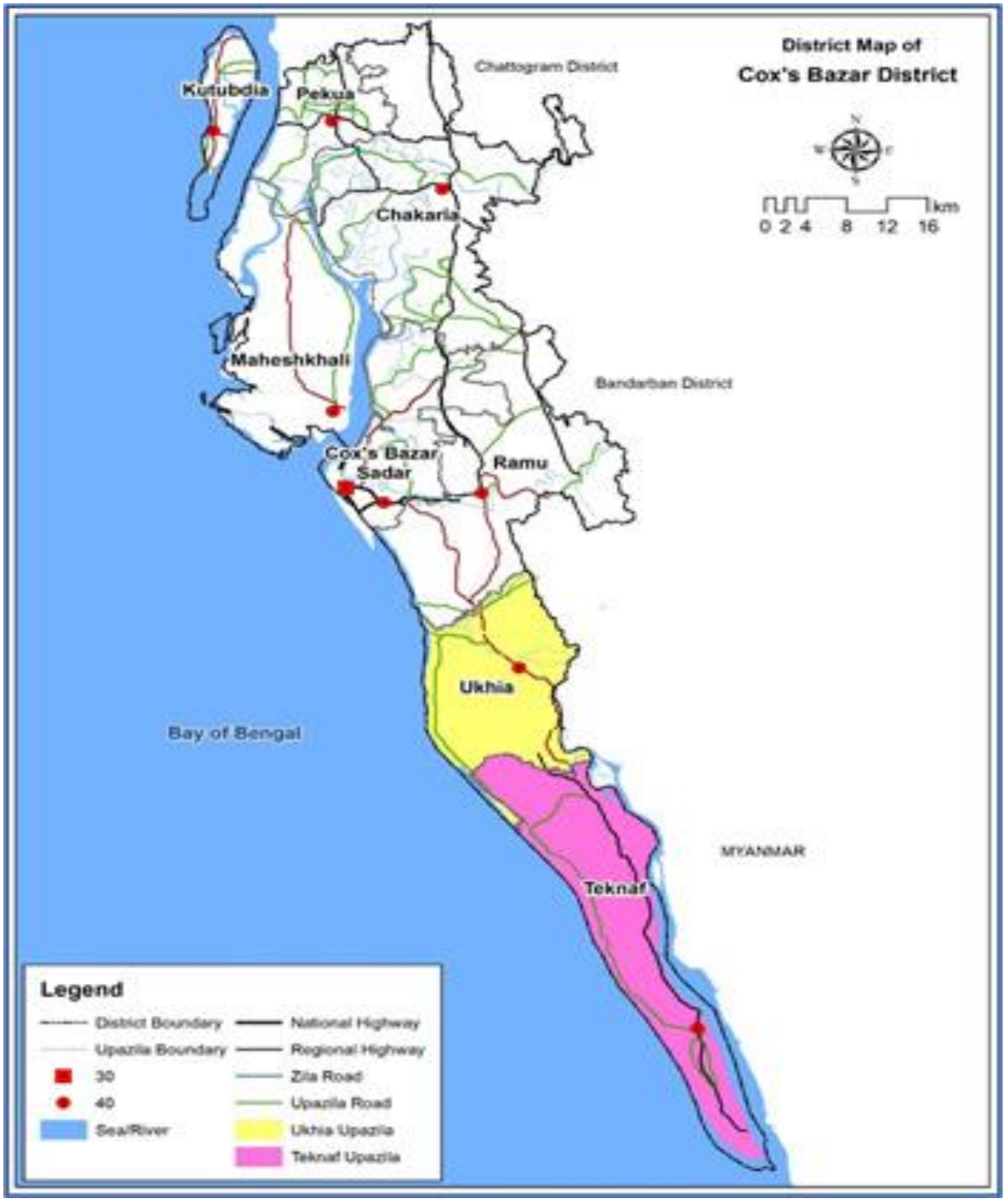



**Figure 3: District Map with project location**




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

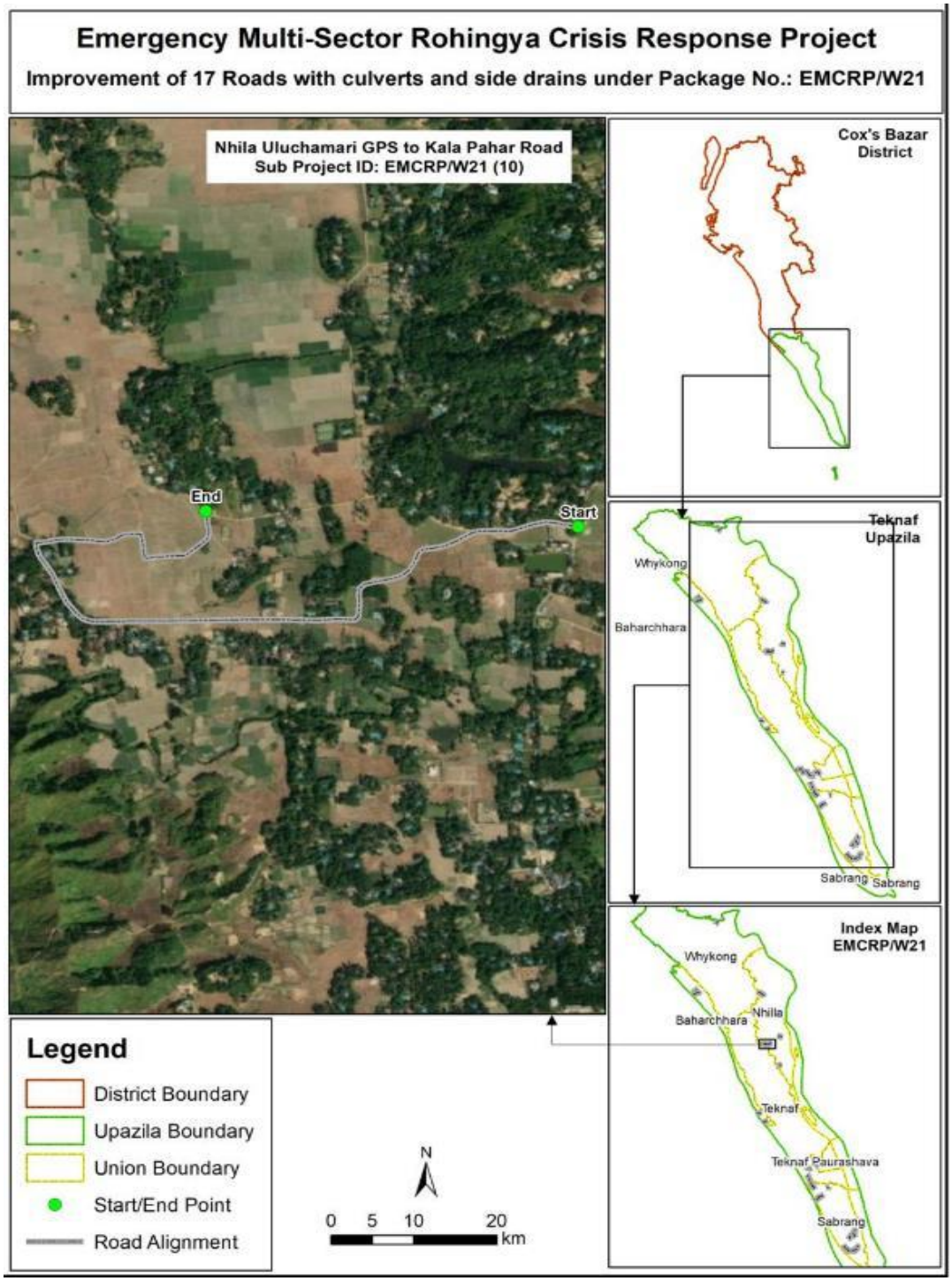



**Figure 5: Upazila Map with Sub-project location**

**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. 1620m. Proposed safety and service providing structures include 2 nos. of Box Culvert, 2nos. Cross Drain, 372m Brick Palisading work that are included in the design and estimation, and as part of road safety works includes 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 | 422905181 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Hnilla |
| WARD | 6 |
| Proposed Chainage | 1620m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 20.998159 N<br>Longitude Value: 92.241389 E |
| Road Ending Point Coordinates | Latitude Value: 20.998444 N<br>Longitude Value: 92.235167 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. 1620m.

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: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 north side Choto Lechuprang mosque (500m), Boro Lechuprang mosque (1km), Lechuprang boro graveyard (1km), Lechuprang Nurani madrasah

(200m), Hamzar chorra (500m), Pankhali GPS (1km), Choto Lechuprang Nurani Madrasah (500m); on south side Uluchamari central mosque (5m), Uluchamari GPS cum cyclone shelter (5m), pond (150m), Guyer chorra (5m), West Uluchamari mosque (5m); on east side Amri khal (1km), Chowdhurypara khal (500m), Salauddin Chander goda (500m), Rongikhali konapara mosque (500m), Rongikhali graveyard (500m); and on west side Khalek bin Olee madrasah (100m), Kala pahar (1km), Dan hater chorra (500m), Social forest (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**

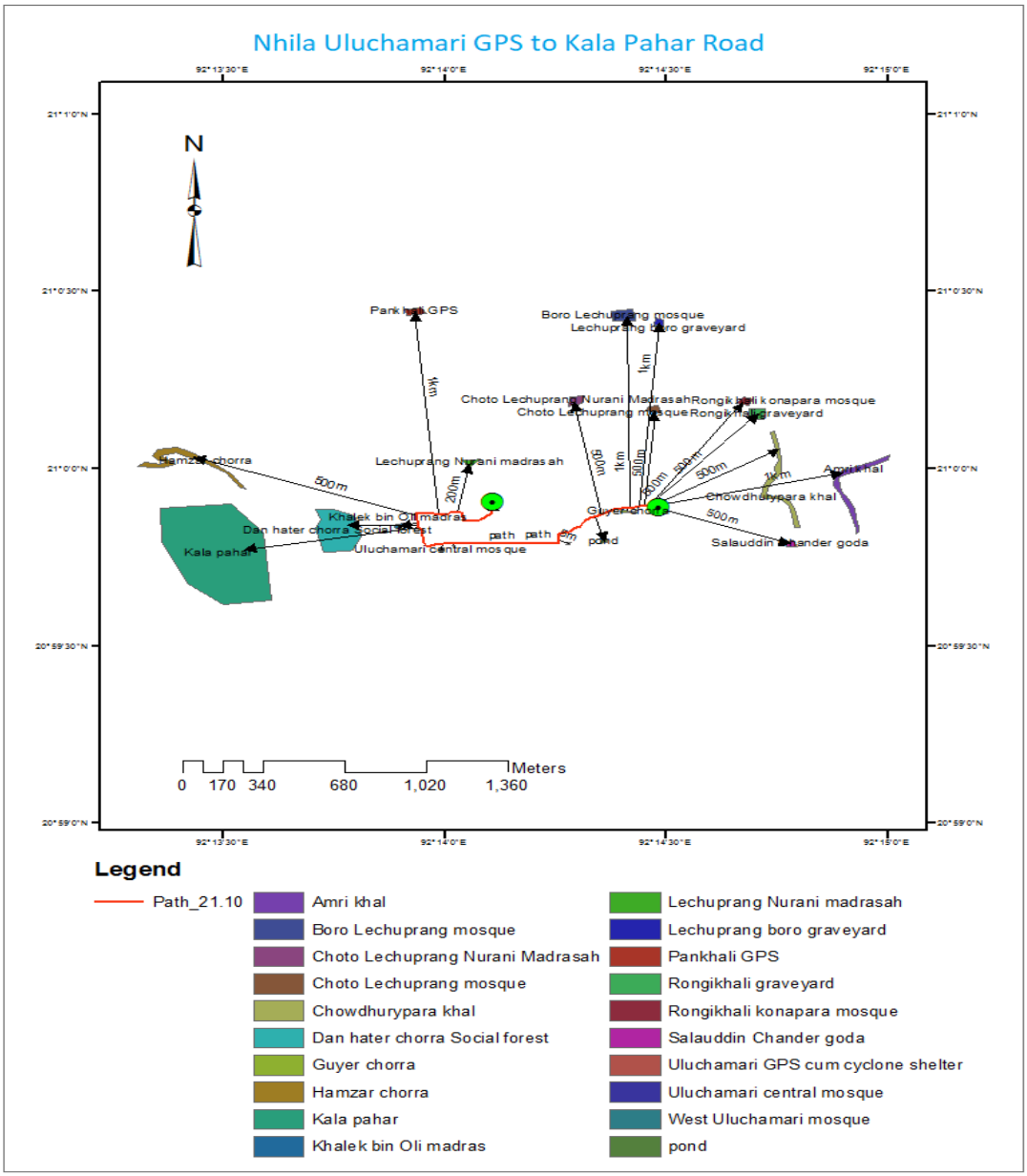



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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.<br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Lechuprang connecting road, Choto Lechuprang connecting road and North Uluchamari 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Lechuprang connecting road, Choto Lechuprang connecting road and North Uluchamari connecting road can be used as access road for transportation. Pickup, dumper trucks could be used |

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| as material transportation vehicles. Manual head load from unloading point to different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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. |

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

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding |

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| and other disease vectors, during the operation phase. |
| **Likely direct and indirect impacts on economic development in the project areas by the sub-project:**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Nhila Uluchamari GPS to Kala Pahar Road Id: 422905181

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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Sadia Azad, IC, Disaster Risk and Climate Change Consultant

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 4,838.1 Sq.m | @38.15 Tk. Per sqm | 184,573.52 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1620.0m | @ 2.56 BDT | 4,147.20 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 130 nos. | @ Tk. 1000 | 130,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.67 |
| | **Subtotal Bill: Environmental facilities** | | | **551,033.11** |

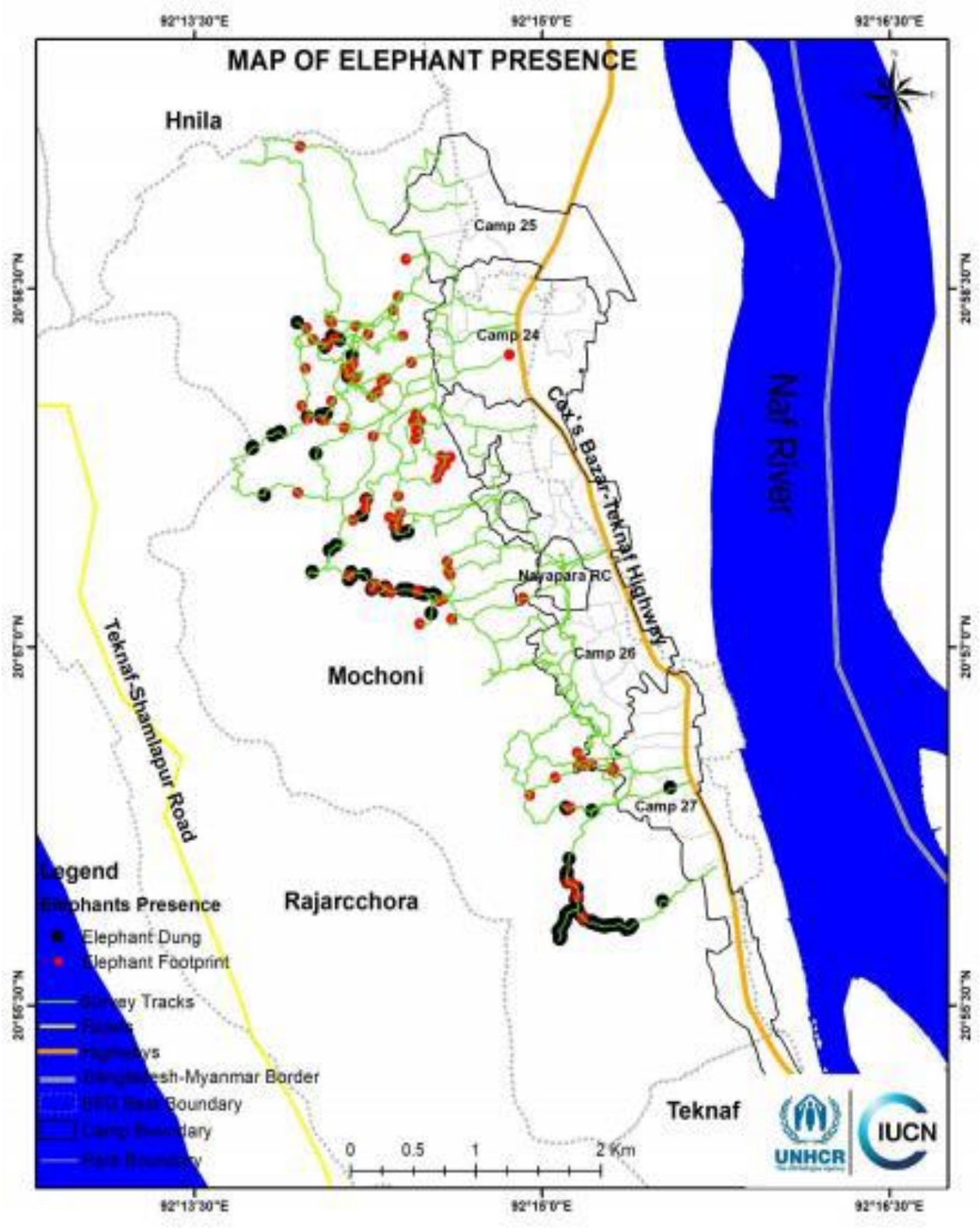
**Cost of H&S Measures under COVID 19 Situations**

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 32 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.10).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 86 | | 108 | 50.00 | 194 | 9,700.00 | To be placed in a case/holder on the basin, for washing hands for max. 37 people a day and showering of 32 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 | 20 nos. for each site | | N/A | 400.00 | 20 | 8,000.00 | For labors who work in close contact, 20 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 | 32 nos. for each labor camp | | 35.00 | 576 | 20,160.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 3 Can | 250.00 | 4.5 | 1,125.00 | |
| 10. | Detergent Cleaner | N/A | 1.500 kg in each camp/month | | 400.00 | 13.50 | 5,400.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | **Grand Total** | | | | | | **110,685.00** | |

**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/W21.10, Road ID No.- 422905181

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

Time: 12:15 PM Date: 13/12/2020

Name of Scheme: Nhila Union Growth Center to Nhila Pourashava Road

Name of Pourashava: চকরিয়া পৌরসভা চকরিয়া, কক্সবাজার

Address: Nhila Ward No: 06 Union: Nhila Upazila: Teknaf District: Cox's Bazar

Page No: 141/18

| | | | | | |
|---|---|---|---|---|---|
| ০১ | মোঃ আবুল হোসেন (চন্দন) | ৫৫ | মুসলিম | চকরিয়া | ব্যবসায়ী |
| ০২ | মোঃ আবুল | ৫৩ | " | " | ব্যবসায়ী |
| ০৩ | মোঃ আবুল কাশেম | ৫৮ | " | চেয়ারম্যান | চকরিয়া উপজেলা |
| ০৪ | মোঃ নবী হোসেন | ৮০ | " | চকরিয়া | ব্যবসায়ী |
| ০৫ | জসিম আবুল | ৫০ | " | " | ব্যবসায়ী |
| ০৬ | মোঃ আবুল | ৬৪ | " | " | [illegible] |
| ০৭ | আবুল হোসেন | ২৫ | " | ছাত্র | ছাত্র |
| ০৮ | আবিদুল হোসেন | ৩২ | " | চকরিয়া | ব্যবসায়ী |
| ০৯ | নিজাম উদ্দিন | ৪৭ | " | " | ব্যবসায়ী |
| ১০ | আবুজর হোসেন | ২০ | " | " | ছাত্র |
| ১১ | মহিউল আলম | ৪৪ | " | " | ব্যবসায়ী |
| ১২ | শফিক আহমদ | ৫৫ | " | " | ব্যবসায়ী |

**Public Consultation Participants' List**

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



**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Whykong R&H to katakhali purbo para Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Katakhali West para, Katakhali Gunarpara, Katakhali Foanarchora, katakhali Hatimora, Modho Katakhali under 1 no. whykong union, Ward 01 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at North side Palongkhali Khal(300m), Paharibeel High School(1km). At South side Katakhali jumma mosque(25m), Furkania Hefzokhana (200m SE), Graveyard(25m), Buddhist Temple(1km), Buddhist Crematory(1km). At East side Aktadia Madrassa(500m), Katakhali GPS (500m), Rastar Matha Jame Mosque(500m). At West side Katakhali Westpara Mosque/Hefzokhana(500m), Katakhali Westpara Graveyard(500m), 3 numbers of Brac School (400m,300m, 450m), Hatimara para-Mosque/new mosque(650m), katakhali fuanasara Mosque(800m). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (11) Whykong R&H to katakhali purbo para–Road Id: 422905132

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905132 | ii. Ward No.: 01 | iii. Mouza: Uttor Nila |
| iv. Village: Katakhali West para, Katakhali Gunarpara, Katakhali Foanarchora, katakhali Hatimora, Modho Katakhali | | v. Name of Union: 1 number Whykong |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 510 |
| xi. Distance from UZHQ: 35 Km. | | |
| ***GPS Coordinates*** | Latitude Value: $21.13354^0$ N<br>Longitude Value: $92.18056^0$ E | Starting Point |

| | | | |
|---|---|---|---|
| | | Latitude Value: 21.13583$^0$ N<br>Longitude Value: 92.18222$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 01 nos. cross Drain (dimension: .975mx.975m) at Ch.266m
- 1 no. Box Culvert (2.50x2.50) at Ch.7m
- 1 number (3 vent 3.0mx2.5m) RCC Box Culvert at Ch.93m
- 155m RCC U-Drain
- 70m Palisading work
- Road safety work 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: 12,411,150.77 (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 at Kalakhali east para–Anwar Islam's house, 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 the North side Palongkhali Khal(300m), Paharibeel High School(1km); on South side Katakhali jumma mosque(25m), Furkania Hefzokhana (200m SE), Graveyard(25m), Buddhist Temple(1km), Buddhist Crematory(1km); on East side Aktadia Madrassa(500m), Katakhali GPS (500m), Rastar Matha Jame Mosque(500m) and on West side Katakhali Westpara Mosque/Hefzokhana(500m), Katakhali Westpara Graveyard(500m), 3 numbers of Brac School (400m,300m,450m), Hatimara para-Mosque/new mosque(650m), katakhali fuanasara Mosque(800m) 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 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 that 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.

[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

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

- 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.

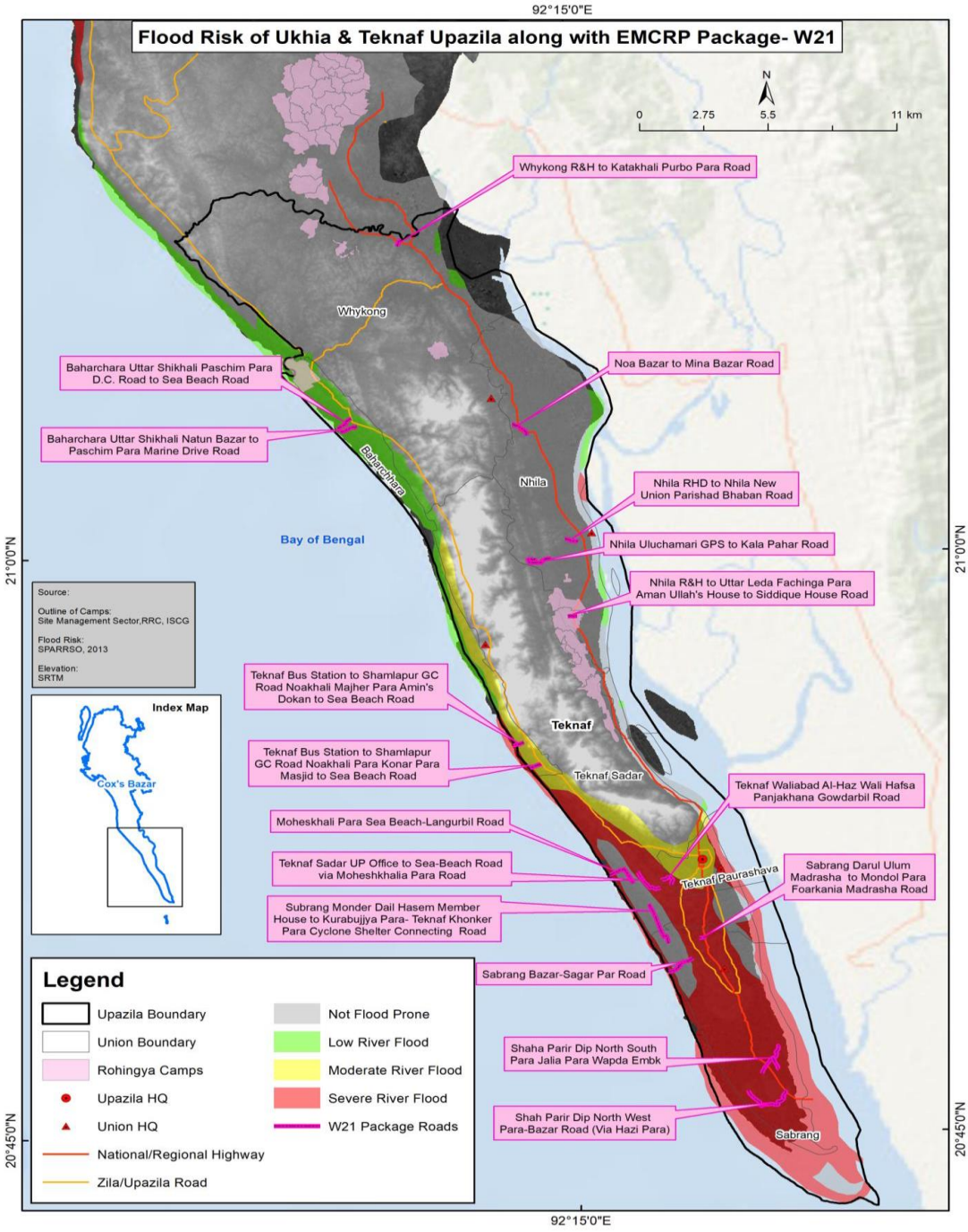



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. In addition, tree planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

# 4 ENVIRONMENTAL AND SOCIAL 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.

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 number cross Drain (dimension: .975mx.975m) at Ch.266m, 1 no. Box Culvert (2.50x2.50) at Ch.7m, 1 number (3 vent 3.0mx2.5m) RCC Box Culvert at Ch.93m and 155m RCC U-Drain will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 70m Palisading work at different chainage are included in design and estimation. 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/W21 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 measures delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing

environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

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

## 6 LIMITATIONS OF THIS STUDY

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

## 7 CONCLUSIONS AND RECOMMENDATIONS

The overall conclusion is that if the mitigation, compensation and enhancement measures are implemented in full, there will be no significant negative environmental impacts in regards to the selection of location, design, construction, and/or operation procedure of the proposed Sub-project. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business, trading 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Whykong R&H to katakhali purbo para Road Id: 422905132
**Implementing Agency/Agencies**: Local Government Engineering Department (LGED)

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **12,411,150.77 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/near the camps or in the areas.

**District**: Cox's Bazar **Upazila**: Teknaf **Union**: 1 number Whykong

**Name of Community/Local Area:** Katakhali West para, Katakhali Gunarpara, Katakhali Foanarchora, katakhali Hatimora, Modho Katakhali
**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. 510m. Proposed safety and service providing structures include 01 nos. Box Culvert (dimension: 1.5mx2.0m) at Ch. 221m, 21m Protective work by Palisading, 69m Surface Drain 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 2,499 sq m.**

**Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:**
This proposed Whykong R&H to katakhali purbo para Road belongs to 1 number Whykong union under Teknaf Upazila. This road has started from Cox's Bazar-Teknaf highway stretching 510m residing in Katakhali area only. This sub-project passes through different important features, e.g., boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 | | Slope at start, shops, U-drain, Settlement, tin fence, tree, the road turned right, settlement, shops, tin fence, runs over katakhali chora, tree, katakhali chora electrc pole, brick wall |
| | | R | Shops, trees Low Ground open space, nut tree, Guide wall, the road turned right, Guide wall, bridge, brick wall, settlement, tin fence, bamboo fence, settlement, tin fence |
| 300-510 | L | | Settlement, electric pole, drain, electric pole, Drain, Electric Pole, settlement, drain, electric pole, tin fence, Guide wall, open field, crop field, bamboo fence, settlement, land tree |
| | | R | Bamboo fence, shop, settlement, tin fence, bamboo fence, solar lamp, drain, brick wall, tin fence, bamboo fence, trees, drain, bamboo fence, tree |



**Figure: Starting point of Whykong R&H to katakhali purbo para Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 North side Palongkhali Khal(300m), Paharibeel High School(1km). At South side Katakhali jumma mosque(25m), Furkania Hefzokhana (200m SE), Graveyard(25m), Buddhist Temple(1km), Buddhist Crematory(1km). At East side Aktadia Madrassa(500m), Katakhali GPS (500m), Rastar Matha Jame Mosque(500m). At West side Katakhali Westpara Mosque/Hefzokhana(500m), Katakhali Westpara Graveyard(500m), 3 numbers of Brac School (400m,300m, 450m), Hatimara para-Mosque/new mosque(650m), katakhali fuanasara Mosque(800m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

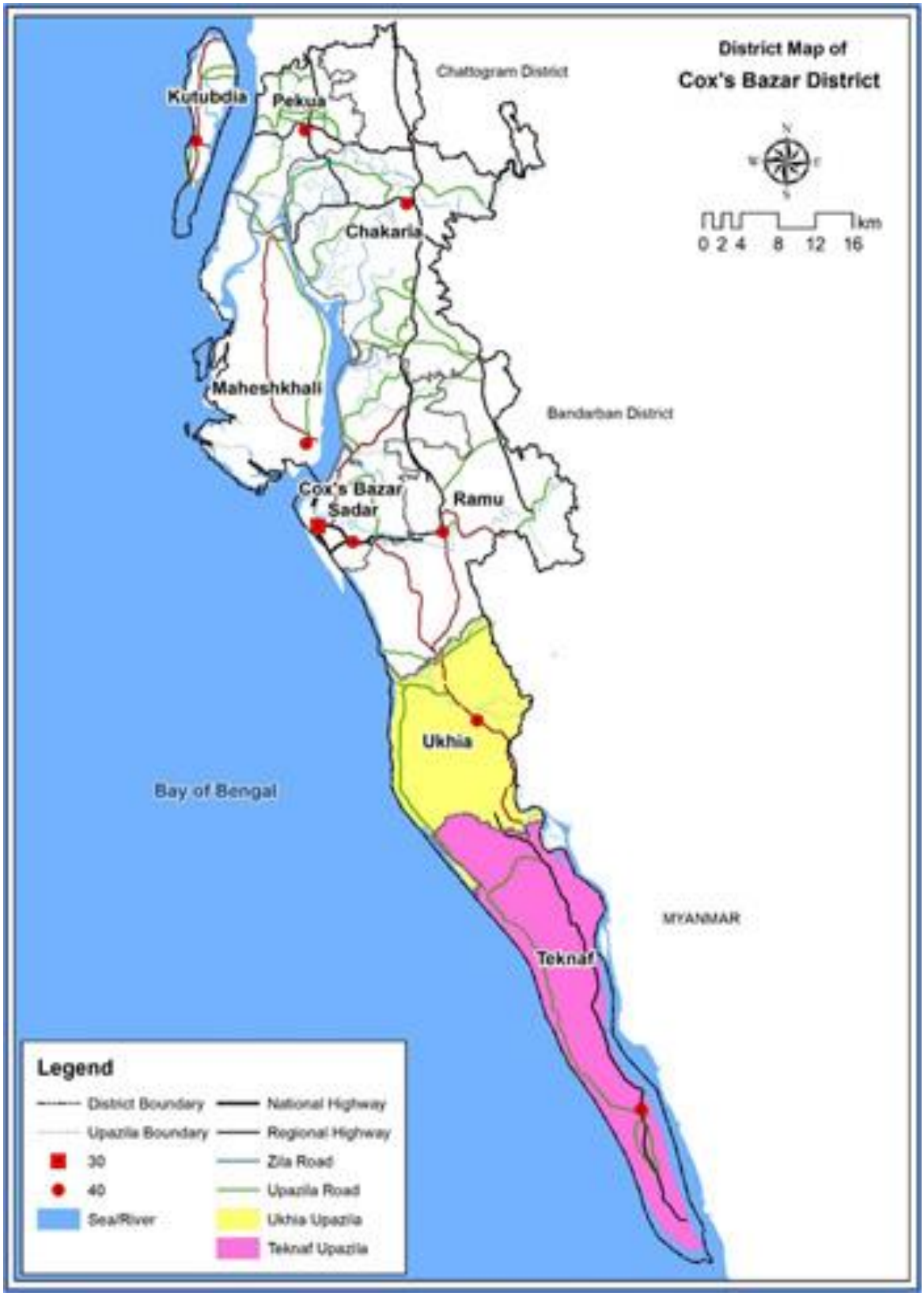



**Figure 3: District Map with project location**




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

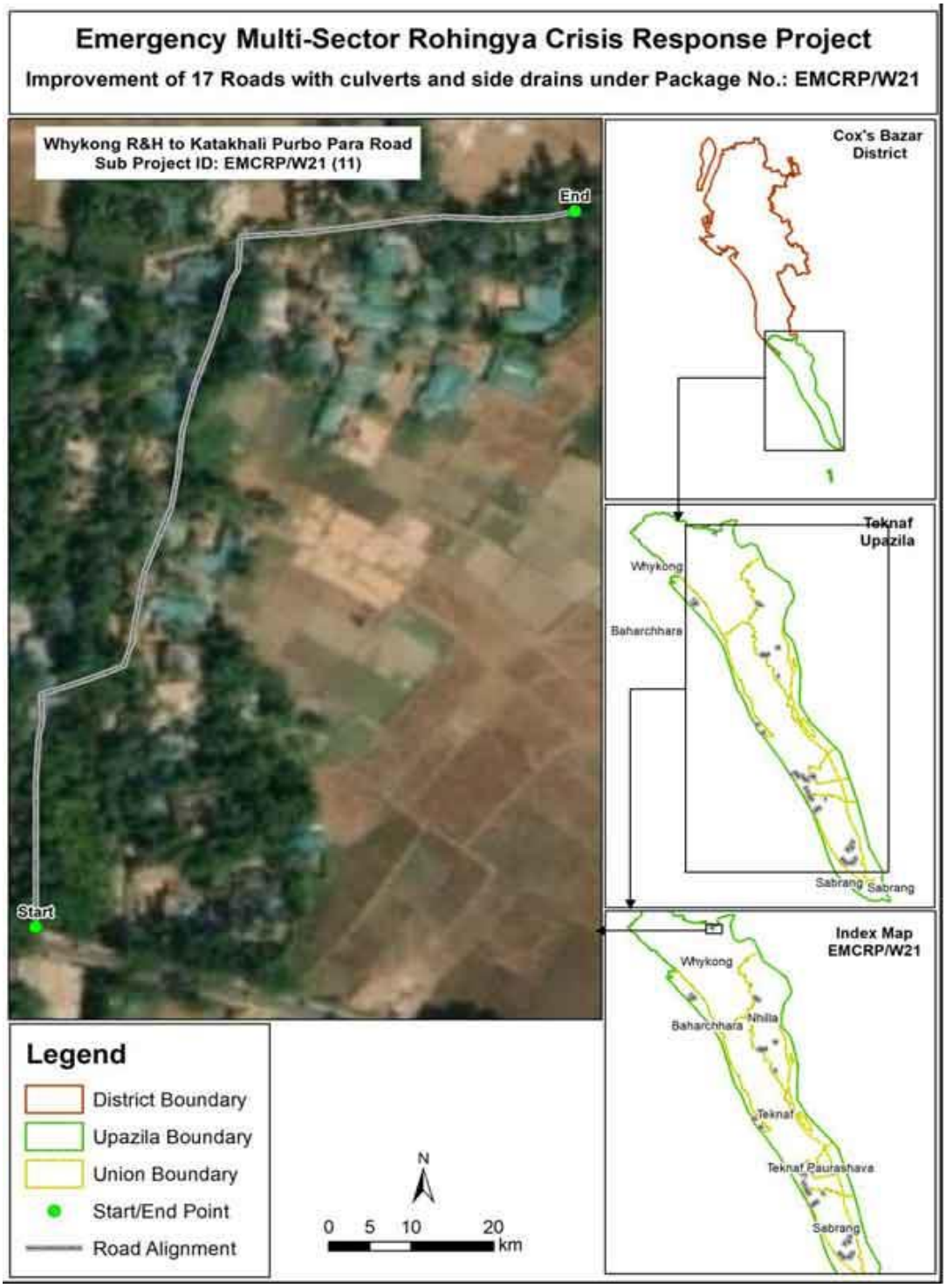



**Figure 5: Upazila Map with Sub-project location**

**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. 510m. Proposed safety and service providing structures include 1 number cross Drain (dimension: .975mx.975m) at Ch.266m, 1 no. Box Culvert (2.50x2.50) at Ch.7m, 1 number (3 vent 3.0mx2.5m) RCC Box Culvert at Ch.93m and 155m RCC U-Drain, 70m protective works by Palisading 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 | 422905132 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | 1 number Whykong |
| WARD | 01 |
| Proposed Chainage | 510m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $21.13354^0$ N<br>Longitude Value: $92.18056^0$ E |
| Road Ending Point Coordinates | Latitude Value: $21.13583^0$ N<br>Longitude Value: $92.18222^0$ 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. 510m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Palongkhali Khal(300m), Paharibeel

High School(1km). At South side Katakhali jumma mosque(25m), Furkania Hefzokhana (200m SE), Graveyard(25m), Buddhist Temple(1km), Buddhist Crematory(1km). At East side Aktadia Madrassa(500m), Katakhali GPS (500m), Rastar Matha Jame Mosque(500m). At West side Katakhali Westpara Mosque/Hefzokhana(500m), Katakhali Westpara Graveyard(500m), 3 numbers of Brac School (400m,300m, 450m), Hatimara para-Mosque/new mosque(650m), katakhali fuanasara Mosque(800m). 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**

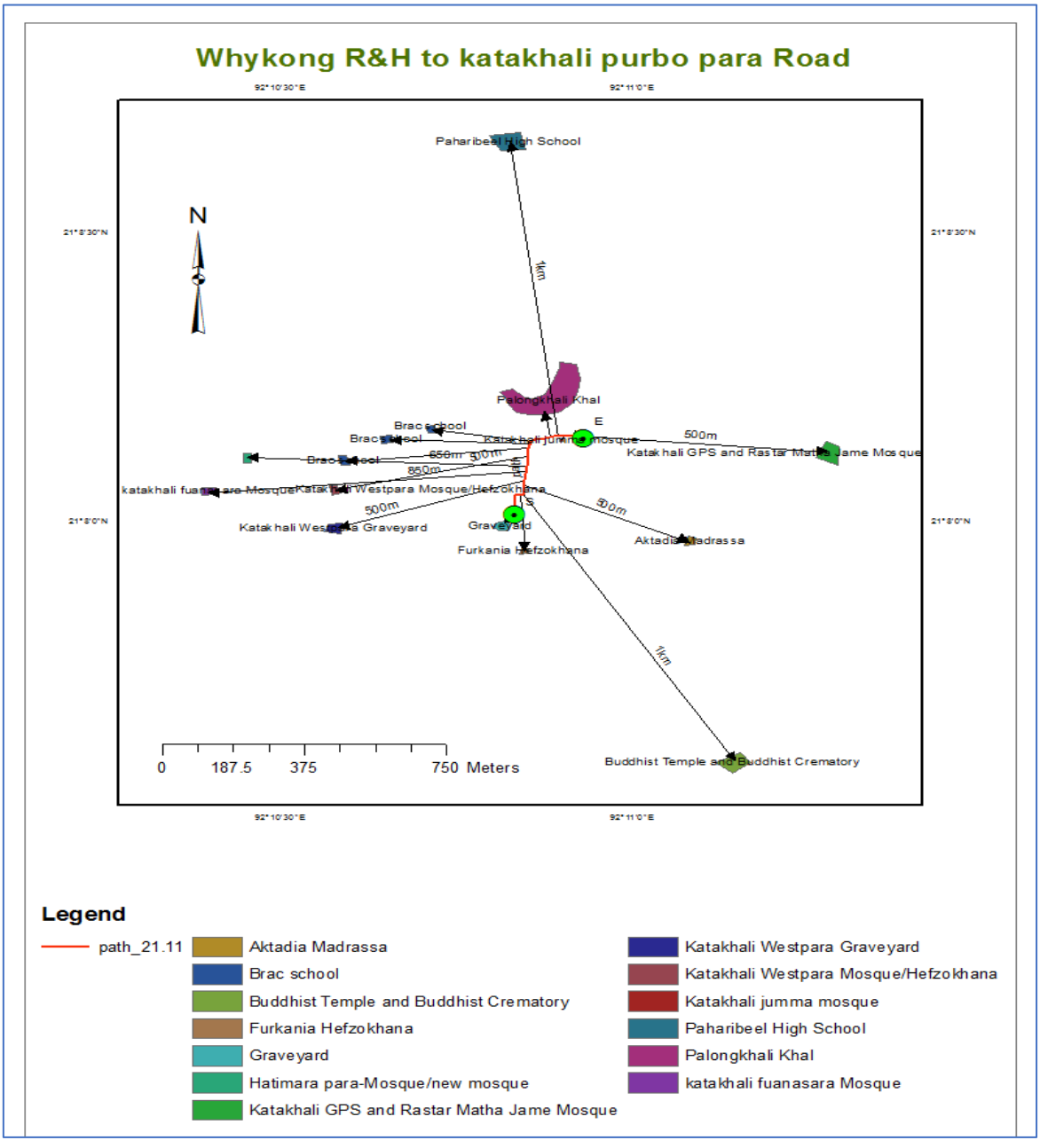



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-100 feet and deep tube well depth is 500 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.<br><br>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.<br><br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>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):**<br>Cox's Bazar-Teknaf Highway 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Cox's Bazar-Teknaf Highway 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:**<br>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.):**<br>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 50 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.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>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:**<br>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)**<br>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:**<br>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:**<br>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)**<br>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)**<br>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)**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Whykong R&H to katakhali purbo para Road Id: 422905132

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 1495.5 Sq.m | @38.15 Tk. Per sqm | 57,053.325 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 510m | @ 2.56 BDT | 1,305.60 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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 |
|---|---|---|---|---|
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 40 nos. | @ Tk. 1000 | 40,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.66 |
| | **Subtotal Bill: Environmental facilities** | | | **330671.30** |

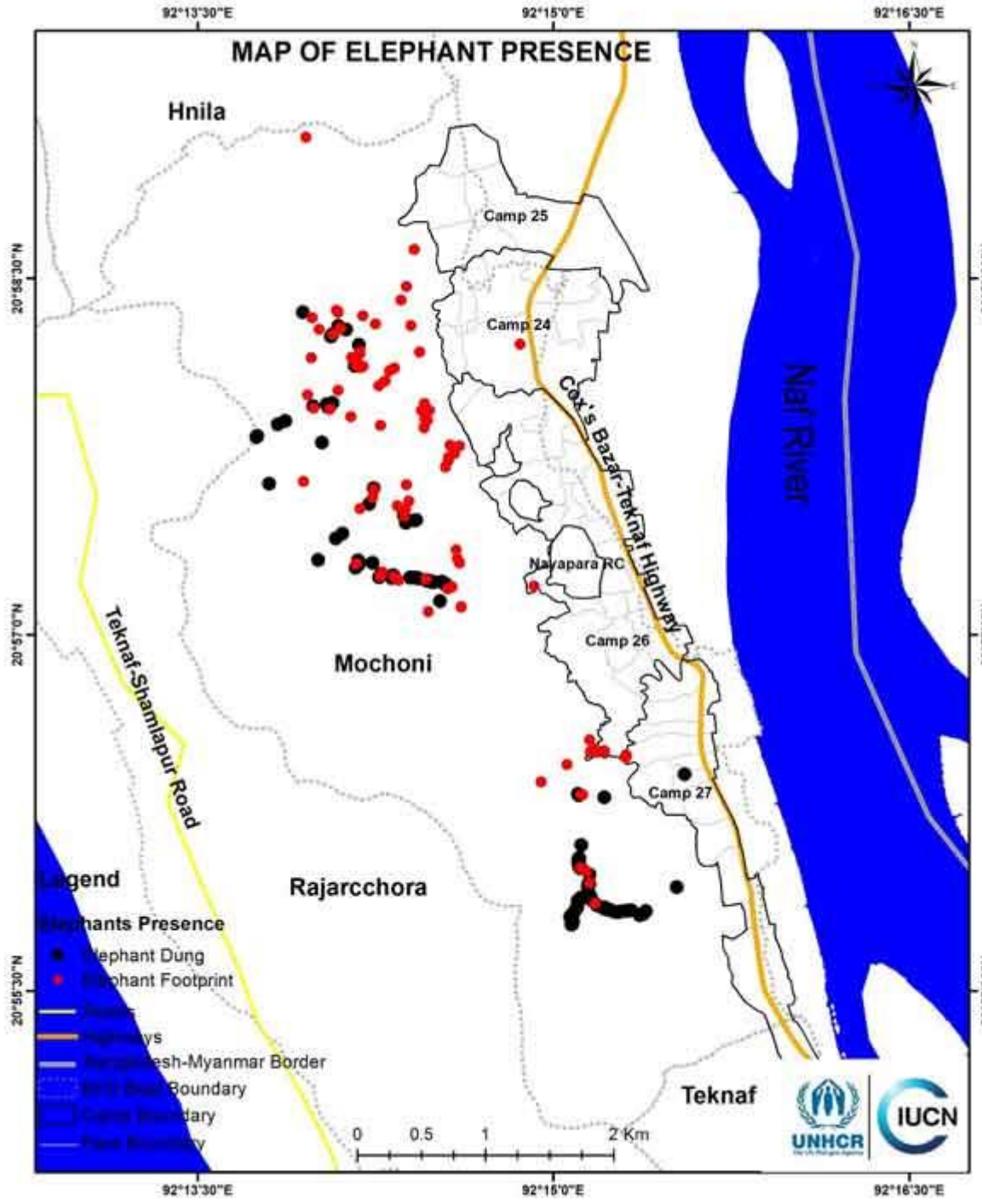
## Cost of H&S Measures under COVID 19 Situations

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 10 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.11).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 27 | | 34 | 50.00 | 61 | 3,050.00 | To be placed in a case/holder on the basin, for washing hands for max. 13 people a day and showering of 10 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 6 nos. for each site | | N/A | 400.00 | 6 | 2,400.00 | For labors who work in close contact, 6 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | 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 | 10 nos. for each labor camp | | 35.00 | 180 | 6,300.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1 Can | N/A | 1 Can | 250.00 | 2 | 500.00 | |
| 10. | Detergent Cleaner | N/A | 1/2 kg in each camp/month | | 400.00 | 4.5 | 1,800.00 | 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** | | | | | | **73,870.00** | |

**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/W21.11, Road ID No.- 422905132

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

**Public Consultation Participants' List**

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








An overview of the current condition of the sub-

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 Noa Bazar to Mina Bazar Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Satgoriapara, West Satgoriapara, Kacharpara, Kombonia, Minabazar, Deilpara, Jibonkhali under whykong union, Ward 07 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at North side Mina Bazar (150m), Mina Bazar Community Center (100m), Malikobi Mosque (80m), Mina Bazar Jame Mosque (15m). At South side Station Gol Mosque (20m), Darus salam Jame Mosque (300m). At East side Old Jame Mosque (5m), Purbo para Jame Mosque (300m), Noyabazar High School (130m), Noyabazar GPS (140m). At West side Gunapara Mosque (05m), Umme Nojir Mosque (500m), Halimam Nurani Madrassa (450m), Hefzokhana (10m), Gunapara Graveyard (50m). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (12) Noa Bazar to Mina Bazar Road Id: 422905002

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905002 | ii. Ward No.: 07 | iii. Mouza: Modhom Nila |
| iv. Village: East Satgoriapara, West Satgoriapara, Kacharpara, Kombonia, Minabazar, Deilpara, Jibonkhali | | v. Name of Union: Whykong |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 910 |
| xi. Distance from UZHQ: 24 Km. | | |
| ***GPS Coordinates*** | Latitude Value: $21.05134^0$ N<br>Longitude Value: $92.23228^0$ E | Starting Point |

| | | | |
|---|---|---|---|
| | | Latitude Value: 21.05639$^0$ N<br>Longitude Value: 92.22663$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 03 nos. cross Drain (dimension: .975mx.975m) at Ch.125m, Ch.310, Ch.485
- 1 no. Box Culvert (2.50x2.50) at Ch.688m
- 350m RCC U-Drain
- 148m Palisading work
- Road safety work 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: 16,159,137.63 (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 at Noyabazar Station, 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: Mina Bazar (150m), Mina Bazar Community Center (100m), Malikobi Mosque (80m), Mina Bazar Jame Mosque (15m) are located on the North; on South side Station Gol Mosque (20m), Darus salam Jame Mosque (300m); on East side Old Jame Mosque (5m), Purbo para Jame Mosque (300m), Noyabazar High School (130m), Noyabazar GPS (140m) and on West side Gunapara Mosque (05m), Umme Nojir Mosque (500m), Halimam Nurani Madrassa (450m), Hefzokhana (10m), Gunapara Graveyard (50m) 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 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 that 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

[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

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

- 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.

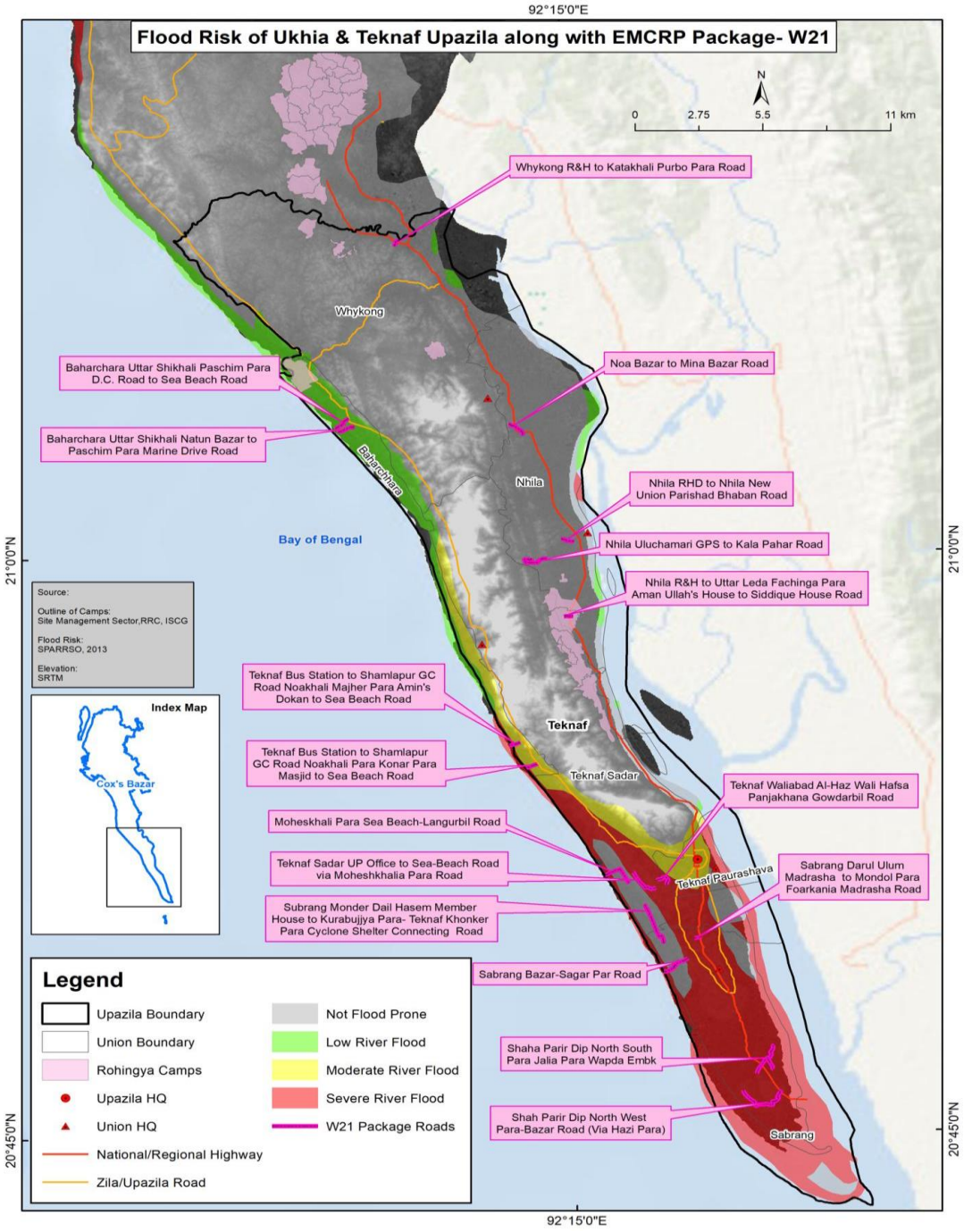



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. In addition, tree planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

# 4 ENVIRONMENTAL AND SOCIAL 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.

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, 03 nos. cross Drain (dimension: .975mx.975m) at Ch.125m, Ch.310, Ch.485 & 1 no. Box Culvert (2.50x2.50) at Ch.688m and 350m RCC U-Drain will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 148m Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Noa Bazar to Mina Bazar Road Id:422905002
**Implementing Agency/Agencies**: Local Government Engineering Department (LGED)

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **16,159,137.63 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/near the camps or in the areas.

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

**Name of Community/Local Area:** East Satgoriapara, West Satgoriapara, Kacharpara, Kombonia, Minabazar, Deilpara, Jibonkhali

**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. 910m. Proposed safety and service providing structures include 03 nos. cross Drain (dimension: .975mx.975m) at Ch.125m, Ch.310, Ch.485 & 1 no. Box Culvert (2.50x2.50) at Ch.688m and 350m RCC U-Drain with 148m Palisading work 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 4459 sq m.**

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

This proposed Noa Bazar to Mina Bazar Road belongs to Whykong union under Teknaf Upazila. This road starts from South Side of Noya bazar, Satgoriapara stretching 910m to North Mina Bazar station. This sub-project passes through different important features, e.g., boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes etc. No other significant environmental or socio-economic 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 fence, Shop, Brick wall, tin fence, crop field, electric pole, settlement, settlement tun fence, pond, pond, crop field, brisge, Shrimp farm, pond, marsh land, shrimp farm |
| | | R | Tin fence, bamboo fence, tin fence, brick wall, tree, open space, household connecting road to the right, Mosque, brick wall, trees, swamp, crop field, open space, crop field, household connecting road to the right, shrimp farm, crop field |
| 300-600 | L | | Tin fence, tin fence, brick wall, Madrassa, Pond, brick wall, settlement, two trees, shop, swamp, shops |
| | | R | Brick wall, settlement, open field, wired fence with RCC pole, brick wall |
| 600-910 | L | | High grounds, Graveyard, culvert, tin fence, Open space, settlement, shops |
| | | R | drain, brick wall, settlement, tin fence Settlement, slum, drain, shops |



**Figure: Starting point Noa Bazar to Mina Bazar Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 North side Mina Bazar (150m), Mina Bazar Community Center (100m), Malikobi Mosque (80m), Mina Bazar Jame Mosque (15m). At South side Station Gol Mosque (20m), Darus salam Jame Mosque (300m). At East side Old Jame Mosque (5m), Purbo para Jame Mosque (300m), Noyabazar High School (130m), Noyabazar GPS (140m). At West side Gunapara Mosque (05m), Umme Nojir Mosque (500m), Halimam Nurani Madrassa (450m), Hefzokhana (10m), Gunapara Graveyard (50m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

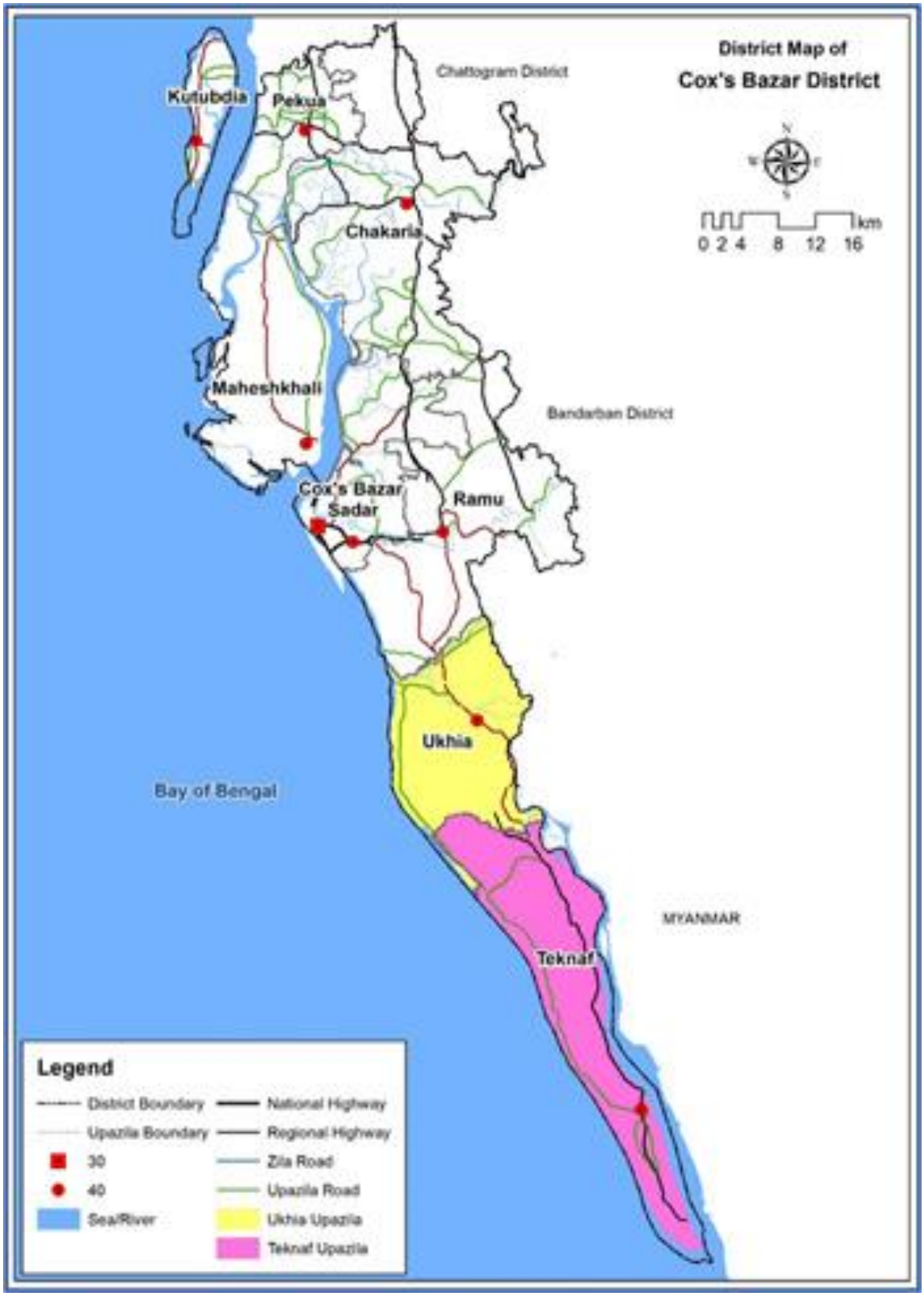



**Figure 3: District Map with project location**




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

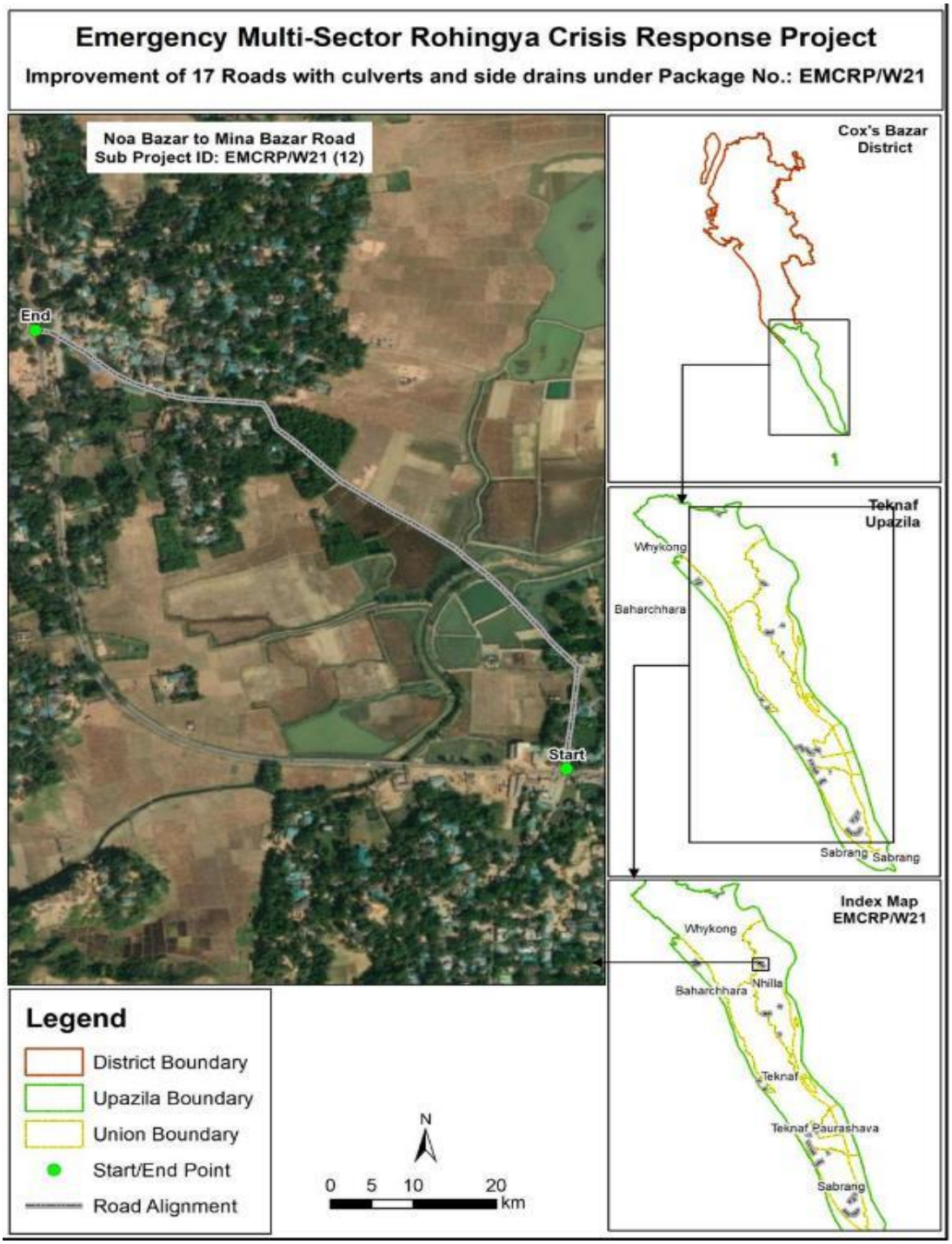



**Figure 5: Upazila Map with Sub-project location**

**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. 510m. Proposed safety and service providing structures include 1 number cross Drain (dimension: .975mx.975m) at Ch.266m, 1 no. Box Culvert (2.50x2.50) at Ch.7m, 1 number (3 vent 3.0mx2.5m) RCC |

Box Culvert at Ch.93m and 155m RCC U-Drain, 70m protective works by Palisading 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 | 422905002 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Whykong |
| WARD | 07 |
| Proposed Chainage | 910m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $21.05134^0$ N<br>Longitude Value: $92.23228^0$ E |
| Road Ending Point Coordinates | Latitude Value: $21.05639^0$ N<br>Longitude Value: $92.22663^0$ 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. 910m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) Very low chance of losing of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Mina Bazar (150m), Mina Bazar Community Center (100m), Malikobi Mosque (80m), Mina Bazar Jame Mosque (15m). At South side Station Gol Mosque (20m), Darus salam Jame Mosque (300m). At East side Old Jame Mosque (5m), Purbo para Jame Mosque (300m), Noyabazar High School (130m), Noyabazar GPS (140m). At West side Gunapara Mosque (05m), Umme Nojir Mosque (500m), Halimam Nurani Madrassa (450m), Hefzokhana (10m), Gunapara Graveyard (50m). 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**

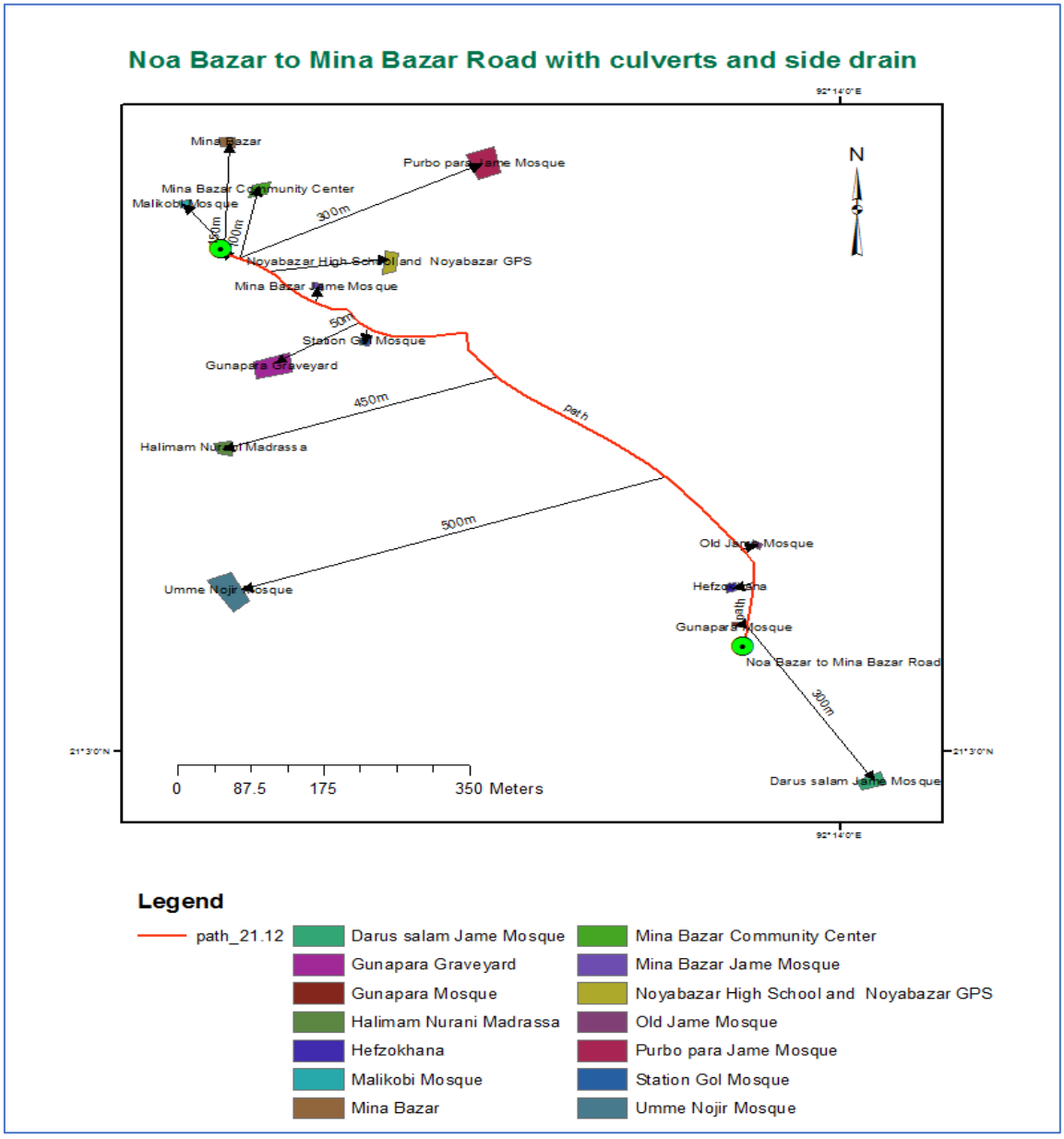



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-100 feet and deep tube well depth is 700 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.<br><br>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.<br><br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>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):**<br>Adjacent Arakan 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Cox's Bazar-Teknaf Highway 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:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>Existing canals, ponds and ditches can be disturbed by the construction works, especially from the |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)<br>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)**<br>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:**<br>Construction or implementation of a road project substantially contributes to the development of the |

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| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Noa Bazar to Mina Bazar Road Id: 422905002

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 2715 Sq.m | @38.15 Tk. Per sqm | 103,577.25 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 910m | @ 2.56 BDT | 2,329.6 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | 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. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge. | 1 no. | LS @ Tk. 15,000 | 15,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| 7. | **Personal Protection Equipment for Workers**<br>Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles | LS | LS @ Tk 30,000 | 30,000 |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 40 nos. | @ Tk. 1000 | 40,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>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 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 no. | LS @ Tk. 30,000 | 30,000 |
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.66 |
| | **Subtotal Bill: Environmental facilities** | | | **378,219.23** |

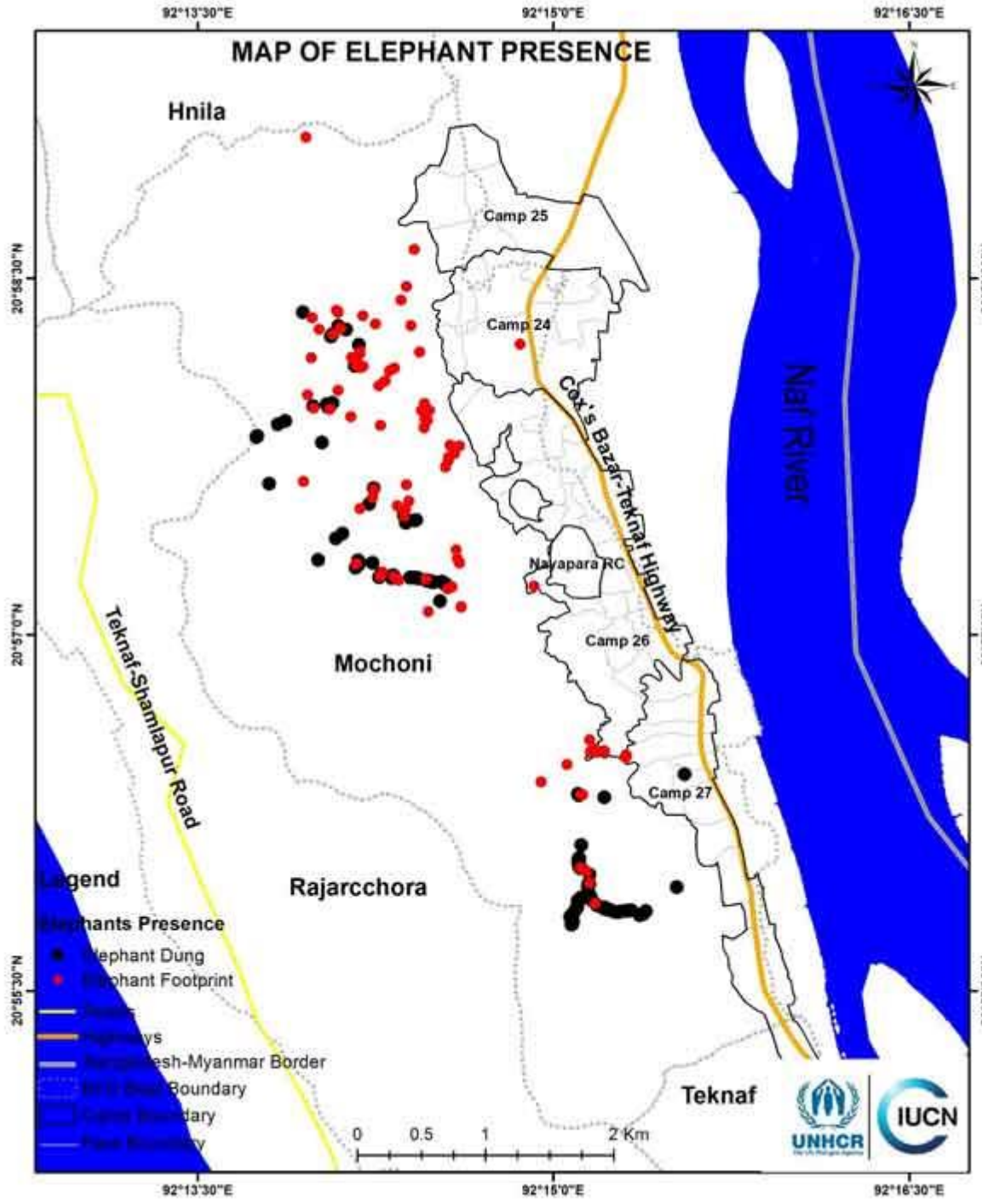
## Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 20 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.12).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 54 | | 68 | 50.00 | 122 | 6,100.00 | To be placed in a case/holder on the basin, for washing hands for max. 23 people a day and showering of 20 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 12 nos. for each site | | N/A | 400.00 | 12 | 4,800.00 | For labors who work in close contact, 12 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 20 nos. for each labor camp | | 35.00 | 360 | 12,600.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 2 Can | 250.00 | 3.5 | 875.00 | |
| 10. | Detergent Cleaner | N/A | 1 kg in each camp/month | | 400.00 | 9 | 3,600.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | **Grand Total** | | | | | | **87,795.00** | |

**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/W21.12, Road ID No.- 422905002

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

সময়: 2:22 PM তারিখ: ২২/০২/২০

| ক্রমিক নং | নাম | বয়স | পুরুষ/মহিলা | গ্রাম | স্বাক্ষর / টিপসই |
|---|---|---|---|---|---|
| ১ | মোঃ আবদুল আজিজ | ৫০ | পুরুষ | দক্ষিণ ডেকাপাড়া বড় আড়া | |
| ২ | আবেদ হোসেন | ৩৫ | পুরুষ | " | |
| ৩ | মোঃ হোসেন | ৪৫ | পুরুষ | " | |
| ৪ | নুরুল আমিন | ৫৫ | পুরুষ | " | |
| ৫ | আবদুল মজুমদার | ৪৩ | পুরুষ | " | |
| ৬ | আলি আহমেদ | ৫৫ | পুরুষ | " | |
| ৭ | মনসুর আলম | ৩৮ | পুরুষ | " | |
| ৮ | নুরুল হোসেন | ৫৮ | পুরুষ | " | |
| ৯ | ইসলাম সরদার | ৭৫ | পুরুষ | " | |
| ১০ | নিজাম উদ্দিন | ৪২ | পুরুষ | " | |
| ১১ | মোঃ ফরিদ | ৪৫ | পুরুষ | দক্ষিণ ডেকাপাড়া বড় আড়া | |
| ১২ | আবদুল মজিদ | ৩৪ | পুরুষ | " | |
| ১৩ | আবদুল জব্বার | ৪৩ | পুরুষ | " | |
| ১৪ | ইসলাম হোসেন তালুকদার | ৪৮ | পুরুষ | " | |
| ১৫ | আবেদা | ৩৯ | পুরুষ | " | |
| ১৬ | নুরুল আমিন | ৩৯ | পুরুষ | " | |

**Public Consultation Participants' List**

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








**An Overview of the current condition of the Sub-**

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 Nhila RHD to Nhila new union parishad bhaban Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Fakirabad, Uluchamari, Rasulabad, Kiyangpara & Natmurapara villages under Hnilla union, Ward 5 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as on north side Dargah graveyard (400m), R&H office (300m), Hnilla pre-cadet school (600m), Hnilla bazar (1km), Sufia GPS (250m), R&H mosque (300m0, salt field (5m), Shadeker gudar khal (5m); on south side Salt field (5m), fish farm 950m), Hnilla UP office (10m), Fokirabad mosque & madras (5m), Chowdhurypara Kiyang (800m), Chowdhurypara chota Kiyang (700m); on east side Pond (10m), south Fuler dhil mosque (100m), Jaliapara mondir (300m), Natmurapara mosque (100m); and on west side Olimura graveyard (10m), Rosulabad mosque & madrasah (300m), Dargahpara hill (350m), Hnilla Rosulabad Kiyang (350m). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (13) Nhila RHD to Nhila new union parishad bhaban Road Id: 422905289

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905289 | ii. Ward No.: 5 | iii. Mouza: South Hnilla |
| iv. Village: Fakirabad, Uluchamari, Rasulabad, Kiyangpara & Natmurapara | | v. Name of Union: Hnilla |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 510 |
| xi. Distance from UZHQ: 18 Km. | | |

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 21.006454 N<br>Longitude Value: 92.248218 E | Starting Point |
| | | Latitude Value: 21.005384 N<br>Longitude Value: 92.252820 E | Ending Point |
| | ***Present Condition of Road*** | HBB | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 1 no. of Box Culvert (dimension: 1.5mx2.0m) at Ch. 235m
- 50m Brick Palisading work at different chainage
- Road safety work 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: 7,030,192.24 (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 Hnilla UP office point, 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 Dargah graveyard (400m), R&H office (300m), Hnilla pre-cadet school (600m), Hnilla bazar (1km), Sufia GPS (250m), R&H mosque (300m0, salt field (5m), Shadeker gudar khal (5m); at south side Salt field (5m), fish farm 950m), Hnilla UP office (10m), Fokirabad mosque & madras (5m), Chowdhurypara Kiyang (800m), Chowdhurypara chota Kiyang (700m); at east side Pond (10m), south Fuler dhil mosque (100m), Jaliapara mondir (300m), Natmurapara mosque (100m); and at west side Olimura graveyard (10m), Rosulabad mosque & madrasah (300m), Dargahpara hill (350m), Hnilla Rosulabad Kiyang (350m) are located. Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation 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

[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

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

- 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.

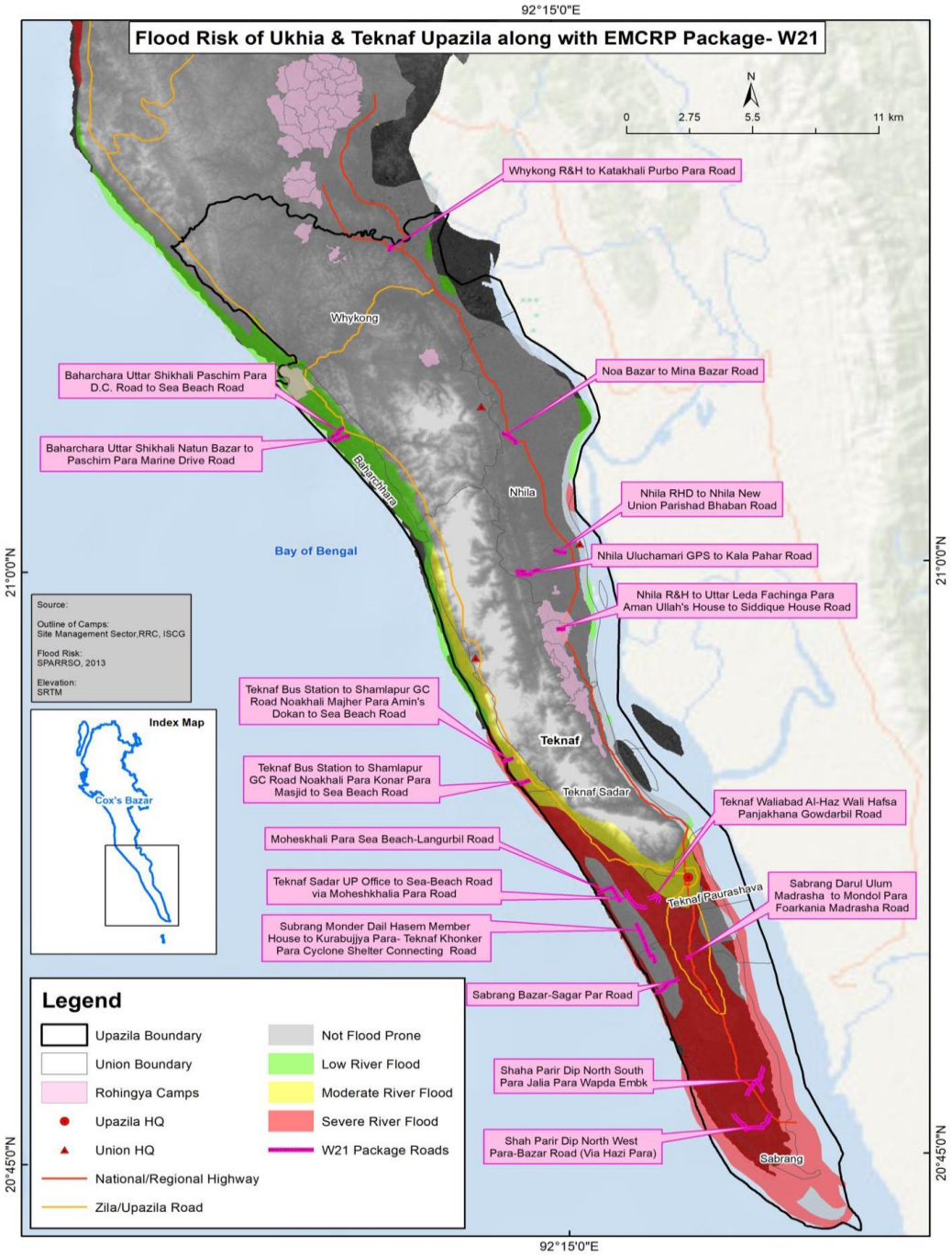



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. In addition, tree planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 4 ENVIRONMENTAL AND SOCIAL 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.

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. of Box Culvert (dimension: 1.5mx2.0m) at Ch. 235m of chainage will be constructed at the subproject area. Due to the presence of low land along different chainage of the road some protective works as 50m Brick Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Nhila RHD to Nhila new union parishad bhaban Road Id: 422905289.
**Implementing Agency/Agencies**: Local Government Engineering Department (LGED)

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **7,030,192.24 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/near the camps or in the areas.

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

**Name of Community/Local Area:** Fakirabad, Uluchamari, Rasulabad, Kiyangpara & Natmurapara.
**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. 510m. Proposed safety and service providing structures include 1 no. of Box Culvert (dimension: 1.5mx2.0m) at Ch. 235m of chainage and some additional protective works as 50m Brick Palisading work 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 2,499 sq m.

**Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:**
This proposed Nhila RHD to Nhila new union parishad bhaban Road belongs to Hnilla union under Teknaf Upazila. This road has starts from Hnilla bazar to Uluchamari road on Nutmurapara graveyard at west side stretching 510m to Cox's bazar- Teknaf highway at east side and passes through different features, such as a Chorra, UP office, fish farms, culverts, ditches, patches of vegetation and agricultural fields, salt fields, homestead garden, mosques, madrasas, graveyards, electric pole, religious institutes, shops 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, solar lamp posts, building, salt field |
| | | R | RCC pole with wire fencing, electric pole, Hnilla UP office, brick boundary wall, salt field |
| 300-510 | L | | Solar lamp posts, salt fields, shop, tin shed fences, tin shed household, open space, inaugural plate |
| | | R | Trees, tin shed fences, paddy lands, mosque, madrasah, electric pole, eucalyptus yards |




**Figure: Starting point of Nhila RHD to Nhila new union parishad bhaban Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 north side Dargah graveyard (400m), R&H office (300m), Hnilla pre-cadet school (600m), Hnilla bazar (1km), Sufia GPS (250m), R&H mosque (300m0, salt field (5m), Shadeker gudar khal (5m); on south side Salt field (5m), fish farm 950m), Hnilla UP office (10m), Fokirabad mosque & madras (5m), Chowdhurypara Kiyang (800m), Chowdhurypara chota Kiyang (700m); on east side Pond (10m), south Fuler dhil mosque (100m), Jaliapara mondir (300m), Natmurapara mosque (100m); and on west side Olimura graveyard (10m), Rosulabad mosque & madrasah (300m), Dargahpara hill (350m), Hnilla Rosulabad Kiyang (350m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 6-7 km away from this sub-project.

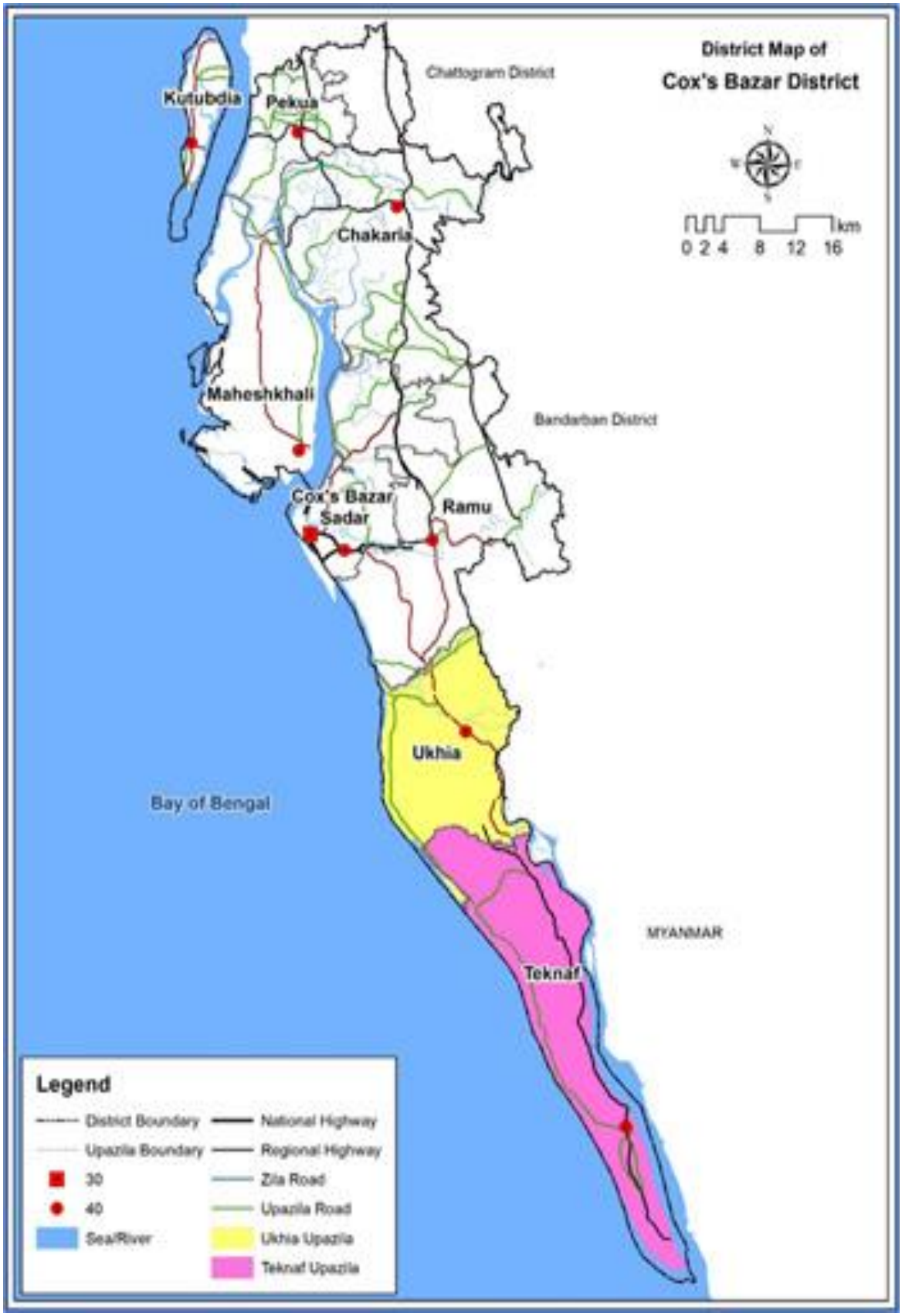



**Figure 3: District Map with project location**




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

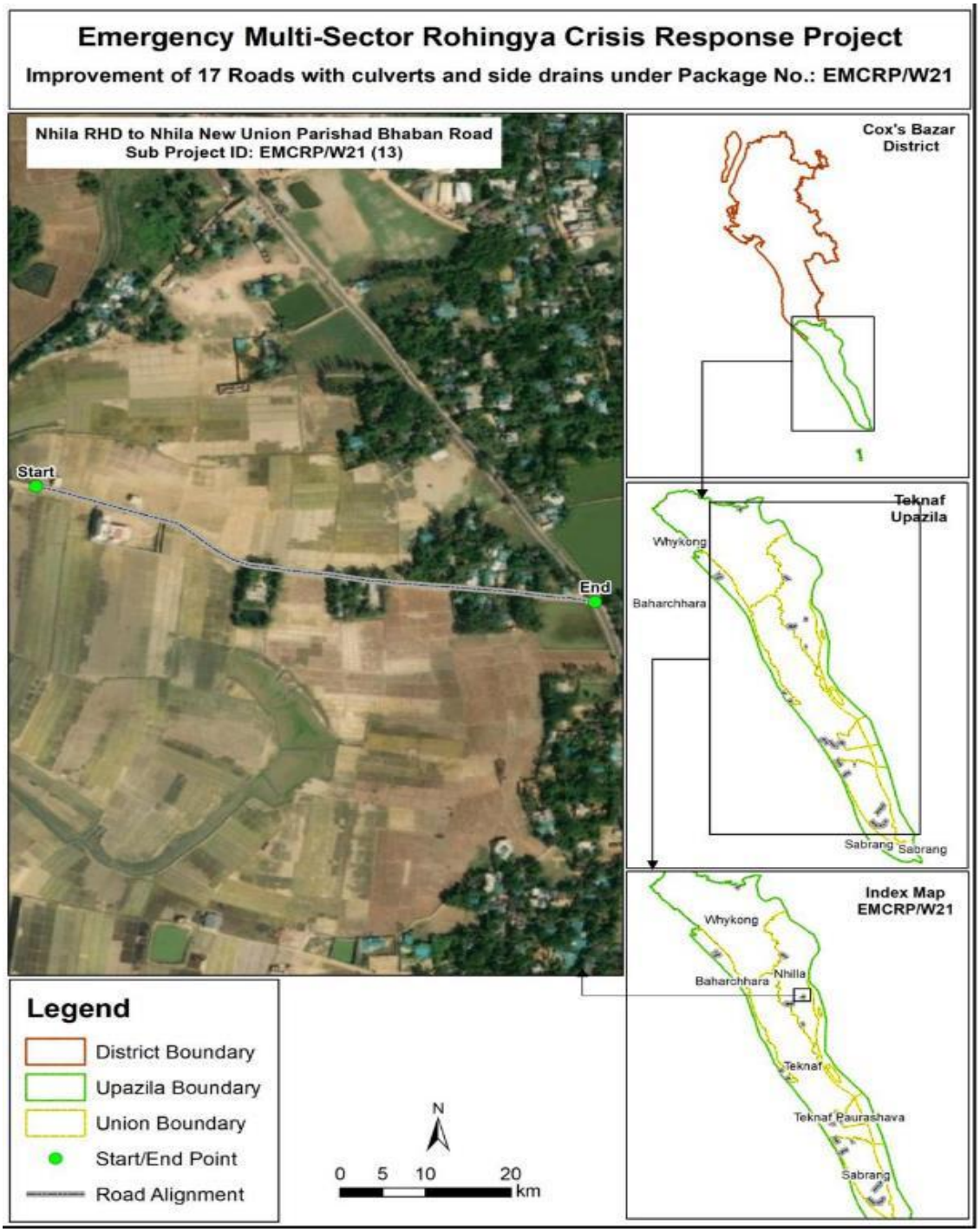



**Figure 5: Upazila Map with Sub-project location**

**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. 590m. Proposed safety and service providing structures include 1 no. of Box Culvert and 50.0m Brick Palisading work that are included in the design and estimation, and as part of road safety works includes 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 | 422905289 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | Hnilla |
| WARD | 5 |
| Proposed Chainage | 510m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21.006454 N<br>Longitude Value: 92.248218 E |
| Road Ending Point Coordinates | Latitude Value: 21.005384 N<br>Longitude Value: 92.252820 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. 510m.

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: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 north side Dargah graveyard (400m), R&H office (300m), Hnilla pre-cadet school (600m), Hnilla bazar (1km), Sufia GPS (250m), R&H mosque

(300m0, salt field (5m), Shadeker gudar khal (5m); on south side Salt field (5m), fish farm 950m), Hnilla UP office (10m), Fokirabad mosque & madras (5m), Chowdhurypara Kiyang (800m), Chowdhurypara chota Kiyang (700m); on east side Pond (10m), south Fuler dhil mosque (100m), Jaliapara mondir (300m), Natmurapara mosque (100m); and on west side Olimura graveyard (10m), Rosulabad mosque & madrasah (300m), Dargahpara hill (350m), Hnilla Rosulabad Kiyang (350m). 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**

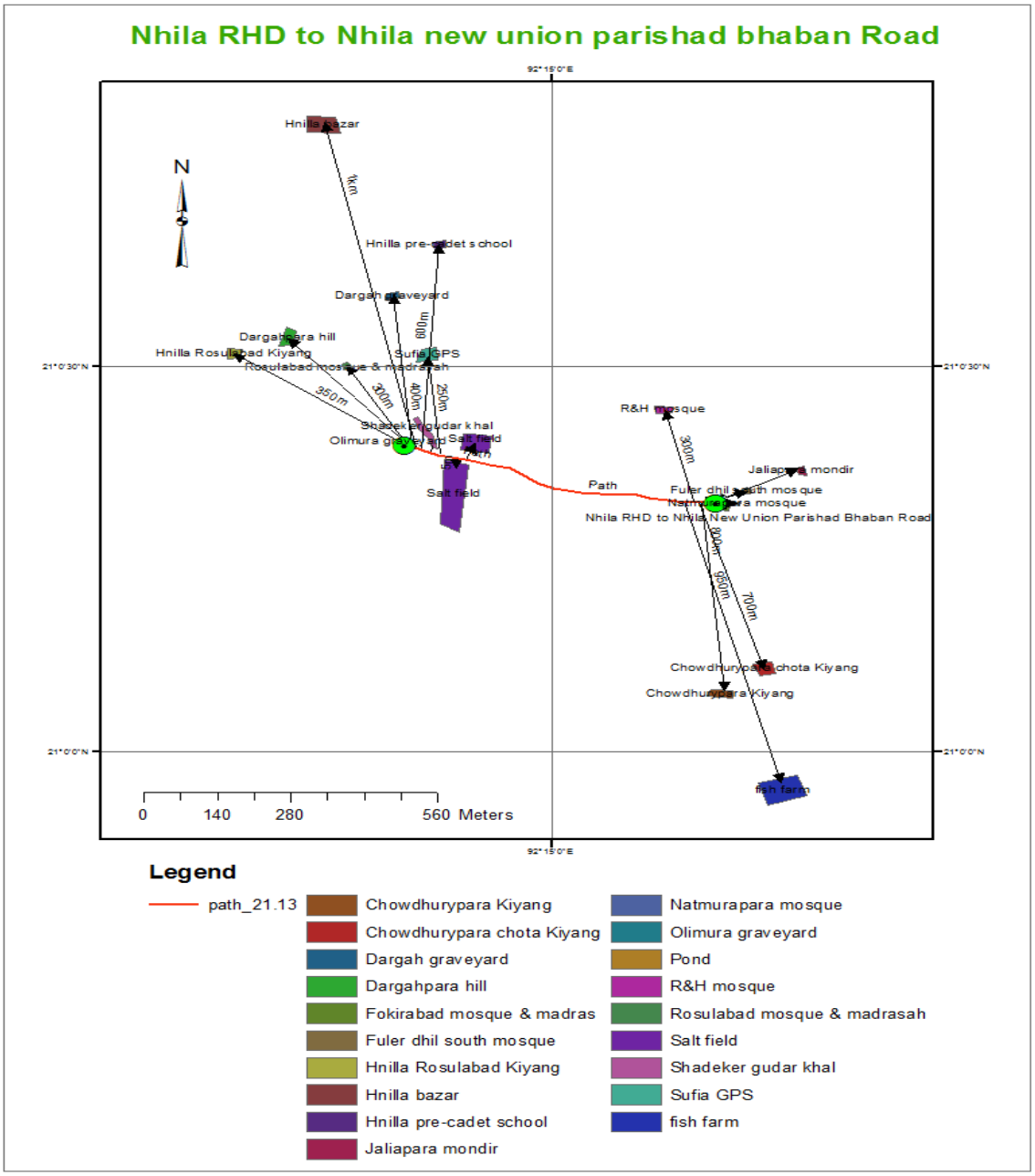



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>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.<br><br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Hnilla bazar-Uluchamari connecting road and Cox's bazar-Teknaf highway 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Hnilla bazar-Uluchamari connecting road and Cox's bazar-Teknaf highway connecting road can |

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| 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:**<br>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.):**<br>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 50 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**

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| **Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)<br>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 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) |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)<br>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)<br>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)<br>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:**<br>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)<br>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)**<br>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:**<br>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)<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Nhila RHD to Nhila new union parishad bhaban Road Id: 422905289

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 1,530.0 Sq.m | @38.15 Tk. Per sqm | 58,369.50 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 510.0m | @ 2.56 BDT | 1,305.60 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 50 nos. | @ Tk. 1000 | 50,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.67 |
| | **Subtotal Bill: Environmental facilities** | | | **341,987.49** |

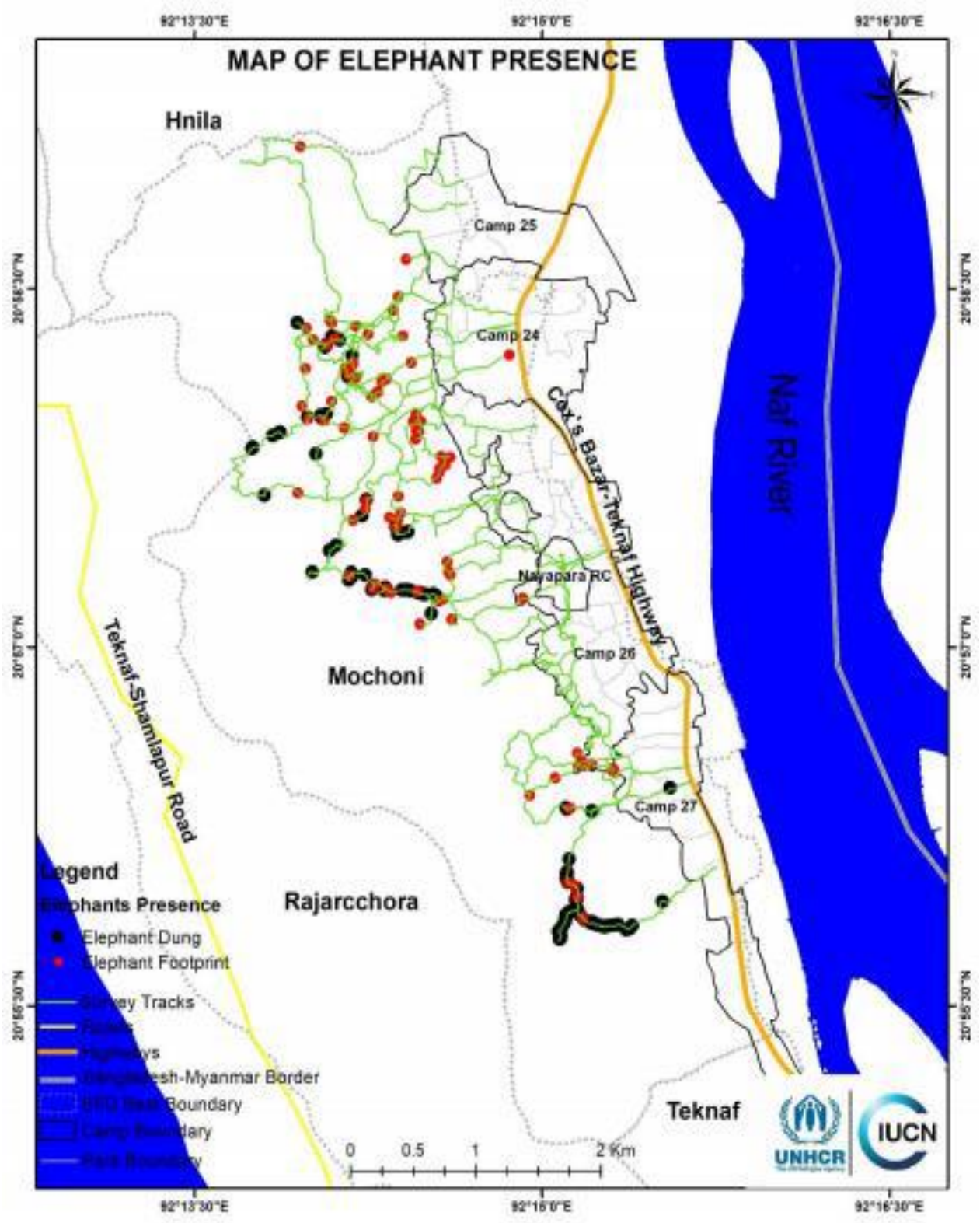
## Cost of H&S Measures under COVID 19 Situations

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 12 works for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.13).

| 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) | 32 | | 40 | 50.00 | 72 | 3,600.00 | To be placed in a case/holder on the basin, for washing hands for max. 15 people a day and showering of 12 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 | 7 nos. for each site | | N/A | 400.00 | 7 | 2,800.00 | For labors who work in close contact, 7 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | 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 | 12 nos. for each labor camp | | 35.00 | 216 | 7,560.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1 Can | N/A | 2 Can | 250.00 | 3 | 750.00 | |
| 10. | Detergent Cleaner | N/A | 1 kg in each camp/month | | 400.00 | 9 | 3,600.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | **Grand Total** | | | | | | **78,130.00** | |

**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/W21.13, Road ID No.- 422905289

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**
স্থানীয় সরকার প্রকৌশল অধিদপ্তরের জরুরী পেঁয়াজ প্রকল্প
Local Government Engineering Department (LGED)
Public Consultation Participants List

**Focus Group Discussion**

সময়: 04:45 PM তারিখ: 14/12/2020
Nhila RHD to Nhila main union Embankment Block no. 5
স্থান: Nhila ওয়ার্ড নং: 05 গ্রাম: Nhila ইউনিয়ন: Teknaf
W21/13

| ক্রম নং | নাম | বয়স | পুরুষ/মহিলা | গ্রাম | স্বাক্ষর / টিপসই |
|---|---|---|---|---|---|
| ০১ | [illegible] | ৬০ | পুরুষ | [illegible] | [illegible] |
| ০২ | [illegible] | ৪০ | পুরুষ | [illegible] | [illegible] |
| ০৩ | [illegible] | ৪৫ | পুরুষ | [illegible] | [illegible] |
| ০৪ | [illegible] | ৪০ | " | [illegible] | [illegible] |
| ০৫ | [illegible] | ৬০ | " | " | [illegible] |
| ০৬ | [illegible] | ৩৫ | " | " | [illegible] |
| ০৭ | [illegible] | ৫০ | " | [illegible] | [illegible] |
| ০৮ | [illegible] | ২২ | " | [illegible] | [illegible] |
| ০৯ | [illegible] | ৬৫ | " | [illegible] | [illegible] |

**Public Consultation Participants' List**

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



**Overview of surrounding features of the Sub-Project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

## Environmental Screening Report

For Baharchara uttar shikhali paschim para D.C. road to sea beach Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 North Shilkhali Majherpara, North Shilkhali poshchimpara, North shilkhali Purbopara, North Shilkhali Uttorpara, North Shilkhali Bailarchora Purbopara under 5 number Bharchora Union, Ward 03 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at North side Bailar Chona Jame Mosque (350m), Bailar Chona Graveyard (300m); At South side Al Hera jame Mosque 20mG, Bazarpara Jame Mosque (500m), Graveyard (70m); At East side Gungaslar Mosque (150m), Graveyard (120m), Murar Pahar (500m), Forest area (500m); At West side House Hold Land, Sea Beach (800m). 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

<table>
<tr><td colspan="4">Package No. EMCRP/W21<br><br>Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.</td></tr>
<tr><td colspan="4">Sub-project Component no. (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road Id: 422905086</td></tr>
<tr><td colspan="4">Component's Location:</td></tr>
<tr><td colspan="2">i. ID. 422905086</td><td colspan="2">ii. Ward No.: 03</td><td>iii. Mouza: Shilkhali</td></tr>
<tr><td colspan="3">iv. Village: North Shilkhali Majherpara, North Shilkhali poshchimpara, North shilkhali Purbopara, North Shilkhali Uttorpara, North Shilkhali Bailarchora Purbopara</td><td colspan="2">v. Name of Union: Whykong</td></tr>
<tr><td colspan="2">vi. Upazila: Teknaf</td><td colspan="3">vii. Sub-Project construction period: 1 year</td></tr>
<tr><td colspan="2">viii. Construction Year: 2021</td><td>ix. Width (m): 4.9</td><td colspan="2">x. Length (m): 825</td></tr>
<tr><td colspan="5">xi. Distance from UZHQ: 26 Km.</td></tr>
</table>

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 21.05960$^0$ N<br>Longitude Value: 92.16048$^0$ E | Starting Point |
| | | Latitude Value: 21.05520$^0$ N<br>Longitude Value: 92.15485$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 02 nos. cross Drain (dimension: .975mx.975m) at Ch.115m and Ch.250
- 2 no. Box Culvert (2.0mx1.50m) at Ch.306m and Ch. 692m
- 2 no. Box Culvert (2.0mx2.0m) at Ch.263m and Ch. 454m
- 95m Palisading work
- 30m Toe Wall
- Road safety work 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: 18,055,494.75 (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 at Abdul Alam Mia's Market, 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 Bailar Chona Jame Mosque (350m), Bailar Chona Graveyard (300m); at South side Al Hera jame Mosque 20mG, Bazarpara Jame Mosque (500m), Graveyard (70m); at East side Gungaslar Mosque (150m), Graveyard (120m), Murar Pahar (500m), Forest area (500m); and at West side House Hold Land, Sea Beach (800m) are located. Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation 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 of hill[4] 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.

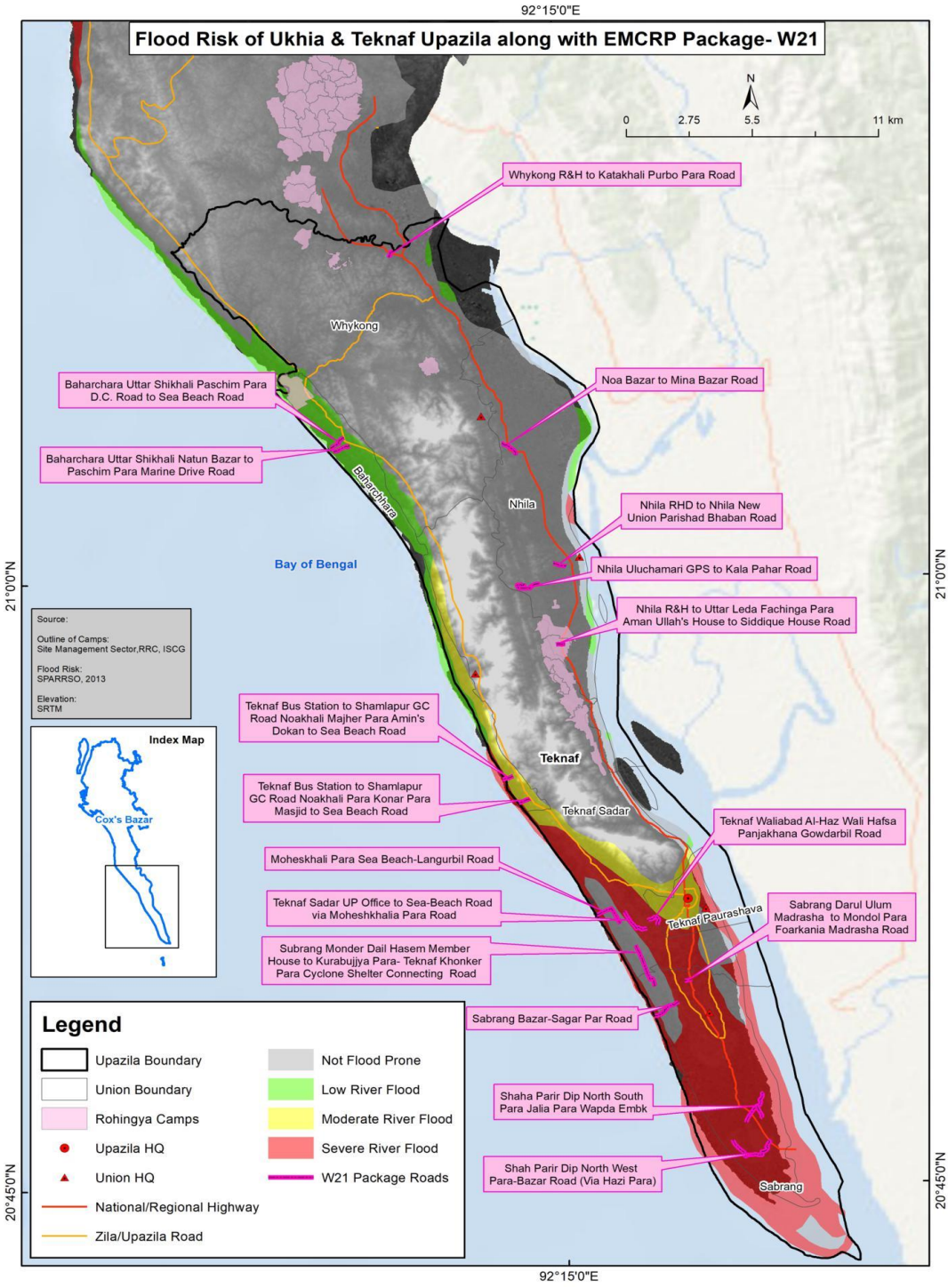



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. The risk of flooding is moderate around the sub-project area and hence the location of the roads may face storm surge or river flood on occasions but the impact would not be severe. In addition, tree

planation on the road slope/ within the premises is also suggested to sooth the temperature effect and increase the water retaining capacity of soil at the same time.

# 4 ENVIRONMENTAL AND SOCIAL 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.

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, 02 nos. cross Drain (dimension: .975mx.975m) at Ch.115m, Ch.250, 2 no. Box Culvert (2.0mx1.50m) at Ch.306m Ch. 692m, 2 no. Box Culvert (2.0mx2.0m) at Ch.263m Ch. 454m, and 30m Toe Wall will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 95m Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Baharchara uttar shikhali paschim para D.C. road to sea beach Road Id: 422905086

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **18,055,494.75 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/near the camps or in the areas.

**District**: Cox's Bazar **Upazila**: Teknaf **Union**: 5 number Baharchora

**Name of Community/Local Area:** North Shilkhali Majherpara, North Shilkhali poshchimpara, North shilkhali Purbopara, North Shilkhali Uttorpara, North Shilkhali Bailarchora Purbopara

**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. 825m. Proposed safety and service providing structures 02 nos. cross Drain (dimension: .975mx.975m) at Ch.115m, Ch.250, 2 no. Box Culvert (2.0mx1.50m) at Ch.306m Ch. 692m, 2 no. Box Culvert (2.0mx2.0m) at Ch.263m Ch. 454m, 95m Palisading work and 30m Toe Wall 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** 4,042.5 sq m.

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

This proposed Baharchara uttar shikhali paschim para-D.C. road to sea beach Road belongs to 5 number Baharchora union under Teknaf Upazila. This road starts from Teknaf-Shaplapur LGED Road stretching 825m to Marine Drive road and passes through different features, such as boundary fences, paddy field, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes etc. No other significant environmental or socio-economic 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 | | Shop, bamboo fence, vegetable garden, bamboo fence, household connecting road to the left, crop field, bamboo fence, crop field, road crosses a drain, bush, bamboo fence |
| | | R | Brick wall, bamboo fence, vegetable yard, Mosque, bamboo fence Crop field, Drain, crop field, |
| 300-600 | L | | Earthen Drain, bush, bamboo fence, crop field, vegetable yard, vegetable yard, bamboo fence |
| | | R | Crop field, bamboo fence, bush, Bamboo saku over small stream, Bailar chora, crop field, bamboo fence |
| 600-825 | L | | Crop Field, Open Field, Bamboo fence, culvert, bamboo fence, Crop field |
| | | R | Crop field, Open field, Crop field, |




**Figure: Starting point of Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 North side Bailar Chona Jame Mosque (350m), Bailar Chona Graveyard (300m); At South side Al Hera jame Mosque 20mG, Bazarpara Jame Mosque (500m), Graveyard (70m); At East side Gungaslar Mosque (150m), Graveyard (120m), Murar Pahar (500m), Forest area (500m); At West side House Hold Land, Sea Beach (800m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

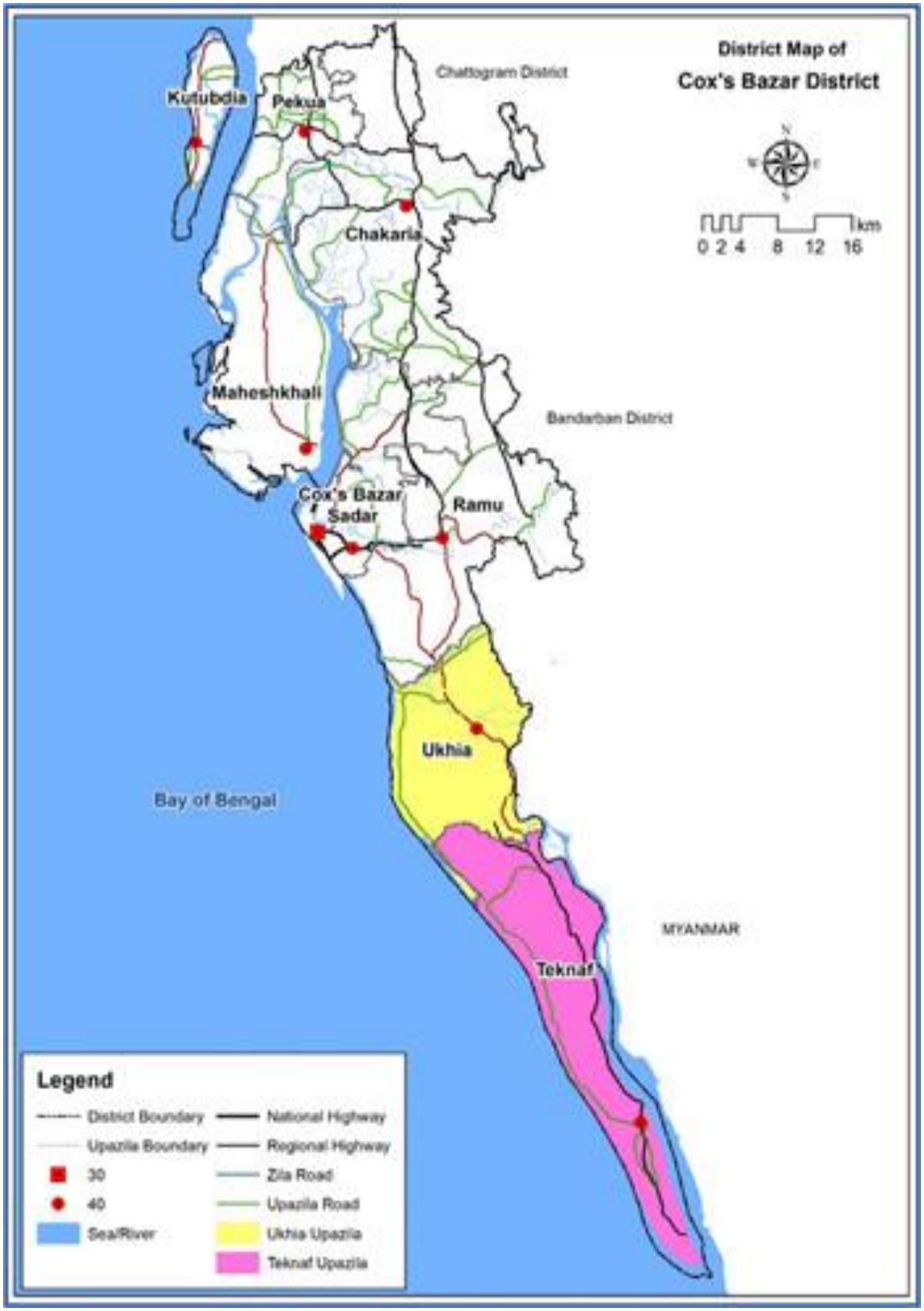



**Figure 3: District Map with project location**




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

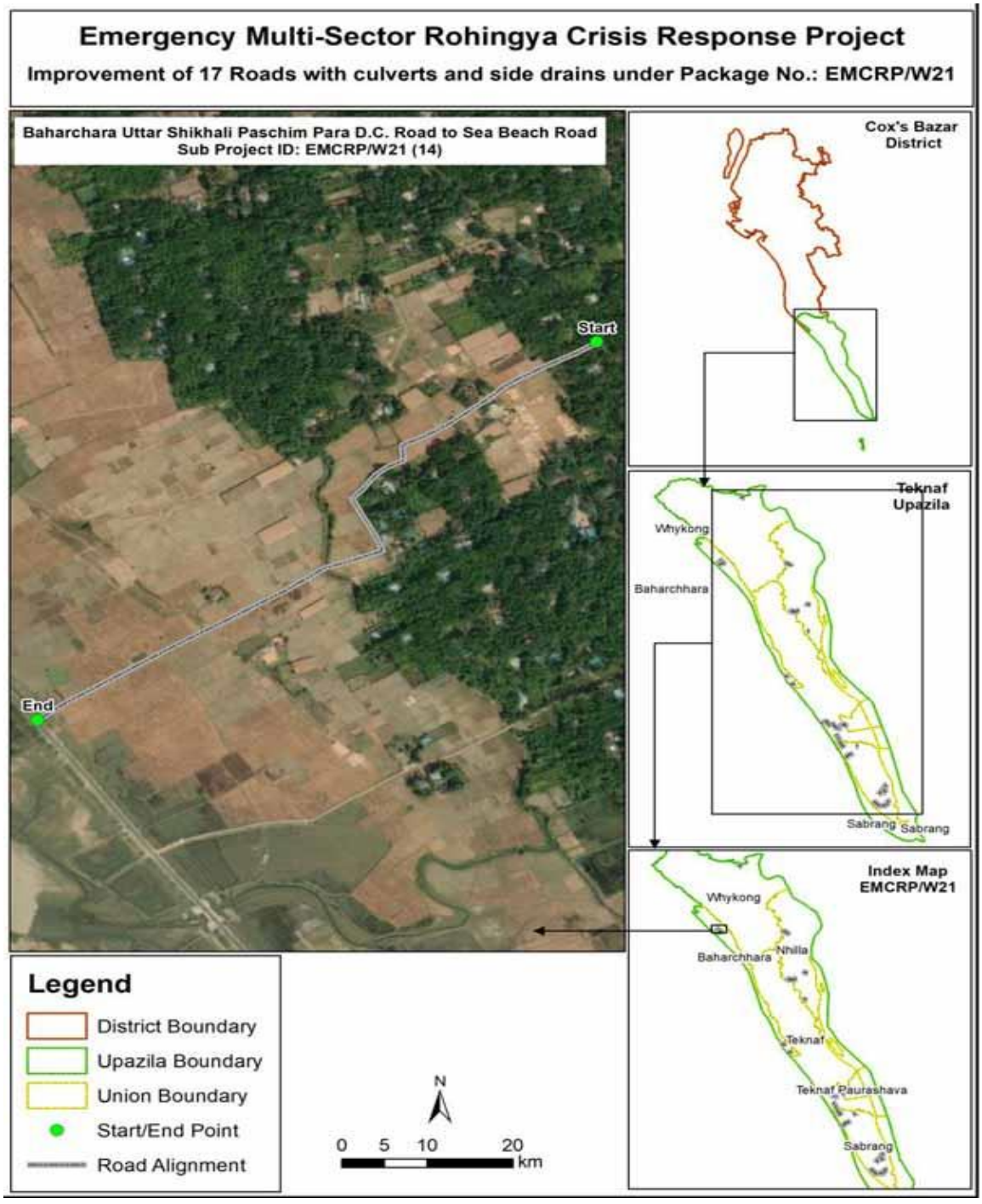



**Figure 5: Upazila Map with Sub-project location**

**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. 825m. Proposed safety and service providing structures include 02 nos. cross Drain (dimension: .975mx.975m) at Ch.115m, Ch.250, 2 no. Box Culvert (2.0mx1.50m) at Ch.306m Ch. 692m, 2 no. Box Culvert (2.0mx2.0m) at Ch.263m Ch. 454m, 95m Palisading work and 30m Toe 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 | 422905086 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | 5 number Baharchora |
| WARD | 03 |
| Proposed Chainage | 825m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $21.05960^0$ N<br>Longitude Value: $92.16048^0$ E |
| Road Ending Point Coordinates | Latitude Value: $21.05520^0$ N<br>Longitude Value: $92.15485^0$ 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. 825m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) Very low chance of losing of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 at North side Bailar Chona Jame Mosque (350m), Bailar Chona Graveyard (300m); At South side Al Hera jame Mosque 20mG, Bazarpara Jame Mosque

(500m), Graveyard (70m); At East side Gungaslar Mosque (150m), Graveyard (120m), Murar Pahar (500m), Forest area (500m); At West side House Hold Land, Sea Beach (800m). 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**

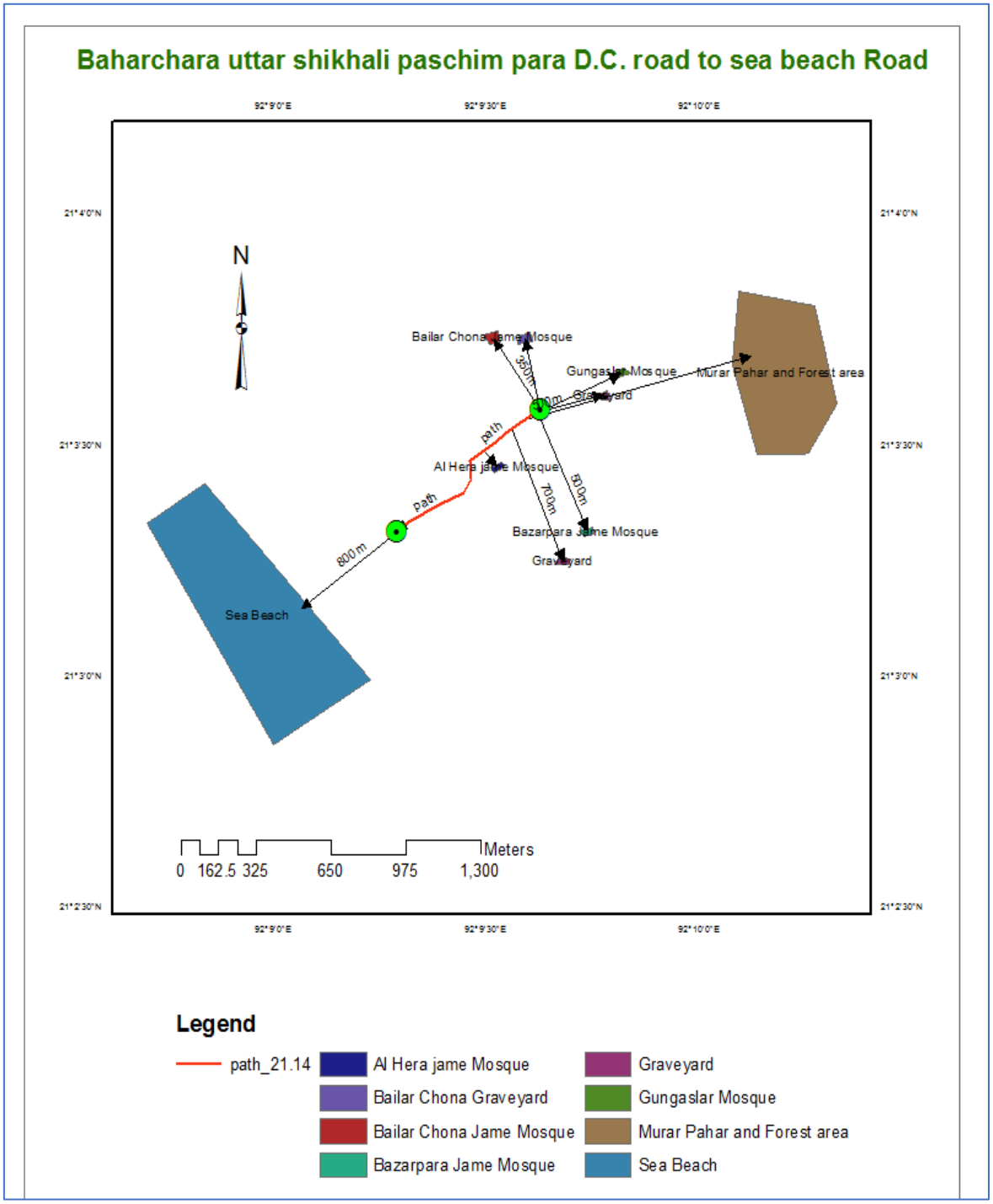



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-100 feet and deep tube well depth is 700 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.<br><br>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.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>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):**<br>Adjacent Teknaf-Shaplapur LGED Raod 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Adjacent Teknaf-Shaplapur LGED Raod 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. |

| |
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| **Location identification for raw material storage:**<br>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.):**<br>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 50 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.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>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)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>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:**<br>Construction or implementation of a road project substantially contributes to the development of |

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| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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** sign s, Post speed limits and suitable bending on the road.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Baharchara uttar shikhali paschim para D.C. road to Sea beach Road Id: 422905086

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 2439 Sq.m | @38.15 Tk. Per sqm | 93,047.85 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 825m | @ 2.56 BDT | 2,112 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 70 nos. | @ Tk. 1000 | 70,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.66 |
| | **Subtotal Bill: Environmental facilities** | | | **397,472.23** |

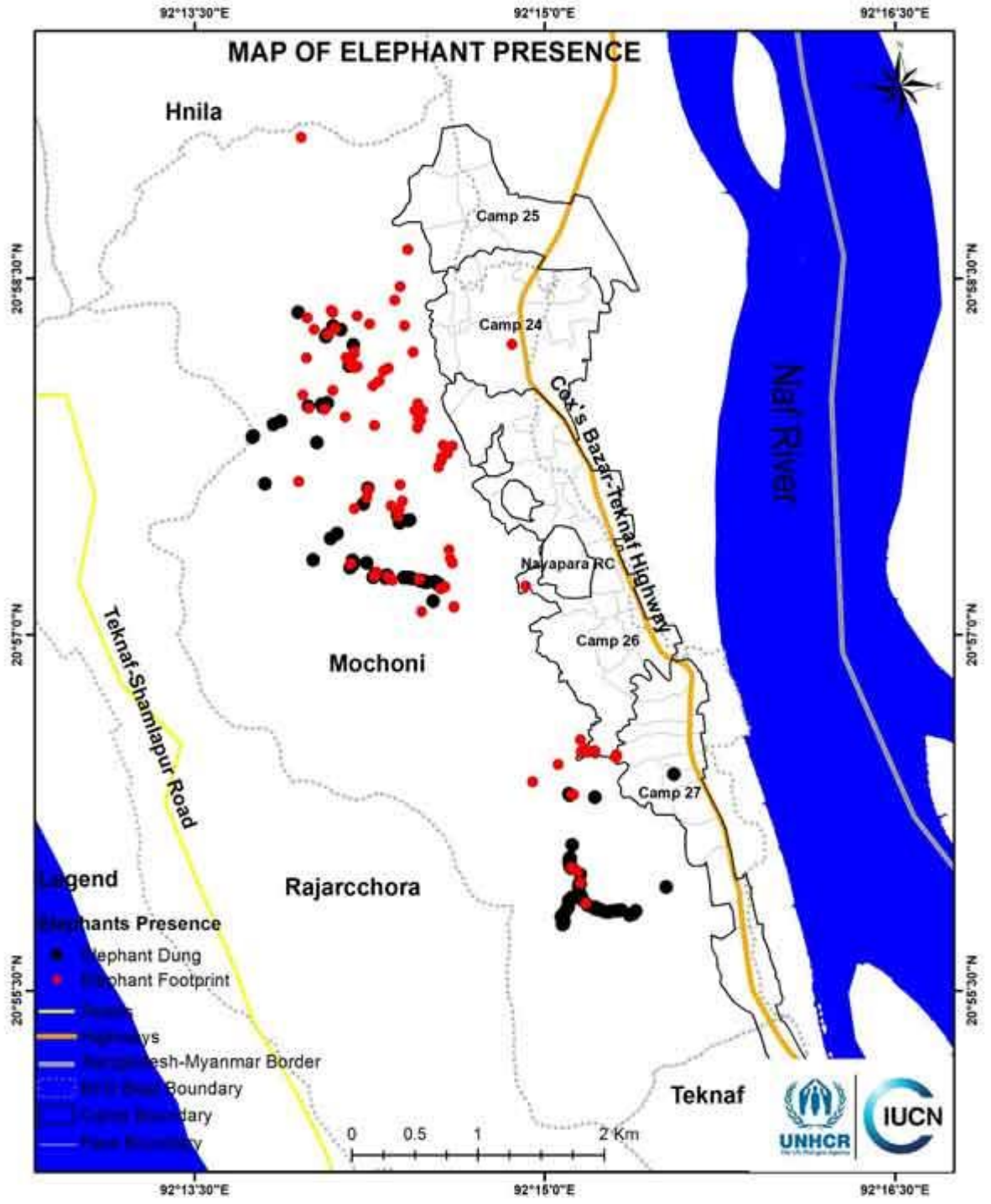
## Cost of H&S Measures under COVID 19 Situations

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 18 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.14).

| 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) | 49 | | 61 | 50.00 | 110 | 5,500.00 | To be placed in a case/holder on the basin, for washing hands for max. 21 people a day and showering of 18 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 10 nos. for each site | | N/A | 400.00 | 10 | 4,000.00 | For labors who work in close contact, 10 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | 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 | 18 nos. for each labor camp | | 35.00 | 324 | 11,340.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 2 Can | 250.00 | 3.5 | 875.00 | |
| 10. | Detergent Cleaner | N/A | 1 kg in each camp/month | | 400.00 | 9 | 3,600.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | **Grand Total** | | | | | | **85,135.00** | |

**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/W21.14, Road ID No.- 422905086

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

| | | | | | |
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| ১ | | | | | |
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**Public Consultation Participants' List**

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








**An overview of the current condition of the Sub-**

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 Baharchara uttar shikhali natun bazar to paschim para marine drive Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Uttor Shilkhali, Uttar Para, Poshchimpara under 5 number Baharchora union, Ward 03 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as, at North side Nurani Madrassa (500m), Mosque (500m), Bailarchora Jame Mosque (450m), Gumgastola Mosque (600m), Bailerchora Graveyard (550); at South side Uttor Shilkhali Boro Lame Mosque (500m), Graveyard (500m), Uttor Shilkhali GPS (450m), Tafinul quran Dakhil Madrassa (200m), Nurani Madrassa (30m); at East side Uttor Shilkhali ForestArea (500m), several House Holds; and at West side Uttor Shilkhali Bazar Jame Mosque (20m) and households(30m) are located. 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road Id: 422905087

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905087 | ii. Ward No.: 03 | iii. Mouza: Shilkhali |
| iv. Village: Uttor Shilkhali, Uttar Para, Poshchimpara | | v. Name of Union: 5 no. Baharchora |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 803 |
| xi. Distance from UZHQ: 26 Km. | | |

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 21.05621$^0$ N<br>Longitude Value: 92.16271$^0$ E | Starting Point |
| | | Latitude Value: 21.05366$^0$ N<br>Longitude Value: 92.15605$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 04 nos. cross Drain (dimension: .975mx.975m) at different chainage
- 22m Palisading work
- Road safety work 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: 16,159,137.63 (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, at Abul Kashem's shop in Baharchora North Shilkhali notun Bazar, 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 Nurani Madrassa (500m), Mosque (500m), Bailarchora Jame Mosque (450m), Gumgastola Mosque (600m), Bailerchora Graveyard (550); at South side Uttor Shilkhali Boro Lame Mosque (500m), Graveyard (500m), Uttor Shilkhali GPS (450m), Tafinul quran Dakhil Madrassa (200m), Nurani Madrassa (30m); at East side Uttor Shilkhali Forest Area (500m), several House Holds; and at West side Uttor Shilkhali Bazar Jame Mosque (20m) and households(30m) are located. Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation 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 of hill[4] 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.

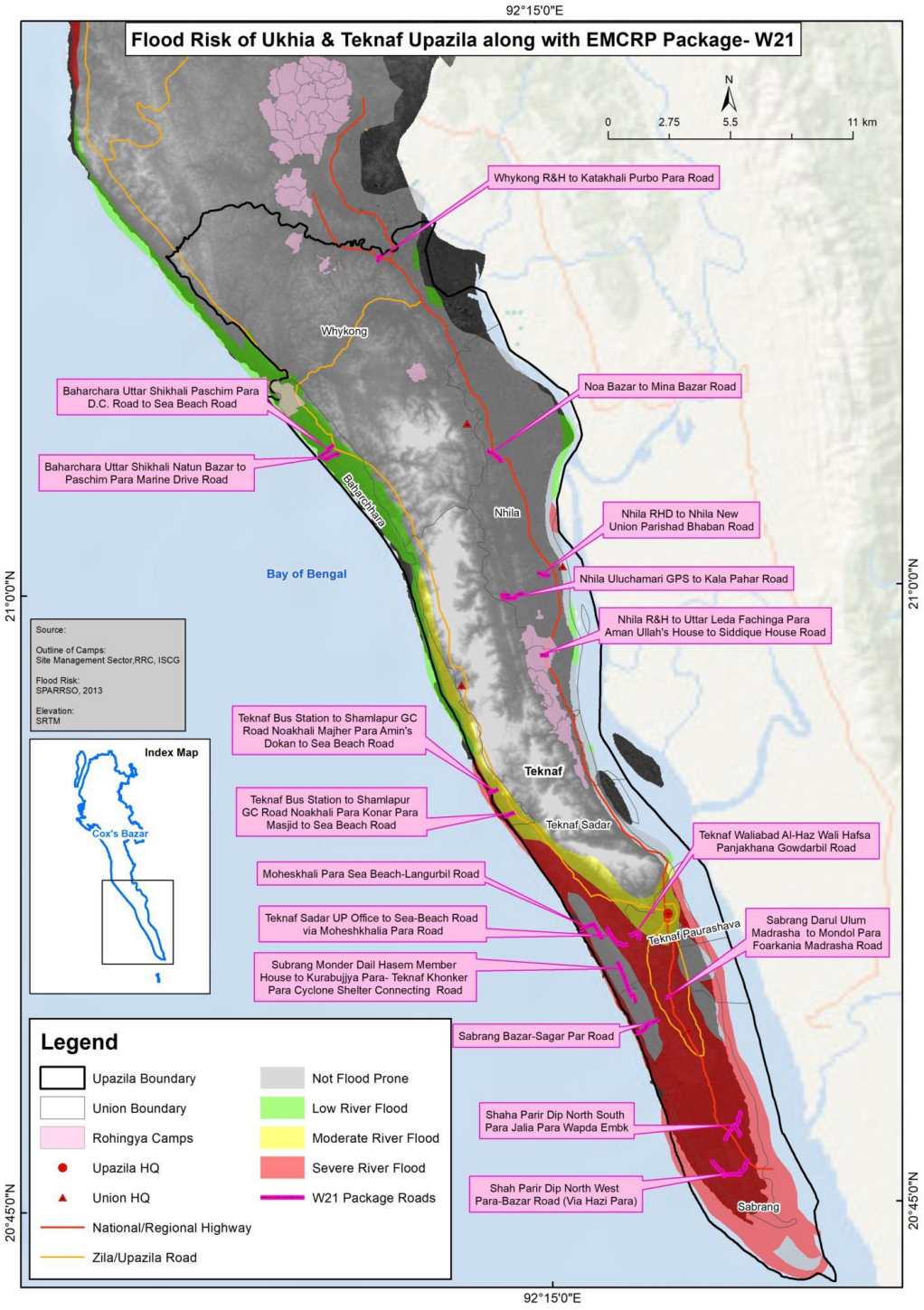



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, no portion of the road ROW falls in the vicinity of the severe river flood inundation area. The risk of flooding is moderate around the sub-project area and hence the location of the roads may face storm surge or river flood on occasions but the impact would not be severe. In addition, tree

planation on the road slope is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

# 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 replanted 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.

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, nos. cross Drain (dimension: .975mx.975m) will be constructed at the subproject area. Due to the presence of low land along different chainage, 22m Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Baharchara uttar shikhali natun bazar to paschim para marine drive Road Id: 422905087

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **10,143,422.53 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/near the camps or in the areas.

**District**: Cox's Bazar **Upazila**: Teknaf **Union**: 5 numbers Baharchora

**Name of Community/Local Area:** Uttor Shilkhali, Uttar Para, Poshchimpara

**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. 803m. Proposed safety and service providing structures include 4 nos. cross Drain (dimension: .975mx.975m) at different chainage and 22m Palisading work 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 3,934.7 sq m.**

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

This proposed Baharchara uttar shikhali natun bazar to paschim para marine drive Road belongs to 5 number Baharchora union under Teknaf Upazila. This road starts from Teknaf-Shilkhali LGED road stretching 803m to Marin Drive. This sub-project passes along different important features, such as, boundary fences, paddy field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes etc. No other significant environmental or socio-economic 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 | | Shop, Open Space, RCC pole with Wired Fence, bamboo fence, Settlements, vegetable yard, |
| | | R | Shop, bamboo fence, bush, bamboo fence, tin fence, bamboo fence, shop, |
| 300-600 | L | | Vegetable yard, crop field, settlement, bridge, vegetable yard, wired fence with RCC Pole, cross drain |
| | | R | Bamboo fence, RCC pole with wired fence, tree garden, household connecting road to the right, shop, marsh land, household connecting road to the right, Electric Pole Vegetable yard |
| 600-803 | L | | Electric Pole, crop field, household connecting road to the left, crop field, pillars, marsh land, cross drain |
| | | R | Vegetable yard, crop field, bamboo fence, tin fence, settlement, culvert, bamboo fence, vegetable yard, bamboo fence, shop, crop, vegetable yard, bamboo fence, cross drain |




**Figure: Starting point of Baharchara uttar shikhali natun bazar to paschim para marine drive Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 North side Nurani Madrassa (500m), Mosque (500m), Bailarchora Jame Mosque (450m), Gumgastola Mosque (600m), Bailerchora Graveyard (550); At South side Uttor Shilkhali Boro Lame Mosque (500m), Graveyard (500m), Uttor Shilkhali GPS (450m), Tafinul quran Dakhil Madrassa (200m), Nurani Madrassa (30m); At East side Uttor Shilkhali Forest Area (500m). All House Hold; At West side Uttor Shilkhali Bazar Jame Mosque (20m) and households (30m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

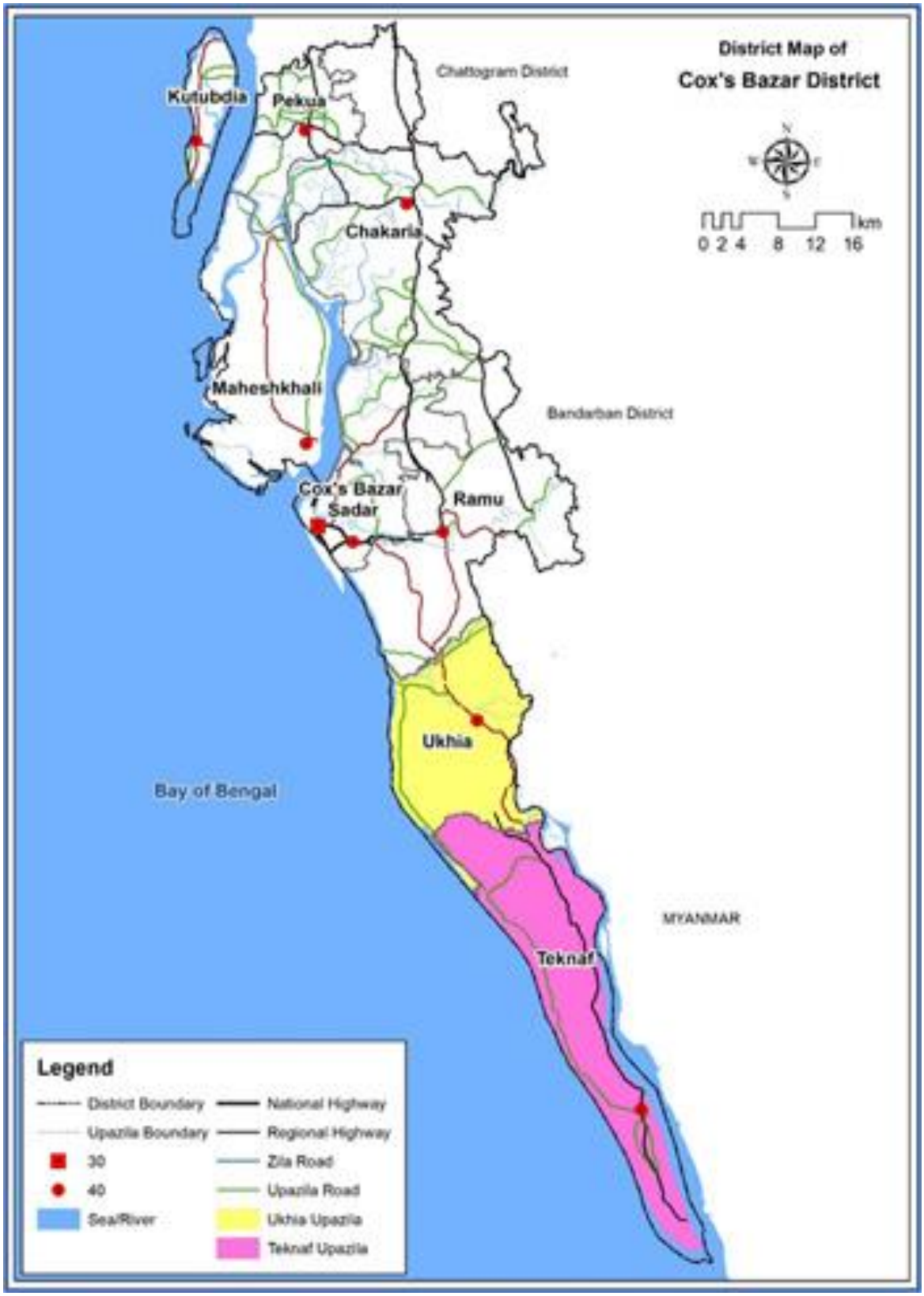



**Figure 3: District Map with project location**




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

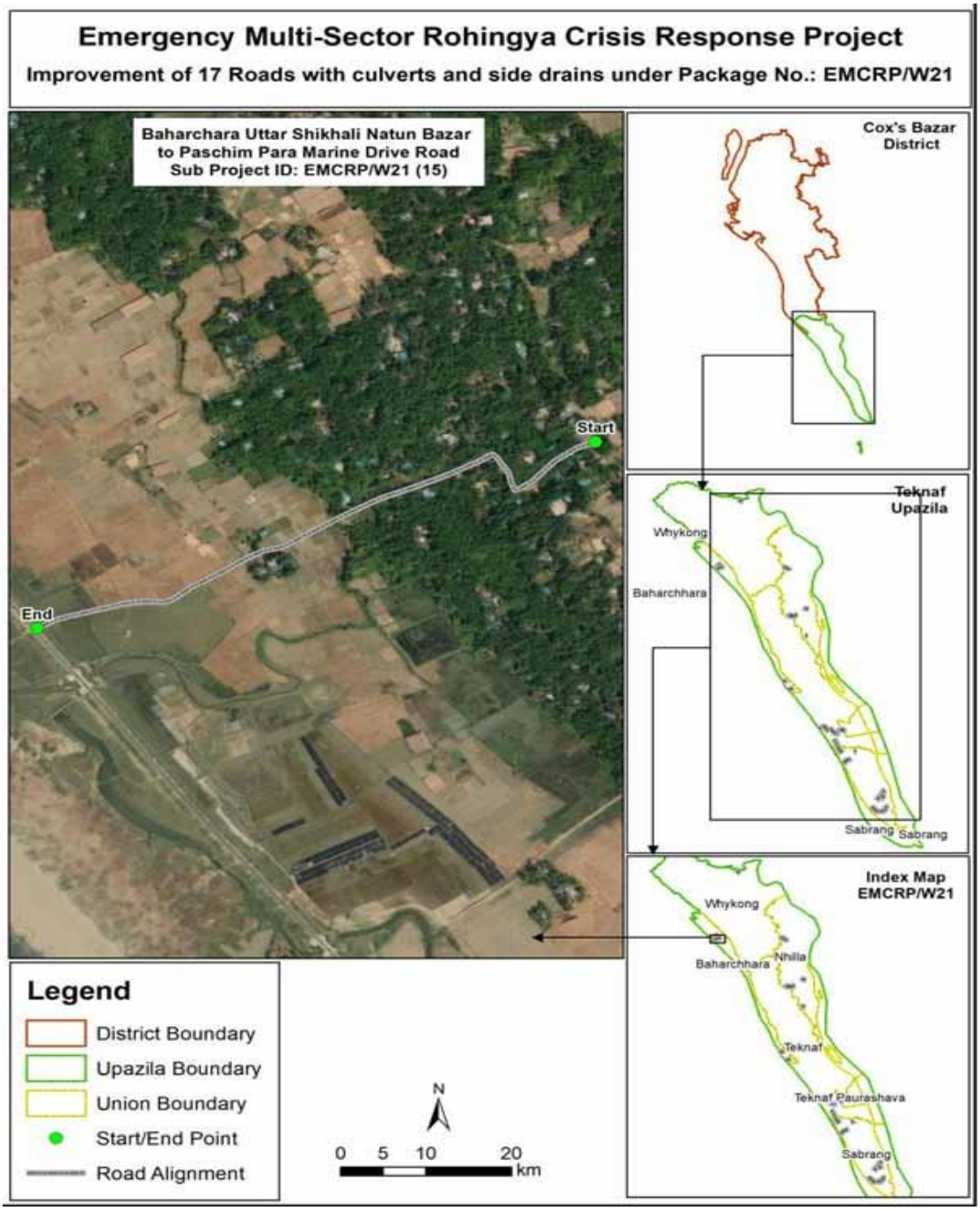



**Figure 5: Upazila Map with Sub-project location**

**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. 803m. Proposed safety and service providing structures include 4 nos. cross Drain (dimension: .975mx.975m) at different chainage and 22m Palisading work 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 | 422905087 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | 5 number Baharchora |
| WARD | 03 |
| Proposed Chainage | 803m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $21.05621^0$ N<br>Longitude Value: $92.16271^0$ E |
| Road Ending Point Coordinates | Latitude Value: $21.05366^0$ N<br>Longitude Value: $92.15605^0$ 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. 803m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) Very low chance of losing of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Nurani Madrassa (500m), Mosque (500m), Bailarchora Jame Mosque (450m), Gumgastola Mosque (600m), Bailerchora Graveyard (550); At South side Uttor Shilkhali Boro Lame Mosque (500m), Graveyard (500m), Uttor Shilkhali GPS (450m), Tafinul quran Dakhil Madrassa (200m), Nurani Madrassa (30m); at East side Uttor

Shilkhali ForestArea (500m), House Holds; at West side Uttor Shilkhali Bazar Jame Mosque (20m) and households (30m) are located. 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**

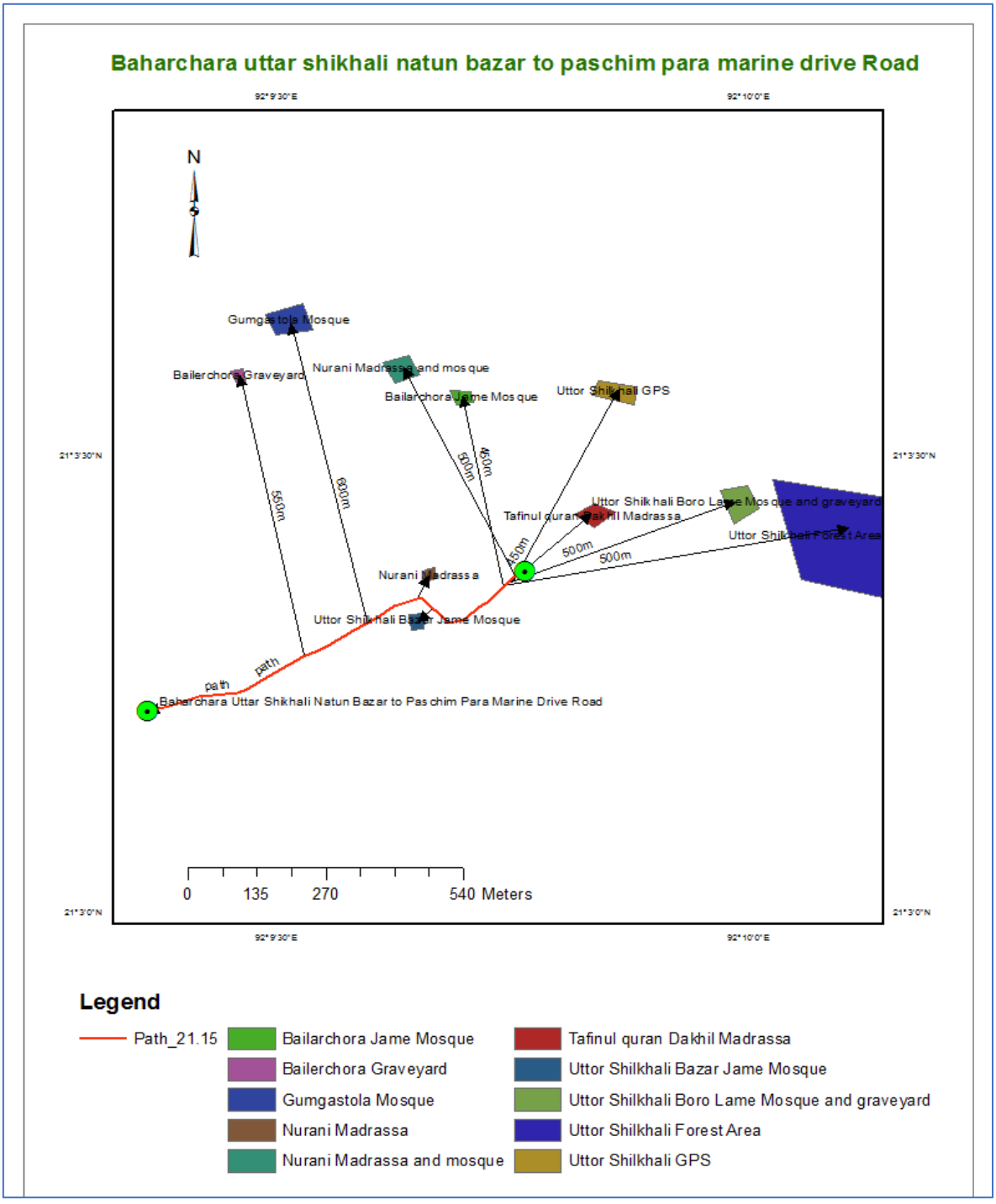



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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

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| relatively small area and adjustable by mitigation measures. |
| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-100 feet and deep tube well depth is 700 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.<br><br>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.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Adjacent Teknaf-Shaplapur LGED 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Teknaf-Shaplapur LGED 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 |

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| different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| ***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>Existing 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 |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>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:** |

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| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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:** Baharchara uttar shikhali natun bazar to paschim para marine drive Road Id: 422905087

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 2394 Sq.m | @38.15 Tk. Per sqm | 91,331.1 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 803m | @ 2.56 BDT | 2055.68 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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 |
|---|---|---|---|---|
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 70 nos. | @ Tk. 1000 | 70,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.66 |
| | **Subtotal Bill: Environmental facilities** | | | **395,699.16** |

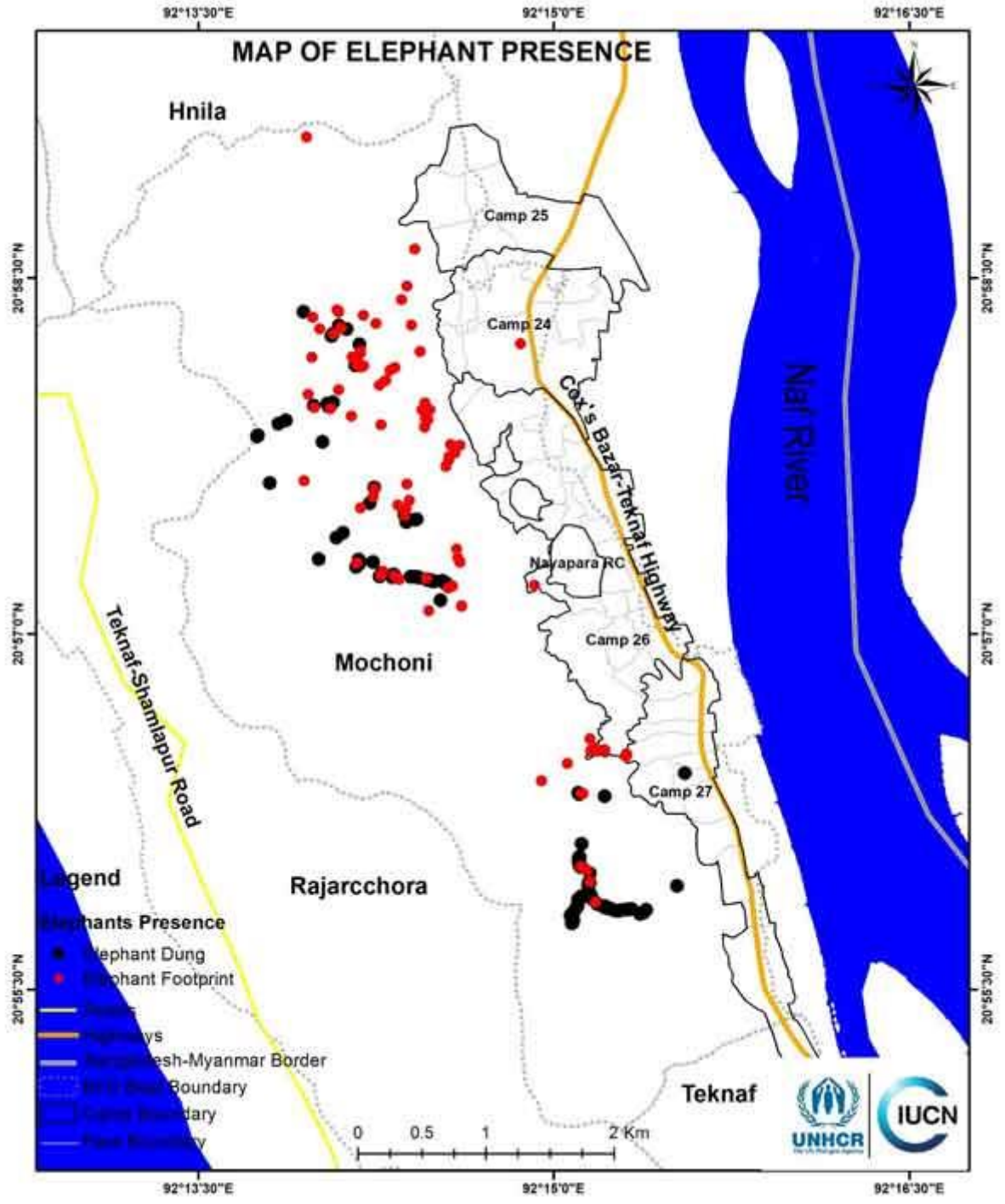
## Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 16 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.15).

| 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) | 44 | | 54 | 50.00 | 98 | 4,900.00 | To be placed in a case/holder on the basin, for washing hands for max. 39 people a day and showering of 34 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 10 nos. for each site | | N/A | 400.00 | 10 | 4000.00 | For labors who work in close contact, 22 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 | 34 nos. for each labor camp | | 35.00 | 288 | 10,080.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 4 Can | 250.00 | 5.5 | 1,375.00 | |
| 10. | Detergent Cleaner | N/A | 1.750 kg in each camp/month | | 400.00 | 15.75 | 6,300.00 | 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** | | | | | | **92,955.00** | |

**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/W21.15, Road ID No.- 422905087

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

Public Consultation Participants' List

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








**An overview of the current condition of the sub-project**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

# Environmental Screening Report

For Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

**January-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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Southpara Noapara, northpara Noapara, Westpara Noapara, Eastpara Noapara under 5 number Baharchora union, Ward 09 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as, at North side Eftedai Madrassa (200m), Koritas Cyclone Center (250m), Noakhali GPS (250m), Bagguna Jhorna (150m), Jhornar Pahar (150m), Rohmania Madrassa (300m), Puraton Shagorparer Mosque (300m), Kader Hossain Fokirer Majar (100m), Boro Graveyard (300m), Elias Cobra Bazar (350m), Konarpara Station (400m); at South side Baguna Boro Graveyard (150m), Mohammadia Madrassa (15m), Darul Ulum Jummania Madrassa (300m), Shofikia Hefjokhana (150m); at East side Ghoramarar Pahar (1000m), Dhala Rastar Mosque (350m); and at West side Sea Beach (500m) and Jailla Ghat (520m) are located. 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road Id: 422905065

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905065 | ii. Ward No.: 09 | iii. Mouza: Boro Dail |
| iv. Village: Southpara Noapara, northpara Noapara, Westpara Noapara, Eastpara Noapara | | v. Name of Union: 5 number Baharchora |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 510 |
| xi. Distance from UZHQ: 10 Km. | | |

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 20.91920$^0$ N<br>Longitude Value: 92.22928$^0$ E | Starting Point |
| | | Latitude Value: 20.91778$^0$ N<br>Longitude Value: 92.22489$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 01 nos. Box Culvert with 2 vents (dimension: 4.5mx4.5m) at Ch.495m
- 109m Protective work by Palisading
- Road safety work 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: 11,644,662.22 (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 Amin's Shop in Bagguna Bazar, 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 the North side Eftedai Madrassa (200m), Koritas Cyclone Center (250m), Noakhali GPS (250m), Bagguna Jhorna (150m), Jhornar Pahar (150m), Rohmania Madrassa (300m), Puraton Shagorparer Mosque (300m), Kader Hossain Fokirer Majar (100m), Boro Graveyard (300m), Elias Cobra Bazar (350m), Konarpara Station (400m); at South side Baguna Boro Graveyard (150m), Mohammadia Madrassa (15m), Darul Ulum Jummania Madrassa (300m), Shofikia Hefjokhana (150m); at East side Ghoramarar Pahar (1000m), Dhala Rastar Mosque (350m); and at West side Sea Beach (500m) and Jailla Ghat (520m) are located. Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation 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

[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

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

- 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.

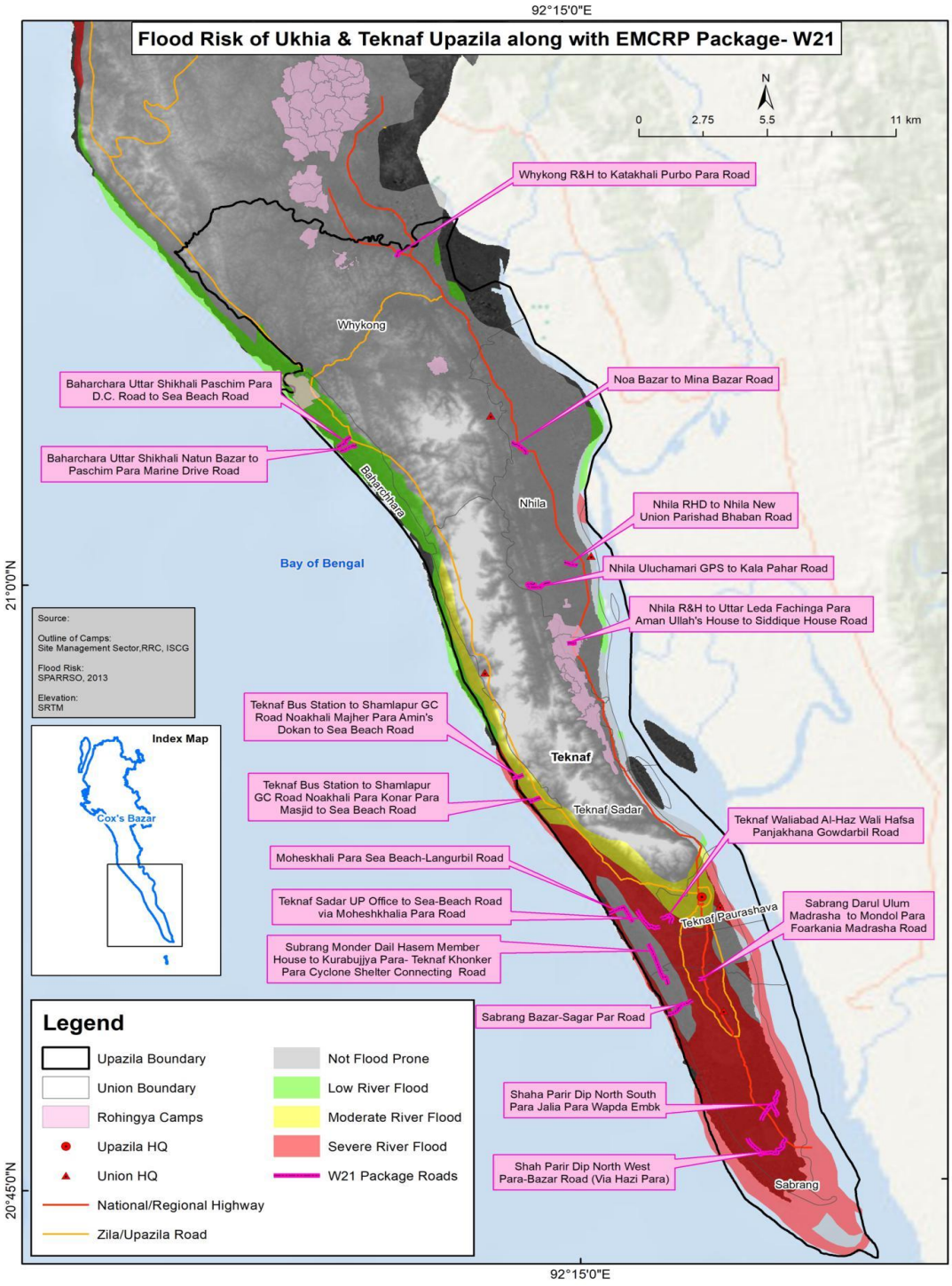



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, small portion of the road ROW falls in the vicinity of the severe river flood inundation area. Road erosion may occur depending on the intensity and the frequency of river flood and storm surge. So tree plantation along the road is suggested specifically for certain conditions. And slope protection techniques can be adhered.

# 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 replanted 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.

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 nos. Box Culvert with 2 vents (dimension: 4.5mx4.5m) at Ch.495m will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 109m Protective work by Palisading at different chainage is included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road Id: 422905065

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **11,644,662.22 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/near the camps or in the areas.

**District**: Cox's Bazar **Upazila**: Teknaf **Union**: 5 number Baharchora

**Name of Community/Local Area:** Southpara Noapara, northpara Noapara, Westpara Noapara, Eastpara 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. 510m. Proposed safety and service providing structures include 1 nos. Box Culvert with 2 vents (dimension: 4.5mx4.5m) at Ch.495m and 109m Protective work by Palisading 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 2499 sq m.**

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

This proposed Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road belongs to 5 number Baharchora union under Teknaf Upazila. This road starts from Teknaf-Shaplapur LGED Road stretching 510m and ends at Marine Drive road. This sub-project passes along different important features, such as, boundary fences, paddy field, salt field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 fence, Electric Pole, Tin fence, Bamboo fence, household connecting road to the left, Electric Pole, bamboo fence, backyard garden, bamboo fence, brick wall |
| | | R | Tree, Open space, bamboo fence, household connecting road to the right, bamboo fence, bamboo fence, electric pole, household connecting road to the right, tin fence, tree garden, rcc pole with wired fence |
| 000-510 | L | | Bamboo fence, household connecting road to the left, Trees, bamboo fence, bush, open space, settlements |
| | | R | RCC Pole with wired fence, vegetation on low ground, Paan Boroz, Vegetable yard, bamboo fence, RCC Pole with Wired fence, Noakhali para Boro khal |



**Figure: Starting point of Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 Eftedai Madrassa (200m), Koritas Cyclone Center (250m), Noakhali GPS (250m), Bagguna Jhorna (150m), Jhornar Pahar (150m), Rohmania Madrassa (300m), Puraton Shagorparer Mosque (300m), Kader Hossain Fokirer Majar (100m), Boro Graveyard (300m), Elias Cobra Bazar (350m), Konarpara Station (400m); At South side Baguna Boro Graveyard (150m), Mohammadia Madrassa (15m), Darul Ulum Jummania Madrassa (300m), Shofikia Hefjokhana (150m); At East side Ghoramarar Pahar (1000m), Dhala Rastar Mosque (350m); At West side Sea Beach (500m), Jailla Ghat (520m). The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

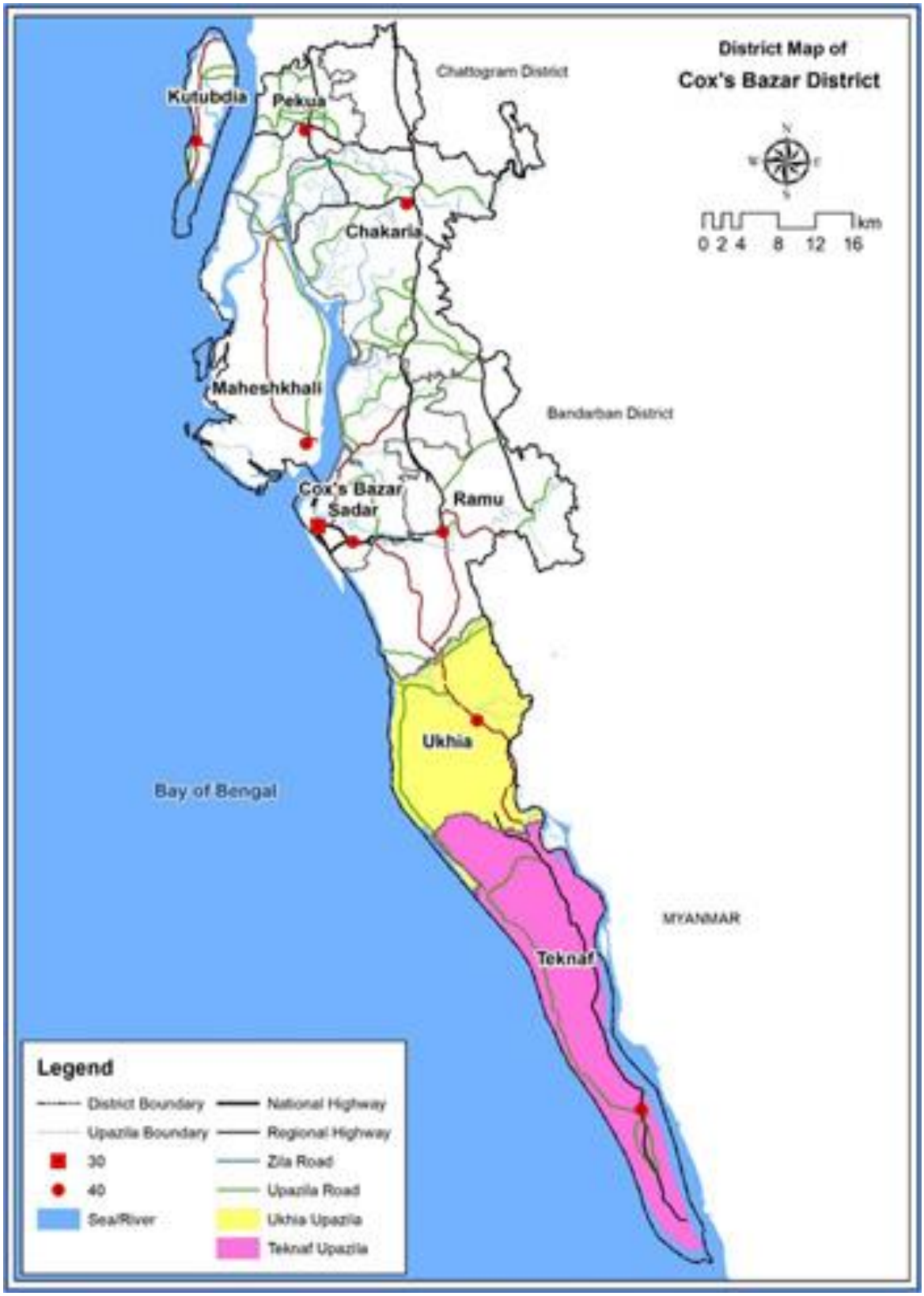



**Figure 3: District Map with project location**




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

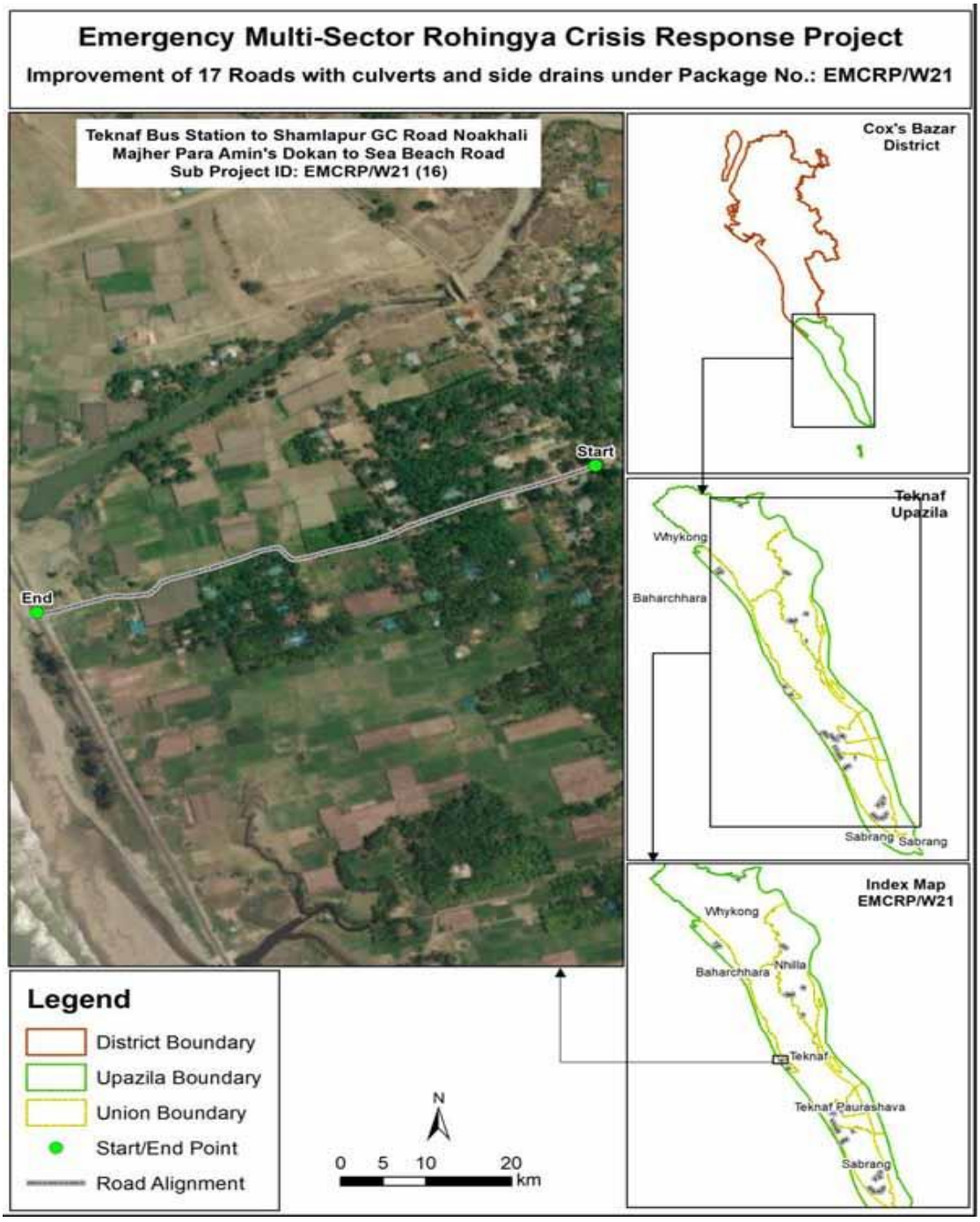



**Figure 5: Upazila Map with Sub-project location**

**Section A: Sub-Project Overview**

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| **Description of sub-project/component interventions:**<br>The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 510m. Proposed safety and service providing structures include 1 nos. Box Culvert with 2 vents (dimension: 4.5mx4.5m) at Ch.495m and109m Palisading work 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 | 422905065 |
| District | Cox's Bazar |
| Upazila | 5 number baharchora |
| Union | Teknaf Sadar |
| WARD | 09 |
| Proposed Chainage | 510m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $20.91920^0$ N<br>Longitude Value: $92.22928^0$ E |
| Road Ending Point Coordinates | Latitude Value: $20.91778^0$ N<br>Longitude Value: $92.22489^0$ 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. 510m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Eftedai Madrassa (200m), Koritas Cyclone Center (250m), Noakhali GPS (250m), Bagguna Jhorna (150m), Jhornar Pahar (150m), Rohmania Madrassa (300m), Puraton Shagorparer Mosque (300m), Kader Hossain Fokirer Majar (100m), Boro Graveyard (300m), Elias Cobra Bazar (350m), Konarpara Station (400m); at South side Baguna Boro Graveyard (150m), Mohammadia Madrassa (15m), Darul Ulum Jummania Madrassa

(300m), Shofikia Hefjokhana (150m); at East side Ghoramarar Pahar (1000m), Dhala Rastar Mosque (350m); and at West side Sea Beach (500m) and Jailla Ghat (520m) are located. 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**

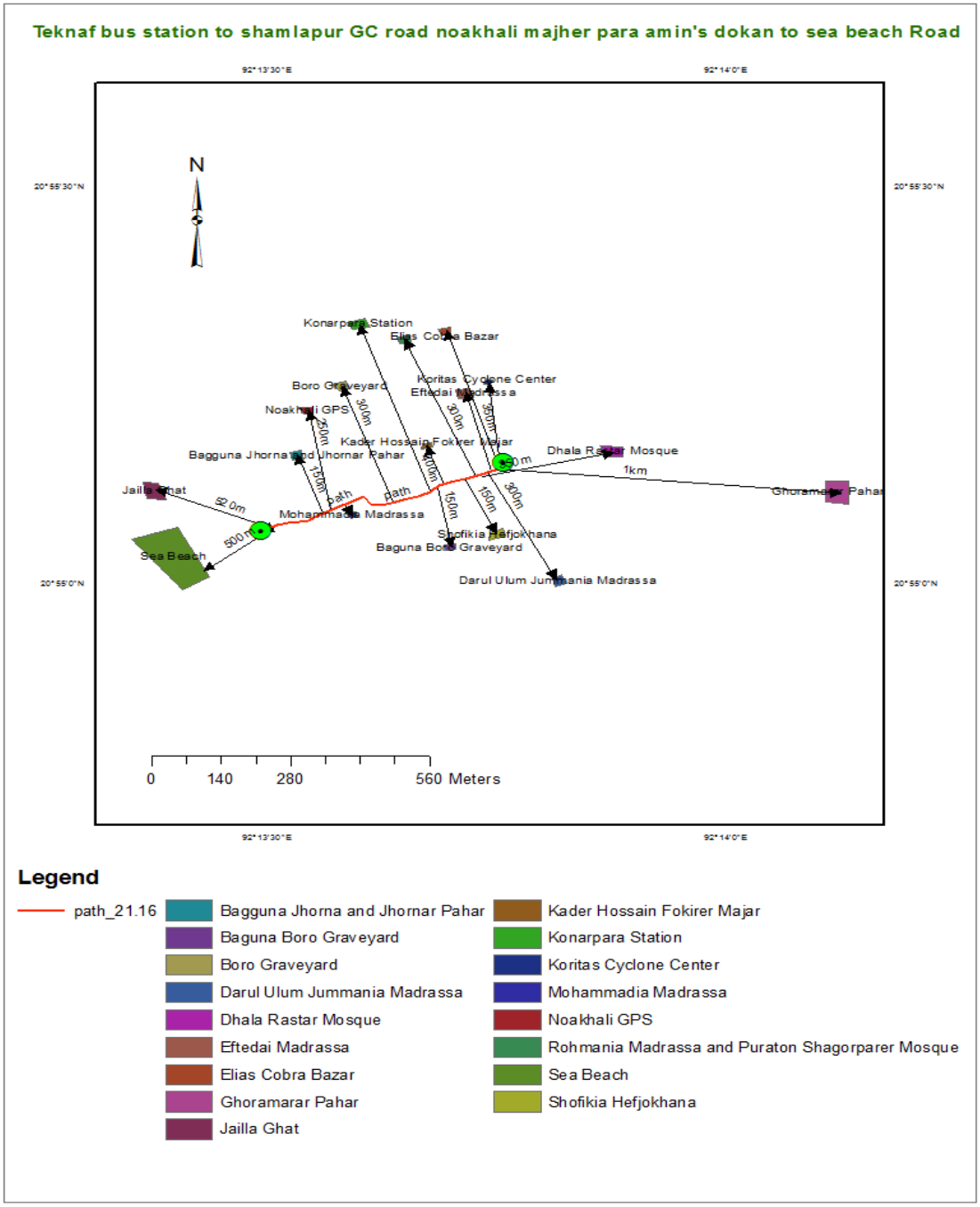



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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):**

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| Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-120 feet and deep tube well depth is 500 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.<br><br>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.<br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>N/A |

**B.2: Pre construction Phase**

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| **Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):**<br>Teknaf-Shaplapur LGED road and marine Drive 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:**<br>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:**<br>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.):**<br>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):**<br>Yes. Teknaf-Shaplapur LGED road and marine Drive road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from |

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| unloading point to different locations can be done. |
| **Location identification for raw material storage:**<br>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.):**<br>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 50 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**

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| ***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>Existing canals 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 |

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| 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)**<br>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:**<br>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)**<br>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:**<br>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**

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| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>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:**<br>Construction or implementation of a road project substantially contributes to the development of the |

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| 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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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 bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id: 422905065

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 1503 Sq.m | @38.15 Tk. Per sqm | 57,339.45 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 510.0m | @ 2.56 BDT | 1,305.6 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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. | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | (v) suitable eye protection goggles | | | |
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 50 nos. | @ Tk. 1000 | 50,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.66 |
| | **Subtotal Bill: Environmental facilities** | | | **340,957.43** |

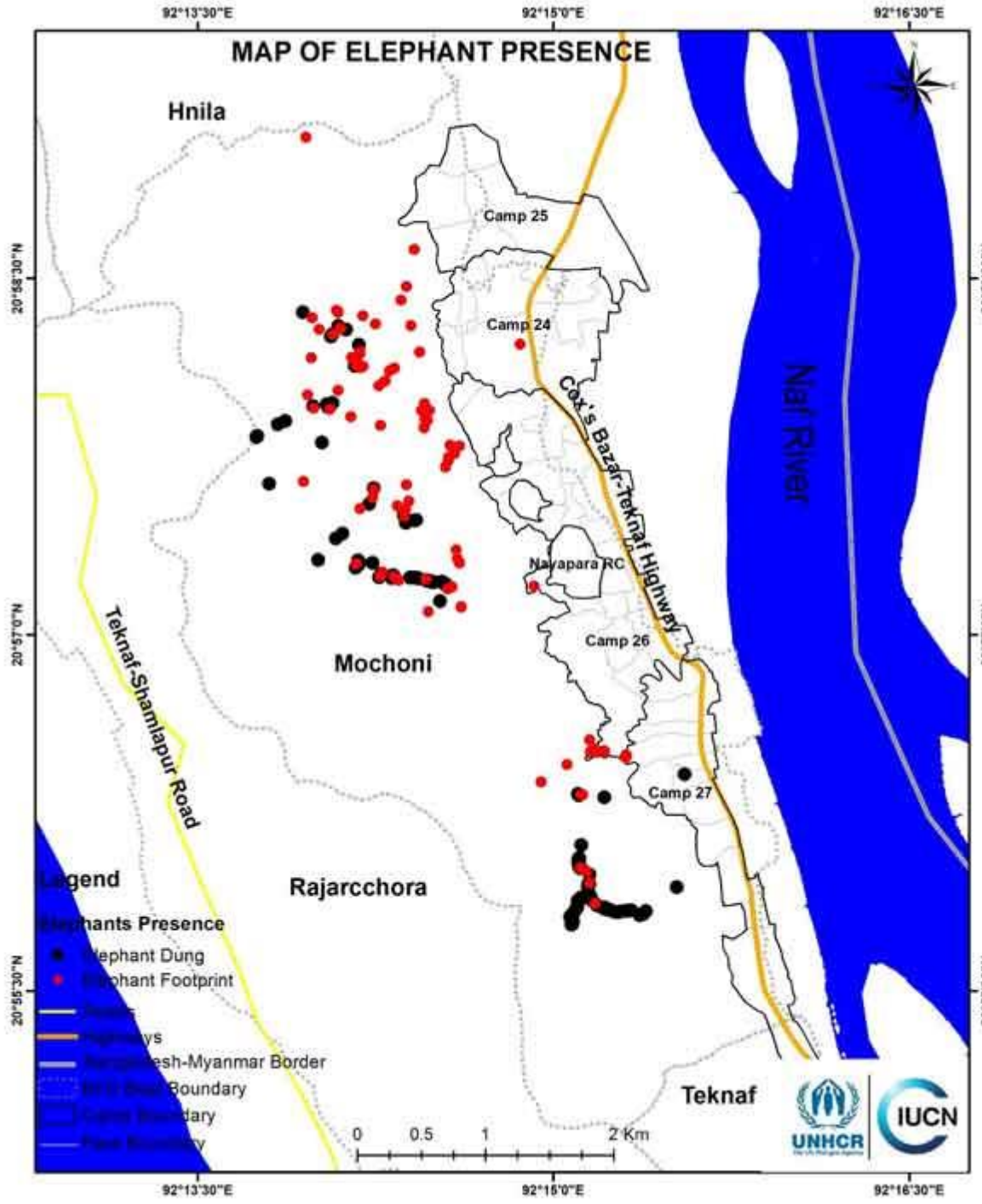
## Cost of H&S Measures under COVID 19 Situations

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 10 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.16).

| 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) | 27 | | 34 | 50.00 | 61 | 3,050.00 | To be placed in a case/holder on the basin, for washing hands for max. 13 people a day and showering of 10 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 6 nos. for each site | | N/A | 400.00 | 6 | 2,400.00 | For labors who work in close contact, 6 in each site |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 810 | 9,720.00 | 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 | 10 nos. for each labor camp | | 35.00 | 180 | 6,300.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1 Can | N/A | 1 Can | 250.00 | 2 | 500.00 | |
| 10. | Detergent Cleaner | N/A | 1/2 kg in each camp/month | | 400.00 | 4.5 | 1,800.00 | 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** | | | | | | **73,870.00** | |

**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/W21.16, Road ID No. - 422905065

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Local Government Engineering Department (LGED)

Public Consultation Participants List

Focus Group Discussion

| | | | | | |
|---|---|---|---|---|---|
| ১ | [illegible] | ৬২ | ✓ | [illegible] | [illegible] |
| ২ | [illegible] | ৭০ | ✓ | [illegible] | [illegible] |
| ৩ | [illegible] | ৩৫ | ✓ | [illegible] | [illegible] |
| ৪ | [illegible] | ৩০ | ✓ | [illegible] | [illegible] |
| ৫ | [illegible] | ৪৮ | ✓ | [illegible] | [illegible] |
| ৬ | [illegible] | ৪২ | ✓ | [illegible] | [illegible] |
| ৭ | [illegible] | ২৯ | ✓ | [illegible] | [illegible] |
| ৮ | [illegible] | ৭৫ | ✓ | [illegible] | [illegible] |
| ৯ | [illegible] | ৬২ | ✓ | [illegible] | [illegible] |
| ১০ | [illegible] | ৬২ | ✓ | [illegible] | [illegible] |
| ১১ | [illegible] | ৫৮ | ✓ | [illegible] | [illegible] |
| ১২ | [illegible] | ৪৬ | ✓ | [illegible] | [illegible] |
| ১৩ | [illegible] | ৫৫ | ✓ | [illegible] | [illegible] |
| ১৪ | [illegible] | ৪৬ | ✓ | [illegible] | [illegible] |
| ১৫ | [illegible] | ৫০ | ✓ | [illegible] | [illegible] |

**Public Consultation Participants' List**

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








An Overview of the current condition of the Sub-project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

# Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

**Project ID: P167762** **IDA Credit No. 5561-BD**






Design and Supervision Consultancy

## Environmental Screening Report

For Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach road with culverts and side drain under Cox's Bazar District.

Under the package no. EMCRP/W21

**Development Design Consultants Ltd.**

## 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 |

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**Executive Summary**

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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 Farmpara, Dhalarasta Gram, Kunarpara Gram, Matpara under 5 number Baharchora union, Ward 09 of Teknaf Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as at North side Ebtadayee Madrasah (300m), Karitus Cyclone center (300m), Noyakhali GPS (350m), Bagguna stream (350m), Jhorna paharer stream (300m), Rahmania Madrasah (200m), Old Sagorparer Madrasah (250m), Kader Hossain Fakirer Mazar (350m), Boro graveyard (50m), Bagguna boro graveyard (350m), Bagguna Bazar (300m), Elias Kobra bazar (60m), Konarpara station (15m); at South side petrol pump (50m), graveyard (15m), Armi cottage (40m); at East side Goramorar hill (1km), Noakhali forest (1km), Dhalarasta mosque (150m); and at west side Azizia Kashem Ulum Madrasah (10m), Marine drive (70m) and Bay of Bengal (100m) are located. 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 **'Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District',** with the bid package no. **EMCRP/W21**.

**Table 1.2.1: Significant features of the Sub-project**

**Package No. EMCRP/W21**

**Description of Sub-project: Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District** i, e., Improvement of (1) Shaha parir dwip North South para jalia para wapda Embk, Id:422904032; (2) Shah Parir dwip North West Para-Bazar road(Via Hazi Para), Id:422904034; (3) Sabrang bazar-sagar par Road, Id:422904036; (4) Moheskhali para sea beach-Langurbil Road, Id:422904037; (5) Teknaf Waliabad Al-Haz Wali Hafsa Panjakhana gowdarbil Road, Id:422904038; (6) Subrang Monder Dail Hasem Member house to Kurabujjya para- Teknaf khonker para cyclone shelter connecting Road, Id:422904042; (7) Sabrang Darul Ulum Madrasha to Mondol para Foarkania Madrasha Road, Id:422904045; (8) Teknaf Sadar UP Office to Sea-Beach Road via Moheshkhalia Para Road, Id:422904047; (9) Nhila R&H to uttar leda fachinga para aman ullah's house to siddique house Road, Id:422905198; (10) Nhila Uluchamari GPS to Kala Pahar Road, Id:422905181; (11) Whykong R&H to katakhali purbo para Road, Id:422905132; (12) Noa Bazar to Mina Bazar Road, Id:422905002; (13) Nhila RHD to Nhila new union parishad bhaban Road, Id:422905289; (14) Baharchara uttar shikhali paschim para D.C. road to sea beach Road, Id:422905086; (15) Baharchara uttar shikhali natun bazar to paschim para marine drive Road, Id:422905087; (16) Teknaf bus station to shamlapur GC road noakhali majher para amin's dokan to sea beach Road, Id:422905065; and (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach Road, Id:422905061, with culverts and side drains in Teknaf Upazila of Cox's Bazar District.

**Sub-project Component no.** (17) Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach road; Road Id: 422905061

**Component's Location:**

| | | |
|---|---|---|
| i. ID. 422905061 | ii. Ward No.: 09 | iii. Mouza: Boro Dail |
| iv. Village: Farmpara, Dhalarasta Gram, Kunarpara Gram, Matpara | | v. Name of Union: 5 number Baharchora |
| vi. Upazila: Teknaf | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021 | ix. Width (m): 4.9 | x. Length (m): 587 |
| xi. Distance from UZHQ: 09 Km. | | |

| | | | |
|---|---|---|---|
| | ***GPS Coordinates*** | Latitude Value: 20.909730$^0$ N<br>Longitude Value: 92.23632$^0$ E | Starting Point |
| | | Latitude Value: 20.90795$^0$ N<br>Longitude Value: 92.23153$^0$ E | Ending Point |
| | ***Present Condition of Road*** | HBB & Earthen | |
| | ***Communication Source*** | Radio & Mobile Networks | |

**Subproject interventions:**

- Bituminous Carpeting options.
- 01 Box Culvert (dimension: 1.5mx2.0m) at Ch.345m
- 1 no. Box Culvert with 2 vents (4.50x4.50) at Ch.555m
- 50m Palisading work
- Road safety work 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: 13,209,252.43 (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, at Azizia Ulum Madrassa, 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 along with 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 Ebtadayee Madrasah (300m), Karitus Cyclone center (300m), Noyakhali GPS (350m), Bagguna stream (350m), Jhorna paharer stream (300m), Rahmania Madrasah (200m), Old Sagorparer Madrasah (250m), Kader Hossain Fakirer Mazar (350m), Boro graveyard (50m), Bagguna boro graveyard (350m), Bagguna Bazar (300m), Elias Kobra bazar (60m), Konarpara station (15m); at South side petrol pump (50m), graveyard (15m), Armi cottage (40m); at East side Goramorar hill (1km), Noakhali forest (1km), Dhalarasta mosque (150m); and at west side Azizia Kashem Ulum Madrasah (10m), Marine drive (70m) and Bay of Bengal (100m). 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 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.

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

[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

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.

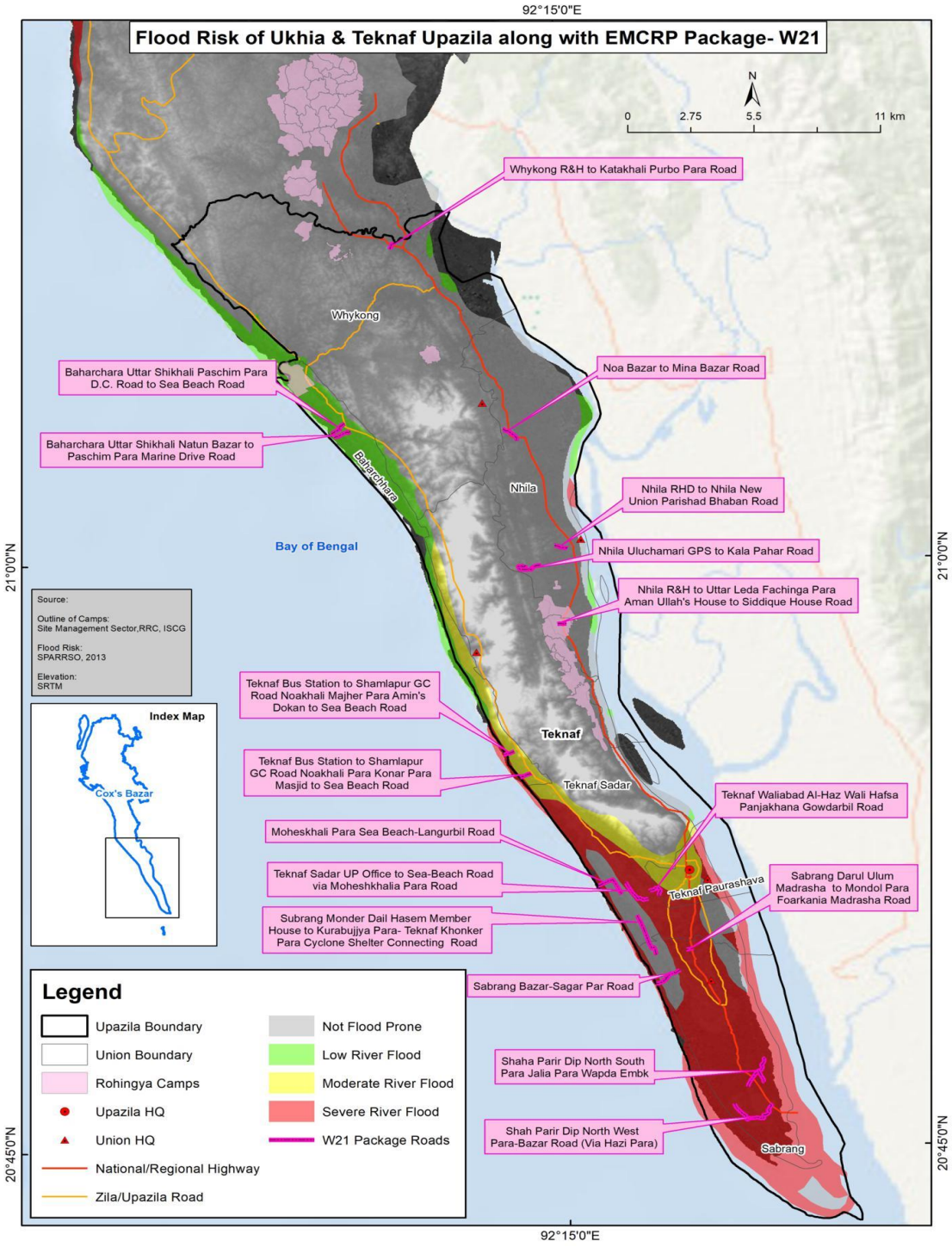



**Figure3.3.2.1: Flood inundation risk map near the subprojects**

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-21, a portion of the road ROW is found to be in the vicinity of the severe river flood inundation area. Road erosion may occur depending on the intensity and the frequency of river flood and storm surge. So tree plantation along the road is suggested specifically for certain conditions. And slope protection techniques can be adhered.

# 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.

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, 01 Box Culvert (dimension: 1.5mx2.0m) at Ch.345m and 1 no. Box Culvert with 2 vents (4.50x4.50) at Ch.555m will be constructed at the subproject area. Due to the presence of low land along different chainage of the road, 50m Palisading work at different chainage are included in design and estimation. 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/W21 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**: (**Improvement of 17 roads and construction of culverts with side drains under Cox's Bazar District:** EMCRP/W21).

**Name of the component**: Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach road; Road Id: 422905061

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

**Estimated total cost of sub-project (in Taka): 295,084,419.59 Tk.**

**Estimated construction period duration**: 1 year

**Estimated total cost of the component (in Taka)**: **13,209,252.43 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/near the camps or in the areas.

**District**: Cox's Bazar **Upazila**: Teknaf **Union**: 5 number Baharchora

**Name of Community/Local Area:** Farmpara, Dhalarasta Gram, Kunarpara Gram, Matpara

**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. 587m. Proposed safety and service providing structures include 01 Box Culvert (dimension: 1.5mx2.0m) at Ch.345m, 1 no. Box Culvert with 2 vents (4.50x4.50) at Ch.555m and 50m Palisading work 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 2876.3 sq m.**

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

This proposed Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach road belongs to 5 number Baharchora union under Teknaf Upazila. This road starts from Teknaf-Shaplapur LGED Road stretching 587m ending at Marine Drive Road. This sub-project passes along different important features, such as, boundary fences, paddy field, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, mosques, graveyards, religious institutes, shops, bushes 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 | | RCC pole with wired fence, Mosque, Vegetable yard, brick wall, Open Space |
| | | R | Bamboo fence, Electric Pole, Settlement, bamboo fence, Paan boroz, Cross Drain, Open Field |
| 300-587 | L | | Brick wall, Personally owned land |
| | | R | Open Field, Crop field, Sand bag, Bhanga Khal |




**Figure: Starting point of Teknaf bus station to shamlapur GC road noakhali para konar para masjid to sea beach road**

**Overall Comments**

The proposed component of the sub-project (Road construction) 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.

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 Ebtadayee Madrasah (300m), Karitus Cyclone center (300m), Noyakhali GPS (350m), Bagguna stream (350m), Jhorna paharer stream (300m), Rahmania Madrasah (200m), Old Sagorparer Madrasah (250m), Kader Hossain Fakirer Mazar (350m), Boro graveyard (50m), Bagguna boro graveyard (350m), Bagguna Bazar (300m), Elias Kobra bazar (60m), Konarpara station (15m); at South side petrol pump (50m), graveyard (15m), Armi cottage (40m); at East side Goramorar hill (1km), Noakhali forest (1km), Dhalarasta mosque (150m); and at west side Azizia Kashem Ulum Madrasah (10m), Marine drive (70m), and Bay of Bengal (100m) are located. The project road crosses through several communities, agricultural lands and community level forests. In this sub-project area, no elephant migration routes exist (ref. IUCN).

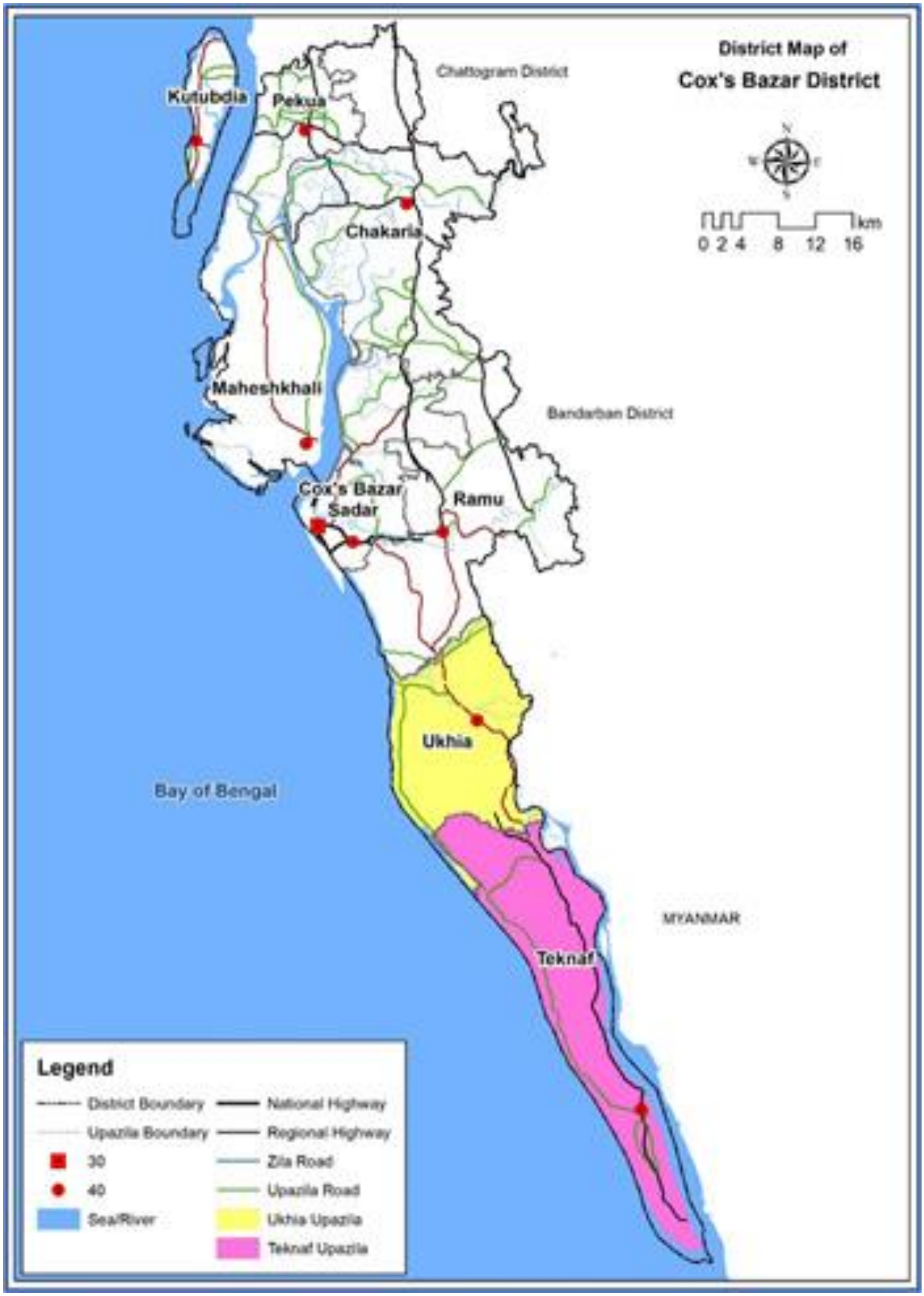



**Figure 3: District Map with project location**




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

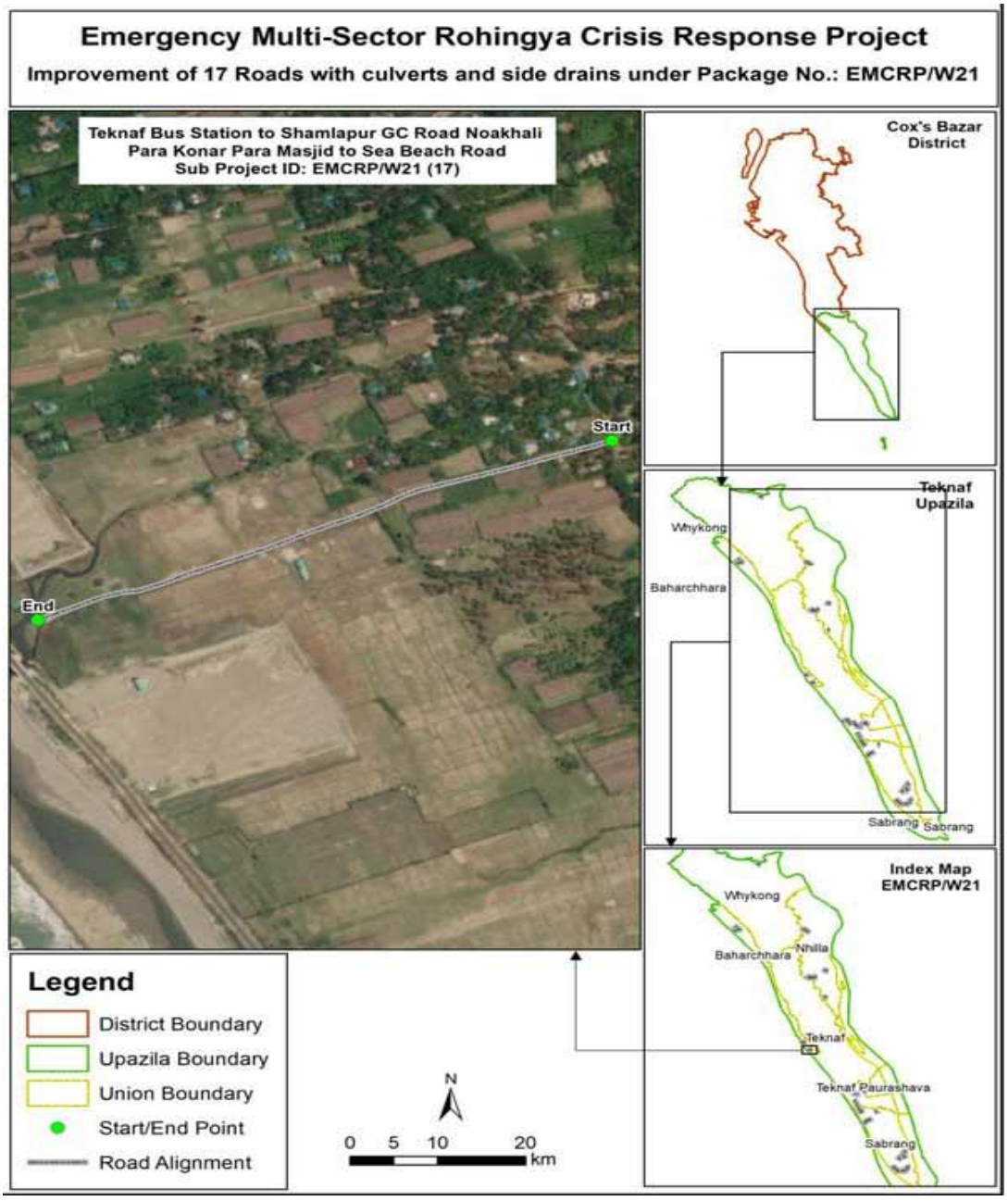



**Figure 5: Upazila Map with Sub-project location**

**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. 587m. Proposed safety and service providing structures include 01 Box Culvert (dimension: 1.5mx2.0m) at Ch.345m, 1 no. Box Culvert with 2 vents (4.50x4.50) at Ch.555m and 50m Palisading work, which 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 | 422905061 |
| District | Cox's Bazar |
| Upazila | Teknaf |
| Union | 5 number Baharchora |
| WARD | 09 |
| Proposed Chainage | 587m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: $20.90973^0$ N<br>Longitude Value: $92.23632^0$ E |
| Road Ending Point Coordinates | Latitude Value: $20.90795^0$ N<br>Longitude Value: $92.23153^0$ 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. 587m.

i) No historical sites were identified.
ii) Not required to relocate local community.
iii) Some trees may be affected.
iv) No chance to lose of agricultural land.
v) Some Household Boundary made of bamboo and tin may need adjustments.
vi) Environmental Sensitivity: No mentionable eco-concerned establishment, no elephant corridor was identified. Construction induced impacts may affect numbers of socio-economic and environmental 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 Ebtadayee Madrasah (300m), Karitus Cyclone center (300m), Noyakhali GPS (350m), Bagguna stream (350m), Jhorna paharer stream (300m), Rahmania Madrasah (200m), Old Sagorparer Madrasah (250m), Kader Hossain Fakirer Mazar (350m), Boro graveyard (50m), Bagguna boro graveyard (350m), Bagguna Bazar (300m), Elias Kobra bazar (60m), Konarpara station (15m); at South side petrol pump (50m), graveyard (15m),

Armi cottage (40m); at East side Goramorar hill (1km), Noakhali forest (1km), Dhalarasta mosque (150m); and at west side Azizia Kashem Ulum Madrasah (10m), Marine drive (70m) and Bay of Bengal (100m). 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**

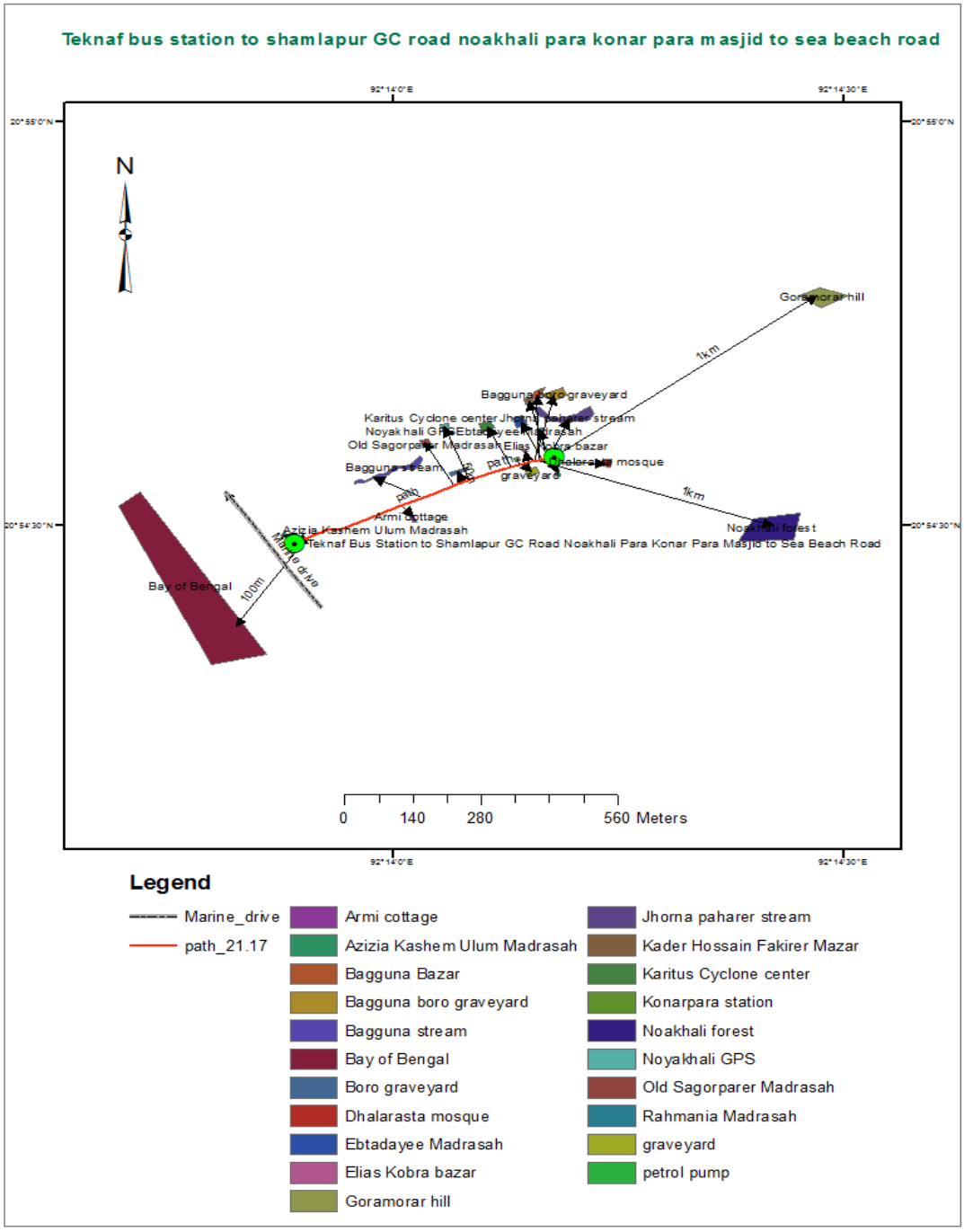



**Figure B.1.1: A sketch of the project intervention area**

**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, 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 an 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.

| |
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| **Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):**<br>Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-120 feet and deep tube well depth is 700 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.<br><br>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.<br><br>Many shallow tube wells (30ft. to 40 ft.) are fitted in local area and most of the water usage is sufficed from these sources.<br>*Data source: IWM Study Report, 2019 |
| **Status of wildlife movement:**<br>**N/A** (None of the information was found about the wildlife movement in or across the area) |
| **State of forestation:**<br>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):**<br>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):**<br>Teknaf to Shaplapur LGED 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:**<br>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:**<br>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.):**<br>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. |

| |
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| **Identification of access road for transportation (Yes/No):**<br>Yes. Teknaf to Shaplapur LGED 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:**<br>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.):**<br>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 50 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.):**<br>***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.<br><br>***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.):**<br>**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.<br>**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:**<br>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)**<br>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 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)**<br>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)**<br>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:**<br>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)**<br>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:**<br>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**

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|---|
| **Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:**<br>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)**<br>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)**<br>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)**<br>There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding |

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| and other disease vectors, during the operation phase. |
| **Likely direct and indirect impacts on economic development in the project areas by the sub-project:**<br>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)**<br>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)**<br>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:**<br>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)**<br>Concentrated outflow will be carried by proposed drains and culvert. |
| **Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:**<br>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;<br>• Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary;<br>• 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;<br>• Number of complaints from stakeholders;<br>• Covering of trucks;<br>• 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.<br>• The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered.<br>• 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.<br>• Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | • No visible degradation to nearby drainages,<br>• *khals* or water bodies due to soil erosion.<br>• 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.<br>• 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.<br>• 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.<br>• Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water.<br>• 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;<br>• Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires;<br>• No visible | 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 |
| | | | | | degradation to nearby drainages, *khals* or water bodies due to construction activities.<br>• 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.<br>• 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.<br>• 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;<br>• Records of supply of uncontaminated water;<br>• Record of Health &Safety orientation trainings;<br>• 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.<br>• Record of accidents/ incidents. | Monthly monitoring. |
| | **Storage of** | Under the | • Train concerned person and team | Construction | • List of materials | During |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | **construction materials** | subproject intervention the overall score is **low**. | assigned for the construction work to ensure items are stored properly and away from steep slopes. | Contractor and monitored by Consultant and PIU | and sources of materials | 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.<br>• 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.<br>• 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;<br>• Regular inspection of waste management activity;<br>• 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 possible. Designs shall ensure that as far as possible all cut and fill activities are balanced<br>• 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 | 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 |
| | | | 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:<br>• 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.<br>• Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies.<br>• Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression.<br>• Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be | Construction Contractor and monitored by Consultant and PIU | • List of materials and sources of materials;<br>• 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 |
| | | | capped with plastic caps or covered with sacks/clothes to avoid any health injury.<br>• 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.<br>• 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;<br>• No noisy work after 5.00 pm.<br>• Sound suppression for equipment;<br>• Ear protection for workers.<br>• Conduct noise quality monitoring as per ESMP. | Construction Contractor and monitored by Consultant and PIU | • Number of complaints from stakeholders;<br>• Use of silencers in noise-producing equipment and sound barriers;<br>• 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;<br>• Number of complaints from stakeholders;<br>• 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<br>• Direct observation and discussion with local people<br>• Restrict the transport of oversize loads.<br>• Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption.<br>• Enforce on-site and access road speed limits.<br>• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.<br>• Local residents should be kept informed about planned Works | Construction Contractor, environmental specialist of D&SC. | • Complaints from communities, pedestrians | Daily during working period |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| **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.<br>• Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles.<br>• 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<br>• Maintain of trees properly<br>• Check survival of trees and replant the dead trees | Construction Contractor, environmental specialist of D&S. | • Number of complaints from stakeholders;<br>• Records of trees number and tree plantation inspection. | Immediately after the construction work is over. |
| **5. Operational Phase** | **Maintenance of road and assets** (Road accidents may increase due | Under the issue the overall score is **low**. | • No advertisement/boardings shall be allowed within the Right of Way limits of the project road.<br>• Regular maintenance and cleaning of assets such as sign boards, road | LGED | • Number of complaints from stakeholders. | During Operation under LGED's regular maintenance program in each |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | to higher number of vehicles using the roads at increased speeds) | | safety sign etc. shall be undertaken.<br>• Clear smooth speed breaker/rough surfaces should be clear in views.<br>• Regular maintenance of road surface and shoulders. | | | 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 bus station to shamlapur GC road noakhali para konar para masjid to sea beach road; Road Id: 422905061

| 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<br>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<br>• Separate community level consultation meeting with the potential affected HHs<br>• 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.<br>• 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.<br>• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those.<br>• After completing the development the site shall be restored as before.<br>• This site is in the local community, so continuous need based discussion with the local community to avoid any conflicts will be taking place.<br>• Sub project intervention must avoid natural disturbance to existing slop and natural drainage.<br>• 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.<br>• 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.<br>• Dust generation must be limited as a result of | Contractor | Environmental Consultant of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | clearing, leveling and site grading operations with using water florescent manually and through water pipes.<br>• 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<br>• Before works start Contractor must provide proper training and guidance on health and safety issues to the labors and associated staffs.<br>• Records of every training must be kept at site.<br>• All kinds of Child labour are completely prohibited in every site.<br>• 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.<br>• 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. | PIU & Contractor | Social Development Specialist and Gender Specialist |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells.<br>• Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site.<br>• Local community must be consulted before any construction works starts. | | of PIU, PSC |
| Construction Activity | Increase in road accidents | • Maintain safety measures during the movement of heavy machinery and equipment.<br>• 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.<br>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.<br>• Adequate facilities ensuring sanitation for labour camps will be put in place.<br>• Treated water will be made available at site for drinking purpose.<br>• Adequate accommodation arrangements for labour forces. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects:<br>• Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site<br>• Wastes after completion of construction works. So, recycling process is not applicable.<br>• 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.<br>• 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:<br>• 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 | • All construction equipment will be properly inspected timely.<br>• The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site.<br>• Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions | 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 |
|---|---|---|---|---|
| | electrical shocks.<br>• Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis. | underfoot; signposted and with adequate lighting.<br>• Proper Signpost at any slippery areas will be ensured in construction site.<br>• Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire.<br>• 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.<br>• All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems.<br>• Provision to first aid box in sub-project areas will be ensured.<br>• Proper Emergency evacuation response plan will exist in sub-project area.<br>• 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.<br>• Awareness training will be given to all personnel | | |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | | involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site.<br>• Adequate quantities of drinking water will be available at all Sites, on different locations within the site.<br>• Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.<br>• 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.<br>• 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, | • Contractor must prepare a waste management plan | PIU / Contractor | Environmental |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|---|---|---|---|---|
| | facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:<br>✓ Pollution from waste materials<br>✓ Health & Safety risks to workers and local community | including relevant directives from "Waste Management Plan Principles" given hereunder. | | Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.<br>• 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.

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**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. | **Grass Turfing**<br>Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 1729.50 Sq.m | @38.15 Tk. Per sqm | 65980.425 |
| 2. | **Dust suppression measures**<br>Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 587m | @ 2.56 BDT | 1,502.72 |
| 3. | **Water Supply and Sanitation**<br>Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge.<br><br>Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | **First Aid Box**<br>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 | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|---|---|---|---|---|
| | necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | **Drinking Water Facilities**<br>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 |
| 6. | **Traffic Management**<br>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 |
| 7. | **Personal Protection Equipment for Workers**<br>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 |
|---|---|---|---|---|
| 8. | **Tree plantation**<br>Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroi, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 50 nos. | @ Tk. 1000 | 50,000 |
| 9. | **Motivation training**<br>Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | **Waste disposal facility**<br>Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | **Water Test (Drinking Water samples)**<br>Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | **Working labour shed:**<br>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 |
|---|---|---|---|---|
| 13. | **Environmental management**<br>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 W21(9), W21(10), W21(11), W21(12), W21(13), W21(14) W21(15), W21(16) & W21(17)]** | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 9 roads i.e.,35,000Tk.*12months*(1/9 one road). (Net payment excluding Tax &VAT). | 46,666.66 |
| | **Subtotal Bill: Environmental facilities** | | | **349,795.53** |

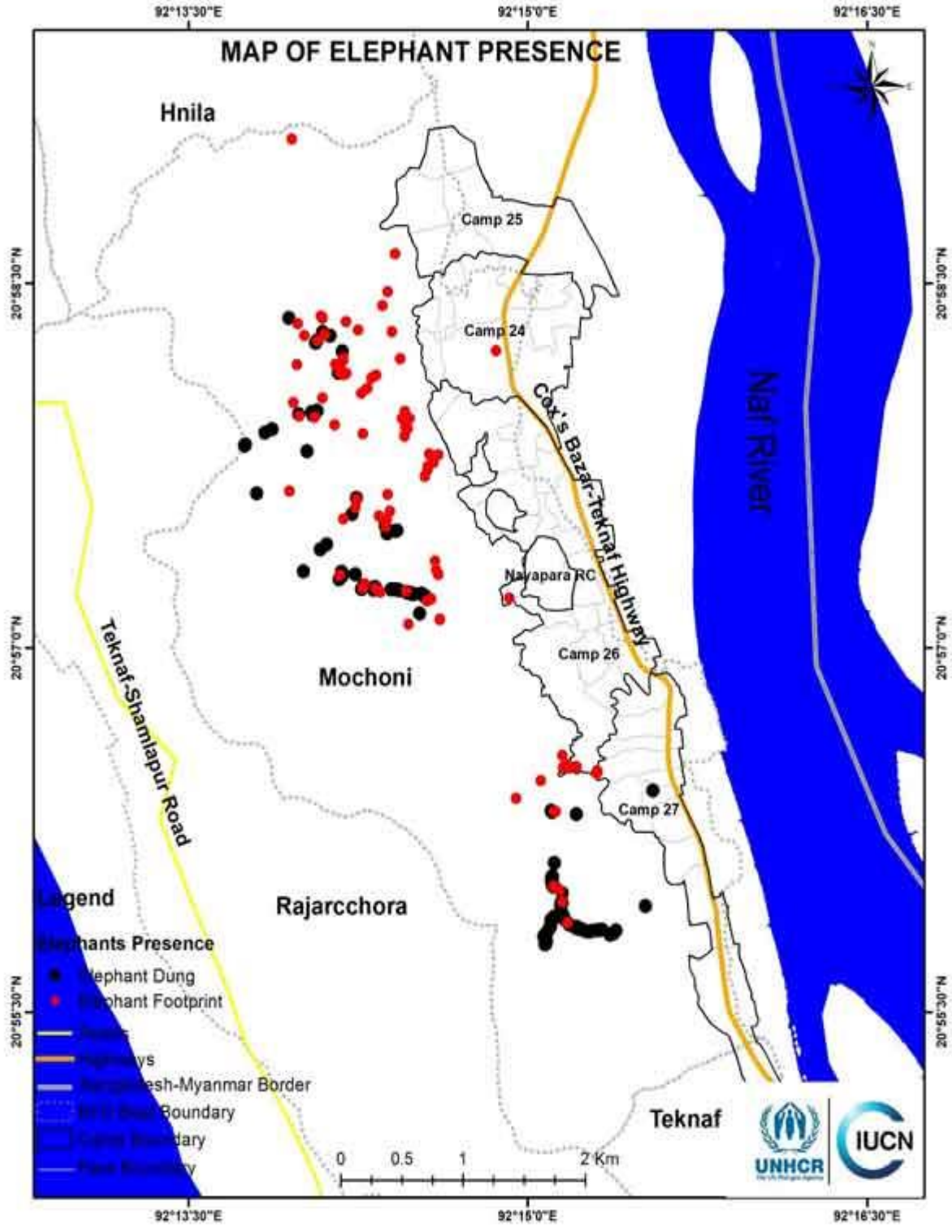
## Cost of H&S Measures under COVID 19 Situations

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 12 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-21.17).

| 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) | 33 | | 40 | 50.00 | 73 | 3,650.00 | To be placed in a case/holder on the basin, for washing hands for max. 13 people a day and showering of 10 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---|---|---|---|---|---|---|---|---|
| | | Site Office | Working Site | Labor Camp | | | | |
| 6. | Face Shield/ Protective Safety Goggles | 7 nos. for each site | | N/A | 400.00 | 7 | 2,800.00 | For labors who work in close contact, 6 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 | 12 nos. for each labor camp | | 35.00 | 216 | 7,560.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1 Can | N/A | 1 Can | 250.00 | 2 | 500.00 | |
| 10. | Detergent Cleaner | N/A | 1/2 kg in each camp/month | | 400.00 | 4.5 | 1,800.00 | 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** | | | | | | **82,610.00** | |

**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/W21.17, Road ID No.- 422905061

**Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)**

Local Government Engineering Department (LGED)

Public Consultation Participants List

**Focus Group Discussion**

**Public Consultation Participants' List**

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







**An overview of the current condition of the Sub-project**