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 R&H Road to Hindu Rohingya new camp

Under the package no. EMCRP/W13

April-2020

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

Contents

Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Host Communities and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as construction of school cum cyclone shelters, and Multipurpose Community and Service Centers (MCSC), facilitating growth centers and RCC Bridge development, and so on, 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 key project beneficiaries- Displaced Rohingya Population (DRP) and Host Communities or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements have been carried out in accordance with guidelines from World Bank; and accordingly, environmental and social screening reports have 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.

The Sub-Project under the title- R&H Road to Hindupara Rohingya new camp, is passing by the Camp 1(E) and is categorized as a village road with a proposed design intervention of ISG 200mm, two-layer HBB to be laid on an existing alignment. For the drainage of rain water and ease movement of natural water flow across the areas especially in the rainy season 5 nos. Cross Drain (dimension: 750mmX750mm, at Ch: 10m, 42m, 198m, 500m, 580m), 3 nos. Box Culvert (with 2 nos. having a dimension of 2.00mX1.50m, at Ch: 245m, 635m and the rest one having a dimension of 3.00mX2.5m, at Ch: 420m) will be constructed. In order to protect hilly land masses and earth on the shoulder from sliding or slipping 528m Brick Palisading wall and unrestricted drainage for mountain eel water during rainy season 46m L-Drain, and as part of road safety works Guide Post & Name Plate has been included in the estimation. Apart from some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length. Proposed improvement of new hindu para Rohingya camp road to be completed on hillock region owned by Government. Maximum land area along the sub-project component was found leased by the local people and social forestations, pineapple fields, bamboo bushes etc. were found across the sideways. A child learning center, a mosque with Hefjakhana named Mahsebin Jobor are situated within chainage 300m from the starting point of sub-project. This sub-project has been connected to Cox's Bazar- Teknaf highway. 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 some 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.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **'**Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District**'; with a package name- EMCRP/W13.**

Table 1.2.1: Significant features of the Sub-project

<table>
<tr><td colspan="4">Package Name: EMCRP/W13: Improvement of 6 Access Road to different camps of Forcibly Displaced Myanmar Nationals (FDMN) under Cox's Bazar District.</td></tr>
<tr><td colspan="4">Sub-project Component no. W13(1) : R&H Road to Hindu Rohingya new camp</td></tr>
<tr><td colspan="4">Component Location:
<table>
<tr><td>i. ID-</td><td>ii. Ward No.: 9</td><td colspan="2">iii. Mouza: Kutupalong</td></tr>
<tr><td>iv.Village: Kutupalong</td><td colspan="3">v. Name of Union: Rajapalong</td></tr>
<tr><td colspan="2">vi. Name of the Upazila: Ukhiya</td><td colspan="2">vii. Construction Year: 2020-21</td></tr>
<tr><td colspan="2">viii. Width (m): 3m (approx.)</td><td colspan="2">ix. Length (Km): 520m</td></tr>
<tr><td>x. Water Status: Available</td><td colspan="3">xi. Water Source: Shallow Tube-well, Deep tube-well</td></tr>
<tr><td colspan="4">xii. Distance from UZHQ: 9.00 Km.</td></tr>
<tr><td rowspan="2">GPS Coordinates</td><td>Latitude Value: 21˚13’31.60” N
Longitude Value: 92˚9’39.78” E</td><td colspan="2">Starting Point</td></tr>
<tr><td>Latitude Value: 21˚13’40.55” N
Longitude Value: 92˚9’41.55” E</td><td colspan="2">Ending Point</td></tr>
<tr><td>Condition of Road</td><td colspan="3">HBB</td></tr>
<tr><td>Communication Source</td><td colspan="3">Radio & Mobile Network</td></tr>
</table></td></tr>
<tr><td colspan="4">Subproject Intervention:
1. Two-layer HBB
2. ISG 200mm
3. 5 nos. Cross Drain (dimension: 750mmX750mm, at Ch: 10m, 42m, 198m, 500m, 580m),
4. 2 nos. Box Culvert (dimension: 2.00mX1.50m, Ch: 245m, 635m)
5. 1 no. box culvert (dimension: 3.00mX2.5m, Ch: 420m), Due to the low land in different chainage of the road
6. 528m Brick Palisading wall and mountain drainage for mountain eel water during rainy season
7. 46m L-Drain and
8. Road safety Guide Post & Name Plate</td></tr>
<tr><td colspan="4">Implementing Agency: Local Government Engineering Department (LGED)</td></tr>
<tr><td colspan="4">Expected construction period (Component -1): 2020-2021</td></tr>
<tr><td colspan="4">Estimated total cost of component: 54,42,176.00 (Tk.)</td></tr>
</table>

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the first consultation meeting with local community from 11:35 AM to 12:45 PM on 23 December, 2019 at House of Nur Mohammad, Kutupalong at west para (Chainage: 00m-300m) which is adjacent to the sub-project location. Refer to Figure 2.1.1, Public Consultation Participants List are attached in Appendix-5 and sub-project pictographic overview are attached in Appendix-6. Several more consultation meetings in different modes were carried out as well. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects. The following table depicts details of several of those consultation meetings with outcomes.

Consultation Date	Time	Venue	Mode of Consultation	Stakeholder/ Participants	Outcomes
23th December 2019	11:35 pm	House of Nur Mohammad, Kutupalong at west para (Chainage: 00m-300m)	Focus Group Discussion	List is attached in Appendix.	Participants were informed about the sub-project interventions, potential impacts and management options, their informed views and comments were taken into consideration and appropriately reflected into the ESMP.
18th February 2020	6:00 pm	Office of the UE, LGED, Cox's Bazar	Direct conversation	UE, Resident Engineer, Field Engineers, LGED Staffs	Consulted about the survey plan and UE office assured of putting all efforts in enforcing ESMP in the field.
19th February, 2020			Telephonic consultation	Md. Sultan Mahmud, Asst. Site planner of UNHCR	Consulted about the survey plan and the site was found free from any direct physical impacts associated with the proposed road works.
19th February, 2020			Telephonic consultation	Shegufta Newaz, Coordinator of site management, UNHCR	
19th February,	3:00 pm	CiC office in Camp 7	Direct Conversation	Subash Chandra Sheel,	He assured of lending all hands from him and his

2020				Camp Mgt. Support-Dty Lead, BRAC, Cox's Bazar.	organization in successful implementation of the project.

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.

Figure 2.1.1: Consultation meeting (FGD) with local community

2.2 Summary of Public Consultation Meeting

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

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that they can make the necessary arrangements to avoid or minimize adverse impacts. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected

parties and individuals helps to resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

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

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

2.3 Suggestions and recommendations of the participants

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

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

3. ENVIRONMENTAL SCREENING

3.1 General

Environmental Screening is the preliminary process of Environmental Assessment for the identification of significant impacts on important environmental components, depending on the nature and size of the project, its interventions and technology, location and time; and evaluation of screening findings will decide whether any further comprehensive assessment study is required or not. This assessment procedure will follow a definite scope of interventions, for example, this particular study will be based on the qualitative assessment of the surrounding environment of the particular site before any physical intervention starts, and maximum project impact area is considered to be half a kilometer of the radial distance around the site.

3.2 Assessment of Screening Findings

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted with the purpose of fulfilling the requirements of GoB and World Bank. Assessment of potential impacts requires a multi-disciplinary approach in which a wide range of issues are taken into consideration to identify and

determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures. Environmental Screening form, as adopted in **Appendix 2** of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents. The screening data and information for this Sub-project and details screening summary have been formulated and shown in **Appendix-1**

The proposed sub-project is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several Rohingya and local households, a mosque with Hefjakhana, bamboo bushes, tilas and community level forest, among other features. During construction period 8 nos. trees may need to be removed; the accrued impacts therefore could be offset by plantation of at least 40 trees along the road length. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in any significant damages to 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 were reported in 2018. The IUCN has conducted a study on such type of conflict. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

3.3 Climate Change Impact Screening

3.3.1 General Climatic Consideration of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already

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

increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.
Together with the above mentioned hazardous situation, 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, which could be disastrous for both refugees and local residents.

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

3.3.2 Site Specific Consideration

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

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only , and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of the-art thunder arrester (lightning protection system) has been suggested to install in the area having a coverage area of 25,434 sq.m for a single arrester. 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.

Specific Environmental and Social Management Plan (ESMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Environmental and Social Management Plan (ESMP) is to formulate measures which will mitigate adverse impacts on various environmental components, which have been identified during observation, and protect environmental resources where possible and enhance the value of environmental and social components where possible.

Among the notable prioritized management measures, contractor must adhere to the best practice HSE (Health, Safety and Environment) management procedure and regular adoption of dust control

procedures (spraying of water at least twice a day) to minimize the effect to the least level. This HSE management procedure targets both groups- the working staffs/labors directly employed by the contractor and the people living in the catchment area or simply the users of the road. Noise impacts must be controlled efficiently as the road has the presence of some disperse settlements, a learning center, NGO facility, a mosque with a Hefjakhana in the areas and construction works must be limited in day time; and the time and duration of any potential noisy works should be communicated with the surrounding people fairly in advance. Special attention should be given to hill/tila-side slopes to protect from any potential landslide or mass movement to adjoining road surface. Construction of L-drain, cross drain, and brick palisading wall are suggested at different chainages to avoid such catastrophe or nuisance. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

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

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf upazilas 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 situations

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

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

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

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situations should be allocated in consultation with project PIU.

4.3 Cost of Environmental Enhancement Works in BOQ

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

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of

operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

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

6. LIMITATIONS OF THIS STUDY

Bangladesh government has imposed a nationwide lockdown to curb the spread of the novel coronavirus in the wake of series of deaths and infections. Authorities declared a ban on passenger travel on all sector from March 24 while all public transport on roads have been suspended from March 26 to stem the spread of virus, officially known as COVID-19. All office works have been postponed and an intended visit to the sites for further consultation with the relevant stakeholders has had to cancel due to this crisis. Therefore, some relevant information and arrangement needs awaiting for recovering this pandemic crisis.

Further, during the consultation, people living in the area and along the site were primarily targeted, though local dialect and Burmese language sometimes posed difficulties in understanding peoples' views. The safeguards team put their best efforts in meeting local representatives and Camp in Charges (CiCs), different sector coordinators, responsible agencies for site development and management while went to any respective road to survey. However, difficulties in finding the meeting time during the stringent working hours in camp areas have been observed very common, therefore, telephonic consent or views were taken in many cases.

7. CONCLUSIONS AND RECOMMENDATIONS

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

The 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. These issues might be problematic if necessary mitigation measures, as suggested in ESMP, would not be properly taken into consideration.
- The project will create employment for the workforce 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 aesthetic appearance.
- A comprehensive Environmental Management & Monitoring Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities. The ESMP mainly focuses on managing, mitigating and reducing the impacts exhibited in design, construction and operation phases.

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-01

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 Access Road to different camps of Forcibly Displaced Myanmar Nationals (FDMN) under Cox's Bazar District.; EMCRP/W13).

Name of the component: R&H Road to Hindu Rohingya new camp

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

Estimated total cost of sub-project (in Taka): 15,66,50,441 tk

Estimated construction period duration: 6 (Six) months

Estimated total cost of the component (in Taka): 54,42,176.00 (Tk.)

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

District: Cox's Bazar **Sub-District**:Ukhiya **Union**: Rajapalong
Name of Community/Local Area: Kutupalong Hindu para Rohingya Camp

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 ISG 200mm, two-layer HBB will be laid on an existing alignment. For drainage of rain water 5 nos. Cross Drain (Size: 750mmX750mm, at Ch: 10m, 42m, 198m, 500m, 580m), Box Culvert 2 nos. (Size: 2.00mX1.50m, Ch: 245m, 635m) and 1 no. (Size: 3.00mX2.5m, Ch: 420m), due to the low land in different chainage of the road 528m Brick Palisading wall and uninterrupted drainage of mountain eel water during rainy season 46m L-Drain and as part of road safety Guide Post & Name Plate have been included in the estimation.

Estimated footprint / land area for this sub-project is 1560 sqm.

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
The proposed improvement of new hindu para Rohingya camp road to be completed on hillock region owned by Government. Maximum land area along with sub-project has been leased by local people. Social forestations, pineapple fields, bamboo bushes etc. are existing across the sideways of the proposed road. A child learning center, Rohingya households, a mosque with Hefjakhana named Mahsebin Jobor are situated within chainage 300m from the starting point of sub-project. Both end of this sub-project is well connected to Cox's Bazar- Teknaf highway.

Total length of the sub-project is 520m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Chainage	Left	Right	Important Environmental/Socioeconomic Features
"0" Point 000-300	L		Start from New Hindu para Rohingya camp, tila (high land), bamboo fencing, community center (BRAC), bamboo bushes, local people households (Kaccha), Mosque with Hefjakhana
		R	Wash block, child learning center, Rohingya settlement, shop, bamboo bushes, Trees, local people households (Kaccha), tin shed fencing, bamboo fencing, local mosque wash block
300-520	L		Community vegetation, electric pole, bamboo bushes, tila
		R	Community vegetation (trees), electric pole, bamboo bushes, pineapple plantation, mango trees, jackfruit trees, segun tree

Figure: Starting Point of New Hindu para Rohingya Camp Road.

Overall Comments

The proposed sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area thus not going to create intimidation to important environmental features. However, some local trees may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. No agricultural productive soil will be used for construction 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.

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. Several individuals from local communities participated in the consultation meeting and they do not have any objection to construction works under this sub-project. Rather, the community 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 have the passage during any emergency situation.

The proposed Sub-project area for the construction of hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub 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. One mosque with Hefjakhana named Mahsebin Jobor is found along the sub-project area. Other important features such as Kutupalong GPS, Kutupalong High School, two crematory, BRAC School, local bazar etc. are situated within approximately half kilometer on south side of the sub-project. No disturbance is anticipated due to construction activities.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 13-15 km away from this sub-project. Appendix-4 presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

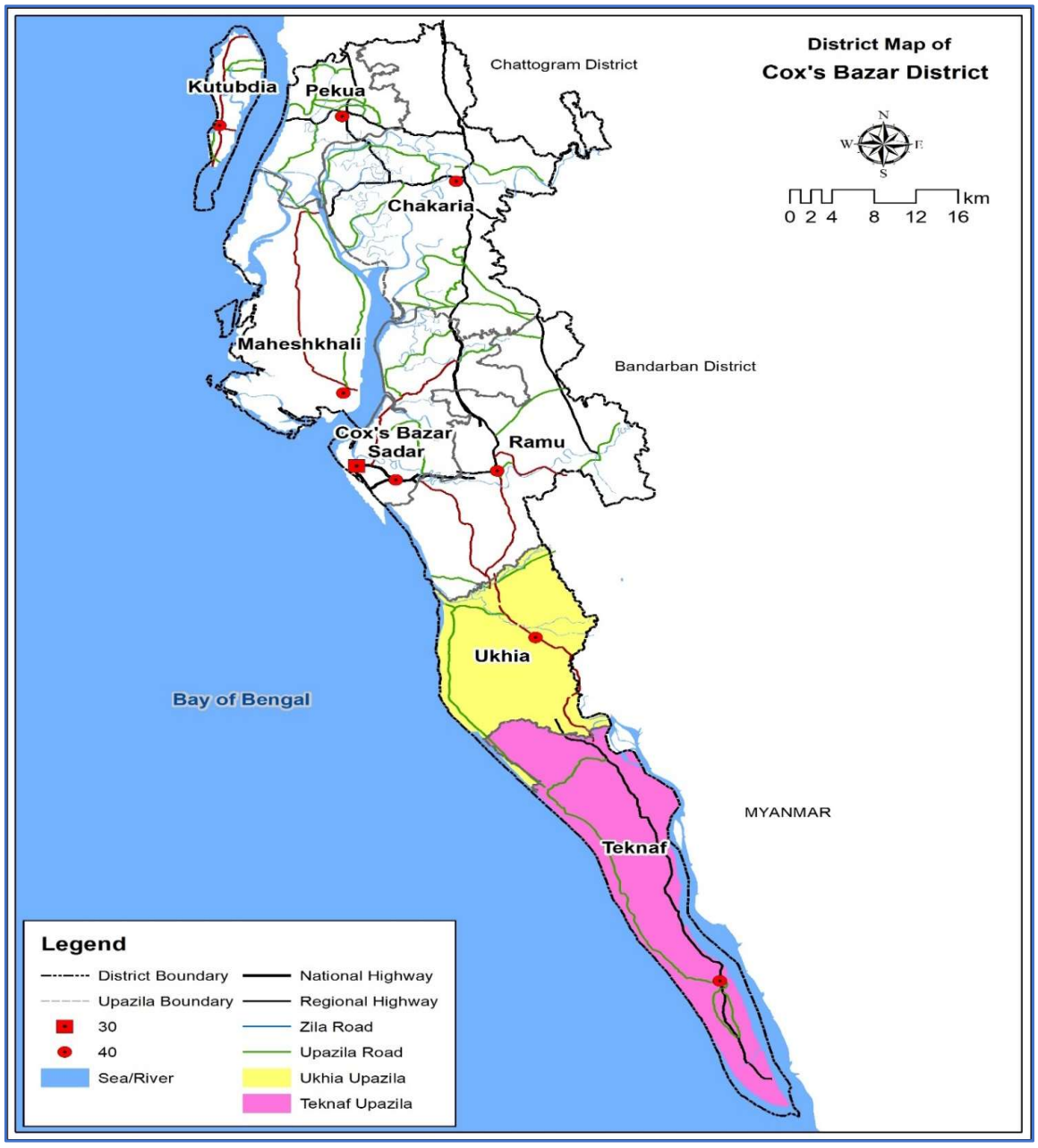

Figure 3: District Map with project location

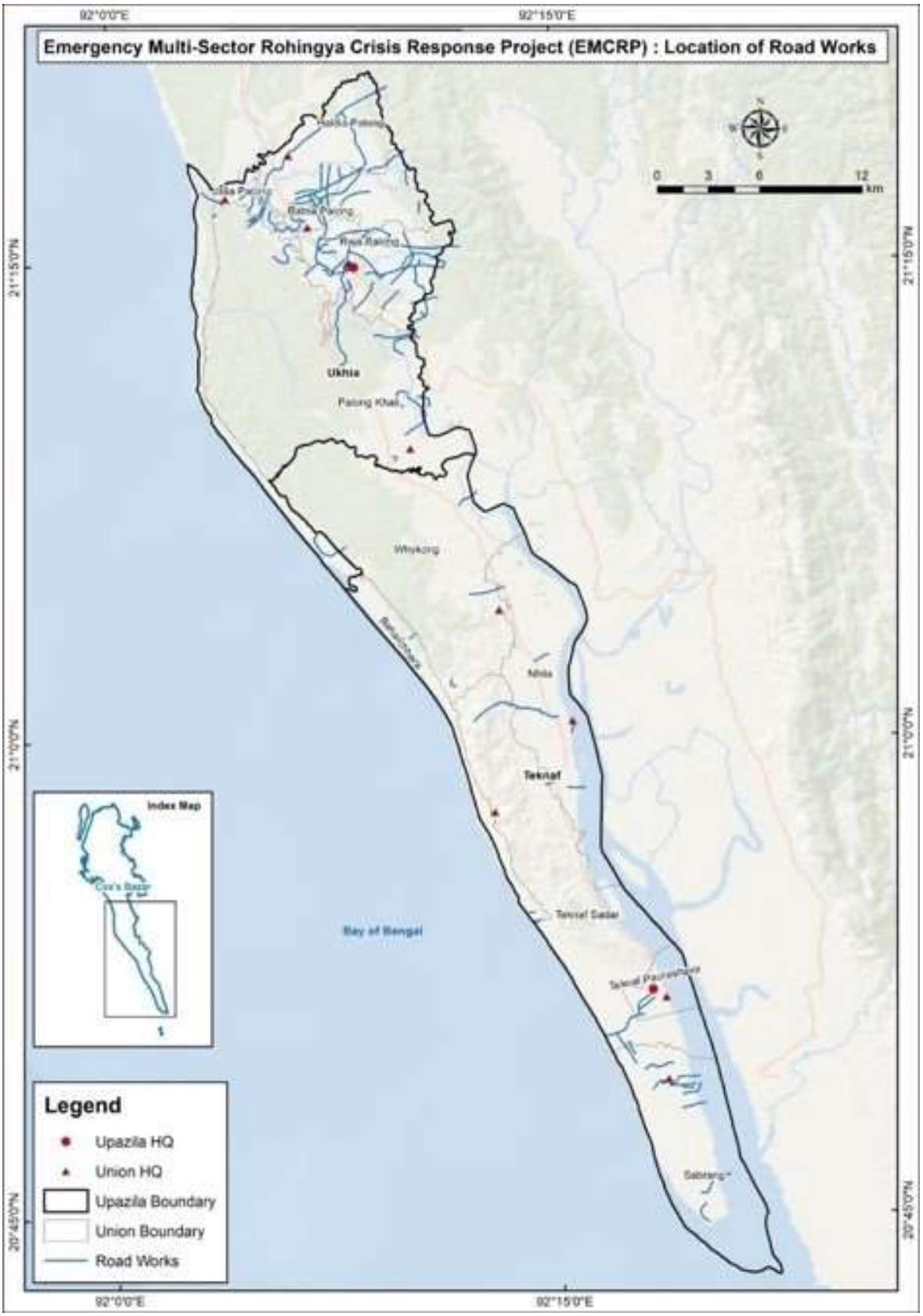

Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

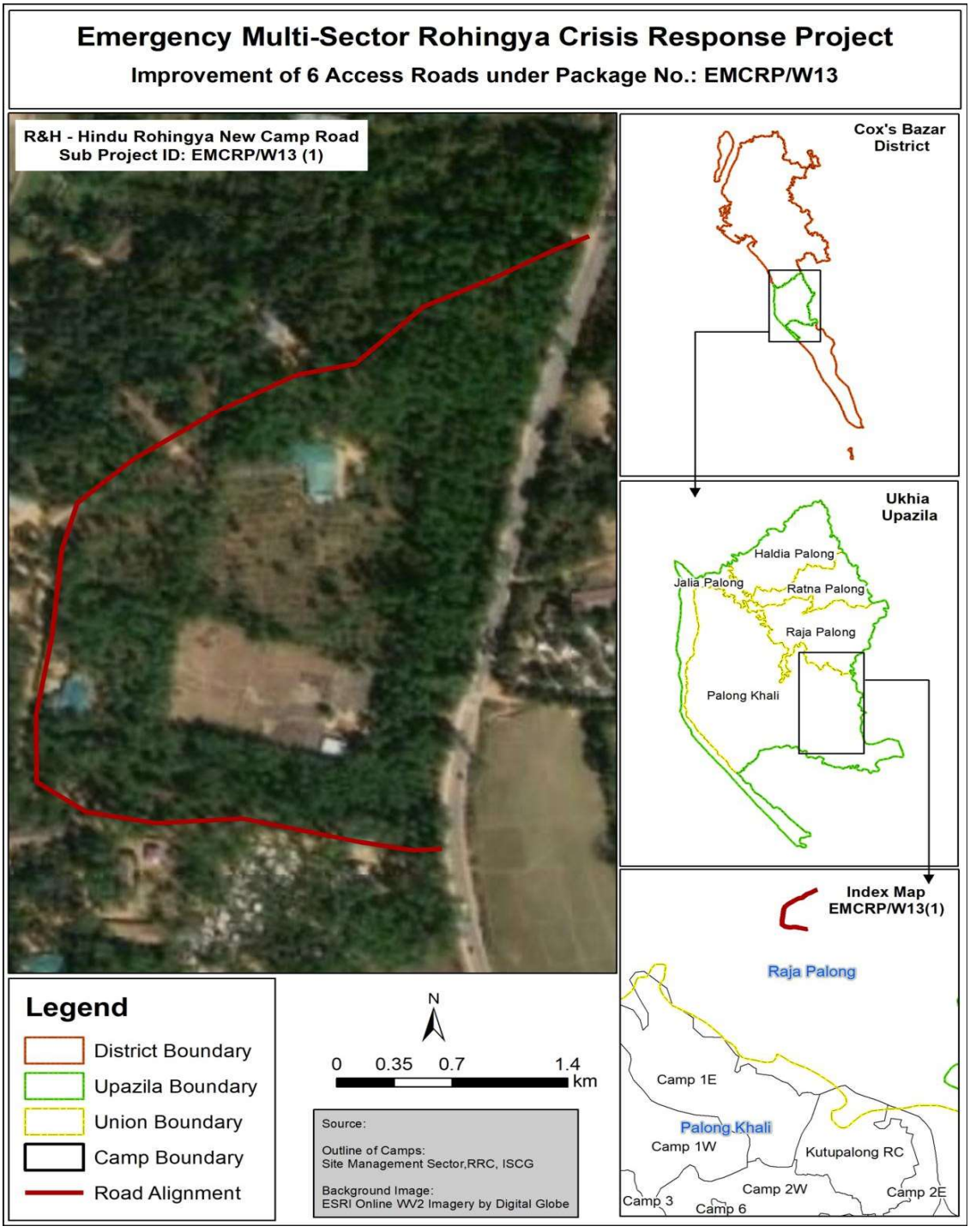

Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:
The Sub-Project is categorized as a hillock village road and this sub-project starts at Baidyaghona Army

road and ends at Thaingkhali Ghonarpara road, which is connected with Rohingya camp no. 13 & 19 with a proposed design intervention of ISG 200mm, two-layer HBB to be laid on an existing alignment stretching up to 520 meters.

Sub-project Location:

The proposed New Hindu Para Rohingya camp road belongs to Rajapalong union, Ward no. 9 under Ukhiya Upazila, Cox;s Bazar. The geographical location of the component is stated below:
Starting Point: Latitude: 21˚13'31.60" N; Longitude: 92˚9'39.78" E
Ending point: Latitude: 21˚13'40.55" N; Longitude: 92˚9'41.55" E

Land ownership
Land is owned by the Government of Bangladesh.

Expected construction period: 6 (Six months)

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

i) Adjacent of the scheme site under the project intervention area: Camp No. 13 and 19.
ii) Impacted area: shown in the diagram and description mentioned in Annex-I
iii) No structures and livelihood will be affected, but several trees will be removed.
iv) DRP relocation is not required
v) Environmental sensitivity: No mentionable eco concerned establishment, no socio cultural site/ elephant corridor were identified. A mosque and community children's learning center or Schools are situated in the locality, but nothing will be affected significantly.

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:

This sub-project is situated within kutupalong village under Rajapalong union of Ukhiya upazila, Cox's Bazar. Cox's Bazar-Teknaf highway is passing east side of the sub-project area. One mosque with Hefjakhana is found along the sub-project area. No scope of disturbance is anticipated. Other important features such as Kutupalong GPS, Kutupalong High School, two temples, two crematory, BRAC School, local bazar etc. are situated within approximately half a kilometer on south side of the sub-project which bring socio-cultural values to the community people. There are no sensitive environmental, cultural, archaeological sites exists in the area of this sub-project. No elephant migration routes exist.

A sketch of the project surrounding area with several features at relatively distant places shown in figure B.1.1 .

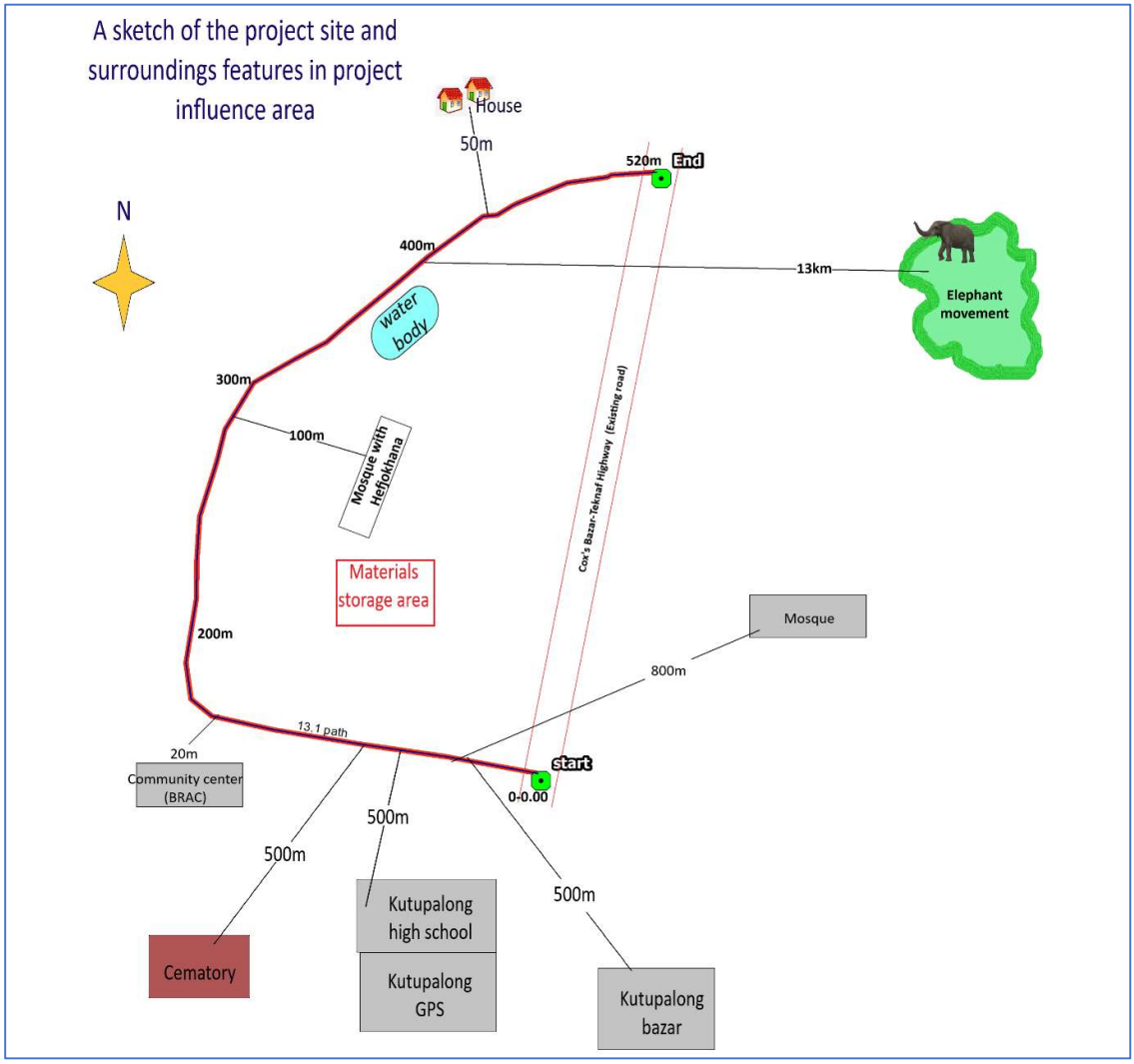

Figure B.1.1 : A sketch of the project intervention area

Location of environmentally important and sensitive areas:

This sub-project location was once environmentally important and sensitive for containing protected forest area but this location has lost its greenery for supporting the lives and livelihood of DRP communities. Local community has, although, started planting trees under social forestation in the areas.

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

No. Elephant migration routes or corridors were present near the sub-project area about 8-9 years ago, but no presence of elephants or their migration routes at this moment. This information is confirmed with maps established by UNHCR/IUCN and the consultation meeting with local stakeholders.

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

Yes. Local community has undertaken social forestation all along the sub-project area. During construction period produced dust will put impact on remaining forests and several numbers of trees may need to cut down.

(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:
Ambient air quality data was not readily available, but quality was apparently good due to the appearance of rural vegetative settings around. But after arrival of Rohingya the number of vehicle movement on the road became too high. Dust is generated through movement of vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor, etc. over the road surface which has caused deterioration of air quality.
Noise:
Noise in the Sub-project area is not a major concern because noise level is within the tolerable limit. Vehicles such as motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface throughout the day and night. These vehicles generate noise but still within the tolerable limit in most cases.

Baseline soil quality:
Soil types are reddish brown muddy and sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

Landslide potential (high/medium/low, with explanation):
Landslide potential is low. Potential erosion/land slide may occur when moderate to high sloping terrains are disturbed for construction of roads. The impacts are negative but very small scale, site-specific within a relatively small area and manageable by mitigation measures.

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH):
Surface water quality: A pond found in the vicinity was the surface water source found during the visiting time, but distantly from the road alignment. Water quality data was not available during the survey period.
Many shallow tube wells (45ft. to 60 ft.) are fitted in local and camp areas, and most of the water usage is sufficed from these sources.
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

*Data source: IWM Study Report

Status of wildlife movement:

Due to settlement of Rohingya Displaced People (RDP) and deforestation, there is little to no wildlife movement in the area.

State of forestation:

In order to accommodate large numbers of Displaced Rohingya People (DRP), hills have been cleared and cut indiscriminately for shelter and settlements have been established on top of small terrain areas. Stairs has been cut into the slope to facilitate access to these settlements. As a result, soil structure became lose to cause soil erosion. Weathering of valuable fertile top soil can make the hills unsuitable to support any vegetation cover which in turn will result in habitat loss, water pollution and water scarcity further

downstream. Newly plantation has been taken place at respective site areas by FAO and other organizations.
Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre-construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): Concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option. Pickup trucks will be more suitable.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: An open space is required to set up a labor camp with associated facilities (toilet for male and female workers, kitchen for cooking, tube-well for water supply facility, and electricity connection) to support the workforce during construction. The space should have enough land area to accommodate a stack yard along with a site office, if possible. This open space should be selected in such a way that workers do not need to travel/walk through a longer distance to reach the sites and the place can be secured with proper fencing with a guard be posted at the entrance. The space or land area can be used on rental basis or under a mutual agreement between the owner and the contractor. The contract/consent document must be kept at the site office, whatsoever the mode of the contract is.
Possible location of labor camps: Next to the labor Camp area or the site office, and within walking distance from the sub-project location.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. The existing road seems to be the best option for transporting materials unto any unloading point in the area. Head load from unloading point to different working locations is easily possible by the assigned contractor.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

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

Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.

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

During the pre-construction period wastes will be generated from some preparatory activities, such as construction of labor camp, site office, material storage/stack yard and associated facilities, etc. and removal of road pavement. All these activities also will be carried out by numbers of local labors. So, around 45 kilograms of construction related wastes, such as bricks, aggregates, leftover cements, sands, etc. will be generated, which are typical solid wastes and a negligible quantity (nearly 5 kg) of bio and non-biodegradable wastes will be generated from the daily necessities of workers and construction staffs, such as food wastes, polythene, papers, plastics, etc. Some chemical waste, like paints, oils, etc. and small amount of solid and liquid wastes from the immediate use of constructed latrines by the workers may also be generated, such as feces and urines.

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

Raw materials: i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates.
Quantity: It is difficult to provide exact figures of raw materials on a typical pre-construction site at this level.

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

Vegetation from social forestry is present in the right of way, mostly within the boundaries of adjacent households and approx. area is nearly 934 sqm, but only 8 nos. of trees might be affected during the construction activities. No borrow pits were found in the area and the current condition shows that there is no aggregated soil on the right of way.

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

The possibility is Low, for stagnant water bodies in borrow pits, quarries for inviting mosquito breeding ground. Since the target area is on high terrain water drains onto lower grounds. However, very small amount of area holds sewage waters in different locations in camp area which can give rise to mosquito breeding.

Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)
Low, there are no existing drainage channels (rivers, canals), but a pond is located beside the sub-project location.

Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced

development: (High/Medium/Low with description) Under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Only some preparatory physical works will be carried out in this phase which has very little scope to trigger landslide.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Since both sides of the road is more or less of similar elevation except in some upland sections along the road length and the soil and hill slope are well compacted, the scale of erosion of lands is very unlikely at this stage.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Dust impact can be high due to poor condition of the road, but other traffic movement impacts such as light or noise impact will not be significant in the pre-construction phase.

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

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): ***Solid waste:*** Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 45 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): ***Type:*** *i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi)Bitumen are the most common type of raw materials to be used in construction period.* **Quantity**: Anticipating the quantity of raw materials to be used needs detail calculation as per design, which is beyond the scope of this report, but presented in engineering design/estimates of the sub-project.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Vegetation is present in some sections of the right of way, but measuring the approx. area is difficult to identify. Aggregated Soil is not present on the ROW. However, a temporary waste dump and equipment yards require approximately 650 square meters of area altogether.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. However, very small amount of area holds sewage waters in different locations in camp area which can give rise to mosquito breeding.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies

(wetlands, marshes): (High/Medium/Low with description) No natural drainage channels are located alongside the road length. However, the existing drains can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low. Potential erosion may occur when moderate to high sloping terrains are disturbed for the improvement of sub-project. The impacts are negative but short term, site specific within a relatively small area and manageable by mitigation measures.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light but low effects of noise and air pollution, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

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

and other disease vectors: (High/Medium/Low with explanation) There is no possibility of stagnant water bodies for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels found in the project area, therefore, 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) 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: Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Low. Concentrated outflow will be carried by proposed drains and culvert.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed HBB road will reduce the pollution generated from dust on the existing poor conditioned road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1: Sub-Project Interventions	Air Quality	Under the subproject intervention the overall score is **low**.	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor monitored by Consultant and PIU	Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection;	Visual monitoring of air quality and if requires, air quality test (CO, $PM_{2.5,10}$) once in construction period in winter season.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Soil impacts	Under the sub-project intervention, the overall score is **low.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.	Construction Contractor monitored by Consultant and PIU	No visible degradation to nearby drainages, *khals* or water bodies due to soil erosion. Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan.	Construction Contractor and monitored by Consultant and PIU	(i)Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires; (iii) No visible degradation to nearby drainages, *khals* or water bodies due to construction activities. (iv)Records should be kept and logged.	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	
					Indicators	Frequency
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is **low**.	Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site	Construction Contractor and monitored by Consultant and PIU	Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health &Safety orientation trainings; Condition of sanitation facilities for workers	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is **low.**	Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents	Monthly monitoring.
	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 with discussion with PIU, Consultant
3:	Wastes	Under the sub-	• Prepare and implement on-site waste	Construction	Complaints from	As work weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
Construction Phase		project intervention, the overall score is **low.**	water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site.	Contractor and monitored by Consultant and PIU	community; Regular inspection of waste management activity; Waste disposal record.	progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and landslides)	Under the sub-project intervention, the overall score is low.	• During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment remain within the right of way and does not disturb the crop.	Contractor, environmental specialist of D&SC	Location of road alignment and slope.	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration: • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury.	Construction Contractor and monitored by Consultant and PIU	-List of materials and sources of materials; -Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low.	• If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialist of D&SC	Complaints from community;	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.	Construction Contractor and monitored by Consultant and PIU	Number of complaints from stakeholders; Use of silencers in noise-producing equipment and sound barriers; Noise Level following decibel	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	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; Number of complaints from stakeholders; Records of air quality inspection.	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is **low.**	• Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. • Local residents should be kept informed about planned Works	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	
					Indicators	Frequency
4. Post Construction	Road Safety		• Install traffic signs for speed limit, speed breaker where needed, Mile post and Create adequate **traffic** detours, and sufficient **signage** & **warning** signs, Post speed limits and suitable bending on the road. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc.	Construction Contractor, environmental specialist of D&Sc	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**.	• Replantation of trees during monsoon period • Maintain of trees properly • Check survival of trees and replant the dead trees	Construction Contractor, environmental specialist of D&Sc	Number of complaints from stakeholders; Records of trees number and tree plantation	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is **low**.	• No advertisement/boardings shall be allowed within the Right of Way limits of the project road. • Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. • Clear smooth speed breaker/rough surfaces should be clear in views. • Regular maintenance of road surface and shoulders.	LGED	Number of complaints from stakeholders;	During Operation under LGED's regular maintenance program in each 3 years.

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

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

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

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

Appendix-02

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

ESMP for Access and evacuation Roads:

Project Stage	***Potential Environmental & Social Impacts/Issues***	***Proposed Mitigation Measures***	***Institutional Responsibilities***	***Supervision Responsibility***
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All of the project stakeholders should be consulted • Separate community level consultation meeting with the potential affected HHs • Consultation meeting with host communities about the project objectives and scope of works	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. • In case of unavoidable circumstances, alternative access will be provided.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	• Selection of sub-project sites and all implementing interventions must take place outside of the	PIU	Environmental Consultant of PIU,

	conflict	elephant 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 paths to avoid the flash flood or any kind of surface runoff. Keeping 20 meters distance from water bodies or natural water flow paths should be maintained, if possible. • Tubewell location within the construction site/camp should not near any kind of latrine and soak well which could be contaminated by those. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to the locations wherever necessary. • Avoid disruption to human settlement, and social, cultural and religiously sensitive areas. • Avoid disturbance to existing slop and any natural drainage system. • The contractor shall ensure that site preparation activities do not lead to any disruption to living or activities of the local residents.	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. • Contractor must provide personal protective equipment (PPE) such as ear plugs, earmuffs, helmets, etc. to the persons working in high-risk areas and wherever required.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Acceptable range of emission of CO, particulate matter [SPM (**Suspended particulate matter)**,	Contractor	Environmental Consultant of PIU,

		PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. • Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level		PSC
Construction Activity	Safety Issues	• Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. • Records of every training must be kept at site. • All kinds of Child labour are completely prohibited in every site. • Every construction materials storage site will be well fenced by Tin and safety caution tape.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water	PIU & Contractor	Social Development Specialist and

		sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be taken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts.		Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

		• 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: • Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site • After completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management from respective authority or Environmental Specialist at PIU in difficulties to reach that authority.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile	• All construction equipment Will be properly inspected timely. • The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. • preparation of proper walkways and clearly designation as a walkway has to be ensured; all	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

	plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box containing adhesive bandages, antibiotic ointment, antiseptic wipes, aspirin, non-latex gloves, scissors, thermometer, etc. in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration		

		tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
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. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	PIU	Environmental Consultant of PIU, PSC. Union Member

Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time.	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the construction)	The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder.	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

Waste Management Plan Principles:

The Contractor shall develop a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food, and organic waste, etc.) prior to commencing of construction and submit to LGED for approval. The plans must include the following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

•Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.

•The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

•Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in

the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.

•Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.

•Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.

•All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.

•Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.

•Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;

•Burning of any type of wastes in a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, 01714980171
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Reviewed by: Md. Saiful Islam, IC, Field Level Environmental Specialist, +8801913442006

Appendix-03

Cost of Environmental Enhancement Works in BOQ

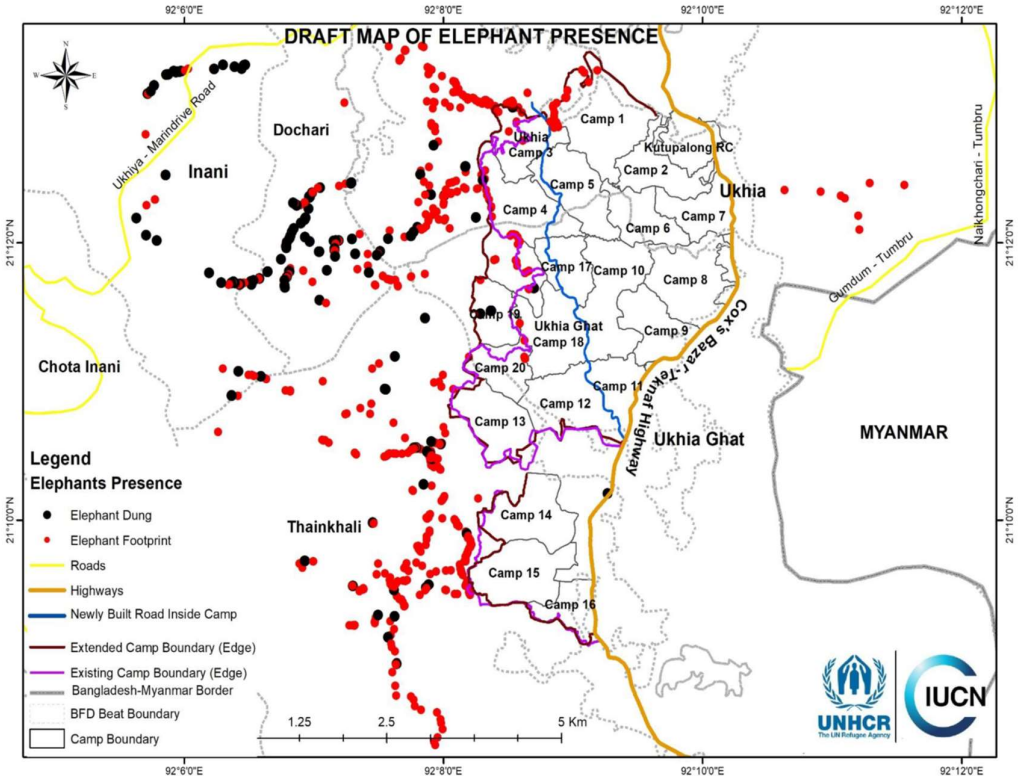
In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope & 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)	LS	@10,000 Tk.	10,000
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	1 no.	@5000 Tk. Per box	5,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	km	Lump sum @ 10000	10,000
4.	**Health safety warning sign** Health safety warning sign at the site office and as per direction of the E.I.C.	LS		15,000
5.	**Providing Safety gear** Providing Safety gear package like safety jacket, hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	LS	@ Tk. 20,000	20,000

Sl no.	Description of item	Quantity	Unit price	Total amount
6.	**Tree plantation** 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.	50nos.	@ Tk. 42.70 for each tree.	2135.0
7.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@10,000	10,000
8.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	2 nos.	@5000 tk for each filter	10,000
9	**Construction of Labor shed**	LS		35,000
	Subtotal Bill: Environmental facilities			117,135

Appendix-04



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

Appendix-05

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time: 11:35 AM ..... Date: 23/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ New Hindu Para Rohingya Camp Road
মত বিনিময়ের স্থানঃ কুতুপালং পাহাড়া নুর মোহাম্মদের বাসা

ইউনিয়নঃ রাজাপালং
ডাকঘরঃ উখিয়া
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	মনোরঞ্জন শীল	৫৩	পুরুষ	কুতুপালং পাহাড়পাড়া	মনোরঞ্জন
০২	আনু আক্তার	২৮	নারী	"	আনু
০৩	আক্কেলা আক্তার	৩৫	"	"	আক্কেলা
০৪	নাছিমা আক্তার	৩৩	"	"	নাছিমা
০৫	খালেদা আক্তার	২২	"	"	খালেদা
০৬	রুজিনা	২৬	"	"	রুজিনা
০৭	রুজিনা	২৪	"	"	রোজিনা
০৮	বিশু কান্না	৪০	পুরুষ	"	বিশু কান্না
০৯	ছুটন কান্না	৩৯	"	"	ছুটন কান্না
১০	নুর মোহাম্মদ	৪০	"	"	নুর মোহাম্মদ
১১	রহিমুল্লা	৪০	"	"	রহিমুল্লা

Public Consultation Participants' List

Appendix-06


Bamboo fencing and Tin shed fencing besides the sub-project


Different types of trees on the edge of the right way 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 Shafi Ullah Ghata Rohingya Camp Road

Under the package no. EMCRP/W13

April-2020

Development Design Consultants Ltd.

ACRONYMS

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

Contents

Executive Summary

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

This proposed Shafiullah Ghata Rohingya Camp road belongs in the area of Camp-16 in Palongkhali union, Ward-5 under Ukhiya upazila. From the starting point near to Camp in Charge (CIC) Office of camp-16 and adjacent to Cox's bazar-Teknaf R&H Road this road stretches further 560 meters from east to west connecting to Mocharkhola road. An overhead water tank is located at the starting point of the road, though at least 15 m distant from the road alignment. Apart from some dispersed human settlements along the road, though at sufficient distances from the alignment, there are some important socio-cultural and religious components along the road length- three Mosques and a Graveyard are among them. There are six learning/training centers located at different chainages along the road length and a playground was found with bustling presence of children at 0+329 chainage during the survey period. Narayonkhali khal is present on the west of the proposed site. The west part of the proposed road, which is nearly 110 m in length, will pass through a wide open field and connect the end point of the road. Apart from this feature no other sensitive environmental, cultural, archaeological, religious sites exist. 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. All these impacts are site-specific and can be minimized by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

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

1. INTRODUCTION

1.1 Project Background

An estimated 730,000[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 hosting community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

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

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

This document represents the Findings from Environmental Screening of the sub-projects under **'**Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District**'; with a package name-EMCRP/W13.**

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W13

Description of Sub-project :

Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District:

(1) R&H Road to Hindu Rohingya new camp (2) Shafiullah Ghata Rohingya Camp road (3) Thainkhali Gonarpara to Tajnimarkhola Road to Tanjimarkhola camp different camps (4) Union Parishad to Chorakhola Road to Hakimpara camp (5) Thainkhali to Boddhogona Road to Tanjimarkhola camp and (6) R&H at TV tower road to camp 7 connecting road in Ukhya Upazial of Cox's Bazar District.

Sub-project Component no. 2. Shafiullah Ghata Rohingya Camp road

Component Location:

i. ID :	**ii. Ward No.:** 05	***iii. Mouza:*** Mosa Khola
iv.Village : Shafi Ullah Ghata	***v. Name of Union:*** Palang Khali	
vi. Name of the Upazila : Ukhiya		
vii. Construction Year : 2019-2020		***viii. Length (m) :*** 560m
ix. Road Width(m): *Crest width usually is 5.5 m, where the carriageway varies from 3.0 to 3.7m along different chainage of the road, depending on the availability of public land and extent of physical obstacles present along the road length.*		
x. Water Status : Available	***xi. Water Source:*** Shallow Tube-well & Deep Tube-well	
xii. Distance from UZHQ : 20 Km.		

GPS Coordinates	Longitude Value: 92^0 9' 8'' E (Starting Point) Latitude Value: 21^0 9' 25'' N (Starting Point)
	Longitude Value: 92^0 8' 58'' E (Ending Point) Latitude Value: 21^0 9' 26'' N (Ending Point)
Condition of Road	Bad (Earthen)
Communication Source	Radio & Mobile Network

Subproject Interventions:

1. HBB road
2. 4 nos. cross drain (dimension: 750mm*750mm),
3. 2 nos. box culvert (dimension: 2m*1.5m) at ch. 415m & 435m.
4. road safety Guide Post & Name Plate

Implementing Agency : Local Government Engineering Department (LGED)

Expected construction period: 2020-2021

Estimated total cost of component: 84,20,034.00 (Tk.)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the first consultation meeting with local community from 11:00 AM to 12:30 PM on 25 December, 2019, refer to **Figure 2.1.1,** Participants' List of that public consultation event are attached in **Appendix-5.** Several more consultation meetings in different modes were carried out as well. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects. The following table depicts details of several of those consultation meetings with outcomes.

Consultation Date	Time	Venue	Mode of Consultation	Stakeholder/ Participants	Outcomes
25th December 2019	11:00 AM	Shafiullahghata Abdul Gaffar's Shop; 5 No. Palongkhali Union, Balukhakhali, Ukhiya	Focus Group Discussion	List is attached in Appendix.	Participants were informed about the sub-project interventions, potential impacts and management options, their informed views and comments were taken into consideration and appropriately reflected into the ESMP.
18th February 2020	6:00 pm	Office of the UE, LGED, Cox's Bazar	Direct conversation	UE, Resident Engineer, Field Engineers, LGED Staffs	Consulted about the survey plan for the 2nd detail survey and UE office assured of putting all efforts in enforcing ESMP in the field.
19th February, 2020	Repeatedly as and when required.		Telephonic consultation	Md. Sultan Mahmud, Asst. Site planner of UNHCR	Consulted about the survey plan and the site was found mostly free from any direct physical impacts
19th	Repeatedly		Telephonic	Shegufta	

February, 2020	as and when required.		consultation	Newaz, Coordinator of site management, UNHCR	associated with the proposed road works. Reciprocal assurance and commitment were rendered for the successful implementation of the component.
19th February, 2020	3:00 pm	CiC office in Camp 7	Direct Conversation	Subash Chandra Sheel, Camp Mgt. Support-Dty Lead, BRAC, Cox's Bazar.	He assured of lending all hands from him and his organization in successful implementation of the project.

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 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 environmental issues. (iii) Consultation with interest groups and the public.

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

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

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

2.3 Suggestions and recommendations of the participants

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

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

3. ENVIRONMENTAL SCREENING

3.1 General

Environmental Screening is the preliminary process of Environmental Assessment for the identification of significant impacts on important environmental components, depending on the nature and size of the project, its interventions and technology, location and time; and evaluation of screening findings will decide whether any further comprehensive assessment study is required or not. This assessment procedure will follow a definite scope of interventions, for example, this particular study will be based on the qualitative assessment of the surrounding environment of the particular site before any physical intervention starts, and maximum project impact area is considered to be half a kilometer of the radial distance around the site.

3.2 Assessment of Screening Findings

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment 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 along with the identification of the impacts and their extents Environmental Screening form, as adopted in **Appendix 2** of the Environmental and Social Management Framework of EMCRP, was administered. The screening data and information for this Sub-project and details screening summary have been formulated and shown in **Appendix-1**

The proposed sub-project is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. Existing alignment of the road through the chainage 000-420 m was found earthen and in deteriorating condition with narrowed strip in some places, and the rest part has to be developed through an open field on the west side of this road component. Both sides of the existing road are characterized by the presence of CIC office, a mosque, couple of training and BRAC learning centers, Relief distribution center, MSF hospital, Rohingya houses and shops and some other establishments. A small progression of hilly afforested areas on the north of the existing road and a wide-open field through which the western end of the proposed road alignment would pass, are the specifically notable environmental features that should receive best consideration throughout the preparation and construction periods. This component of the sub-project will establish direct road connection between camp 15 and camp 16.

There are several trees that may be damaged or uprooted for road widening, but, these road side trees could be left unharmed and conserved in road shoulders during the construction period, if decisions are made prudently. No particular water bodies are anticipated to be affected by this sub-project works. Impacts on air quality during the construction phase may turn to bit negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage).
Several numbers of shelters, fencings, solar lamp posts, drains and other structures will be rehabilitated or resettled under the due care of CiC and organizations responsible for respective camp development and management, and an ARAP (Abbreviated Resettlement Action Plan) has been prepared to this end.

No mentionable eco-concerned features and establishments or socio cultural sites/ elephant corridor (checked with local IUCN representative) are found in the vicinity.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict were reported in 2018. The IUCN has conducted a study on such type of conflict. Consultation meetings held at the site also revealed that there was no presence of elephants across the areas. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

3.3 Climate Change Impact

3.3.1 General Climatic Consideration of the area

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

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

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

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

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

3.3.2 Site Specific Consideration

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

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only , and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sq.m for a single arrester. 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 component area, it can be assumed that possible impacts would be largely construction-related, and could be addressed through adoption of good engineering practices; good housekeeping; better *in-situ* construction materials management; and observance of health and safety protocols during the implementation period.

Specific Environmental and Social Management Plan (ESMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this plan is to formulate measures which will mitigate the adverse impacts on various environmental components, and protect environmental resources and enhance the value of environmental and social components where possible. Additional social management measures beyond the scope of environmental and social measures delineated in this document are perceived and suggested by the Social Safeguards team in their Social Screening Reports.

Among the notable prioritized management measures, contractor must adhere to the best practice HSE (Health, Safety and Environment) management procedure and regular adoption of dust control procedures (spraying of water at least twice a day) to minimize the effect to the least level. This HSE management procedure targets both groups- the working staffs/labors directly employed by the contractor and the people living in the catchment area or simply the users of the road. Noise impacts must be controlled efficiently due to the presence of numbers of learning/training centers along the road length and construction works must be limited in day time; and the time and duration of any potential noisy works should be communicated with the surrounding people fairly in advance. Cut and fill operation along the road length and adjoining hilly terrains will be balanced as far as possible and proper care will be taken so that slope or toe of the road embankment remain within the right of way.

As the west part of the road requires a massive earthworks, borrow pits may need to be excavated; and in that case, those should be within 3 m distance from the road toe line and should not affect the stability of the road or any structure on it. Further construction related activities which may

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

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 upazilas 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 areas and reinstate some parts of the ecosystem services, though primarily.

4.2 Health and Safety Measures under COVID situations

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

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

a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.
b. All workers, supervising and supporting engineers and staffs, consultants, service providers and other concerned parties must adhere to the personal health and hygiene rules, social distancing, and other protective measures in full in order to protect

themselves and contain the infections any further. Necessary training and awareness campaign will be aligned with the specific sub-project scenario and prevailing conditions.

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

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situations should be allocated in consultation with project PIU.

4.3 Cost of Environmental Enhancement Works in BOQ

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

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

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

6. LIMITATIONS OF THIS STUDY

Bangladesh government has imposed a nationwide lockdown to curb the spread of the novel coronavirus in the wake of series of deaths and infections. Authorities declared a ban on passenger travel on all sector from March 24 while all public transport on roads have been suspended from March 26 to stem the spread of virus, officially known as COVID-19. All office works have been postponed and an intended visit to the sites for further consultation with the relevant stakeholders has had to cancel due to this crisis. Therefore, some relevant information and arrangement needs awaiting for recovering this pandemic crisis.

Further, during the consultation, people living in the area and along the site were primarily targeted, though local dialect and Burmese language sometimes posed difficulties in understanding peoples' views. The safeguards team put their best efforts in meeting local representatives and Camp in Charges (CiCs), different sector coordinators, responsible agencies for site development and management while went to any respective road to survey. However, difficulties in adherence to the meeting schedule during the stringent working hours in camp areas have been observed very common on different occasions, therefore, telephonic consent or views were taken in many cases.

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 component. There will in fact be tremendous benefits from recommended mitigation and enhancement measures and major improvements in quality of life, opportunities in business and trading, jobs and ensuring social safety and security will be achieved once the scheme is in operation. The conclusions of the Screening study can be summarized as follows:

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan. These issues might be problematic if necessary mitigation measures, as suggested in ESMP, would not be properly taken into consideration.
- The project will create employment for the workforce 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 & Monitoring Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities. The ESMP mainly focuses on managing, mitigating and reducing the impacts exhibited in design, construction and operation phases.

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 component within shortest possible period of time, and with great care and efficiency.

Appendix-1

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District; EMCRP/W13.

Name of the component: Shafiullah Ghata Rohingya Camp road

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

Estimated total cost of sub-project (in Taka): 15,66,50,441 tk

Estimated construction period duration: 6 (Six) months

Estimated total cost of the component (in Taka): 84,20,034.00 (Tk.)

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years, but Government policies will determine here about the O&M period inside the camps.

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

Name of Community/Local Area: Shafiullah Ghata, CIC office of camp 16

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): Improvement of Shafiullah Ghata Rohingya camp road from CH. 00-560m by HBB and 4 nos. cross drain (size: 750mm*750mm), 2 nos. box culvert (size: 2m*1.5m) at ch. 415m & 435m. (Technical Report 2019, EMCRP).

Estimated footprint / land area for this sub-project is 1680 sqm.

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

This proposed Shafi Ullah Ghata Rohingya Camp road belongs in the area of Camp-16 in Palongkhali union, Ward-5 under Ukhiya upazila. This road has a starting point near to Camp in Charge (CIC) Office of camp-16 and adjacent to Cox's bazar-Teknaf R&H Road stretching 560 meters from east to west connecting with Mocharkhola road. Existing alignment through the chainage 000-420 m was found earthen and in deteriorating condition with narrowed strip in some places, and the rest part has to be developed through an open field on the west side of this road component. Both sides of the existing road is characterized by the presence of CIC office, a mosque, couple of training and BRAC learning centers, Relief distribution center, MSF hospital, Rohingya houses and shops and some other establishments. A small progression of hilly afforested areas on the north of the existing road and a wide open field through which the western end of the proposed road alignment would pass, are the specifically notable environmental features that should receive best consideration throughout the preparation and construction periods. This component of the sub-project will establish direct road connection between camp 15 and camp 16.

Important Environmental Features (IEFs) near site:

Chainage Length of the sub-project: 560 m. Detail Environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table: Features along the Chainage length of the Sub-Project

Chainage (m)	Left	Right	Environmental/Socioeconomic features
000-300	L		CIC Office (Camp-16), Mosque, Skill Training Center, Rohingya Shop, U-Drain
		R	Learning center, Camp Information & Coordination Centre, Distribution Center, U-Drain, small Hills
300-600	L		U-Drain, Distribution Center, Mental Health Service Center, Rohingya Households, SAM Center, MSF Hospital, open field on the western end.
		R	U-Drain, Rohingya Households, Learning Centre (BRAC), Play Ground, open field on the western end.

Figure : Starting Point of Shafiullah Ghata Rohingya Camp Road

Overall Comments

Team members from D&SC conducted consultation meetings with DRP and local community regarding the sub-project activities. (Please refer to figure 2). DRP Community and their Leader (Majhi) have no objection regarding the implementation of said component of the sub-project. Nonetheless, several of the participants expressed their concerns whether they needed to relocate their households for this construction works. It has appealed to their negative instincts that this intervention might cause the demolition of their settlements.

The participants were made understood that this project's scope of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. But the existing road width, position of different structures and establishments along the road length, and the need for optimum clearance for passage of vehicles and human traffic are urging for widening the road in several places, which may need to rehabilitate numbers of shelters, fencings, drains and other structures. All these infrastructural and non-infrastructural rehabilitations and replacement will take place under the direct guidance and supervision of Camp-In-Charge (CiC) along with organizations responsible for respective camp development and management. Social safeguards team of the project has prepared ARAP (Abbreviated Resettlement Action Plan) to this end, which will be submitted to World Bank for

further smooth processes. This state of development has also been consulted with the participating stakeholders. Moreover, other issues have also been brought to their attention, such as, drainage system has also been included into the design of the component of the sub-project, since runoff from higher grounds are also a concerning matter during rainy season.

The area was once forested, but now denuded of trees, though some homestead vegetation is still soothing the eyes. Some of those trees may need to be removed or damaged during the construction period; sufficient precaution has to be adopted all along the construction period to avoid the potential loss and in case of any compensation against tree-cutting or removal there will be appropriate provision in ARAP and suggestion for financing. Further, people (DRP) living in the locality was also concerned about the dust and air pollution that are usually generated during the construction period and they were assured of taking the proper management/mitigated measures throughout the period.

Labor engagement from DRP community was a common demand from every participant in a consultation meeting and that would be ensured in case of works to be carried out inside the camps, except the engagement of some skilled labors for specified responsibilities.

The proposed road would provide a direct communication network from camp 15 to camp 16 and will also connect the Cox's bazar-Teknaf R&H Road. This communication network would support the ongoing relief distribution and other associated support services in a more effective and congenial way and ensure better living and socio-economic condition for the people living in the catchment areas.

The completed environmental screening form is given below.

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 yards and human wastes will be generated in labor camp. Dust and noise are among the nuisance that may be generated 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 component no historical sites were identified. This proposed Shafi Ullah Ghata Rohingya Camp road belongs in the area of Camp-16 in Palongkhali union, Ward-5 under Ukhiya upazila. There are three mosques near the site (within 1 km) and among those, one is located within several meters from the proposed site. A children's playground is found close to the road. A wide-open field on the western end of the road shall provide the space for additional length (approx. 110 m) of the proposed road to be constructed through it. A small progression of hilly afforested areas on the north side of the existing road is also found. Slight disturbance to these sites may take place by the preparation and construction works of this sub-project component. Strict measures related to HSE and good engineering practices have to be upheld in the site to contain and lessen the impacts to the least level. Elephant migration routes are not present in or around the area, which has also been confirmed by the participants in the consultation meeting, neither any forest is present in the vicinity. Only homestead garden/ vegetation is present at some chainages in contiguous home areas.

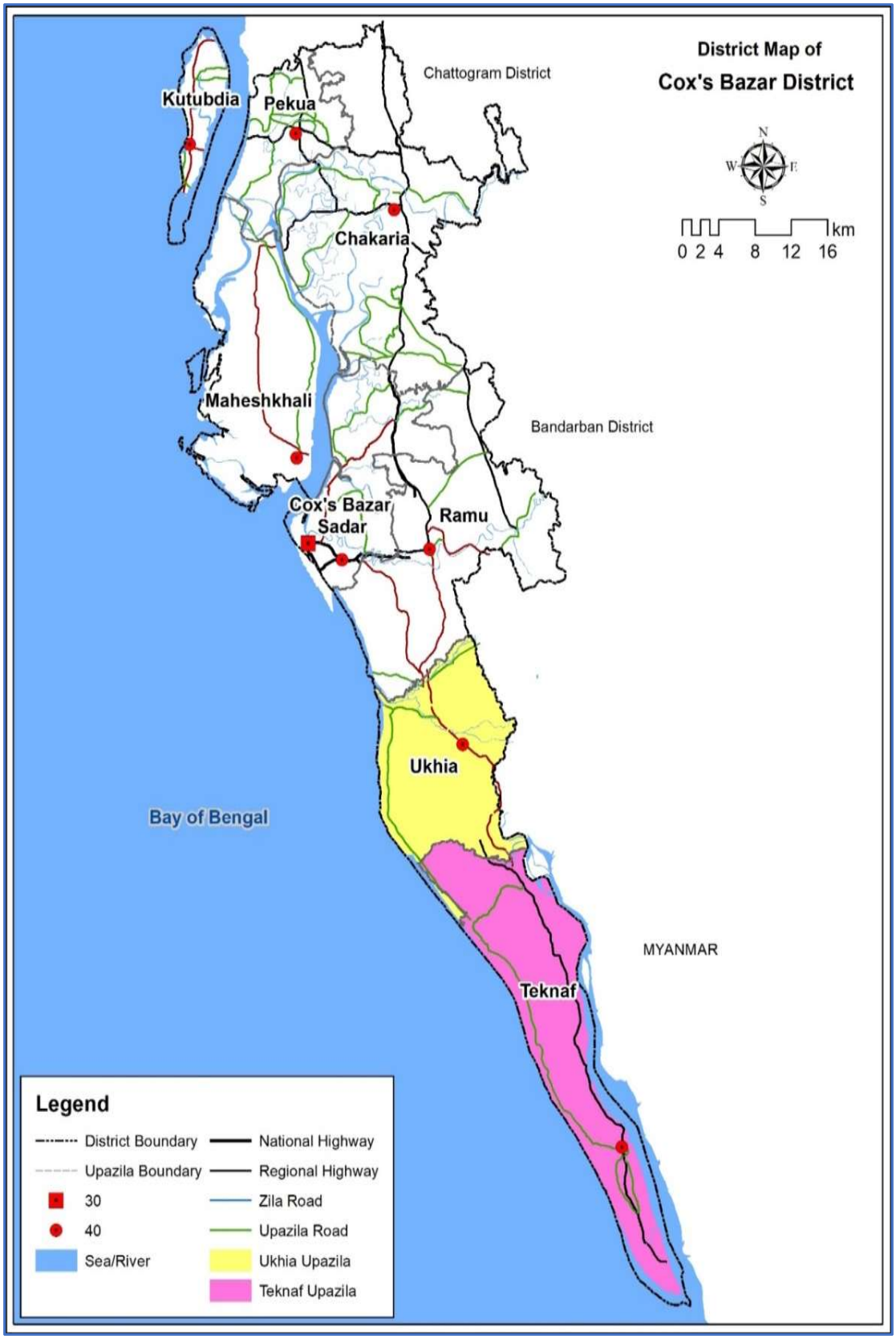


Figure 3: District Map with project location

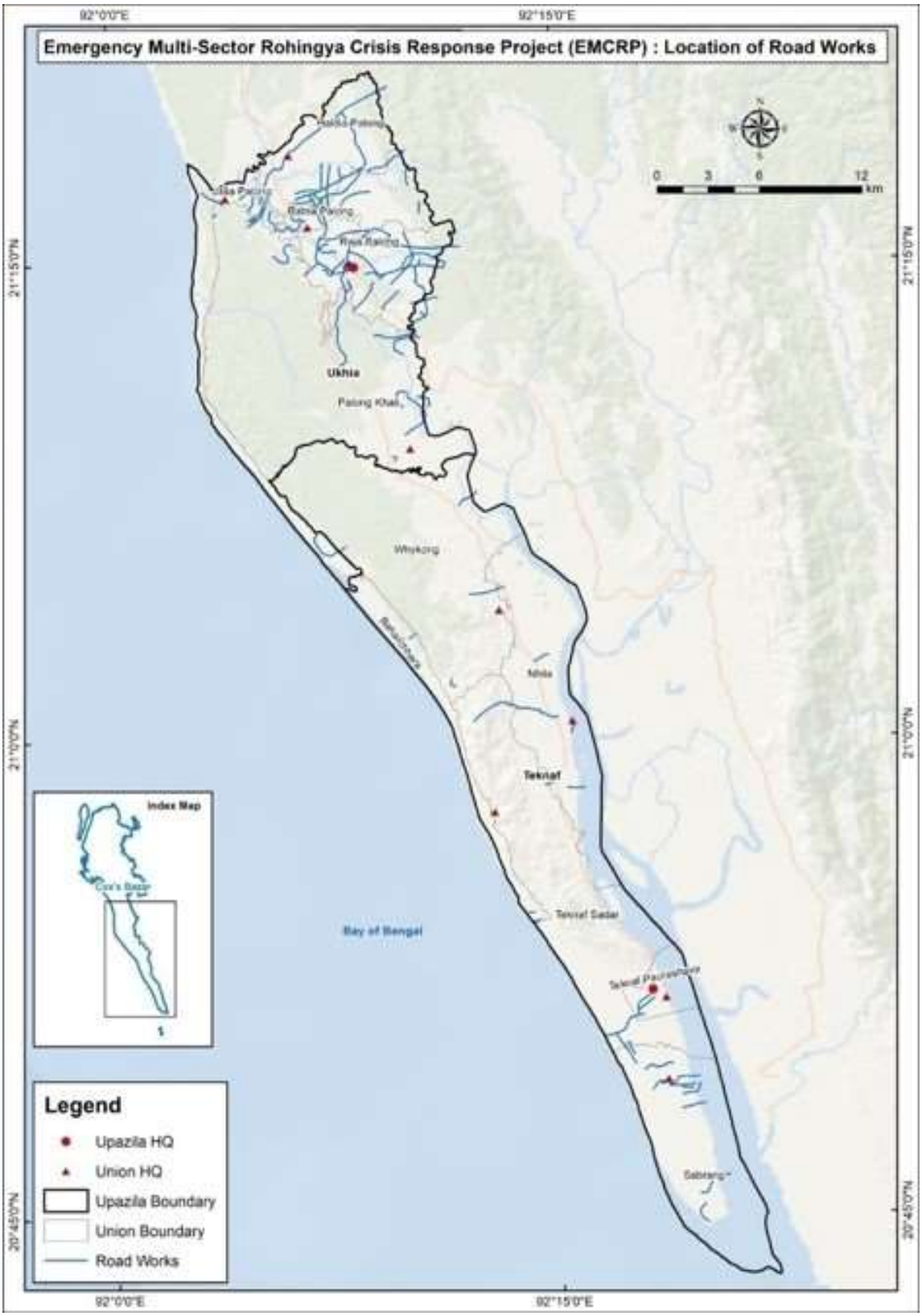


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

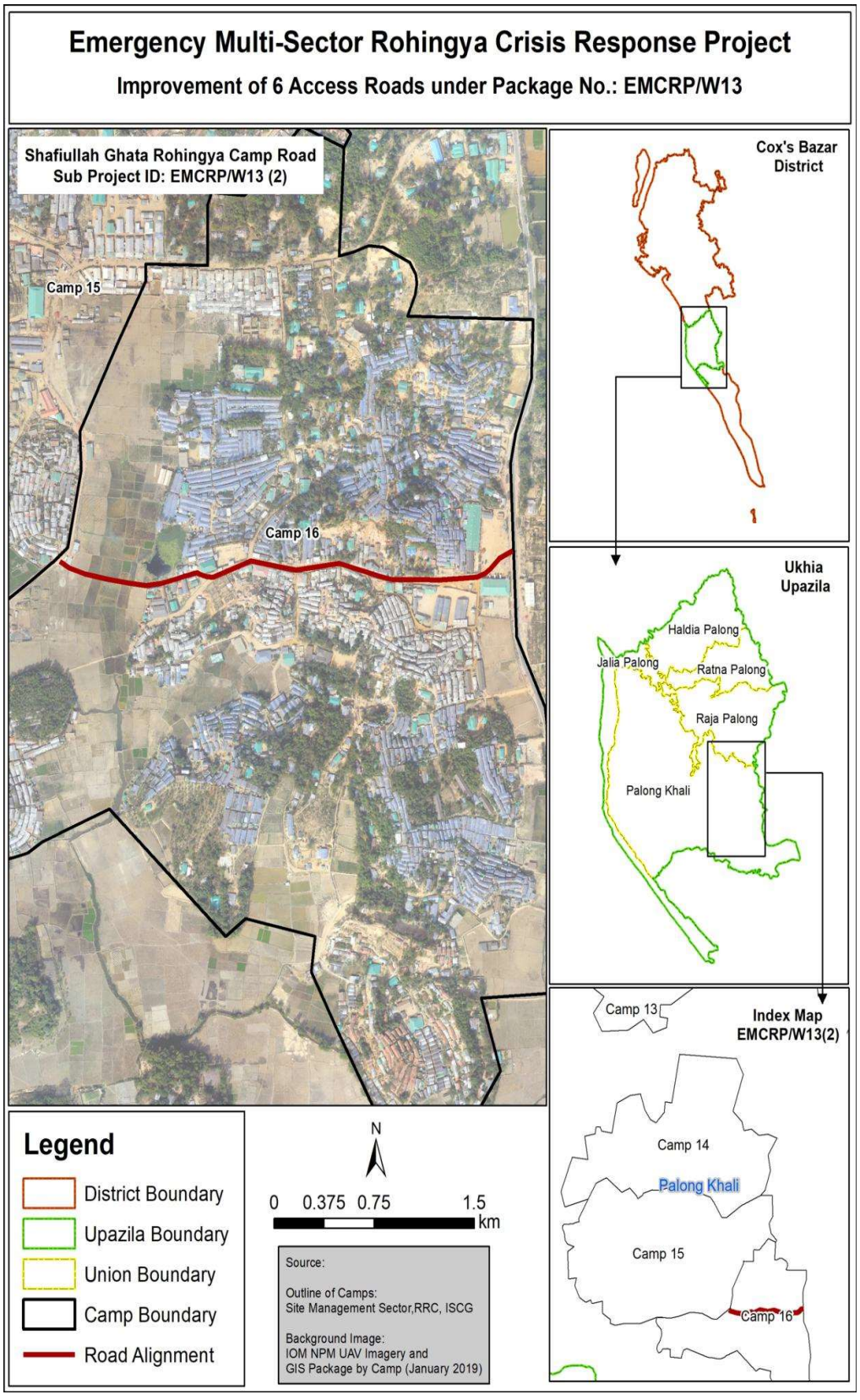


Figure 5: Upazila Map with Sub-project component location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions: The Sub-Project component is categorized as a village road with a proposed design of ISG 200mm, One Layer BFS and two-layer HBB for 560 meters.
Sub-project Location: This proposed Shafi Ullah Ghata Rohingya Camp road belongs in the area of Camp-16 in Palongkhali union, Ward-5 under Ukhiya upazila. This road has the starting point near to Camp in Charge (CIC) Office of camp-16 and adjacent to Cox's bazar-Teknaf R&H Road and is stretching 560 meters from east to west connecting with Mocharkhola road. This road will establish connection between camp 15 and camp 16.
Expected construction period: Six (6) months.
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or cultural assets): Please also explain any analysis on alternative location was conducted: i) Adjacent of the scheme site under the project intervention area: Camp No. 16. ii) Project influence area considers the spaces stretching 50 m on each side from the centerline of the proposed road. A mosque, a playground, several learning and training centers, health service facilities, relief distribution centers, etc. are present within the influence area. There is very less likely chance for these features/structures to be affected by the construction works. A small progression of hilly afforested areas on the north side of the existing road and a wide open field across the western end of the proposed length of the road are the environmental features that must receive special care throughout the construction period. iii) Several numbers of shelters, fencings, drains and other structures will be rehabilitated or resettled under the due care of CiC and organizations responsible for respective camp development and management. iv) No particular water bodies will be affected, but several trees may be damaged or uprooted for widening the road width. Social safeguards team of the project has prepared ARAP (Abbreviated Resettlement Action Plan) to compensate this loss. v) No mentionable eco-concerned features and establishments or socio cultural sites/ elephant corridor (checked with local IUCN representative) are found in the vicinity.

Section B: Environmental Screening

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

Description of cultural properties (if applicable, including distance from site): In the proposed area of camp no. 16, DRP houses are located on both sides of the proposed road- on top of mound or hillock. Some parts of those elevated areas, on the eastern side, of the camp are leased to local people to practice social forestry. Nonetheless, since the influx, this forest is subject to degradation and deforestation. Previously, Elephant movement was present in these forested areas but in present days elephants are not observed at all.

Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of the proposed road include forested land as mentioned above, 3 Mosques and 1 Graveyard and a wide open field in the vicinity. Narayonkhali khal is present on the west of the proposed site. Apart from these features no other sensitive environmental, cultural, archaeological, religious sites exist.

A sketch of the project site and surrounding features at relatively distant places are shown in figure B.1.1 and locations of sensitive institutions in the project surrounding areas (within 30m buffer zone) are shown in figure B.1.2.

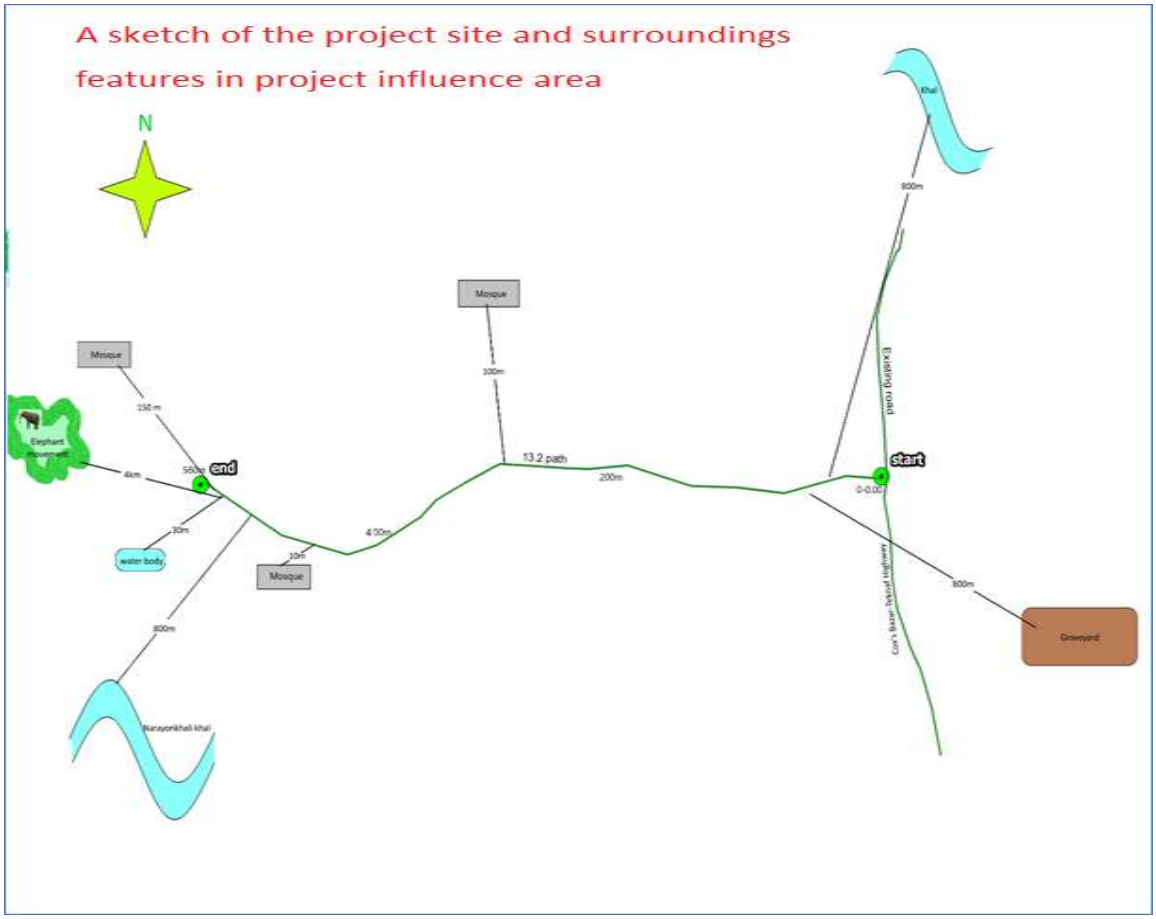


figure B.1.1 : A sketch of the project site and the surrounding area

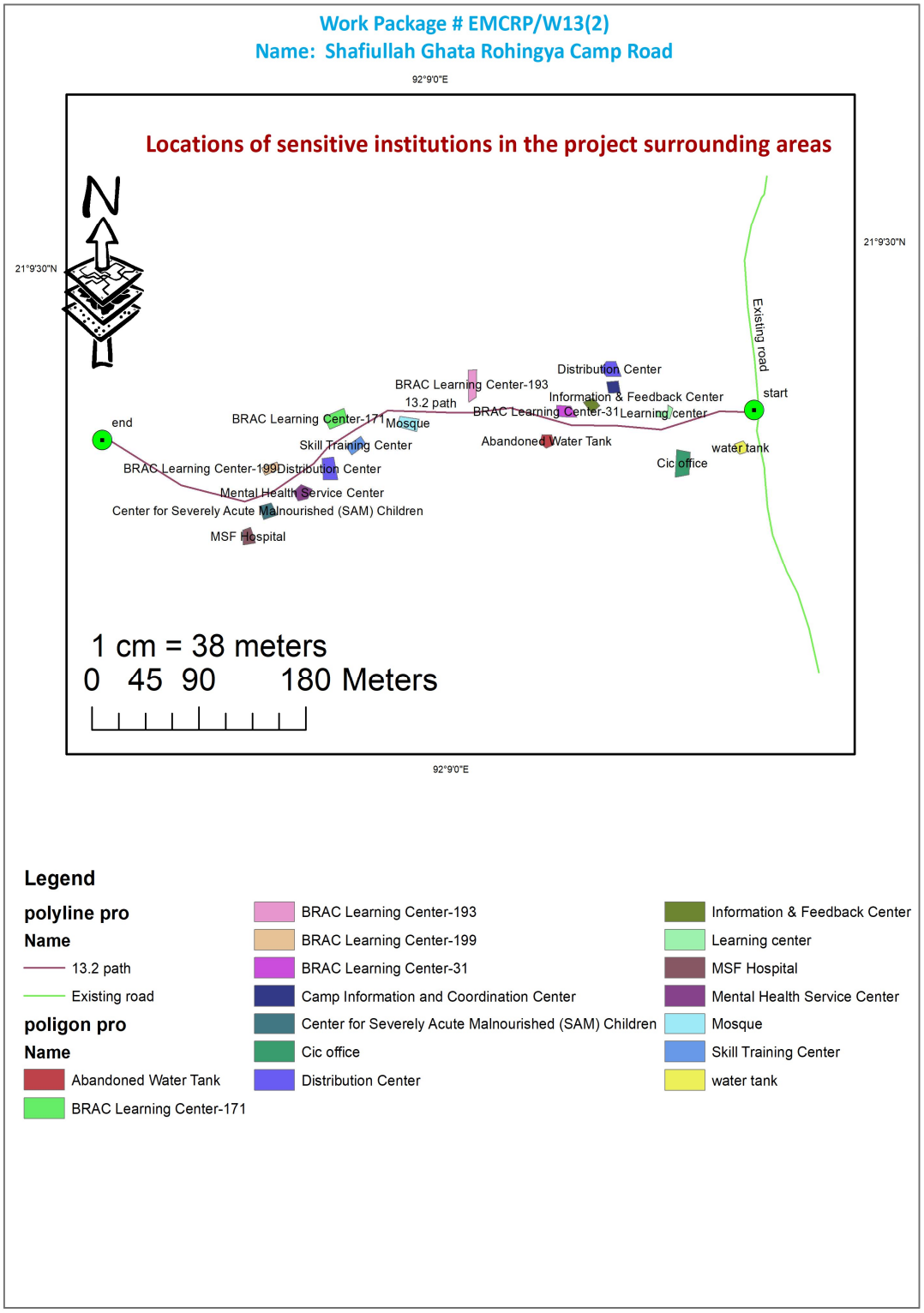


Figure B.1.2: Locations of sensitive institutions in the project surrounding areas (within 30m buffer zone)

Location of environmentally important and sensitive areas:

(1) Within/near Elephant Migration Routes Yes/No*:
No. Previously, Elephant corridor/ route were present, but due to deforestation and settlement of Displaced Rohingya People (DRP) there is no existence of Elephant corridor/ route at this moment. Elephant migration route is being confirmed with maps established by UNHCR/IUCN and the consultation meeting with local stakeholders.
(2) Potential impacts on remaining forests in/around camps Yes/No:
No. Even though there is a forested area more than 1km away from the project site, it will not receive any adverse impacts.
(3) Other issues:
No more mentionable issues were raised.

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

Baseline air quality and noise levels:
Dust:
Low amount of dust was observed in the proposed site due to the non-paved condition of the road and due to light vehicular movement.

Noise:
Noise level is not very significant in the site area. Noise is originating from the public clamor-primarily the noise from communication among the Rohingya Displaced People (RDP), service providers and relief distributors.

Baseline soil quality:
Soil types are reddish brown muddy and sandy soil and of Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

Landslide potential (high/medium/low, with explanation):
Landslide potential is low. Potential erosion/land slide may occur when moderate to high sloping terrains are disturbed for construction of roads. The impacts are negative but of very small scale, site-specific within a relatively small area and can be minimized by mitigation measures.

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

Surface water 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.
*Data source : IWM Study Report

Groundwater quality: Ground water quality data was not available at that moment from any reliable sources. However, shallow tube wells (average depth in the area: 45ft. to 60 ft bgl) will be installed in the labor camp area before mobilizing any physical works at site and quality must be tested before allowing the water to be used for any purpose.

Status of wildlife movement:
Many instances of wildlife movement across the area were informed by the local participants present in

the consultation meeting. But after the mass arrival of Rohingya Displaced People (DRP) in the area and consequent deforestation the movement has no longer been observed, except a few numbers of foxes being still visible, though not frequently.
State of forestation: In order to accommodate large numbers of Displaced Rohingya People (DRP), hills have been cleared of vegetation and indiscriminate harvest of plant logs for shelter construction and use as fuel wood has made the terrain completely denuded. Stairs have been cut into the slope to facilitate access to the settlements. As a result, soil structure became lose, causing localized soil erosion. Weathering of valuable fertile top soil has made the parts of the hills unsuitable to support any vegetation cover which in turn has resulted in habitat loss, water pollution and water scarcity to further downstream. In order to avert further devastation, afforestation program has been initiated in many places by FAO and others organizations, though not visible in this site yet. However, LGED itself will implement a massive afforestation program along its road lengths through the support of Forest Department and to be financed by World Bank under the additional financing to this EMCRP project.
Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre-construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): Concerning ancillary facilities, the access road for the sub-project component is proper in order for the equipment and pre-construction vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option. Pickup trucks will be used instead.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet for male and female, and potable water supply facilities will be available at labor camp and sub-project site office. No electricity supply system is in the camp area, though the work will be carried out during the day time only.
Possible location of labor camps: Suitable location for labor camp will be selected in close proximity of the sub-project location.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates, vii) tin, for the construction of labor camps and associated facilities.
Identification of access road for transportation (Yes/No): Yes. The existing earthen road would give very good access to the unloading point of materials. Head loading from unloading point to construction location is the prime way for material transportation, to be managed and directed by contractor.
Location identification for raw material storage:

Adjacent to the camp area and very close to the sub-project location and away from steep slopes.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, dust from bricks will be produced during construction of labor camps and associated facilities.
Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): Faecal sludge and kitchen waste will be produced from labor lodging area which can be categorized as solid and liquid wastes. The quantity tentatively can be 200 kilograms each month, but the quantity will be reduced on site in course of time. Debris from the pre-construction work such as, brick chips, leftover cements which is solid waste in type.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates. Quantity cannot be assumed at this level.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No valuable vegetation is present in the right of way; patches of vegetation under social forestry are found over the northern hilly terrains along the existing road length. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The existing aligned portion of the road will not cause such problem, because of having high terrain, and water drains into lower grounds.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) The area is characterized by the presence of small hills/tillas, open field, and DRP settlements and service facilities. Therefore, four cross drains and two box culverts are proposed for efficient drainage of water from storm, flash flood, and household/municipal use. There is no existing drainage channel or surface water body in close proximity of the site, so any disturbance or modification is unlikely.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. With all interventions under this sub-project, there is very little scope of causing damage to any terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work may lead to low scale effects of landslide, if the stability of adjacent hilly terrain soil is disturbed by any pre-construction activities. The impacts are negative but short-term and site-specific. It

can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less of similar elevation. The concentrated outflow will be managed through draining system which has been included in the design, alongside the road construction.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts related to light but low effects of noise and little effects of air pollution.

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

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction works. Leftover oils or spills from machineries may have a high probability to generate liquid waste. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 250 kg.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates. ***Quantity:*** Anticipating the quantity of raw materials to be used needs detail calculation as per design, which is beyond the scope of this report, but presented in engineering design/estimates of the sub-project.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No valuable vegetation is present in the right of way; patches of vegetation under social forestry are found over the northern hilly terrains. The west end of the proposed road will have a completely new alignment connecting to the existing one, which requires nearly 1500 m^3 of soil for earthworks. This is just an approximate estimation of quantity of earth volume; more comprehensive estimation corresponding to the relevant chainage is a part of engineering BOQ/estimation and is beyond the scope of this document. However, the adjoining field can provide this amount of soil, but borrow pits must be at least 3 m distant from the toe line, and should not affect the stability of the road or any structure on it. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is moderate, for stagnant water bodies in borrow pits for mosquito breeding ground, mainly because of the likely construction of borrow pits and high extraction and use of water during the construction period. In order to mitigate this potential problem, soil could be collected from the places away from the construction sites or the depth of the pits should be kept even with the top 15 cm soil be

replaced after removing the inner soil, or borrow areas could be far deeper to be used for fish pond at later stage. Water extraction and use should be made limited and adoption of reuse and recycle process must reduce the water use to an optimum level.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) The area is characterized by the presence of small hills/tillas, open field, and DRP settlements and service facilities. Therefore, four cross drains and two box culverts are proposed for efficient drainage of water from storm, flash flood, and household/municipal use. There is no existing drainage channel or surface water body in close proximity of the site, so any disturbance or modification is unlikely.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. With all interventions under this sub-project, there is very little scope of causing damage to any terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work may lead to low scale effects of landslide, if the stability of adjacent hilly terrain soil is disturbed by any construction activities. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less at similar elevation. The concentrated outflow will be managed through the drains to be constructed as part of this work.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts related to invasive light (because all vehicles will move during day time) but low effects of noise and air pollution is anticipated.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number, speed and frequency of vehicles will be increased. This growth has moderate potential to generate dust and blow those in the air, and contribute to causing health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description). Low. The exposure of bare soil becomes limited after the construction of the proposed road; but over and frequent use of road by the moderate to heavy or overloaded vehicles may cause damage to road and increasing erosion of soil that may turn to long-term or semi-permanent destruction and loss of soils. Setting barriers at strategic locations to limit or stop the heavy/overloaded vehicles on the road and speed

breakers at different sensitive points on the road to limit the speed, are two effective options for saving the road and people's lives, and reducing soil erosion and the effects on road-side vegetation.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system:(High/Medium/Low with description) Not applicable.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no activity or operation during this period, which has the possibility to create stagnant water bodies for encouraging mosquito breeding and other disease vectors.
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) Extent of this sort of disturbance or modification is very unlikely; however, the type and extent of water use and the mode of discharge may affect the water quality of distant water bodies or drainage channels, but dilution effect during the rainy season would minimize the effects.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low, there are no protected areas in or around the sub-project sites, and no known areas of ecological interest, which may be directly affected.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: The entire sub-project component area is nearly flat, except some hilly terrain on the north of the proposed road. But no activities in the operation period are expected to be linked with landslides, slumps, slips or other mass movements in road cuts.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) No
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved road communication will definitely increase the traffic/ vehicular movement, which must increase noise pollution, but air pollution effect will not be increased significantly, as the proposed HBB road will reduce the pollution generated from dust on the earthen road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1: Sub-Project Interventions	Air Quality	Under the subproject intervention the overall score is **low**.	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor monitored by Consultant and PIU	Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection;	Visual monitoring of air quality and if requires, air quality test (CO, $PM_{2.5,10}$) once in construction period in winter season.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Soil impacts	Under the sub-project intervention, the overall score is **low.**	• Precautions must be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Construction Contractor monitored by Consultant and PIU	No visible degradation to nearby drainages, *khals* or water bodies due to soil erosion. Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan.	Construction Contractor and monitored by Consultant and PIU	(i)Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; (iii) No visible degradation to nearby drainages, *khals* or water bodies due to construction activities. (iv)Records should be kept and logged.	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	
					Indicators	Frequency
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is **low**.	Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site.	Construction Contractor and monitored by Consultant and PIU	Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health &Safety orientation trainings; Condition of sanitation facilities for workers	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is **low.**	Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents	Monthly monitoring.
	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; • Storage facility for construction materials.	Sites to be selected before construction phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
3: Construction Phase	Wastes	Under the sub-project intervention, the overall score is **low.**	• Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site.	Construction Contractor and monitored by Consultant and PIU	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Weekly as work progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and landslides)	Under the sub-project intervention, the overall score is low.	• During construction cut and fill will be balanced as far as is possible. Designs shall ensure that all cut and fill activities are balanced as far as possible. • 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. • Also ensure there is no scope for stagnant water.	Contractor, environmental specialist of D&SC	Location of road alignment and slope.	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants.	Construction Contractor and monitored by Consultant and PIU	-List of materials and sources of materials; -Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field or water bodies, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is **low**.	• If during detailed design cutting of trees is required or any situation appears that needs uprooting of trees or damage to trees occurred, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialist of D&SC	Complaints from community; numbers of trees to be removed or damaged.	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.	Construction Contractor and monitored by Consultant and PIU	Number of complaints from stakeholders; Use of silencers in noise-producing equipment and sound barriers; Measured noise Level following decibel meter (dB), if required at all.	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	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; Number of complaints from stakeholders; Records of air quality inspection.	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is **low.**	• Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. • Local residents should be kept informed about planned Works and schedule.	Construction Contractor, environmental specialist of D&S.	Complaints from communities, pedestrians.	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
4. Post Construction	Road Safety		• Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate **traffic** detours, and sufficient **signage** & **warning** signs, Post speed limits and suitable bending on the road. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc.	Construction Contractor, environmental specialist of D&S.	Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Afforestation	Under the issue the overall score is **low**.	• Replantation of trees during monsoon period • Maintain of trees properly • Check survival of trees and replant the dead trees.	Construction Contractor, environmental specialist of D&S.	Number of complaints from stakeholders; Records of trees number and tree plantation inspection.	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is **low**.	• No advertisement/boardings shall be allowed within the Right of Way limits of the project road. • Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. • Clear smooth speed breaker/rough surfaces should be clear in views. • Regular maintenance of road surface and shoulders.	LGED	Number of complaints from stakeholders.	During Operation under LGED's regular maintenance program in each 3 years.

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

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

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

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

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

Appendix-2

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

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All of the project stakeholders should be consulted • Separate community level consultation meeting with the potential affected HHs • Consultation meeting with host communities about the project objectives and scope of works	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. • In case of unavoidable circumstances alternative access will be provided.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Pre-Construction Stage	Site Preparation: Soil Erosion; alteration of natural drainage	• All sites must avoid the low land near the water bodies or natural flow paths to avoid the flash flood or any kind of surface runoff. Keeping 20 meters distance from water bodies or natural water flow paths should be maintained, if possible. • Tubewell location within the construction site/camp should not be near to any kind of latrine and soak well which could be contaminated by those. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to the locations wherever necessary. • Avoid disruption to human settlement, and social, cultural and religiously sensitive areas. • Avoid disturbance to existing slop and any natural drainage system. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Borrow pit construction and management: water stagnation, mosquito breeding ground, and soil fertility loss.	• Identify borrow pits/areas in consultation with the local LGED staff and D&S consultants, and priority should be given to barren land or land without tree cover outside the road reserve or by excavating land and creating new water tanks/ponds, or land acquired temporarily outside the road reserve or by excavation of proposed culverts. • Do not dug the borrow pits within 3m of the toe line of the final section of the road embankment and dig the borrow pits continuously. Ridges of not less than 8 m widths shall be left at intervals, not exceeding 300 m in length and small drains should be cut	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		through the ridges to facilitate drainage. • Slope the bed level of the borrow pits, as far as possible, down progressively towards the nearest cross drain, if any, and do not lower it than the bed of the cross-drain, to ensure efficient drainage. • Stabilize the banks of the borrow pit with the top soil if it is used for fish ponds by compaction. • Return stockpiled topsoil (first 15 cm soil) to the borrow pit and all worked areas to be stabilized through re-vegetation using local plants.		
Construction Activity	Noise from construction works	• Construction activities shall be finished at day time within 05 PM. Further necessary measures to be taken for avoiding any disturbance. • Contractor must provide personal protective equipment (PPE) such as ear plugs, earmuffs, helmets, etc. to the persons working in high-risk areas and wherever required.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Acceptable range of emission of CO, particulate matter [SPM (**Suspended particulate matter)**, PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. • Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Safety Issues	• Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem • Before works started proper training and guidelines on health and safety issues to the labours and associated staffs are to be provided. • Records of every training must be kept at site. • All kinds of Child labour are completely prohibited in every site. • Every construction materials storage site will be well fenced by Tin and safety caution tape.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site	Contractor	Environmental Consultant of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• After completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management from respective authority or Environmental Specialist at PIU in difficulties to reaches to that authority.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment at site will be properly inspected and timely repairing to be ensured. • The risk assessment shall be prepared and communicated prior to the commencement of work for all types of work activities on site. • All provided walkways (if required and managed to provide) shall be provided with good conditions underfoot; signposted and with adequate lighting. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • Sub project will have a Proper emergency response plan (ERP) and be communicated 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	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
		ensure the efficacy and coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box containing adhesive bandages, antibiotic ointment, antiseptic wipes, aspirin, non-latex gloves, scissors, thermometer, etc. in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • Ensure all equipment is in working condition and suitable for jobs (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Ensure all tools and other work equipment are serviced and maintained in accordance with maintenance schedules and manufacturer's instructions. • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be		

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure that 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	Noise disturbances to fauna	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.	Contractor	Environmental Consultant of PIU, PSC.
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge and other solid wastes impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time	Contractor	Environmental Consultant of PIU, PSC.

Project Stage	Potential Environmental & Social Impacts/ Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
Decommissioning during the project implementation period (including site clearance after the construction)	The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Contractor must prepare a waste management plan including following principles given hereunder.	PIU and Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

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 Management and Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. This BOQ has two parts- costs shown in first part are only the site specific (the costs associated with the component/specific road site) and the costs shown in second part bear the overall/common costs for the sub-project (a labor shed will be constructed for the entire sub-project, and costs for that and other associated facilities in the labor camp areas are presented under this head). Moreover, costs associated with certain engineering design and implementation, such as road safety measures, construction of retaining wall for protection from landslides/mass movement, or storm water drainage system, etc. are included into the BOQ for physical works.

Cost of Environmental Management and Enhancement Works in BOQ

1. **Site/component Specific BOQ:**

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** 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)	1680sqm	38.15tk	64,092
2.	**First Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	1 no.	@6500 Tk. Per box	6,500
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	LS	10,000	10,000

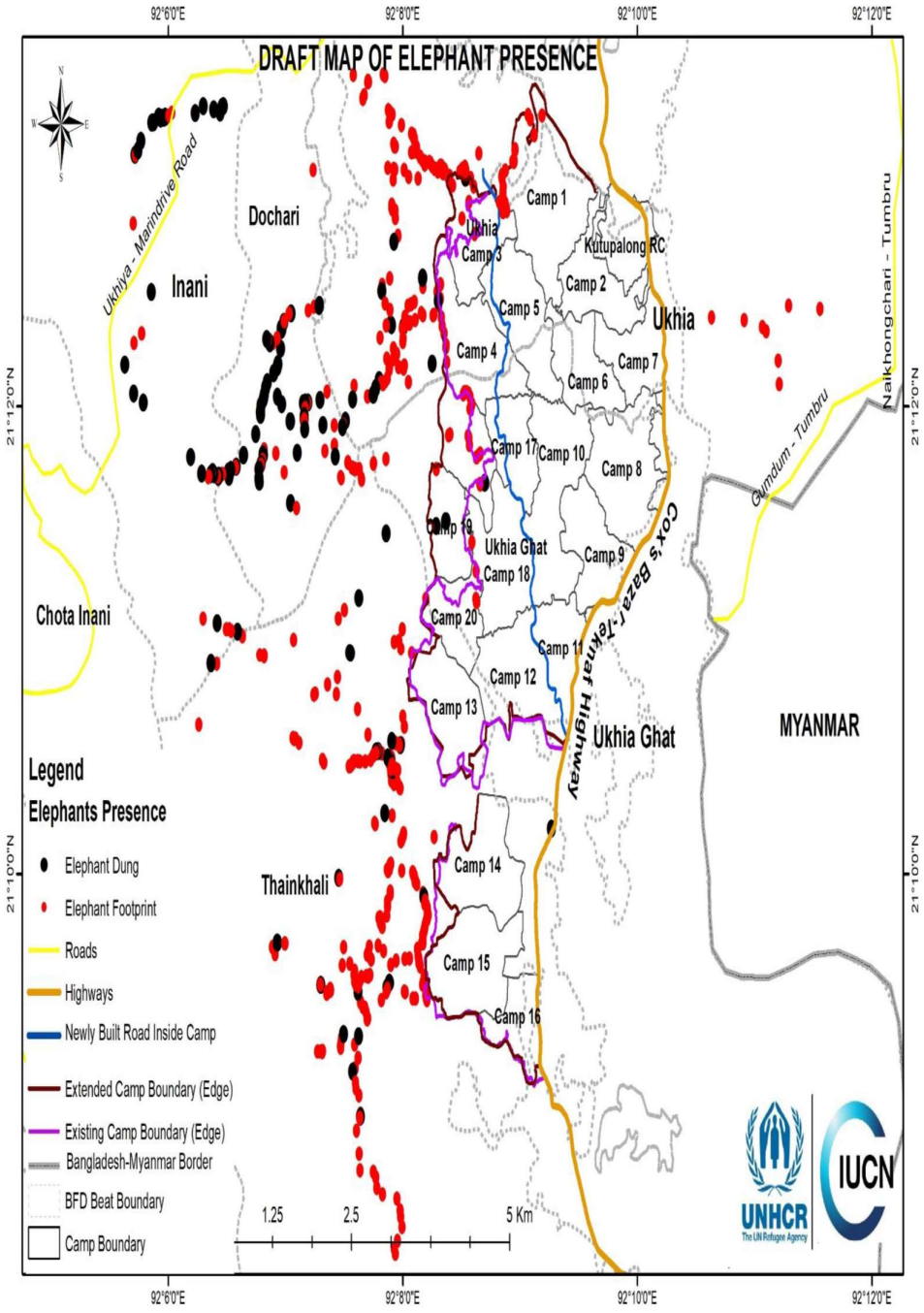
Sl no.	Description of item	Quantity	Unit price	Total amount
4.	**Health safety warning sign** Health safety warning sign at the site office and as per direction of the E.I.C.	2	5,000	10,000
5.	**Providing Safety gear** Providing safety gear packages like hand gloves, spectacles for eye protection, ear plug, helmets, masks, visible jacket, safety shoes for at least 15 persons (10 workers and 5 visitors) as per direction of E.I.C.	15	@ Tk. 5,000	75,000
Subtotal Bill: Environmental facilities				165,592

2. Common (Shared) items in BOQ for the entire sub-project

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Waste disposal Facility (Temporary)** Temporary camp site waste disposal facility (collection, transportation, and dumping of the wastes) improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2	@10,000	20,000
2.	***Temporary Sanitary Latrine*** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000

3.	**Water facilities** Campsite water supply facilities: Preferably 1 no. of tube well at the labor campsite (Depending on the site condition, D&SC consultant will assist the contractor for selecting the option)	1 nos.	20,000	20,000
4.	***Water filter*** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	2 nos.	@3500 tk for each filter	7,000
5.	**Test (Drinking Water samples)** Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C.	2 nos	10,000	20,000
6.	**Construction of Labor shed** Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	LS		80,000
Subtotal Bill: Environmental facilities				187,000

Appendix-4



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

Appendix-5

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

Time:...12:00.................. Date. 25/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ Shafiullah Ghata Rohingya Camp Road
মত বিনিময়ের স্থানঃ শফিউল্লাহ ঘাটা, মো: গফফারের দোকান

ইউনিয়নঃ পালংখালী
ডাকঘরঃ বালুখালী - ৪৭৫০
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	মো: মহিউদ্দিন	৫২	পুরুষ	[illegible]	[signature]
০২	মো: নুর হোসেন	৬০	"	"	[signature]
০৩	মো: রাশেদুল হক	২৩	"	"	[signature]
০৪	মো: শাহজাহান	৩২	"	"	[signature]
০৫	সৈয়দ করিম	২৬	"	"	[signature]
০৬	জসিম উদ্দিন	৩৪	"	"	[signature]
০৭	আবু তৈয়ব	৪৮	"	"	আবু তৈয়ব
০৮	সিরাজ	২৮	"	"	[signature]
০৯	রফিক উদ্দিন	৩২	"	"	[signature]
১০	মো: ইউসুফ	৩২	"	"	[signature]
১১	মো: রহমত উল্লাহ	৪৮	"	"	রহমত
১২	মো: আব্দুল সত্তার	৩৩	"	"	সত্তার
১৩	মো: আব্দুস জব্বার	৪৫	"	"	[signature]
১৪	মো: আব্দুল সফর	৫৫	"	"	[signature]
১৫	মো: আব্দুর রহমান	২২	"	"	[signature]
১৬	মো: নুর আমিন	৩৪	"	"	[signature]
১৭	মো: জাফর আলম	৫২	"	"	[signature]

Public Consultation Participants' List

Appendix-6

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Local Government Engineering Department (LGED)
Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Work Package # EMCRP/W13(2)

Name: Shafiullah Ghata Rohingya Camp Road

Survey on locations of sensitive institutions in the project surrounding areas

Sl. No.	Available Sensitive Institution	Location of Institution			Distance from Sub Project Location	
		Chainage(m)	Latitude	Longitude	Distance (m)	Orientation
1	Water Tank	0	21.157361	92.152361	15	Left
2	CiC Office Camp-16	20	21.157222	92.152194	10	Left
3	Learning Center	20	21.157222	92.152194	20	Right
4	Camp Information and Coordination Center	47	21.157083	92.151972	3	Right
5	Distribution Center	47	21.157083	92.151972	7	Right
6	Information & Feedback Center	75	21.157056	92.151722	1	Right
7	BRAC Learning Center-31	121	21.157056	92.151278	1	Right
8	Abandoned Water Tank	171	21.157139	92.150806	10	Left
9	BRAC Learning Center-193	227	21.157194	92.150278	1	Right
10	Mosque	244	21.157167	92.150083	1	Left
11	BRAC Learning Center-171	299	21.157250	92.149611	1	Right
12	Skill Training Center	299	21.157250	92.149611	1	Left
13	Playground	329	21.157167	92.149306	1	Right
14	Distribution Center	350	21.157111	92.149083	2	Left
15	Mental Health Service Center	376	21.157167	92.148889	4	Left
16	BRAC Learning Center-199	382	21.157167	92.148861	10	Right
17	Center for Severely Acute Malnourished (SAM) Children	396	21.157083	92.148778	2	Left
18	MSF Hospital	420	21.157083	92.148556	15	Left

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 Thainkhali Gonarpara to Tajnimarkhola Road to Tanjimarkhola camp

Under the package no. EMCRP/W13

April-2020

Development Design Consultants Ltd.

ACRONYMS

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

Contents

Executive Summary

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

Thainkhali Gonarpara to Tajnimar Khola Road to Tanjimarkhola camp at Ch: 00m - 2775m belongs in the area of Thainkhali Gonarpara village in Ukhiya Upazila of Cox's Bazar District, and the proposed road improvement works will include 61m of retaining wall, 17 nos. of cross drains and 4 nos. of box culverts at different chainage in order to ensure the stability of the road, proper drainage system across the area, and the protection of (natural) water bodies and physiographic features of the area . Apart from some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length. 2 EPI vaccination centers, 4 learning centers from different humanitarian agencies, 1 pre-primary school, and CiC office are among the different sensitive establishments along the road ways. This road component also sees a pond just at contiguous, and several religious institutions within several meters distances, along its way. This road component will not provide any scope of disturbance to religious and cultural values to the community people. In this road component area, no elephant migration routes exist as well (ref. IUCN). Elephant migration routes were about 10-15 kilometers away from this sub-project. The mosques as mentioned previously are not in the way of ROW and a total of 5 mosques have been identified within 1 kilometer radius. The proposed road is not passing through any reserved areas, but there are several patches of wetlands, waterlogged areas, and stretches of hilly lands across the area and along the road length as well and sufficient numbers of protective structures have been proposed therefore. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water

resources and affect some trees. All these impacts are site-specific and can be minimized by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits (if any), and in the areas of occupational health safety, road safety and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient roadways and associated safeguard facilities. Since the road will not pass through any reserved areas of any kind and sufficient numbers of structures are included in proposed implementation works for reducing the sensitivity to the least level 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 community of Ukhiya & Teknaf Upazila along with the displaced community from Myanmar, Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been initiated which will improve the communication status as such. This project is designed to improve the road communication network of overall Teknaf & Ukhiya Upazila. Since this surge of displaced community from Myanmar has invited more commute and caused more traffic in this area, this project will surely aid in the betterment of the target location and moreover initiate the growth potential of the area.

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

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

This document represents the Findings from Environmental Screening of the sub-projects under **'**Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District**'; with a package name-EMCRP/W13.**

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W13: Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District:
(1) R&H Road to Hindu Rohingya new camp (2) Shafiullah Ghata Rohingya Camp road (3) Thainkhali Gonarpara to Tajnimarkhola Road to Tanjimarkhola camp different camps (4) Union Parishad to Chorakhola Road to Hakimpara camp (5) Thainkhali to Boddhogona Road to Tanjimarkhola camp and (6) R&H at TV tower road to camp 7 connecting road in Ukhya Upazial of Cox's Bazar District.

Sub-project Component no. (3) Thainkhali Gonarpara to Tajnimarkhola Road to Tanjimarkhola camp

Component Location :

i. ID-422945093	ii. Ward No.: 01	iii. Mouza :
iv. Name of Union : Palongkhali		
v. Name of the Upazila : Ukhiya	vi. Length (m) : 2775m	
vii. Construction Year: 2020-21	viii. Width (m) : 3.00 m (Excluding edging)	
ix. Water Status : Available	x. Water Source: Shallow Tube-well & Deep Tube-well	

GPS Coordinates	Latitude Value: 21˚10'22.5" N (Starting Point) Longitude Value: 92˚09' 18." E (Starting Point)
	Latitude Value: 21˚10'52" N (Ending Point) Longitude Value: 92˚08' 47.1" E (Ending Point)
Condition of Road	Brick Flat Soling Road
Communication Source	Radio & Mobile Network

Subproject Interventions:

1. BC road
2. 61 meters **Retaining wall**
3. 1437 meters **L-Drain**
4. **374 meters U-Drain**
5. 1327 meter **Brick Palisading**
6. 17 numbers of **Cross Drain** (dimension: 750mmX 750mm) at different chainage and
7. 4 numbers of **Box Culvert** of different sizes
8. road safety Guide Post & Name Plate

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period: 2020-2021

Estimated total cost of component: 5,29,79,750.00 (Tk.)

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the first consultation meeting with local community from 4:00 PM to 5:00 PM on 23 December, 2019 which is adjacent to the sub-project location, Refer to **Figure 2.1.1** , Public Consultation Participants List are attached in **Appendix-5.** Several more consultation meetings in different modes were carried out as well. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects. The following table depicts details of several of those consultation meetings with outcomes.

Consultation Date	Time	Venue	Mode of Consultation	Stakeholder/ Participants	Outcomes
23th December 2019	04:00 PM	Subproject road location	Focus Group Discussion	List is attached in Appendix.	Participants were informed about the sub-project interventions, potential impacts and management options, their informed views and comments were taken into consideration and appropriately reflected into the ESMP.
18th February 2020	6:00 pm	Office of the UE, LGED, Cox's Bazar	Direct conversation	UE, Resident Engineer, Field Engineers, LGED Staffs	Consulted about the survey plan for the 2nd detail survey and UE office assured of putting all efforts in enforcing ESMP in the field.
19th February, 2020	Repeatedly as and when required.		Telephonic consultation	Md. Sultan Mahmud, Asst. Site planner of UNHCR	Consulted about the survey plan and the site was found mostly free from any direct physical impacts associated with the proposed road works. Reciprocal assurance and commitment were
19th February, 2020	Repeatedly as and when required.		Telephonic consultation	Shegufta Newaz, Coordinator of site	

				management, UNHCR	rendered for the successful implementation of the component.
19th February, 2020	3:00 pm	CiC office in Camp 7	Direct Conversation	Subash Chandra Sheel, Camp Mgt. Support-Dty Lead, BRAC, Cox's Bazar.	He assured of lending all hands from him and his organization in successful implementation of the project.

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 must 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 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 environmental issues. (iii) Consultation with interest groups and the public.

Every consultation event presents a useful channel for the collection of specific social information through the local people. Affected parties and inhabitants should be informed in advance so that

they can make the necessary arrangements to avoid or minimize adverse impacts upon them. Information should be disseminated to all interested parties, professionals and the general public so that they can develop informed opinions and provide useful input. Effective communication with the affected parties and individuals helps resolve any adversary to the road project concerned. Cooperation from informed residents and groups can lead to substantial savings in costs and time.

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

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

2.3 Suggestions and recommendations of the participants

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

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

3. ENVIRONMENTAL SCREENING

3.1 General

Environmental Screening is the preliminary process of Environmental Assessment for the identification of significant impacts on important environmental components, depending on the nature and size of the project, its interventions and technology, location and time; and evaluation of screening findings will decide whether any further comprehensive assessment study is required or not. This assessment procedure will follow a definite scope of interventions, for example, this particular study will be based on the qualitative assessment of the surrounding environment of the particular site before any physical intervention starts, and maximum project impact area is considered to be half a kilometer of the radial distance around the site.

3.2 Assessment of Screening Findings

This section identifies the potential impacts that the various elements of the proposed Project may have on aspects of the physical, biological and socio-economic environment. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted with the purpose of fulfilling the requirements of GoB and World Bank. Assessment of potential impacts

requires a multi-disciplinary approach in which a wide range of issues are taken into consideration to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures. Environmental Screening form, as adopted in **Appendix 2** of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents. The screening data and information for this Sub-project and details screening summary have been formulated and shown in **Appendix-1**

The proposed sub-project component is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses several communities, institutions, public centers, agricultural lands, ponds and community level forest. Road side trees could be left unharmed during the construction period, if decisions are made prudently. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps. Presence of number of educational, religious and social institutions along the road length denotes the significance of potential risks from ambient air and noise pollution. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage.)

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict were reported in 2018. The IUCN has conducted a study on such type of conflict. Consultation meetings held at the site also revealed that there was no presence of elephants across the areas. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

3.3 Climate Change Impact Screening

3.3.1 General Climatic Consideration 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.

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

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

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

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

3.3.2 Site Specific Consideration

The thunder storm has been found to have the highest impact in the area, casualties were reported as well. Intensity of precipitation has been seen to have increased in the past few years. Salinity was not found in the subproject area and occurrence of cyclonic storm surge was not reported. Temperature was reported to have increased over the past few years.

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways only , and associated mitigation or offsetting measures are really hard to plot on the same tiny impact areas, though an overall set of measures are often considered in practical aspect. In order to avoid the devastation caused by the thunderstorm, state-of the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sq.m for a single arrester. 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/SAFEGURADS

4.1 Mitigation and Management Measures

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

Specific Environmental and Social Management Plan (ESMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this ESMP) is to formulate

measures which will mitigate adverse impacts on various environmental components, which have been identified during observation, and protect environmental resources where possible and enhance the value of environmental and social components where possible.

Among the notable prioritized management measures, contractor must adhere to the best practice HSE (Health, Safety and Environment) management procedure and regular adoption of dust control procedures (spraying of water at least twice a day) to minimize the effect to the least level. This HSE management procedure targets both groups- the working staffs/labors directly employed by the contractor and the people living in the catchment area or simply the users of the road. Noise impacts must be controlled efficiently due to the presence of numbers of educational, social and religious centers/institutions along the road length and construction works must be limited in day time; and the time and duration of any potential noisy works should be communicated with the surrounding people fairly in advance. The area is also characterized by the presence of agricultural land, vegetable gardens, several patches of wetlands, water logged areas, a road-side fish pond and progression of hilly land masses (not continuously) along the road length; thus different types of protective and environmental quality enhancing structures are suggested in the design and included in construction works. 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. Moreover, contractor's staffs and workers will be given training on good practice construction works, health safety, and efficient camp management, and relevant awareness building sessions will also be conducted, and records of all those training and awareness building sessions will be kept on-site as part of effective management and monitoring of safeguard works. With all the required efforts, once the overall effects for this proposed construction works are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

The subproject specific environmental management plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of EMP 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 upazilas 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 areas and reinstate some parts of the ecosystem services, though primarily.

4.2 Cost of Environmental Enhancement Works in BOQ

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

5. LIMITATIONS OF THIS STUDY

Bangladesh government has imposed a nationwide lockdown to curb the spread of the novel coronavirus in the wake of series of deaths and infections. Authorities declared a ban on passenger travel on all sector from March 24 while all public transport on roads have been suspended from March 26 to stem the spread of virus, officially known as COVID-19. All office works have been postponed and an intended visit to the sites for further consultation with the relevant stakeholders has had to cancel due to this crisis. Therefore, some relevant information and arrangement needs awaiting for recovering this pandemic crisis.

Further, during the consultation, people living in the area and along the site were primarily targeted, though local dialect and Burmese language sometimes posed difficulties in understanding peoples' views. The safeguards team put their best efforts in meeting local representatives and Camp in Charges (CiCs), different sector coordinators, responsible agencies for site development and management while went to any respective road to survey. However, difficulties in adherence to the meeting schedule during the stringent working hours in camp areas have been observed very common on different occasions, therefore, telephonic consent or views were taken in many cases.

6. CONCLUSIONS AND RECOMMENDATIONS

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan. These issues might be problematic if necessary mitigation measures, as suggested in ESMP, would not be properly taken into consideration.
- The project will create employment for the workforce 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 & Monitoring Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities. The ESMP mainly focuses on managing, mitigating and reducing the impacts exhibited in design, construction and operation phases.

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 component within shortest possible period of time, and with great care and efficiency.

Appendix-1

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District; EMCRP/W13.

Name of the component: Thainkhali Gonarpara to Tajnimarkhola Road to Tanjimarkhola camp different camps**.**

Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 15,66,50,441 Tk

Estimated construction period duration: 6 (Six) months

Estimated total cost of the component (in Taka): 5,29,79,750.00 (Tk.)

Estimated Operation and Maintenance period (life of sub-project): Project design life is more than 15 (Fifteen) years, but Government policies will determine here about the O&M period inside the camps.

District: Cox's Bazar **Sub-District**:Ukhiya **Union**: Palongkhali
Name of Community/Local Area: Thainkhali, Gonarpara, Tajnimarkhola Road, Tanjimarkhola camp

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project component is categorized as a village road-A and will be improved with Carpeting options. For facilitating drainage of rain/storm water 17 numbers of **Cross Drain** (Size: 750mmX 750mm) at different chainage and 4 numbers of **Box Culvert** of different sizes will be constructed herewith. To accommodate mountain steep water drainage passage during rainy season, 1437 meters **L-Drain** and **374 meters U-Drain** at different chainage has been included in the estimation. Because of the low land in different chainage of the road 1327 meter **Brick Palisading** works and 61 meters **Retaining wall** have been included. As well as, for ensuring road safety Km Post, Guide post & Name Plate have been included in the estimation (Technical Report 2019, EMCRP)

Estimated footprint / land area for this sub-project is 8325 sqm.

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
This road starts from Thainkhali Bazar Graveyard stretching 2775m to Telkhola Road which has connected Rohingya Camp number 12,13,14 and 19. This road was found to have 600 meters HBB and 837 meter BFS which are targeted to be used as salvage materials for construction. The proposed design has included with 250mm ISG, 150mm Sub-Base, 40mm Carpeting and 7mm Seal Coat.

Important Environmental Features (IEFs) near site:
Chainage Length of the sub-project: 2775 meter. Detail Environmental features within 100m of the both sides from the center line were collected at 300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Table 1.3.1: Environmental Features along the Chainage length of the Sub-Project component

Chainage	Left	Right	*Environmental Features*
"0" Point 000-300	**L**		Hill, wet land, open field, earthen drain
		R	Hill, Electric Pole, Drain made with Bamboo
300-600	**L**		Playing Field, earthen drain, culvert
		R	Drain made with Bamboo
600-900	**L**		Wet land, hill
		R	Drain
900-1200	**L**		Hill, Paddy land, water logging in a certain area, Fish Pond
		R	Vegetable yard, corn field
1200-1500	**L**		Hill, bamboo fence
		R	Hill, Household, connecting Road, bamboo fence
1500-1800	**L**		Drain, earthen drain, paddy field, vegetable yard, bamboo fence
		R	Settlement, hill, earthen road, tin made fence, brick wall, connecting road to a house
1800-2100	**L**		Bamboo fence, tin fence, paddy field, culvert, drain
		R	Tin made fence, paddy field, hill
2100-2775	**L**		Shop, brick wall, paddy land, culvert
		R	Guide wall, Madrasa, tin made fence, hill, bamboo fence

This intervention is not in the way of major vegetation cover or wetlands, but there are small wetlands in different patches, a water logged area and a fish pond present alongside the road. However the existing condition of the road has indicated that small hills have been adjusted in order for making the way. There are small hill areas beside this road on top of which several settlements and dense tree cover exists. Homestead gardens consisting big trees and remains of some vegetation cover is present along the road as well. No major/further environmental features, ecologically critical location present in or around the sub-project component area in more than 100 meter radius. Fair amount of paddy fields and vegetable yard was found to be located along the road ways. However, existing paddy fields are not in production state due to the pollution and damage caused by the sewage water runoffs from adjacent households. DRP community can be found within 30 meters in different places, who are primarily responsible for this intensifying rate of pollution as the local or host community people commented.

Figure : Starting Point of the Road

Overall Comments

The proposed sub-project component is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area, thus not going to create intimidation to important environmental features. Though there are small wetlands, a fish pond and a water logged area in different patches along the road length, sufficient numbers of structures are included in design to protect and preserve the natural settings of the areas. Besides, major inputs will be mainly at construction phase and limited within the sub-project component boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The local individuals were participated in participatory public consultation meetings. Local communities have no objection to construction works under this sub-project.

No significant impact is expected on the ecosystem and biodiversity if the ESMP is followed in the field with utter care and vigilance, but some agricultural land will be disturbed due to the construction works, mainly from the induced dust pollution, which can be mitigated efficiently by the contractor.

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. in equipment 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 component no historical sites were identified. In this road project area, no elephant migration routes exist at all (ref. IUCN). Elephant migration routes run about 10-15 kilometers away from this sub-project. The mosques as mentioned previously are not in the way of ROW. Out of the 4 mosques identified within 1 kilometer radius, one is closer to the road, about 300 feet away, named Thainkhali Central Jame Mashjid. This location is mostly populated by Muslims. No other sensitive cultural or archeological feature is found during the survey.

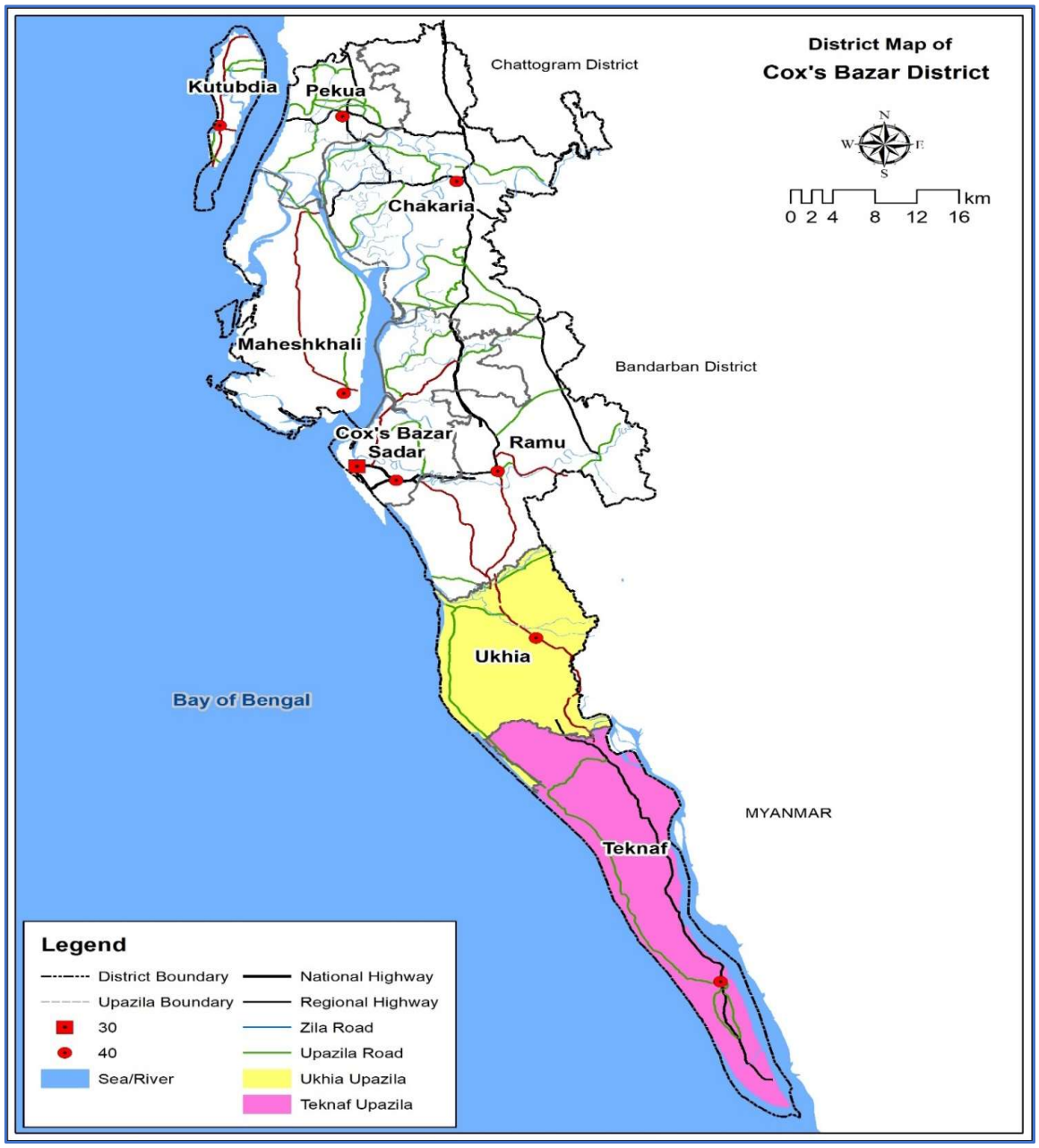


Figure 3: District Map with project location

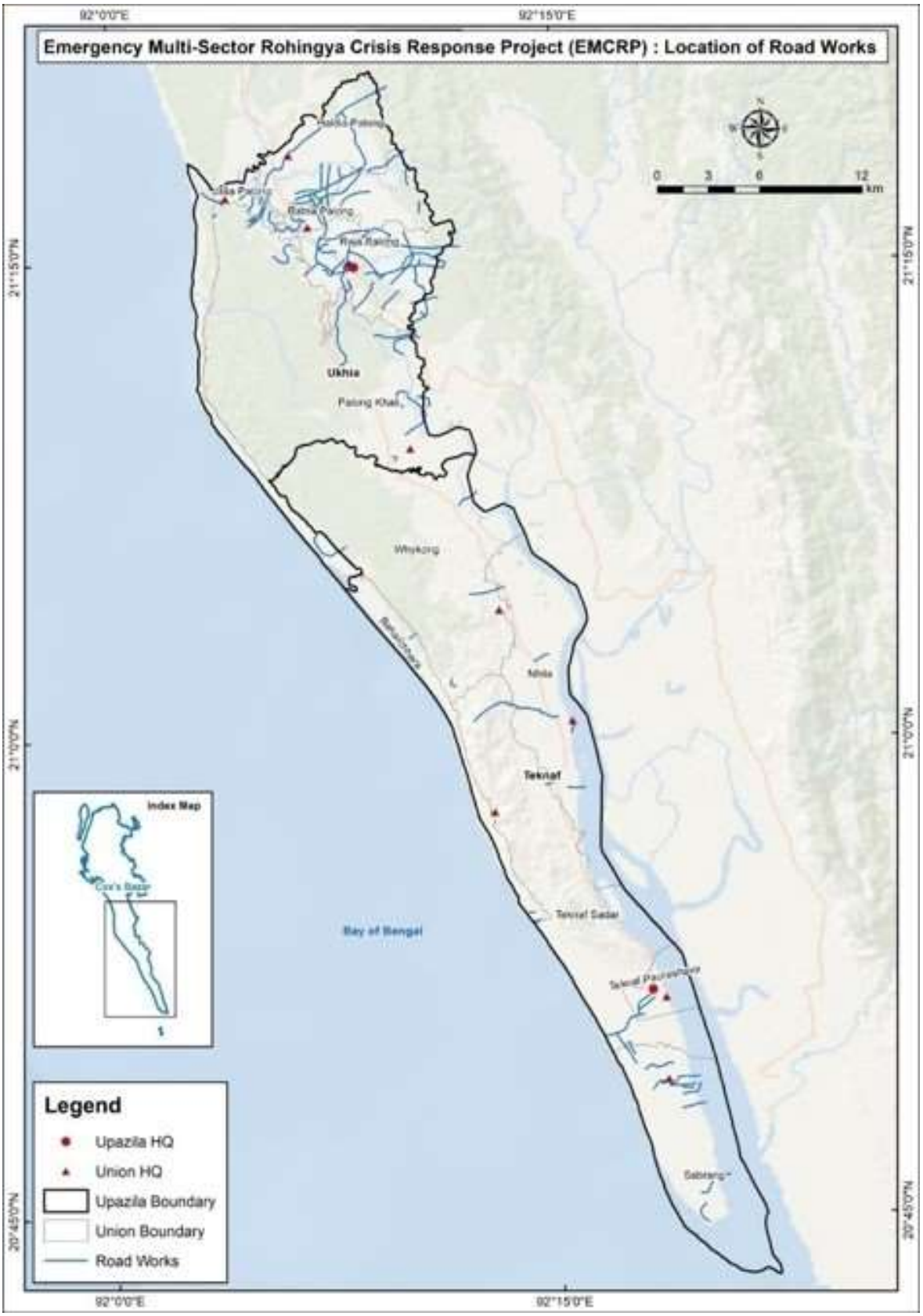


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

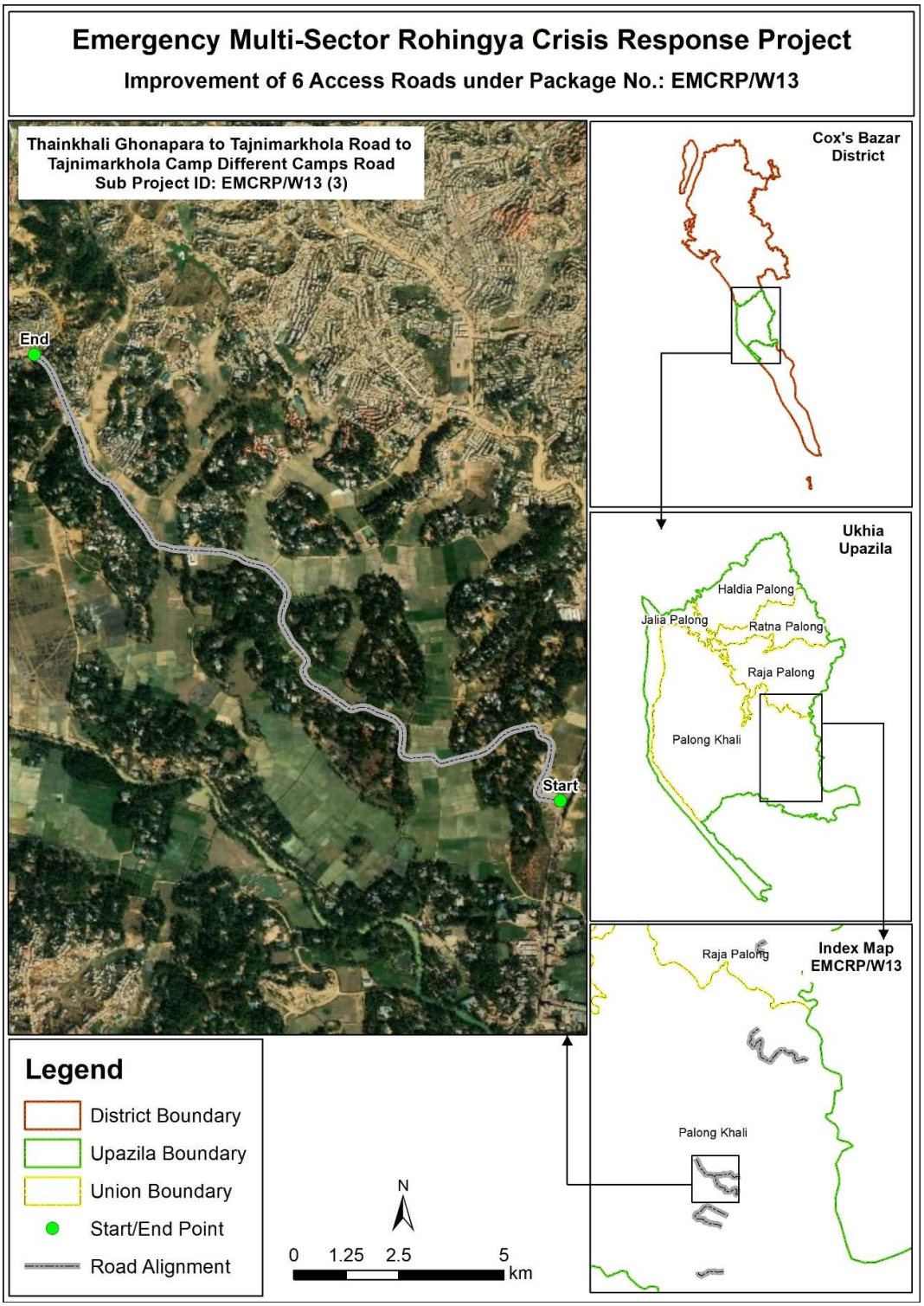


Figure 5: Upazila Map with Sub-project component location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project component is categorized as a village Road. Based on the field survey, this sub-project component involves improvement of 894m HBB, 334m BFS road and the associated link road will contain 53m HBB and 55m BFS road length. According to the design, this component will be developed with 200mm ISG and two layer of HBB.

Sub-project Location:

Important Features	
ID	422945093
District	Cox's Bazar
Upazila	Ukhiya
Union	Palongkhali
Total Chainage	2700 m
Proposed Chainage	2775 m
Road Type	Village Road-A
Proposed Intervention Type	Carpeting
Road Starting Point Coordinates	Latitude Value: 21˚10'22.5" N Longitude Value: 92˚09' 18.9" E
Road Ending Point Coordinates	Latitude Value: 21˚10'52" N Longitude Value: 92˚08' 47.1" E

Land ownership

Land is owned by Government.

Expected construction period: Six (6) months

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

i) The proposed Sub-project component will get connected to Telkhola Road where Camp number 12, 13, 14 and 19 are located. Starting point of the road is from Thainkhali Bazar Graveyard. The whole length is in Gunarpara area. The area holds mostly locals however DRP community is also present in moderate numbers.

ii) No historical sites were identified.

iii) 2-3 ditches/wetlands found adjacent to the subproject component area, a pond is located at 1+198 chainage.

iv) Not required to relocate the local community.

v) Small areas of vegetation coverage and part of hilly areas will get affected.

vi) No chance of loss of agricultural land but indirect affect may results in from dust and left over materials from the construction. This can be minimized through ESMP.

vii) Some Household Boundaries made of bamboo and tin may need to be readjusted.

Environmental Sensitivity: Patches of wetlands, a fish pond and a water logged area are present along or near the road side, but no elephant corridor is found (Checked with local IUCN representative) at present in the vicinity.

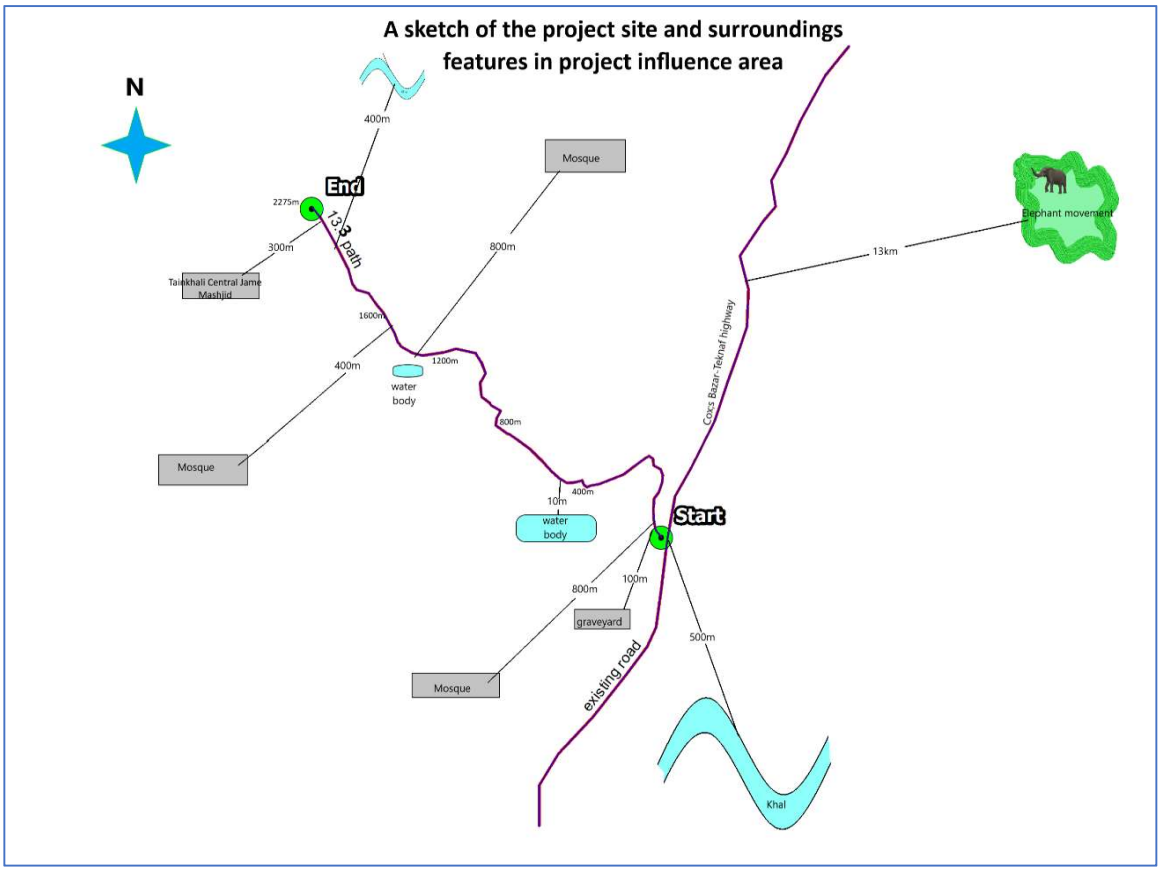
Section B: Environmental Screening

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

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

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

A total of 4 mosques have been identified within 1 kilometer radius to the North, West and South. On the South there are two mosques. A fair amount of vegetation coverage is also present but no protected or sensitive forest cover area is found. There is no elephant corridor in this area as well as no sensitive cultural and environmental protective sites are present; though several ditches/wetlands, a fish pond, and a water logged site is present in the vicinity. A sketch of the project site and surrounding features at relatively distant places are shown in figure B.1.1 and locations of sensitive institutions in the project



surrounding areas (within 30m buffer zone) are shown in figure B.1.2.

Figure B.1.1 : A sketch of the project site and surrounding area

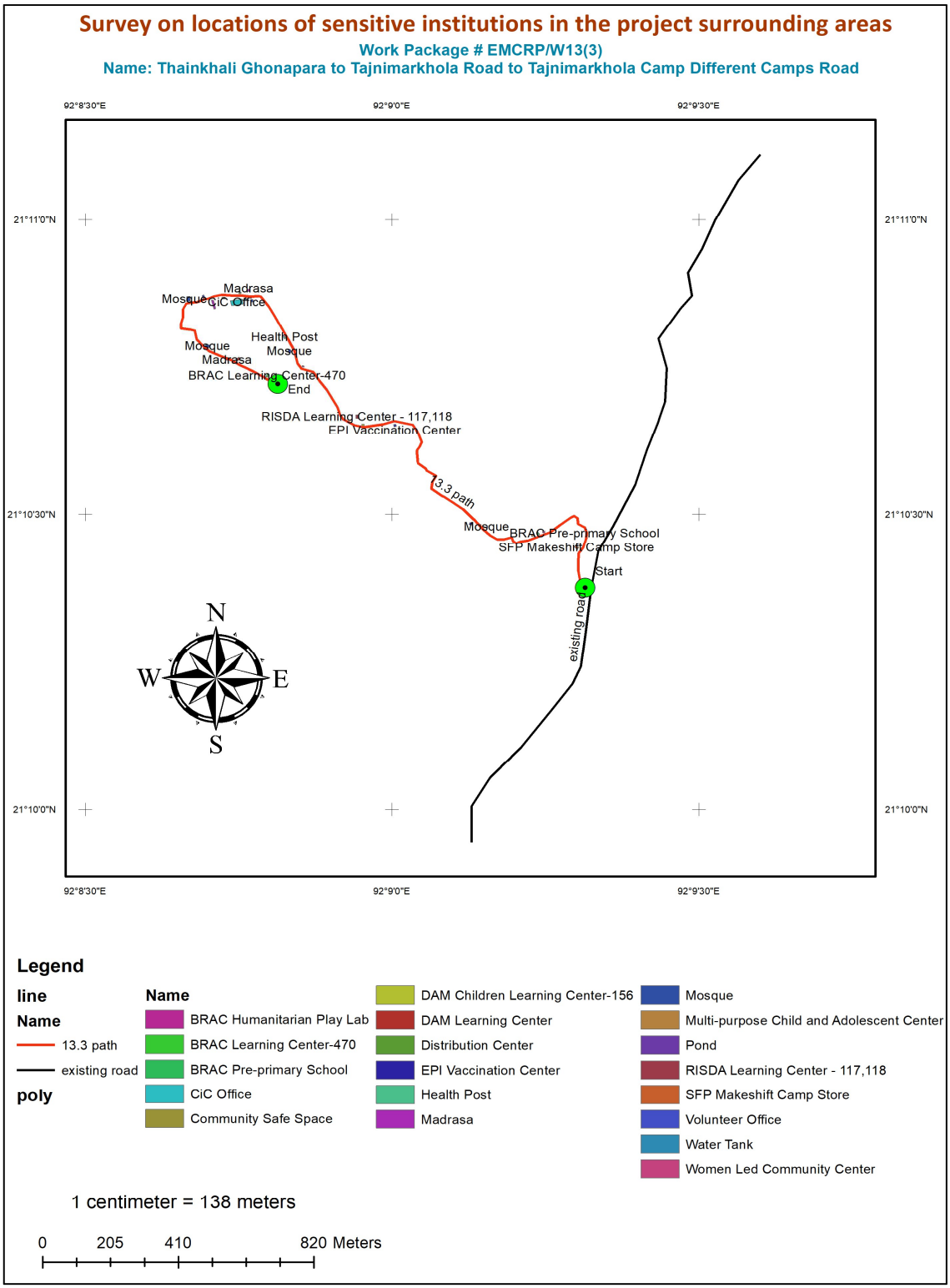


Figure B.1.2: Locations of sensitive institutions in the project surrounding areas (within 30m buffer zone)

Location of environmentally important and sensitive areas:

This sub-project component location is not environmentally important in wider aspect, but there are sensitive environmental features such as several patches of wetlands, water logged area and hilly progression at different chainage is found in the vicinity. The area has already been a victim to vegetation degeneration and hill cutting. Some tin shed boundaries and bamboo fences may need to be readjusted after the construction works, and impacts from dust, noise and solid wastes are in moderate scale, site-specific within a relatively small area and manageable by mitigation measures.

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

No. Previously, Elephant corridor/ route were present, but due to deforestation and settlement of Displaced Rohingya People (DRP) there is no existence of Elephant corridor/ route at this moment. Elephant migration route is being confirmed with maps established by UNHCR/IUCN and the consultation meeting with local stakeholders.

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

No. This location does not have any major amount of vegetation coverage to have impacts from the sub-project component.

(3) Other issues:

The surrounding waste management condition within a small length area is in very poor state. The faecal sludge and waste waters from latrines were found running over existing roads in the last quarter.

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

Baseline air quality and noise levels:

Dust:

Moderate amount of dust was observed in the proposed site due to the non-paved condition of the road and lighter vehicular movement.

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Noise:

Noise level is also very low in the site area. Noise is originating from the commotion of local community.

Baseline soil quality:

The Sub-project component area is located mainly on red, alluvial, muddy, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Medium scale land slide potential, since the target area is characterized by high lands and placed in hilly areas which have been previously cut for the ROW of existing road. Soil structure seemed loose in some places.

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

Surface water quality: No existing data on the quality of Surface water bodies were found during the visiting time. Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil. Many shallow tube wells (45ft. to 60 ft. below the ground level) are fitted in local area and most of the water usage is sufficed from these sources. *Data source: IWM Study Report, 2019
Status of wildlife movement: No major land-dwelling wildlife movement is present in the targeted area. However in the vegetation coverage which was observed during the survey, some birds were present.
State of forestation: The area has moderate level of vegetation cover which is mostly homestead gardens and bushes. This area had more trees before the DRP influx as locals mentioned. Along the chainage, most of the area has trees and plantation of several kinds. The hilly areas have fair amount of vegetation covers as well. Newly plantation has been taken place at respective site areas by **FAO** and others organization (not in this particular site till to date).
Summary of water balance analysis (For water supply scheme only): ***N/A***

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): Concerning ancillary facilities, the access road for the sub-project component is proper in order for the equipment vehicles to arrive at the proposed location. At several points in the chainage, there are steep turns where big wheel trucks are not suited for equipment transportation. Small pickup trucks should be used and manual labor will be needed from drop points.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Water supply and electricity are available in the area to support the workforce. Open spaces are available for construction of labor camp with associated facilities. In case of private land, a written consent from the owner is preferable.
Possible location of labor camps: Open space is available for this to accommodate. In case of private land, a written consent from the owner is preferable.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vi) steels v) Bitumen vi) brick chips are the most common type of road materials used in pre-construction.

Identification of access road for transportation (Yes/No): Yes. The existing road can offer access to the stack yard to facilitate material unloading. However, considerations need to be taken account for avoiding disturbance at points where households are located. The pickup trucks as material transportation vehicles can enter the access road. Manual head load from unloading point to different locations can be done.
Location identification for raw material storage: Adjacent to labor camp/temporary stock yard or if any different location is available 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.): Asphalts and aggregates, earth/ mud, brick chips, cement dusts, dust from bricks, and other debris materials from the existing road surface which is to be removed during the pre-construction phase. Also, sludge will be produced from labor camp latrines and kitchen waste is mostly composed of organic matters such as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 50 kg daily and sludge may amount to 8 kg per day.
Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): In the pre-construction phase, road pavement materials such as asphalts and aggregates, brick chips, stone chips, earth/mud, etc. will be produced from recovery to an amount of 50 kilograms per day, and considered as pre-construction solid wastes. Fecal sludge and kitchen waste will be produced from labor lodging area which can be categorized as solid and liquid wastes. The quantity tentatively can be 8 kilograms per day.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): ***Raw materials:*** i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) wood, etc. will be used for construction of labor camp, storage and associated facilities. **Quantity:** It is difficult to provide exact figures of raw materials on a typical pre-construction site at this level.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No dense vegetation is present in the right of way. Aggregated soil is present on ROW in some sections, which may need to level up for an adjustment to the formation level of the proposed road but estimating the soil amount in square meters is not possible under this survey procedure.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)

Low. This area does not face water stagnation because of high elevation, and most water flows down towards low lying lands, but an water logged area is found near 1+050 chainage on the left side of the road The existing road has earthen drainage in most sections of the road. Moreover, locals 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) Low. There is no existing natural drainage channels (rivers, canals) in the vicinity; but earthen drains, wetlands/ditches, a fish pond and a water logged areas are found at different chainage alongside the road. No significant disturbance or modification is anticipated during the pre-construction stage.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. There is very little to no scope of damage to terrestrial or aquatic ecosystems or endangered species directly or by induced development at this stage.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Work leading to chances of landslides is low. However, stock piling along/near the slopes can cause localized land slips.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since there are some sections where the road lies at the bottom of hilly terrain and concentrated outflow may generate during the heavy rain. This concentrated outflow will be managed through storm water drainage system which has been included in detail design.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Low. Traffic movement due to carrying materials to the stack yard and labor camp site would cause limited scale of air and noise pollution, but unwanted light impact is not anticipated to occur.

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

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): ***Solid waste:*** Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 30 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): ***Type:*** i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bitumen are the most

common type of road materials used in construction. ***Quantity:*** Anticipating the quantity of raw materials to be used needs detail calculation as per design, which is beyond the scope of this report, but presented in engineering design/estimates of the sub-project.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No valuable vegetation is present in the right of way. Aggregated soil is present on ROW in some sections, which may need to level up for an adjustment to the formation level of the proposed road during the construction phase.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) Low. This area does not face water stagnation due to the high elevation and most water flows down towards low lying lands. The existing road has earthen drainage system in most sections of the road. Moreover, locals 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) There is no existing natural drainage channels (rivers, canals) in the vicinity; but earthen drains, wetlands/ditches, a fish pond and a water logged areas are found at different chainage alongside the road. These water bodies are more likely to receive disturbances and the fish pond may experience landmass slips from the road side embankment. However, road design has included protection walls (incl. palisading) for such sensitive boundaries and appropriate protective measures will be followed during the construction period.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Under this intervention, there is very little to no scope of damage to terrestrial or aquatic ecosystems or endangered species directly, if guiding measures in the ESMF are followed properly.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Work leading to chances of landslides is low to medium. In some sections of the road, especially along hillsides or pond embankment, slope stability may be impacted by overloading and over steepening fill slopes, including the road prism and stock piling near the slopes. In order to protect and avoid the induced impacts, retaining walls including palisading are included in design and slope stability including cut and fill operations are to be carried out very carefully.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road has households throughout the major sections. Only there are some sections where the road lies at the bottom of hilly terrain and concentrated outflow may generate

during the heavy rain. This concentrated outflow will be managed through storm water drainage system.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts in relation to light effects, but low effects of noise and air pollution, and can mostly be mitigated by different management and protective options.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute in health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) Medium. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility of stagnant water bodies as the road will have proper drainage system.
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) Low. The road will be improved keeping substantial design and implementation provision for adequate drainage system along with protection of the stability of slopes and management of cut and fill operations. Therefore, no further disturbance or modification of existing drainage channels or surface water bodies is anticipated during the operation period.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)

Low. There are no protected areas in or around project sites, and no known areas of ecological interest.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: Heavy loaded vehicles will have a vibration effect on surrounding environment during the operation phase, and this vibration may loose the soil structure of the hilly sections resulting in small landslides or mass movement, though it will be very site specific and precaution should be taken by limiting the vehicular speed and weight from the first day in operation (by placing barriers in strategic locations), and constructing guide walls along the risky or sensitive sections.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) No
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the previous muddy road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1: Sub-Project Interventions	Air Quality	Under the subproject intervention the overall score is **low**.	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor monitored by Consultant and PIU	Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection;	Visual monitoring of air quality and if requires, air quality test (CO, $PM_{2.5,10}$) once in construction period in winter season.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Soil impacts	Under the sub-project intervention the overall score is **low.**	• Precautions must be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere.	Construction Contractor monitored by Consultant and PIU	No visible degradation to nearby drainages, *khals* or water bodies due to soil erosion. Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan.	Construction Contractor and monitored by Consultant and PIU	(i)Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; (iii) No visible degradation to nearby drainages, *khals* or water bodies due to construction activities. (iv)Records should be kept and logged.	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	
					Indicators	Frequency
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is **low**.	Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site.	Construction Contractor and monitored by Consultant and PIU	Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health &Safety orientation trainings; Condition of sanitation facilities for workers	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is **low.**	Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents	Monthly monitoring.
	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; • Storage facility for construction materials.	Sites to be selected before construction phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is **low.**	• Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site.	Construction Contractor and monitored by Consultant and PIU	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Weekly as work progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and landslides)	Under the sub-project intervention, the overall score is Medium.	• During construction cut and fill will be balanced as far as is possible. Designs shall ensure that all cut and fill activities are balanced as far as possible. • 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. • Also ensure there is no scope for stagnant water.	Contractor, environmental specialist of D&SC	Location of road alignment and slope.	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	• Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt natural land contours, natural drainage pattern, and create water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. • Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement Concrete bunded area or on wooden stage covered with polythene/tarpaulin.	Construction Contractor and monitored by Consultant and PIU	-List of materials and sources of materials; -Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field or water bodies, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is **low**.	• If during detailed design cutting of trees is required or any situation appears that needs uprooting of trees or damage to trees occurred, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialist of D&SC	Complaints from community; numbers of trees to be removed or damaged.	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.	Construction Contractor and monitored by Consultant and PIU	Number of complaints from stakeholders; Use of silencers in noise-producing equipment and sound barriers; Measured noise Level following decibel meter (dB), if required at all.	Inspection by PIU and supervision consultants on monthly basis;

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	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; Number of complaints from stakeholders; Records of air quality inspection.	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is **low.**	• Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC. • Local residents should be kept informed about planned Works and schedule.	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	
					Indicators	Frequency
4. Post Construction	Road Safety		• Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate **traffic** detours, and sufficient **signage** & **warning** signs, Post speed limits and suitable bending on the road. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.	Construction Contractor, environmental specialist of D&SC	Road barriers, signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Afforestation	Under the issue the overall score is **low**.	• Replantation of trees during monsoon period • Maintain of trees properly • Check survival of trees and replant the dead trees.	Construction Contractor, environmental specialist of D&SC.	Number of complaints from stakeholders; Records of trees number and tree plantation inspection.	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is **low**.	• No advertisement/ boarding shall be allowed within the Right of Way limits of the project road. • Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. • Clear smooth speed breaker/rough surfaces should be clear in views. • Regular maintenance of road surface and shoulders.	LGED	Number of complaints from stakeholders.	During Operation under LGED's regular maintenance program in each 3 years.

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

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

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

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

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

Appendix-2
Environmental and Social Management Plan (ESMP) of this Sub project (site specific)

ESMP for Access and evacuation Roads:

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All of the project stakeholders should be consulted • Separate community level consultation meeting with the potential affected HHs • Consultation meeting with host communities about the project objectives and scope of works	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. • In case of unavoidable circumstances alternative access will be provided.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant conflict	• Selection of sub-project sites and all implementing interventions must take place outside of the elephant corridor/influence area.	PIU	Environmental Consultant of PIU, PSC
Pre-Construction Stage	Site Preparation: Soil Erosion; alteration of natural drainage	• All sites must avoid the low land near the water bodies or natural flow paths to avoid the flash flood or any kind of surface runoff. Keeping 20 meters distance from water bodies or natural water flow paths should be maintained, if possible. • Tubewell location within the construction site/camp should not near any kind of latrine and soak well which could be contaminated by those. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to the locations wherever necessary. • Avoid disruption to human settlement, and social, cultural and religiously sensitive areas. • Avoid disturbance to existing slop and any natural drainage system. • The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Noise from construction works	• Construction activities shall be finished at day time within 05 PM. Further necessary measures to be taken for avoiding any disturbance. • Contractor must provide personal protective equipment (PPE) such as ear plugs, earmuffs, helmets, etc. to the persons working in high-risk	Contractor	Environmental Consultant of PIU, PSC

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
		areas and wherever required.		
Construction Activity	Dust	• Acceptable range of emission of CO, particulate matter [SPM (**Suspended particulate matter)**, PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. • Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Safety Issues	• Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem • Before works started proper training and guidelines on health and safety issues to the labours and associated staffs are to be provided. • Records of every training must be kept at site. • All kinds of Child labour are completely prohibited in every site. • Every construction materials storage site will be well fenced by Tin and safety caution tape.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar.	Contractor	Environmental Consultant of PIU, PSC

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts.	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
		camps will be put in place • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation.		
Construction Activity	Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction.	Preparation of a waste management plan covering the following aspects: • Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site • After completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management from respective authority or Environmental Specialist at PIU in difficulties to reaches to that authority.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and	• All construction equipment at site will be properly inspected and timely repairing to be ensured. • The risk assessment shall be prepared and communicated prior to the commencement of work for all types of work activities on site. • All provided walkways (if required and managed to provide) shall be provided with good conditions underfoot; signposted and with adequate lighting.	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. • 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.	• Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • Sub project will have a Proper emergency response plan (ERP) and be communicated 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 efficacy and coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box containing adhesive bandages, antibiotic ointment, antiseptic wipes, aspirin, non-latex gloves, scissors, thermometer, etc. in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • Ensure all equipment is in working condition and suitable for jobs (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and		

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
		can do the works. • Ensure all tools and other work equipment are serviced and maintained in accordance with maintenance schedules and manufacturer's instructions. • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure that 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	Noise disturbances to fauna	• Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures.	Contractor	Environmental Consultant of PIU, PSC.

Project Stage	*Potential Environmental & Social Impacts/Issues*	*Proposed Mitigation Measures*	*Institutional Responsibilities*	*Supervision Responsibility*
		• Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.		
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge and other solid wastes impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time	Contractor	Environmental Consultant of PIU, PSC.
Decommissioning during the project implementation period (including site clearance after the construction)	The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Contractor must prepare a waste management plan including following principles given hereunder.	PIU and Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

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. This BOQ has two parts- costs shown in first part are only the site specific (the costs associated with the component/specific road site) and the costs shown in second part bear the overall/common costs for the sub-project (a labor shed will be constructed for the entire sub-project, and costs for that and other associated facilities in the labor camp areas are presented under this head). Moreover, costs associated with certain engineering design and implementation, such as road safety measures, construction of retaining wall for protection from landslides/mass movement, or storm water drainage system, etc. are included into the BOQ for physical works.

Cost of Environmental Management and Enhancement Works in BOQ

1. **Site/component Specific BOQ:**

Sl No.	*Description of item*	*Quantity*	*Unit price*	*Total amount*
1.	***First Aid Box*** Supply of first aid box with standard contents and as per direction of the E.I.C.	2 nos.	@6500 Tk. Per box	13,000
2.	***Dust suppression measures*** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	LS	60,000 BDT	60,000
3.	***Health safety warning sign*** Health safety warning sign and as per direction of the E.I.C.	2	Lump sum @ 5000	10,000
4.	***Motivational training*** Motivation training (twice: before and after construction start) by the Upazila Engineer and Contractor's representatives on safety practice and as per direction of the E.I.C.	20 persons	Approx. @ Tk. 1000.per person (twice: before and after construction start)	40,000

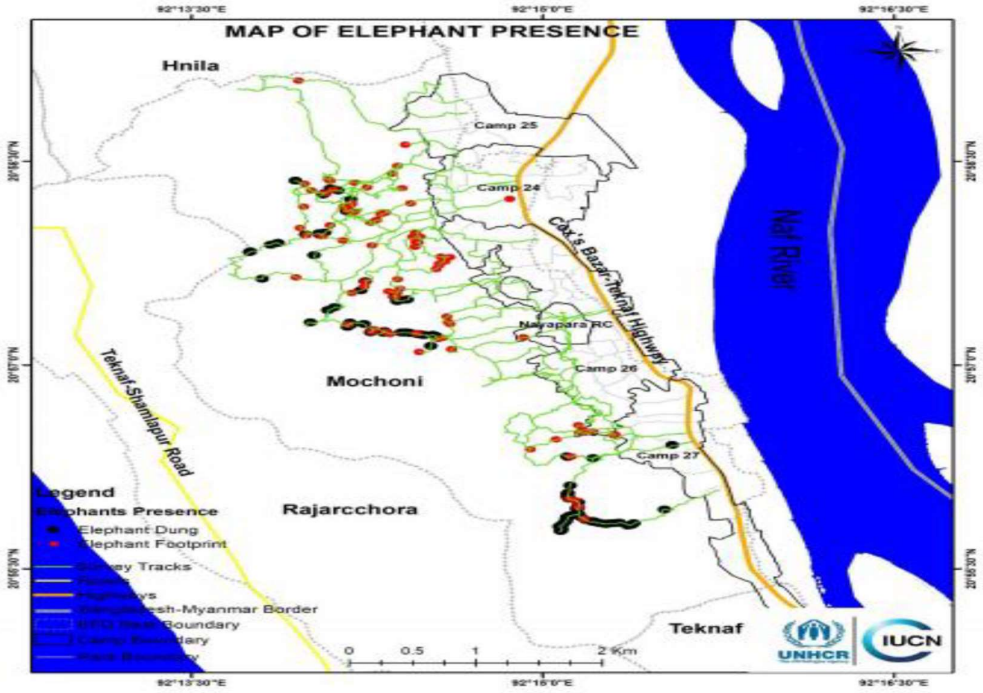
Sl No.	*Description of item*	*Quantity*	*Unit price*	*Total amount*
5.	***Providing Safety gear*** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	20 sets	@ Tk. 5,000 for each set	100,000
Subtotal Bill: Environmental facilities				223,000

2. Common (Shared) items in BOQ for the entire sub-project

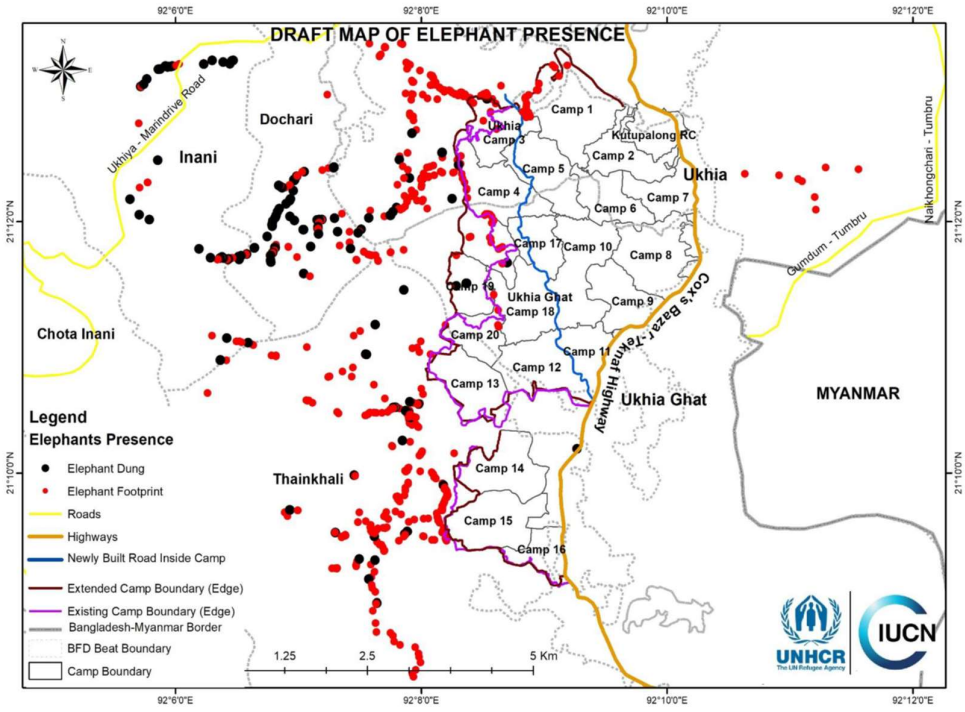
Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Waste disposal Facility (Temporary)** Temporary camp site waste disposal facility (collection, transportation, and dumping of the wastes) improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	2	@10,000	20,000
2.	***Temporary Sanitary Latrine*** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@20,000 per toilet	40,000
3.	**Water facilities** Campsite water supply facilities: Preferably 1 no. of tube well at the labor campsite (Depending on the site condition, D&SC consultant will assist the contractor for selecting the option)	1 nos.	20,000	20,000

4.	***Water filter*** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	2 nos.	@3500 tk for each filter	7,000
5.	**Test (Drinking Water samples)** Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C.	2 nos	10,000	20,000
6.	**Construction of Labor shed** Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C.	LS		80,000
Subtotal Bill: Environmental facilities				187,000

Appendix-4



Map 2: Elephant presence, along with traversing routes, around the camps 24, 25 26 and 27, based on elephant signs - foot-prints and dung piles. (Based on data from IUCN Bangladesh's field survey conducted during 13–24 May 2018 and on maps provided by the UNHCR)



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

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:..04:30PM.......... Date..23/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ থাইংখালী গোনারপাড়া থেকে তাজনিমার খোলা

মত বিনিময়ের স্থানঃ থাইংখালী স্টেশন সৈয়দ আকবর মার্কেট

ইউনিয়নঃ পালংখালী

ডাকঘরঃ বালুখালী

উপজেলাঃ উখিয়া

জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং.	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১	মো: বেলাল হোসেন	৪৬	পুরুষ	থাইংখালী	বেলাল হোসেন
২	মো: রফিক	৫২	"	"	রফিক
৩	মো: হাসেম আলী	৩৮	"	"	হাসেম আলি
৪	আলি হোসেন	২৮	"	"	আ: হোসেন
৫	মো: মামুনুল হক	২৯	"	"	মো: মামুনুল
৬	সিরাজ	৪০	"	"	সিরাজ
৭	সবুজ আলি	২৫	"	"	সবুজ আলি
৮	মো: ইউসুফ	৪২	"	"	ইউসুফ
৯	মো: রফিক	৩৮	"	"	রফিক
১০	মিজান	৪০	"	"	মিজান
১১	মিন্টু হোসেন	৩৬	"	"	মিন্টু
১২	নুর আমিন	২২	"	"	নুর আমিন
১৩	মো: ইসমাইল	৩৭	"	"	ইসমাইল
১৪	আব্দুস সাত্তার	৪০	"	"	আব্দুস সাত্তার
১৫	মো: আলামীন	২৯	"	"	মো: আলামীন
১৬	আবু মিয়া	৩৭	"	"	আবু মিয়া
	নুরুল হুদা	৪০	"	"	নুরুল হুদা
	মো: মাহীন	২৫	"	"	মো: মাহীন
	রবিউল ইসলাম	৩০	"	"	রবিউল
	শফিক	৪৩	"	"	শফিক

Public Consultation Participants' List

Appendix-6

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
Local Government Engineering Department (LGED)
Emergency Multi Sector Rohingya Crisis Response Project (EMCRP)

Work Package # EMCRP/W13(3)

Name: Thainkhali Ghonapara to Tajnimarkhola Road to Tajnimarkhola Camp Different Camps Road

Survey on locations of sensitiveinstitutions/households in the project surrounding areas

Sl. No.	Available Sensitive Institution	Location of Institution			Distance from Sub Project Location	
		Chainage	Latitude	Longitude	Distance(m)	Orientation
1	SFP Makeshift Camp Store	126	21.173917	92.155111	5	Left
2	BRAC Humanitarian Play Lab	304	21.174750	92.154583	3	Right
3	EPI Vaccination Center	1020	21.177583	92.150417	3	Left
4	DAM Children Learning Center-156	1132	21.177833	92.149528	1	Right
5	BRAC Pre-primary School	1138	21.177861	92.149444	5	Right
6	Multi-purpose Child and Adolescent Center	1153	21.177861	92.149306	2	Right
7	Mosque	1175	21.177889	92.149083	15	Right
8	Pond	1198	21.177889	92.148861	0	Right
9	EPI Vaccination Center	1240	21.178000	92.148500	1	Left
10	RISDA Learning Center - 117,118	1290	21.178444	92.148306	25	Right
11	Women Led Community Center	1425	21.179278	92.147417	5	Right
12	Mosque	1466	21.179611	92.147278	3	Left
13	Health Post	1519	21.180028	92.147139	3	Left
14	Mosque	1691	21.181167	92.146194	3	Left
15	Madrasa	1695	21.181194	92.146139	7	Right
16	Water Tank	1710	21.181194	92.146000	15	Left
17	Community Safe Space	1725	21.181194	92.145861	2	Right
18	CiC Office	1725	21.181194	92.145861	8	Left
19	Distribution Center	1778	21.181194	92.145389	3	Left
20	Madrasa	1803	21.181139	92.145139	5	Left
21	Volunteer Office	1814	21.181167	92.145056	2	Right
22	Mosque	1868	21.181000	92.144528	1	Right
23	Mosque	2068	21.179722	92.144944	2	Left
24	Madrasa	2140	21.179417	92.145556	2	Right
25	DAM Learning Center	2160	21.179333	92.145694	5	Left
26	BRAC Learning Center-470	2268	21.178861	92.146583	2	Left

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 Union parisad to Chorakhola Road to Hakimpara camp

Under the package no. EMCRP/W13

April-2020

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 Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Band

Contents

Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Host Communities and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as construction of school cum cyclone shelters, and Multipurpose Community and Service Centers (MCSC), facilitating growth centers and RCC Bridge development, and so on, 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 key project beneficiaries- Displaced Rohingya Population (DRP) and Host Communities or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements have been carried out in accordance with guidelines from World Bank; and accordingly, environmental and social screening reports have 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.

The Sub-Project is categorized as a village Road. This sub-project starts from Palongkhali Union parishad and connects to Thainkhali-Telkhola road, which is connected to Rohingya camp no. 13 & 14. Based on field survey, the existing road has 119m BFS and 80m HBB within the alignment. According to the design this sub-project is to be improved with ISG 250mm, Sub-base 150mm, Base course 150mm, 40mm Carpeting with 7mm Seal Coat. Apart from some dispersed human settlement owned by local and Rohingya people along the road length, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the areas. The existing road also crosses through bamboo and tin fencing, patches of vegetation and agricultural lands, guide-and-retaining wall at several places, an army camp on a tila, Camp -14 CiC offices, NGO offices and facilities, UP complex, Union Parishad Jame Mosque and shops/business entities. Cox's Bazar-Teknaf highway is passing by the east side of the sub-project area. Union parishad jame mosque is 50m away at west side, Thainkhali central jame mosque is at 500m North, Thainkhali station jame mosque is at 450m at East and the Camp mosque is at 750m South from the sub-project site. The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and 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.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **'**Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District**'; with a package name-EMCRP/W13.**

Table 1.2.1: Significant features of the Sub-project

<table>
<tr><td colspan="4">Package Name: EMCRP/W13: Improvement of 8 Access Road to different camps of Forcibly Displaced Myanmar Nationals (FDMN) under Cox's Bazar District.</td></tr>
<tr><td colspan="4">Sub-project Component no. W13(4): Union parisad to Chorakhola Road to Hakimpara camp</td></tr>
<tr><td colspan="4">Component Location:</td></tr>
<tr><td colspan="2">i. ID- 422945096</td><td>ii. Ward No.: 5</td><td>iii. Mouza: Balukhali</td></tr>
<tr><td colspan="2">iv.Village: Thainkhali</td><td colspan="2">v. Name of Union: Palongkhali</td></tr>
<tr><td colspan="2">vi. Name of the Upazila: Ukhiya</td><td colspan="2">vii. Width (m): 3.00m (approx.)</td></tr>
<tr><td colspan="2">viii. Construction Year: 2020-2021</td><td colspan="2">ix. Length (Km): 2205m</td></tr>
<tr><td colspan="2">x. Water Status: Available</td><td colspan="2">xi. Water Source: Shallow Tube-well, Deep tube-well</td></tr>
<tr><td colspan="4">xii. Distance from UZHQ: 18-19 Km.</td></tr>
<tr><td>GPS Coordinates</td><td>Latitude Value: 21˚10’0.05” N
Longitude Value: 92˚9’7.6” E</td><td colspan="2">Starting Point</td></tr>
<tr><td></td><td>Latitude Value: 21˚10’8.2” N
Longitude Value: 92˚9’13.4” E</td><td colspan="2">Ending Point</td></tr>
<tr><td>Condition of Road</td><td colspan="3">BFS, HBB</td></tr>
<tr><td>Communication Source</td><td colspan="3">Radio & Mobile Network</td></tr>
<tr><td colspan="4">Subproject Intervention:
1. BC
2. ISG 250mm
3. Sub-base 150mm
4. Base course 150mm
5. 40mm Carpeting with 7mm Seal Coat
6. 166m Brick Palisading wall and 14m Retaining wall at chainage 233m
7. 1305 m L-Drain and 203m U-Drain at different chainage
8. 7 nos. Cross Drain (dimension: 750mmX 750mm, Ch: 431m, 617m, 932m, 1127m, 1344m, 1673m, 2030m)
9. Box Culverts 2nos. (dimension: 2.00mX1.50m, Ch: 1327m), 1no. (Size: 2.50mX2.50m, Ch: 1583m) and 3nos. (Size: 3.50mX3.50m, Ch: 1828m, 1875m, 1975m),
10. Road safety Guide Post & Name Plate</td></tr>
<tr><td colspan="4">Implementing Agency: Local Government Engineering Department (LGED)</td></tr>
<tr><td colspan="4">Expected construction period (Component -1): 2020-2021</td></tr>
<tr><td colspan="4">Estimated total cost of component: 3,65,99,391.00 (Tk.)</td></tr>
</table>

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the first consultation meeting with local community during 11:00 AM to 12:45 PM on 25 December, 2019 at a pharmacy alongside UP complex building which is adjacent to the sub-project location. Refer to Figure 2.1.1, Public Consultation Participants List are attached in Appendix-5. Several more consultation meetings in different modes were carried out as well. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects. The following table depicts details of several of those consultation meetings with outcomes.

Consultation Date	Time	Venue	Mode of Consultation	Stakeholder/ Participants	Outcomes
25th December 2019	11:00 noon	A pharmacy alongside UP complex building which is adjacent of the sub-project location	Focus Group Discussion	List is attached in Appendix.	Participants were informed about the sub-project interventions, potential impacts and management options, their informed views and comments were taken into consideration and appropriately reflected into the ESMP.
18th February 2020	6:00 pm	Office of the UE, LGED, Cox's Bazar	Direct conversation	UE, Resident Engineer, Field Engineers, LGED Staffs	Consulted about the survey plan and UE office assured of putting all efforts in enforcing ESMP in the field.
19th February, 2020			Telephonic consultation	Md. Sultan Mahmud, Asst. Site planner of UNHCR	Consulted about the survey plan and the site was found free from any direct physical impacts associated with the proposed road works.
19th February, 2020			Telephonic consultation	Shegufta Newaz, Coordinator of site management, UNHCR	
19th February, 2020	3:00 pm	CiC office in Camp 7	Direct Conversation	Subash Chandra Sheel, Camp Mgt. Support-Dty Lead, BRAC, Cox's Bazar.	He assured of lending all hands from him and his organization in successful implementation of the project.

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 must 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.

2.1.1 Summary of Public Consultation Meeting

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

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

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

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

2.2 Suggestions and recommendations of the participants

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

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

3. ENVIRONMENTAL SCREENING

3.1 General

Environmental Screening is the preliminary process of Environmental Assessment for the identification of significant impacts on important environmental components, depending on the nature and size of the project, its interventions and technology, location and time; and evaluation of screening findings will decide whether any further comprehensive assessment study is required or not. This assessment procedure will follow a definite scope of interventions, for example, this particular study will be based on the qualitative assessment of the surrounding environment of the particular site before any physical intervention starts, and maximum project impact area is considered to be half a kilometer of the radial distance around the site.

3.2 Assessment of Screening Findings

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted with the purpose of fulfilling the requirements of GoB and World Bank. Assessment of potential impacts requires a multi-disciplinary approach in which a wide range of issues are taken into consideration to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures. Environmental Screening form, as adopted in **Appendix 2** of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents. The screening data and information for this Sub-project and details screening summary have been formulated and shown in **Appendix-1**

The proposed sub-project is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The existing road crosses through local and Rohingya households, bamboo and tin fencing, patches of vegetation and

agricultural lands, guide-and-retaining wall at several places, an army camp on a tila, Camp -14 CiC office, NGO offices and facilities, UP complex, Union Parishad Jame Mosque and shops/business entities. . During construction period 12/15 nos. trees may need to be removed; the accrued impacts therefore could be offset by plantation of at least 80 trees along the road length. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, and but will be localized and temporary and will unlikely to result in structural damages to buildings or walls of the adjacent private properties. During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and solid waste and sewage.)

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict were reported in 2018. The IUCN has conducted a study on such type of conflict. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

3.3 Climate Change Impact Screening

3.3.1 General Climatic Consideration of the area

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

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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

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

3.3.2 Site Specific Consideration

The thunder storm has been found to have the highest impact in the area in recent years, casualties were reported. Intensity of precipitation has been seen to have increased in the past few years. Salinity was found in the subproject area and occurrence of cyclonic storm surge was not reported. Temperature was reported to have increased over the past few years.

In order to avoid the devastation caused by the thunderstorm, state-of the-art thunder arrester (lightning protection system) has been suggested to install in the areas having a coverage area of 25,434 sq.m for a single arrester. For reducing the effect of salinity in the water, rain water harvesting is suggested. As well as tree plantation is suggested along the road sides.

4. ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

Specific Environmental and Social Management Plan (ESMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Environmental and Social Management Plan (ESMP) is to formulate measures which will mitigate adverse impacts on various environmental components, which have been identified during observation, and protect environmental resources where possible and enhance the value of environmental and social components where possible.

Among the notable prioritized management measures, contractor must adhere to the best practice HSE (Health, Safety and Environment) management procedure and regular adoption of dust control procedures (spraying of water at least twice a day) to minimize the effect to the least level. This HSE management procedure targets both groups- the working staffs/labors directly employed by the contractor and the people living in the catchment area or simply the users of the road. Noise impacts must be controlled efficiently as the road has the presence of local and Rohingya settlements, NGO offices and facilities, army camp, CiC office, community center, and a mosque in the close vicinity of the areas and construction works must be limited in day time; and the time and duration of any potential noisy works should be communicated with the surrounding people fairly in advance. Special attention should be given to hill/tila-side slopes to protect from any potential landslide or mass movement to adjoining road surface. Construction of L-drain, cross drain, brick palisading, and retaining wall are suggested at different chainages to avoid such catastrophe or nuisance. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

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

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf upazilas 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 situations

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

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

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

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

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situations should be allocated in consultation with project PIU.

4.3 Cost of Environmental Enhancement Works in BOQ

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

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

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

6. LIMITATIONS OF THIS STUDY

Bangladesh government has imposed a nationwide lockdown to curb the spread of the novel coronavirus in the wake of series of deaths and infections. Authorities declared a ban on passenger travel on all sector from March 24 while all public transport on roads have been suspended from March 26 to stem the spread of virus, officially known as COVID-19. All office works have been postponed and an intended visit to the sites for further consultation with the relevant stakeholders has had to cancel due to this crisis. Therefore, some relevant information and arrangement needs awaiting for recovering this pandemic crisis.

Further, during the consultation, people living in the area and along the site were primarily targeted, though local dialect and Burmese language sometimes posed difficulties in understanding peoples' views. The safeguards team put their best efforts in meeting local representatives and Camp in Charges (CiCs), different sector coordinators, responsible agencies for site development and management while went to any respective road to survey. However, difficulties in finding the meeting time during the stringent working hours in camp areas have been observed very common, therefore, telephonic consent or views were taken in many cases.

7. CONCLUSIONS AND RECOMMENDATIONS

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

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

The 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. These issues might be problematic if necessary mitigation measures, as suggested in ESMP, would not be properly taken into consideration.
- The project will create employment for the workforce 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 aesthetic appearance.
- A comprehensive Environmental Management & Monitoring Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities. The ESMP mainly focuses on managing, mitigating and reducing the impacts exhibited in design, construction and operation phases.

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

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 Access Road to different camps of Forcibly Displaced Myanmar Nationals (FDMN) under Cox's Bazar District; EMCRP/W13).

Name of the component: Union parisad to Chorakhola Road to Hakimpara camp

Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 15,66,50,441 tk

Estimated construction period duration: 6 (Six) months

Estimated total cost of the component (in Taka): 3,65,99,391.00 (Tk.)
Estimated Operation and Maintenance period (life of sub-project): Project design life more than 15 (Fifteen) years but Government policies will determine the period for sub-projects to operate in/near the camps.
District: Cox's Bazar **Sub-District**:Ukhiya **Union**: Palongkhali
Name of Community/Local Area: Thainkhali

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road and improved by BC options. The proposed design of Sub-project includes ISG 250mm, Sub-base 150mm, Base course 150mm, 40mm Carpeting with 7mm Seal Coat. For drainage of rain water and ease movement of natural water flow 7 nos. **Cross Drain** (Size: 750mmX 750mm, Ch: 431m, 617m, 932m, 1127m, 1344m, 1673m, 2030m) and 2nos. **Box Culverts** (Size:2.00mX1.50m, Ch: 1327m) will be constructed. For the passage of mountain eel water during rainy season **1305 m L-Drain** and **203m U-Drain** at different chainage has been included in the estimation. Due to the low land in different chainage of the road 166m Brick Palisading wall and 14m Retaining wall at chainage 233m are included in the design. In addition, Km Post, Guide post & Name Plate has been included in the estimation (Technical Report 2019, EMCRP).

Estimated footprint / land area for this sub-project is 6615 sqm.

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
Proposed improvement of Union Parishad to Chorakhola Road to Hakimpara camp is to be completed as village road and land is owned by the Government. The existing road crosses through local and Rohingya households, bamboo and tin fencing, patches of vegetation and agricultural lands, guide-and-retaining wall at several places, an army camp on a tila, Camp -14 CiC office, NGO offices and facilities, UP complex, Union Parishad Jame Mosque and shops/business entities. Detail socio-cultural and environmental features within 100m of the both sides from the center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the table below:

Chainage	Left	Right	Important Environmental/Socioeconomic Features
"0" Point 000-300	L		Start from Shop of Abdul Khalek, u drain, tin shed fencing, tin shed households, army camp on tila (high land), bamboo fencing, retaining wall, shop
		R	Agricultural land, tree plantation with bamboo fence, electric pole, shop, CiC office of Camp-14, households, trees, retaining wall
300-600	L		Retaining wall, Rohingya household, tree, bamboo fencing, open land
		R	Tila, shop, Health care center, tin shed household, retaining wall, bamboo fencing
600-900	L		BRAC office, connecting road, tila, u drain, guide wall, tree, bamboo bushes, paddy land, electric pole
		R	Wire fencing, u drain, paddy land, geo-bag shoulder, drainage channel
900-1200	L		Tila, tree, bamboo fencing, Rohingya households, community center, counselling center, retaining wall
		R	Bamboo fencing, u drain, wire fencing, big tree, retaining wall, paddy land,
1200-1500	L		Sanitary ring, slab shop, tin shed fencing, electric pole
		R	Paddy land, tila, homestead vegetation, retaining wall, wire fencing
1500-1800	L		Bamboo fencing, bamboo bushes, tree, permanent households
		R	Social forestation, guide wall, tila, electric pole
1800-2100	L		Open field, Bamboo fencing, permanent households, tree, electric pole, guide wall
		R	Social forestation on tila, Permanent households, bamboo bushes
2100-2400	L		Bamboo fencing, Permanent households, main road, UP complex building
		R	Permanent households, Union parishad jame Mosque, guide wall, shop

Figure: Starting point of Union Parishad to Corakhola Road to Hakimpara Camp

Overall Comments

The proposed sub-project component is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area thus not going to create intimidation to important environmental features. Drainage congestion/water logging facilities are not in good condition in this sub-project area and are damaged in several places. Every year this catchment area gets inundated by rain water for at least a day as blockage of drainage channel is made by local people in some places. In rainy season landslides happens frequently. Some local trees may need to be removed due to construction activities. No agricultural productive soil will be used for this purpose. 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 the project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

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. Several individuals from local communities participated in the consultation meeting and they do not have any objection to construction works under this sub-project. Rather, the community 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 have the passage during any emergency situation.

The proposed Sub-project area for the construction of hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No 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. This sub-project is situated within Thainkhali village under Palongkhali union Ukhiya upazila, Cox's Bazar. Cox's Bazar-Teknaf highway is passing by the east side of the sub-project area. Several religious centers like mosques are located within one kilometer from the site. Union parishad jame mosque is 50m away at west side, Thainkhali central jame mosque is at 500m North, Thainkhali station jame mosque is at 450m East and Camp mosque is at 750m South from the sub-project location. No disturbance is anticipated due to construction activities to all these facilities.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 4-5 km away from this sub-project. Appendix-4 presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

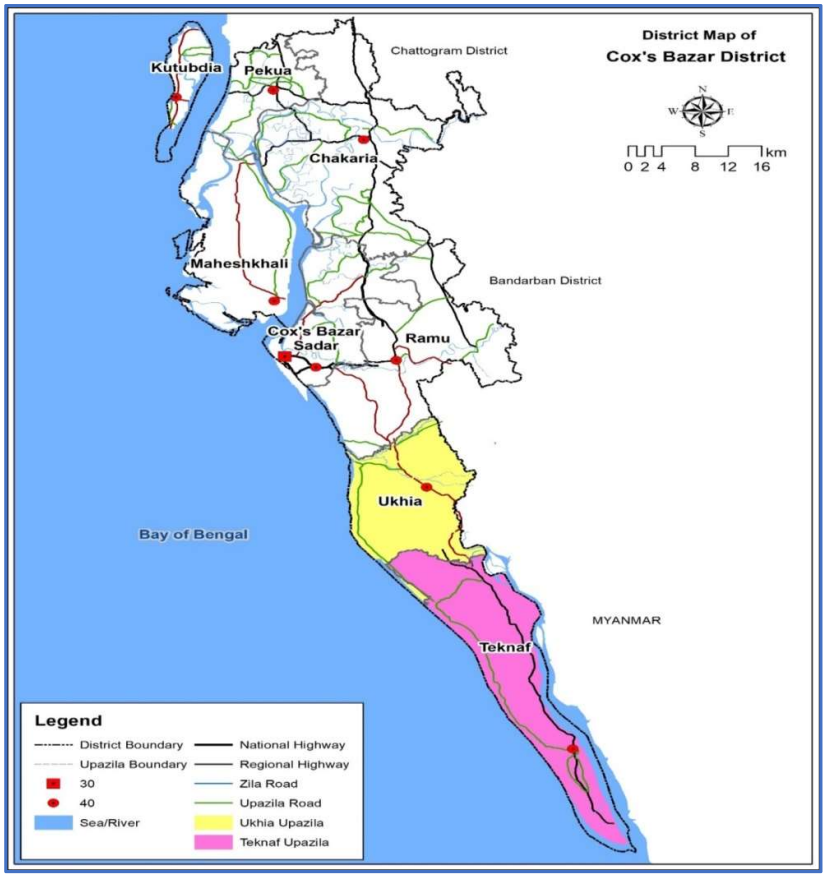


Figure 3: District Map with project location

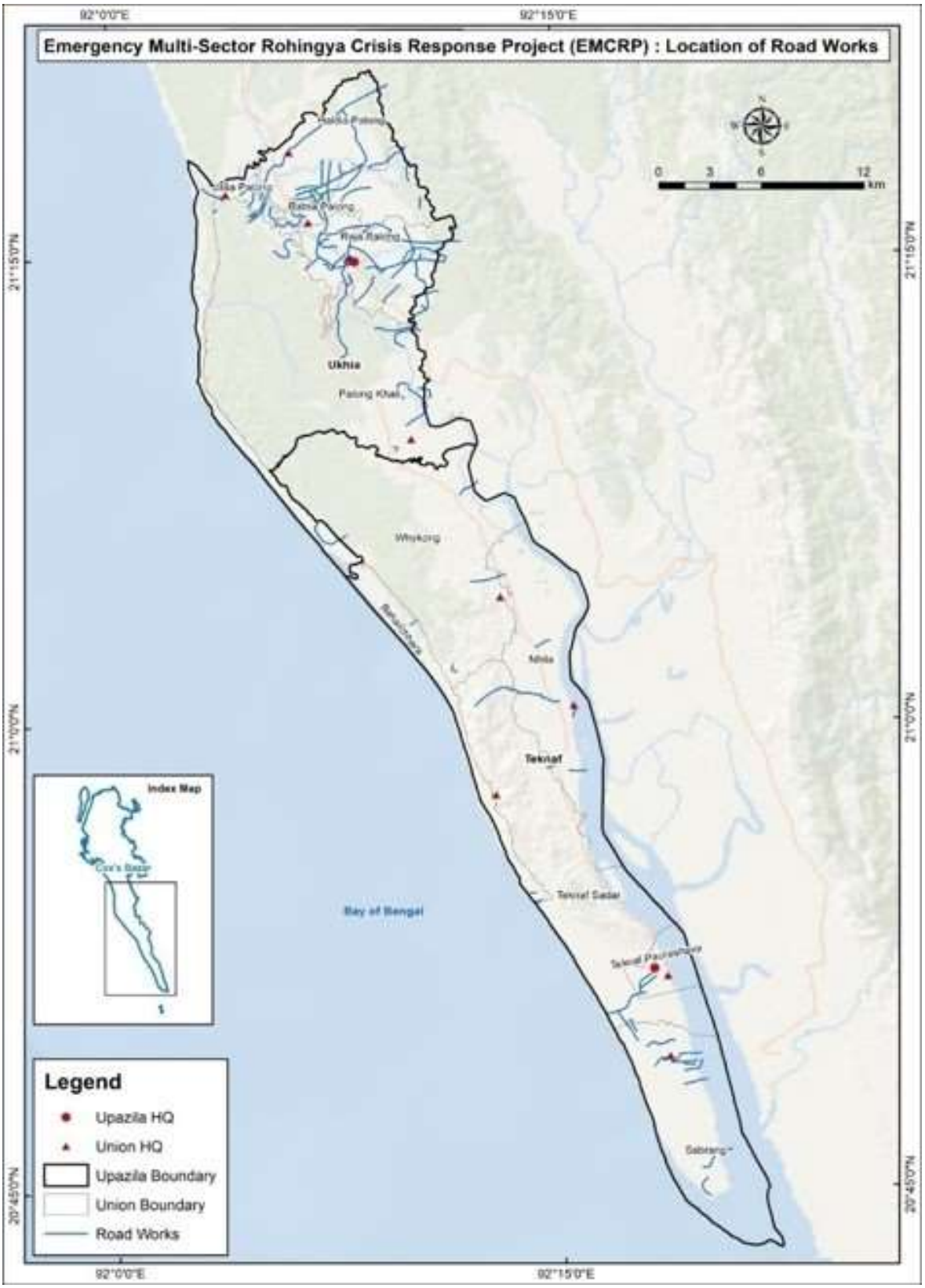


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

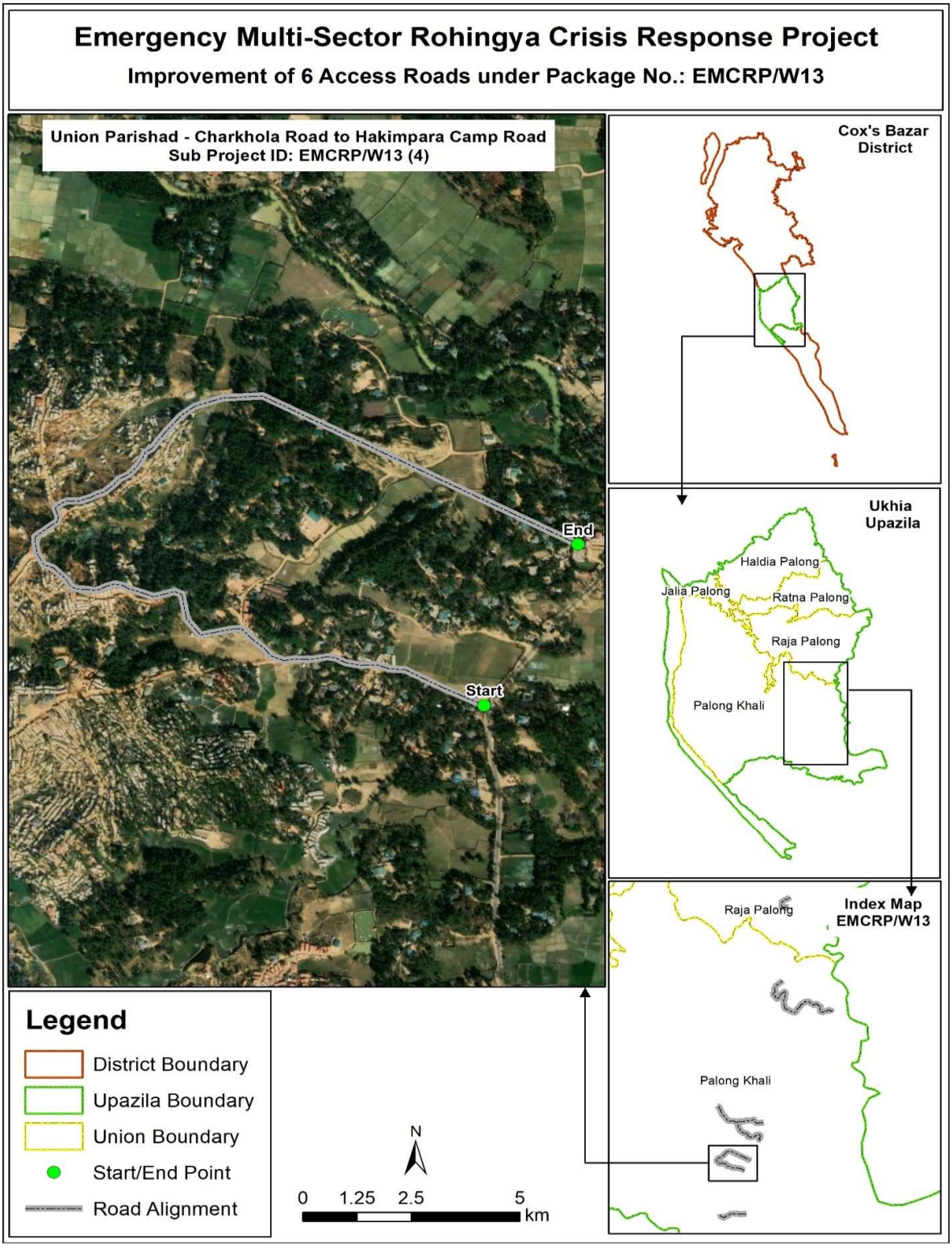


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions: The Sub-Project is categorized as a village Road. This sub-project starts from Palongkhali Union parishad and connects to Thainkhali-Telkhola road which is connected to Rohingya camp no. 13 & 14. Based on field survey, this sub-project component has got 119m BFS and 80m HBB road in existing scenario. According to the design, this sub-project is to be improved with ISG 250mm, Sub-base 150mm, Base course 150mm, 40mm Carpeting with 7mm Seal Coat.
Sub-project Location: This sub-project is situated within Thainkhali village under Palongkhali union Ukhiya upazila, Cox's Bazar. Cox's Bazar-Teknaf highway is passing by the east side of the sub-project area. GPS Coordinates of Sub-project: **Starting Point:** Latitude: 21˚10'0.05" N; Longitude: 92˚9'7.6" E **Ending point:** Latitude: 21˚10'8.2" N; Longitude: 92˚9'13.4" E **Land ownership** Land is owned by the Government of Bangladesh.
Expected construction period: **8** (Eight) months
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive environmental areas such as elephant corridors, water bodies, etc. and historical or socio cultural assets): Please also explain any analysis on alternative location was conducted: i) The proposed Sub-project is located within Thainkhali village which is connected to camp road of 13 & 14. ii) No historical sites were identified. iii) 3 water bodies are located near the subproject location, but with sufficient distance in between. iv) Not required to relocate Displaced Rohingya People (DRP). v) Environmental Sensitivity: no mentionable eco concerned establishment, no socio cultural site and elephant corridors (confirmed by the consultation with local people).

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 religious sites like mosques within the catchment area named Union parishad jame mosque, Thainkhali central jame mosque, Thainkhali station jame mosque, Hakimpara Rohingya camp mosque. Hakimpara Rohingya camp health care center, community center and UP complex building are also located along the sub-project area.

There are no sensitive environmental, cultural, archaeological sites exist in the area of this sub-project.

In this sub-project area, no elephant migration routes exist (ref. IUCN).

A sketch of the project surrounding area and project influence area are shown in figure B.1.1

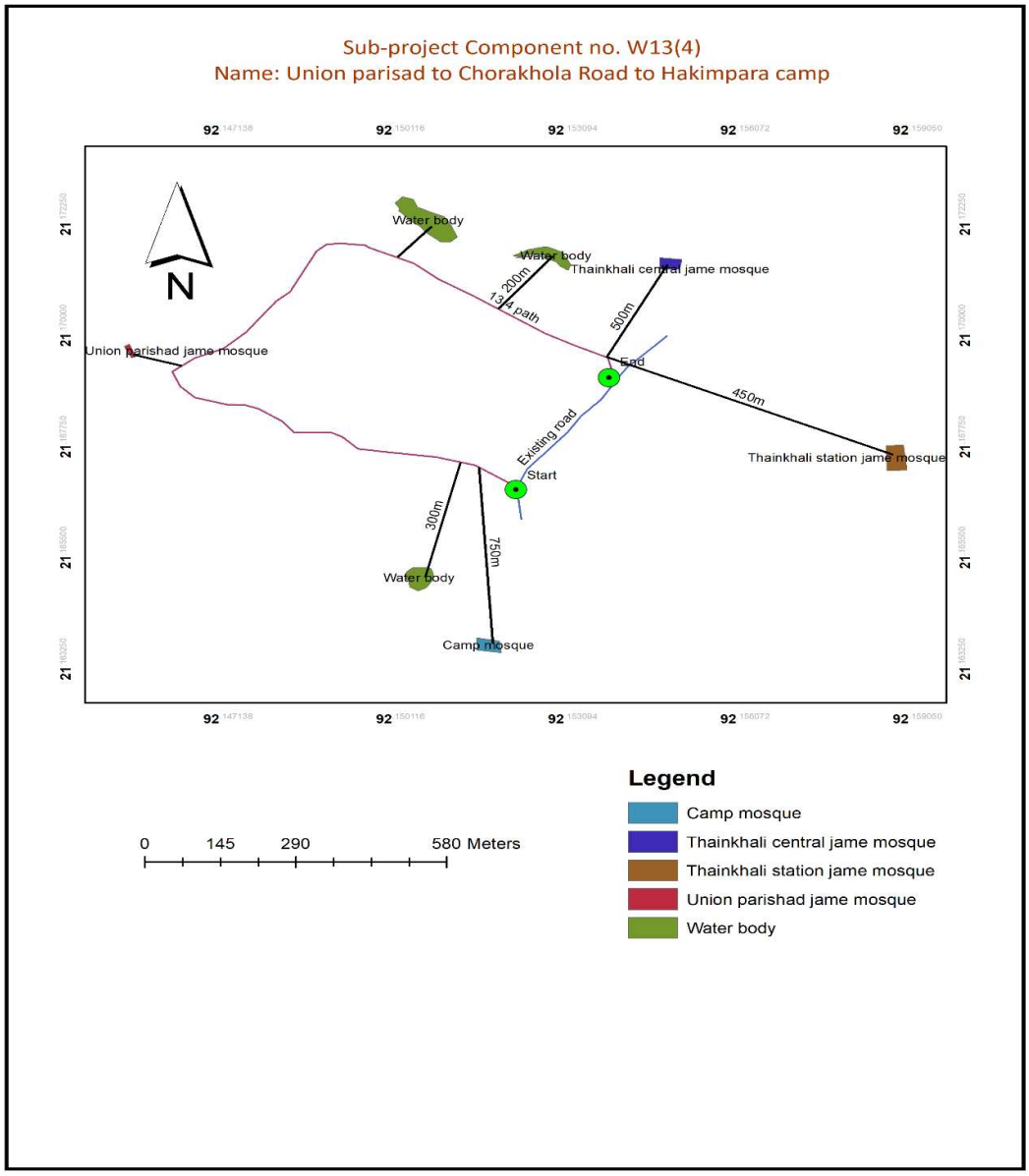


Figure B.1.1 : A sketch of the project intervention area

Location of environmentally important and sensitive areas:

This sub-project location was once environmentally important and sensitive for containing protected forest area but this location has lost its greenery for supporting the lives and livelihood of DRP communities. Local community has, although, started planting trees under social forestation in the areas. Potential erosion or landslide may occur when moderate to high sloping terrains are disturbed for the

improvement of the road. The impacts are negative but small scale, site-specific within a relatively small area and manageable by mitigation measures.

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

No. Elephant migration routes or corridors were present near the sub-project area about 8-9 years ago, but no presence of elephants or their migration routes at this moment. This information is confirmed with maps established by UNHCR/IUCN and the consultation meeting with local stakeholders.
Appendix-4 presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

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

No. There is no natural forest land at this moment in the area. Afforestation works have been in progress by WFP and others organizations.

(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:

Air:

Ambient air quality data was not readily available, but quality was apparently good due to the appearance of rural vegetative settings around. But after arrival of Rohingya the number of vehicle movement on the road became too high. Dust is generated through movement of vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor, etc. over the road surface which has caused deterioration of air quality.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerable limit. Vehicles such as motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface throughout the day and night. These vehicles generate noise but still within the tolerable limit in most cases. Noise is also originating from the communication among the Rohingya Displaced People (RDP), service providers and relief distributors.

Baseline soil quality:

The Sub-project area is located mainly in red, alluvial, muddy, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Landslide potential is low. Potential erosion/land slide may occur when moderate to high sloping terrains are disturbed for construction of roads. The impacts are negative but very small scale, site-specific within a relatively small area and manageable by mitigation measures.

Baseline surface water and groundwater quality (FE, TDS, fecal coliform, pH): Surface water quality: There are three ponds in the vicinity which could be considered as the source of surface water in the area, but water quality data was not available during the visiting period. Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil. Many shallow tube wells (150ft. to 200 ft.) and deep tube wells (700ft. to 800ft.) are fitted in camp area and most of the water usage is sufficed from these sources. *Data source: IWM Study Report, 2019
Status of wildlife movement: No major land-dwelling wildlife movement is present in the targeted sub-project area
State of forestation: Since this sub-project falls under a local village and Hakimpara Rohingya camp area, so no major forest is remained near or around the target area; practice of deforestation or loss of vegetation is no longer getting widened. This area is mostly covered with homestead gardening and backyard tree coverage. Newly plantation has been taken place at respective site areas by FAO and others organizations.
Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): Concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option. Pickup trucks will be more suitable.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: An open space is required to set up a labor camp with associated facilities (toilet for male and female workers, kitchen for cooking, tube-well for water supply facility, and electricity connection) to support the workforce during construction. The space should have enough land area to accommodate a stack yard along with a site office, if possible. This open space should be selected in such a way that workers do not need to travel/walk through a longer distance to reach the sites and the place can be secured with proper fencing with a guard be posted at the entrance. The space or land area can be used on rental basis or under a mutual agreement between the owner and the contractor. The contract/consent document must be kept at the site office, whatsoever the mode of the contract is.
Possible location of labor camps: Next to the labor Camp area or the site office, and within walking distance from the sub-project location.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. The existing road seems to be the best option for transporting materials unto any unloading point in

the area. Head load from unloading point to different working locations is easily possible by the assigned contractor.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.
Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): During the pre-construction period wastes will be generated from some preparatory activities, such as construction of labor camp, site office, material storage/stack yard and associated facilities, etc. and removal of road pavement. All these activities also will be carried out by numbers of local labors. So, around 45 kilograms of construction related wastes, such as bricks, aggregates, leftover cements, sands, etc. will be generated, which are typical solid wastes and a negligible quantity (nearly 5 kg) of bio and non-biodegradable wastes will be generated from the daily necessities of workers and construction staffs, such as food wastes, polythene, papers, plastics, etc. Some chemical waste, like paints, oils, etc. and small amount of solid and liquid wastes from the immediate use of constructed latrines by the workers may also be generated, such as feces and urines.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Raw materials:** i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) wood. **Quantity:** It is difficult to provide exact figures of raw materials on a typical pre-construction site at this level.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Vegetation from social forestry is present in the right of way, mostly within the boundaries of adjacent households and approx. area is nearly 934 sqm, but only 8 nos. of trees might be affected during the construction activities. No borrow pits were found in the area and the current condition shows that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation) The possibility is Low, for stagnant water bodies in borrow pits, quarries for inviting mosquito breeding ground. Since the target area is on high terrain water drains onto lower grounds. However, very small amount of area holds sewage waters in different locations in camp area which can give rise to mosquito breeding.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) Low, there are no existing drainage channels (rivers, canals), but a pond is located beside the sub-project location.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced

development: (High/Medium/Low with description) Under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Only some preparatory physical works will be carried out in this phase which has very little scope to trigger landslide.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Since both sides of the road is more or less of similar elevation except in some upland sections along the road length and the soil and hill slope are well compacted, the scale of erosion of lands is very unlikely at this stage.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Dust impact can be high due to poor condition of the road, but other traffic movement impacts such as light or noise impact will not be significant in the pre-construction phase.

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

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): ***Solid waste:*** Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 45 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): ***Type:*** *i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi)Bitumen are the most common type of raw materials to be used in construction period.* ***Quantity****: Anticipating the quantity of raw materials to be used needs detail calculation as per design, which is beyond the scope of this report, but presented in engineering design/estimates of the sub-project.*
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No dense vegetation is present in the right of way. However, a dense growth of shrubs and small trees alongside the road can be said to be in ROW. Aggregated Soil is not present on the ROW. However, a temporary waste dump and equipment yards require approximately 650 square meters of area altogether.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) Low. This area does not face water stagnation for long periods of time. Moreover, locals have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description***)***

No natural drainage channels are located alongside the road length. However, the existing drains can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place to reduce the impacts to the minimum level.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low. Potential erosion may occur when moderate to high sloping terrains are disturbed for the improvement of sub-project. The impacts are negative but short term, site specific within a relatively small area and manageable by mitigation measures.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light but low effects of noise and air pollution, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils:(High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation) There is no possibility of stagnant water bodies for encouraging mosquito breeding and other disease vectors, during the operation phase.

Likely direct and indirect impacts on economic development in the project areas by the sub-project: Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes):(High/Medium/Low with description) No existing drainage channels or surface water bodies found in the project area, therefore, no such effect is anticipated.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description) 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: Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Low. Concentrated outflow will be carried by proposed drains and culverts.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed HBB road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Section D: Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1: Sub-Project Interventions	Air Quality	Under the subproject intervention the overall score is **low**.	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor monitored by Consultant and PIU	Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection;	Visual monitoring of air quality and if requires, air quality test (CO, $PM_{2.5,10}$) once in construction period in winter season.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Soil impacts	Under the sub-project intervention the overall score is **low.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.	Construction Contractor monitored by Consultant and PIU	No visible degradation to nearby drainages, *khals* or water bodies due to soil erosion. Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan.	Construction Contractor and monitored by Consultant and PIU	(i)Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; (iii) No visible degradation to nearby drainages, *khals* or water bodies due to construction activities. (iv)Records should be kept and logged.	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	
					Indicators	Frequency
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is **low**.	Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site.	Construction Contractor and monitored by Consultant and PIU	Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health &Safety orientation trainings; Condition of sanitation facilities for workers	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is **low.**	Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents	Monthly monitoring.
	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 with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is **low.**	• Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site.	Construction Contractor and monitored by Consultant and PIU	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	weekly as work progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and landslides)	Under the sub-project intervention, the overall score is low.	• During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment remain within the right of way and does not disturb the crop.	Contractor, environmental specialist of D&SC	Location of road alignment and slope.	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration : • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury.	Construction Contractor and monitored by Consultant and PIU	-List of materials and sources of materials; -Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low.	• If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialist of D&SC	Complaints from community;	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.	Construction Contractor and monitored by Consultant and PIU	Number of complaints from stakeholders; Use of silencers in noise-producing equipment and sound barriers; Noise Level following decibel meter (dB), if necessary.	Inspection by PIU and supervision consultants on monthly basis

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	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; Number of complaints from stakeholders; Records of air quality inspection.	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is **low.**	• Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. • Local residents should be kept informed about planned Works	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	
					Indicators	Frequency
4. Post Construction	Road Safety		• Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate **traffic** detours, and sufficient **signage** & **warning** signs, Post speed limits and suitable bending on the road. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc.	Construction Contractor, environmental specialist of D&SC	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**.	• Replantation of trees during monsoon period • Maintain of trees properly • Check survival of trees and replant the dead trees	Construction Contractor, environmental specialist of D&SC	Number of complaints from stakeholders; Records of trees number and tree plantation inspection.	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is **low**.	• No advertisement/boardings shall be allowed within the Right of Way limits of the project road. • Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. • Clear smooth speed breaker/rough surfaces should be clear in views. • Regular maintenance of road surface and shoulders.	LGED	Number of complaints from stakeholders	During Operation under LGED's regular maintenance program in each 3 years.

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

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

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

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

Appendix-2

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

ESMP for Access and evacuation Roads:

Project Stage	***Potential Environmental & Social Impacts/Issues***	***Proposed Mitigation Measures***	***Institutional Responsibilities***	***Supervision Responsibility***
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All of the project stakeholders should be consulted • Separate community level consultation meeting with the potential affected HHs • Consultation meeting with host communities about the project objectives and scope of works	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. • In case of unavoidable circumstances, alternative access will be provided.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	• Selection of sub-project sites and all implementing interventions must take place outside of the	PIU	Environmental Consultant of PIU,

	conflict	elephant 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 paths to avoid the flash flood or any kind of surface runoff. Keeping 20 meters distance from water bodies or natural water flow paths should be maintained, if possible. • Tubewell location within the construction site/camp should not near any kind of latrine and soak well which could be contaminated by those. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to the locations wherever necessary. • Avoid disruption to human settlement, and social, cultural and religiously sensitive areas. • Avoid disturbance to existing slop and any natural drainage system. • The contractor shall ensure that site preparation activities do not lead to any disruption to living or activities of the local residents.	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. • Contractor must provide personal protective equipment (PPE) such as ear plugs, earmuffs, helmets, etc. to the persons working in high-risk areas and wherever required.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Acceptable range of emission of CO, particulate matter [SPM (**Suspended particulate matter),**	Contractor	Environmental Consultant of PIU,

		PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. • Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level		PSC
Construction Activity	Safety Issues	• Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. • Records of every training must be kept at site. • All kinds of Child labour are completely prohibited in every site. • Every construction materials storage site will be well fenced by Tin and safety caution tape.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water	PIU & Contractor	Social Development Specialist and

		sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be taken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts.		Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

		• 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: • Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site • After completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management from respective authority or Environmental Specialist at PIU in difficulties to reach that authority.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC

Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment Will be properly inspected timely. • The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. • Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box containing adhesive bandages, antibiotic ointment, antiseptic wipes,	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

		aspirin, non-latex gloves, scissors, thermometer, etc. in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Operation &Maintenance	Noise disturbances to fauna	• Provision to maintain noise and vibration from the operation and maintenance of machinery and	PIU	Environmental Consultant of PIU,

		equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.		PSC. Union Member
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time.	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the construction)	The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder.	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

Waste Management Plan Principles:

The Contractor shall develop a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food, and organic waste, etc.) prior to commencing of construction and submit to LGED for approval. The plans must include the following principles or series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

•Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.

•The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

•Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.

•Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.

•Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.

•All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.

•Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.

•Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;

•Burning of any type of wastes in a labor camp or construction site shall be prohibited completely.

Prepared by: Harogopal Kabiraj, Environmental Focal Person, 01714980171
Tanvir Ahsan Haque, Environmental Specialist, 01688117059
Sadia Azad, IC, Disaster Risk and Climate Change Consultant
Reviewed by: Md. Saiful Islam, IC, Field Level Environmental Specialist, +8801913442006

Appendix-3

Cost of Environmental Enhancement Works in BOQ

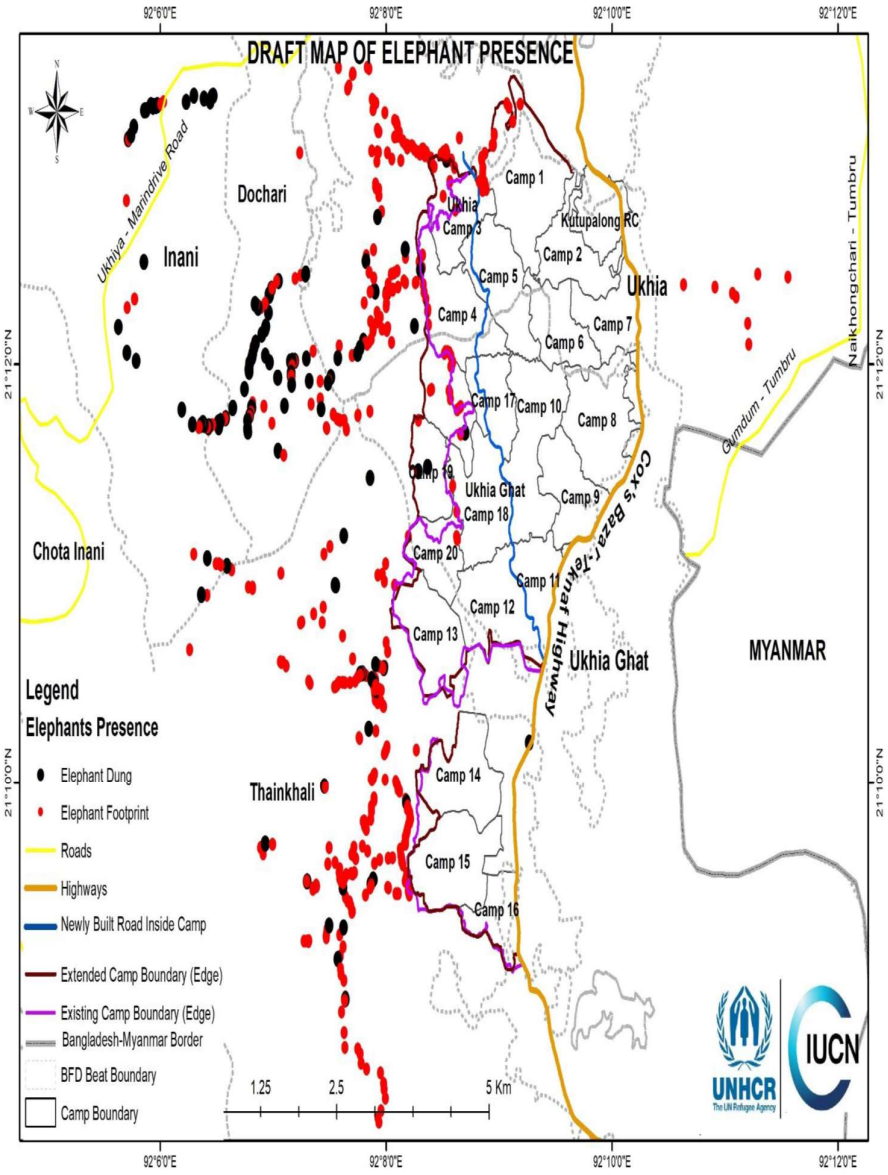
In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope & 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)	LS	@10,000 Tk.	10,000
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	2 nos.	@5000 Tk. Per box	10,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	km	Lump sum @ 20,000	20,000
4.	**Health safety warning sign** Health safety warning sign at the site office and as per direction of the E.I.C.	LS		15,000
5.	**Providing Safety gear** Providing Safety gear package like safety jacket, hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	LS	@ Tk. 20,000	20,000

Sl no.	Description of item	Quantity	Unit price	Total amount
6.	**Tree plantation** 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.	150nos.	@ Tk. 42.70 for each tree.	6405.00
7.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@10,000	10,000
8.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	2 nos.	@5000 tk for each filter	10,000
9	**Construction of Labor shed**	LS		80,000
	Subtotal Bill: Environmental facilities			181,405

Appendix-4



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

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time: 11:10 AM Date: 25/12/19

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

1-12
3

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

প্রকল্পের নামঃ UP to Chora khola Road to Hakimpara Camp
মত বিনিময়ের স্থানঃ Union Parishad

ইউনিয়নঃ Palongkhali
ডাকঘরঃ Bhalukhali
উপজেলাঃ Ukia
জেলাঃ Cox's Bazar

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১	শফিকুর রহমান	৩৩	পুরুষ	হাকিম পাড়া	Saumi
2	হামিদ আহমদ	৫০	"	"	[illegible]
৩	জুবাইর	20	"	"	[illegible]
৪	নোমান খান	২৮	"	পশ্চিমপাড়া	[illegible]
৫	Emon	১৯	"	হাকিম পাড়া	[illegible]
৬	মোঃ মুহিদুল আলম	৪৭	"	মধুরছড়া	[illegible]
৭	মৌঃ জয়নাল হোসাইন	৫৫	"	বালুখালী	[illegible]
৮	হাঃ মোক্তার হোসাইন	৩৯	"	ক্যাম্প ৮	[illegible]
৯	আবরার উদ্দিন	৫৫	"	হাকিম পাড়া	[illegible]
১০	আবদুল হক	৫৩	"	থাইংখালী	আবদুল
১১	রহিম	২২	"	"	[illegible]
১২	এম. গফুর উদ্দিন চৌধুরী	৫৪	"	মোছার খোলা	[illegible] 0181[redacted]035876

Public Consultation Participants' List

Appendix-6

Existing Newly planted trees and u drain are besides the sub-project

Existing u drain beside the targeted sub-project

Local drainage channel, electric pole and Tin fencing are on the way to 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 Thainkhali to Boddhogona Road to Tanjimarkhola camp

Under the package no. EMCRP/W13

April-2020

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 Brick
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
SMC	School Management Committee
SPM	Suspended Particulate Matter
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNHCR	The United Nations High Commissioner for Refugees
VAT	Value-Added Tax
WB	World Band

Contents

Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental protection and services. Nevertheless, to aid into the condition and improve the symbiotic relationship between the Host Communities and the Displaced Rohingya Population (DRP), many forms of interventions are taking place. One of those is Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) which is aided by World Bank holding one of the objectives to provide improved communication network for Upazila of Teknaf and Ukhiya. Among all different components of this project such as construction of school cum cyclone shelters, and Multipurpose Community and Service Centers (MCSC), facilitating growth centers and RCC Bridge development, and so on, 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 key project beneficiaries- Displaced Rohingya Population (DRP) and Host Communities or in other words, local population. From many of the project's purposes, identification of environmental and social components which might fall into bargain for improvement works and ensuring the safeguards of those components are very basic or fundamental motives. In order to take these matters into consideration, screening and assessment of these elements have been carried out in accordance with guidelines from World Bank; and accordingly, environmental and social screening reports have 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.

The Sub-Project is categorized as a village Road-B. This sub-project has started from Baidyaghona Army camp to Thainkhali Ghonarpara road which connected with Rohingya camp no. 13 & 19. Due to the low land in different chainage of the road 528m Brick Palisading wall as well as for road safety Km Post, Guide post & Name Plate has been included in the estimation Apart from some dispersed human settlement along the road, though at sufficient distance from the alignment, there are some important socio-cultural and religious components along the road length. Some religious center like mosque are situated within one kilometer. Balukhali mosque is half Km away at east side, at west side Bagguna mosque is on 750m, Ghonarpara mosque is on 800m at south side and Moynaghona mosque is on 950m away, otherwise two mosques and one homestead temple are alongside from the sub-project side. The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and affect some trees. All these impacts are site-specific and adjustable by mitigation or offsetting measures. Good management practices in labor camps, material storage areas, borrow pits, and in the areas of occupational health safety, road safety, and hazardous material management would suffice in curbing the potential pollution, hazards and any further risks related to construction works. Appendix 02 of this report has detailed out the mitigation measures within the scope of interventions associated with this component of the sub-project.

This component of the sub-project has been proposed to ameliorate the socio-economic condition of the people living in the surrounding and connecting areas through providing climate resilient roadways and associated safeguard facilities. Since the road will not pass through 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.
- ✓ Improve the local planning, coordination and work execution capacity
- ✓ Facilitate emergency route in case of emergency situation
- ✓ Decrease road accidents & promote efficient use of existing facilities
- ✓ Make a crucial contribution to economic development and growth and bring important social benefits

This document represents the Findings from Environmental Screening of the sub-projects under **'**Improvement of 6 Access Road to different camps of forcibly displaced Myanmar nationals under Cox's Bazar District**'; with a package name-EMCRP/W13.**

Table 1.2.1: Significant features of the Sub-project

Package Name: EMCRP/W13: Improvement of 8 Access Road to different camps of Forcibly Displaced Myanmar Nationals (FDMN) under Cox's Bazar District.		
Sub-project Component no. W13(5): Thainkhali to Boddhogona Road to Tanjimarkhola camp		
Component Location:		
i. ID- 422945094	ii. Ward No.: 4	iii. Mouza: Balukhali
iv.Village: Moynaghona, Thainkhali	v. Name of Union: Palongkhali	
vi. Name of the Upazila: Ukhiya	vii. Length (Km): 640m	
viii. Construction Year: 2020-2021	ix. Width (m): 3m (approx.)	
x. Water Status: Available	xi. Water Source: Shallow Tube-well, Deep tube-well	
xii. Distance from UZHQ : 17 Km.		
GPS Coordinates	Latitude Value: 21˚10'39.1" N; Longitude Value: 92˚9'21.2" E	Starting Point
	Latitude Value: 21˚10'39.3" N; Longitude Value: 92˚9'1.8" E	Ending Point
Condition of Road	BFS, HBB	
Communication Source	Radio & Mobile Network	
Subproject Intervention 1. BC 2. ISG 250mm 3. Sub-base 150mm 4. Base course 150mm, 5. 40mm Carpeting with 7mm Seal Coat 6. 236 m L-Drain 7. 5 nos. Cross Drain (dimension: 750mmX 750mm, Ch: 10m, 42m, 198m, 500m, 580m) and 8. Box Culverts 2nos. (dimension: 2.00mX1.50m, Ch: 245m, 635m) and 1no. (Size: 3.00mX2.50m, Ch: 420m), 9. Road safety Guide Post & Name Plate		
Implementing Agency: Local Government Engineering Department (LGED)		
Expected construction period (Component -1): 2020-2021		
Estimated total cost of component: 1,49,16,431.00 (Tk.)		

2. PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. Several events of consultation meetings were carried out in different dates and times with different types of stakeholders. D&SC conducted the first consultation meeting with local community during 03:30 PM to 04:45 PM on 23 December, 2019 at the shop of Hamidul Haque in Moynaghona which is adjacent to the sub-project location. Refer to Figure 2.1.1, Public Consultation Participants List is attached in Appendix-5 and sub-project pictographic overview is attached in Appendix-6. Several more consultation meetings in different modes were carried out as well. The local individuals, chairman and/or member of Union Parishad, representatives from different agencies participated in those consultation events. A questionnaire was kept ready and responses were elicited during the FGD. During these consultations, the communities were explained about the project, its benefits, associated social and environmental aspects. The following table depicts details of several of those consultation meetings with outcomes.

Consultation Date	Time	Venue	Mode of Consultation	Stakeholder/ Participants	Outcomes
23th December 2019	3:00 noon	The shop of Hamidul Haque in Moynaghona which is adjacent of the sub-project location	Focus Group Discussion	List is attached in Appendix.	Participants were informed about the sub-project interventions, potential impacts and management options, their informed views and comments were taken into consideration and appropriately reflected into the ESMP.
18th February 2020	6:00 pm	Office of the UE, LGED, Cox's Bazar	Direct conversation	UE, Resident Engineer, Field Engineers, LGED Staffs	Consulted about the survey plan and UE office assured of putting all efforts in enforcing ESMP in the field.
19th February, 2020			Telephonic consultation	Md. Sultan Mahmud, Asst. Site planner of UNHCR	Consulted about the survey plan and the site was found free from any direct physical impacts associated with the proposed road works.
19th February, 2020			Telephonic consultation	Shegufta Newaz, Coordinator of site	

				management, UNHCR	
19th February, 2020	3:00 pm	CiC office in Camp 7	Direct Conversation	Subash Chandra Sheel, Camp Mgt. Support-Dty Lead, BRAC, Cox's Bazar.	He assured of lending all hands from him and his organization in successful implementation of the project.

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 must 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 maintenance were discussed. The advantages and disadvantages regarding the sub-project activities were also revealed. A successful public consultation programme requires the following three elements to be effectively executed (i) dissemination of information to the stakeholders (ii) solicitation of information from affected parties and inhabitants by environmental issues. (iii) Consultation with interest groups and the public.

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

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

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

2.3 Suggestions and recommendations of the participants

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

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

3. ENVIRONMENTAL SCREENING

3.1 General

Environmental Screening is the preliminary process of Environmental Assessment for the identification of significant impacts on important environmental components, depending on the nature and size of the project, its interventions and technology, location and time; and evaluation of screening findings will decide whether any further comprehensive assessment study is required or not. This assessment procedure will follow a definite scope of interventions, for example, this particular study will be based on the qualitative assessment of the surrounding environment of the particular site before any physical intervention starts, and maximum project impact area is considered to be half a kilometer of the radial distance around the site.

3.2 Assessment of Screening Findings

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted with the purpose of fulfilling the requirements of GoB and World Bank. Assessment of potential impacts requires a multi-disciplinary approach in which a wide range of issues are taken into consideration to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation.

In order to realize the exact physical, biological and socio-economic environment of the proposed sub-project site and the influence area in regards to the implementation measures. Environmental Screening form, as adopted in **Appendix 2** of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents. The screening data and information for this Sub-project and details screening summary have been formulated and shown in **Appendix-1**

The proposed sub-project is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. The project road crosses households, trees, bamboo and tin fencing, agricultural lands, shops and local bazar along the road length. There are three distant mosques in the area, and a learning centre, two madrasas, a playground, a NGO office and a fish market were found located alongside the road. A bamboo bridge and local drainage system were also observed. Two or three trees may need to be removed during the construction period. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts and camps. 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 will be localized and temporary and will unlikely to result in structural damages to 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 were reported in 2018. The IUCN has conducted a study on such type of conflict. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

3.3 Climate Change Impact Screening

3.3.1 General Overview of the area

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis

evolved. A recent study conducted by World Bank[3] has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

The hilly region of the country, especially the part in Cox's Bazar is characteristically of muddy or soil structure, not of any rocky formation and the stability comes from the roots of the trees. Denudation of trees from hilltops in order for the huge settlement of Rohingya people has already increased the vulnerability to the risk of hill collapse by destabilizing the terrain. Also, the vigorous monsoons make the area prone to landslides, and there is always the lurking threat of cyclones and thunderstorm across the area.

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

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

3.3.2 Site Specific Screening and outcome

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

The meteorological data suggests that there is no significant change in the weather. In order to avoid the devastation caused by the thunderstorm, state-of the-art thunder arrester (lightning protection system) has been suggested to install having a coverage area of 25,434 sq.m for a single arrester. Also there is no significant flooding potential in the 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.

Specific Environmental and Social Management Plan (ESMP) has been prepared to eliminate, reduce or regulate the adverse impacts for this subproject. The purpose of this Environmental and Social Management Plan (ESMP) is to formulate measures which will mitigate adverse impacts on various environmental components, which have been identified during observation, and protect

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

environmental resources where possible and enhance the value of environmental and social components where possible.

Among the notable prioritized management measures, contractor must adhere to the best practice HSE (Health, Safety and Environment) management procedure and regular adoption of dust control procedures (spraying of water at least twice a day) to minimize the effect to the least level. This HSE management procedure targets both groups- the working staffs/labors directly employed by the contractor and the people living in the catchment area or simply the users of the road. Noise impacts must be controlled efficiently as the road has the presence of local settlements, learning centre, NGO office, madrasas, fish market and a playground in the close vicinity of the areas and construction works must be limited in day time; and the time and duration of any potential noisy works should be communicated with the surrounding people fairly in advance. Special attention should be given to hill/tila-side slopes to protect from any potential landslide or mass movement to adjoining road surface. Construction of L-drain and cross drains is suggested at different chainages to avoid such catastrophe or nuisance. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities.

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

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area, primarily under the Ukhiya and Teknaf upazilas 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 situations

Apart from the established Occupational Health and Safety (OHS) measures being followed in construction sites, offices, and labor camps, a set of additional measures has to be taken and practiced throughout the daily cycle by each labor, staff and any involved parties, due to the ongoing pandemic coronavirus situation. Staffs and consultants at PIU and D&S, along with the pool of consultants under different firms/agencies for different services, and all the representatives or staffs of construction contractors and suppliers have to play much sensitive, (pro-) active and responsible roles in abiding by the rules and measures by themselves and getting the involved workers and different stakeholders adhered to the same. A detailed guideline containing a set of measures with shared responsibilities has been sketched out in order to fight the exposure and further spread of this potentially fatal situation. This plan or guideline shall constitute an integral part of ESMP

measures for every sub-project, though is not included in this report to keep it concise and specific, and the contractor is required to keep the copy of that guideline at every site offices.

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

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

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation, capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situations should be allocated in consultation with project PIU.

4.3 Cost of Environmental Enhancement Works in BOQ

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

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities and DRPs. Contractors' employed site managers and safeguard

supervisors (or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. The said employees shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities.

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

PIU will have safeguards specialists stationed in Cox's Bazar and will conduct field visits very frequently. Moreover, Executive Engineer's office in Cox's Bazar and Upazila Engineers' office in Ukhiya and Teknaf will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Safeguards specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done, and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

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

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

6. LIMITATIONS OF THIS STUDY

Bangladesh government has imposed a nationwide lockdown to curb the spread of the novel coronavirus in the wake of series of deaths and infections. Authorities declared a ban on passenger travel on all sector from March 24 while all public transport on roads have been suspended from March 26 to stem the spread of virus, officially known as COVID-19. All office works have been

postponed and an intended visit to the sites for further consultation with the relevant stakeholders has had to cancel due to this crisis. Therefore, some relevant information and arrangement needs awaiting for recovering this pandemic crisis.

Further, during the consultation, people living in the area and along the site were primarily targeted, though local dialect and Burmese language sometimes posed difficulties in understanding peoples' views. The safeguards team put their best efforts in meeting local representatives and Camp in Charges (CiCs), different sector coordinators, responsible agencies for site development and management while went to any respective road to survey. However, difficulties in finding the meeting time during the stringent working hours in camp areas have been observed very common, therefore, telephonic consent or views were taken in many cases.

7. CONCLUSIONS AND RECOMMENDATIONS

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

The 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. These issues might be problematic if necessary mitigation measures, as suggested in ESMP, would not be properly taken into consideration.
- The project will create employment for the workforce 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 Management & Monitoring Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities. The ESMP mainly focuses on managing, mitigating and reducing the impacts exhibited in design, construction and operation phases.

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

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: (Improvement of 6 Access Road to different camps of Forcibly Displaced Myanmar Nationals (FDMN) under Cox's Bazar District; EMCRP/W13).

Name of the component: Thainkhali to Boddhogona Road to Tanjimarkhola camp

Implementing Agency/Agencies: Local Government Engineering Department (LGED)
Estimated total cost of sub-project (in Taka): 15,66,50,441 tk

Estimated construction period duration: 6 (Six) months

Estimated total cost of the component (in Taka): 1,49,16,431.00 (Tk.)

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

District: Cox's Bazar **Sub-District**:Ukhiya **Union**:Palongkhali
Name of Community/Local Area: Moynaghana, Thainkhali

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-B and will be improved with BC option. The proposed design of Sub-project includes ISG 250mm, Sub-base 150mm, Base course 150mm, 40mm Carpeting with 7mm Seal Coat. For drainage of rain water and ease movement of natural water flow 5 nos. **Cross Drain** (Size: 750mmX 750mm, Ch: 10m, 42m, 198m, 500m, 580m) and 2nos. **Box Culverts** (Size:2.00mX1.50m, Ch: 245m, 635m) and another box culvert (Size: 3.00mX2.50m, Ch: 420m) will be constructed. For an uninterrupted passage of mountain eel water during rainy season **236 m L-Drain** at different chainage has been included in the estimation. Km Post, Guide post & Name Plate has also been included in the estimation (Technical Report 2019, EMCRP).

Estimated footprint / land area for this sub-project is 1920 sqm.

Brief description of sub-project site: (e.g. present land use, Important Environmental Features (IEFs) near site, etc.:
Proposed improvement of Thainkhali to Baddagona Road to Tanjimarkhola Camp is to be completed as village road-B and land is owned by the Government. Due to frequent use for communication by the local community and displaced Rohingya people earthen shoulder and slope of the road at different parts has been heavily damaged. Therefore, earth work during construction period is needed for the sub-project. Detail Environmental features within 100m of the both sides of the road from its center line were collected @300m longitudinal intervals. The findings of the survey for the aforementioned road can be seen in the following table:

Chainage	Left	Right	Important Environmental/Socioeconomic Features
"0" Point 000-300	L		Start from Shop of Yasin at Moynaghona, u drain, tila (high land), electric pole, tree, tin shed fencing, tin shed households, bamboo fencing, shops, local bazar
		R	Guide wall, shops, bamboo fencing, tree, playground, drain (kaccha), paddy land, DRP households, tubewell, mosque,
300-640	L		Paddy land, boundary pole, electric pole, drain, marshland
		R	Playground, DRP households, local people household, temple, canal, tree, bamboo fencing, vegetables field, homestead garden, marshland

Figure: Starting point of Thainkhali to Baddagona Road to Tanjimarkhola Camp

Overall Comments

The proposed sub-project component is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area thus not going to create intimidation to important environmental features. Existing road is very narrow from chainage 350m-640m, so this road width will be widened as per proposed design. During the wet season road condition becomes horrible and tough to keep the communication system running, and road erosion/landslides on the edge occur frequently. Some local trees may need to be removed for construction activities. 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 the project boundary. Further mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

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. Several individuals from local communities participated in the consultation meeting and they do not have any objection to construction works under this sub-project. Rather, the community 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 have the passage during any emergency situation.

The proposed Sub-project area for the construction of hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No 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. This sub-project is situated within Thainkhali, ghonarpara villages under Palongkhali union Ukhiya upazila, Cox's Bazar. Some religious sites like mosques and madrasas are located within one kilometer from the site. Balukhali mosque is half Km away at east side, at west side Bagguna mosque is on 750m, Ghonarpara mosque is on 800m at south side and Moynaghona mosque is on 950m away; besides, two mosques and one homestead temple are located alongside. A learning centre and a playground are located very close by. A canal and patches of marshland are also located in the vicinity.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Appendix-4 presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

Figure 3: District Map with project location

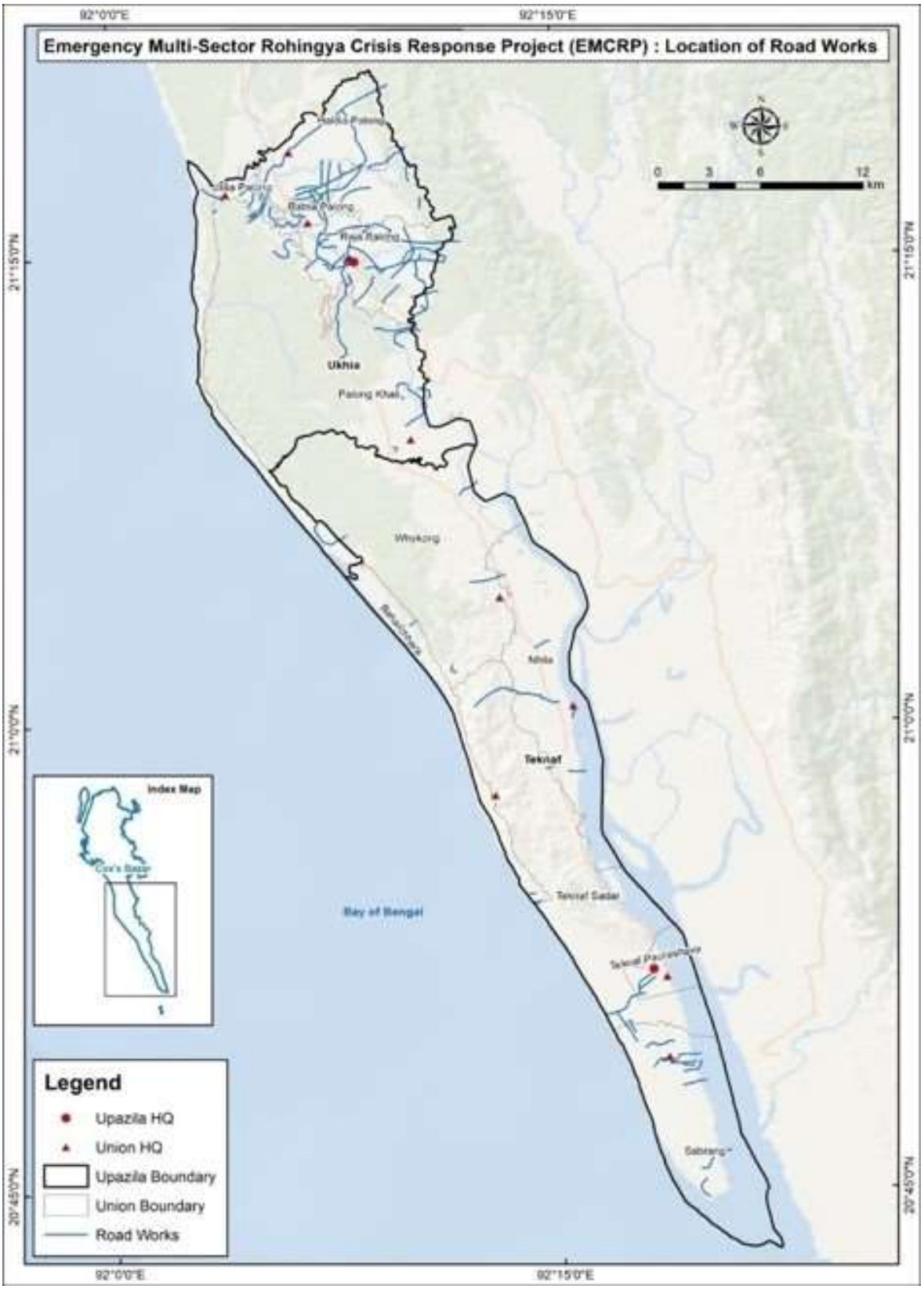


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

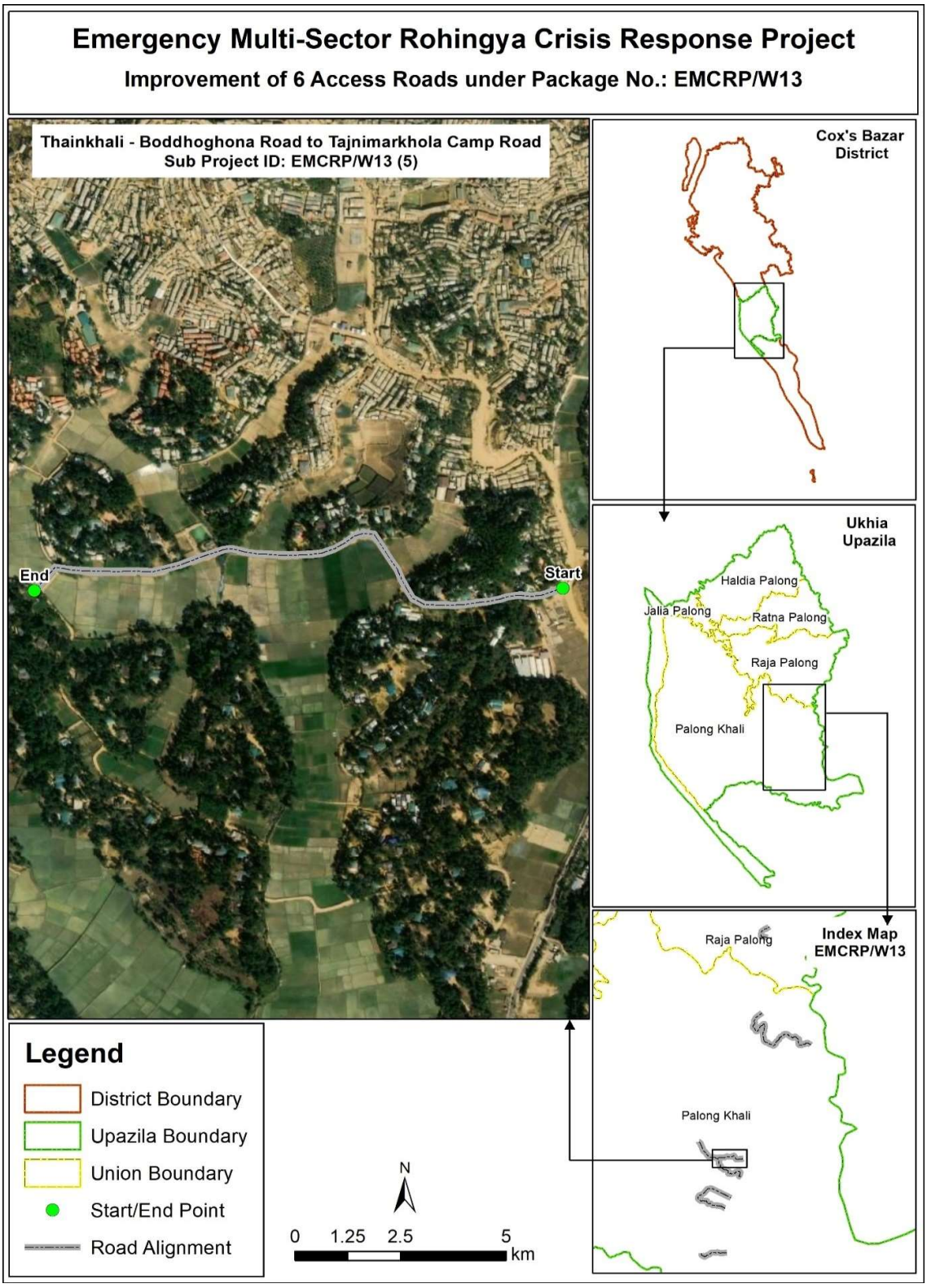


Figure 5: Upazila Map with Sub-project location

Completed environmental and social screening forms are given below:

Section A: Sub-Project Overview

Description of sub-project/component interventions:
The Sub-Project is categorized as a village Road-B. This sub-project starts from Baidyaghona Army camp to Thainkhali Ghonarpara road which is connected to Rohingya camp no. 13 & 19. Based on field survey, this sub-project has got 40m HBB road. According to the design this sub-project is to be improved with ISG 250mm, Sub-base 150mm, Base course 150mm, 40mm Carpeting with 7mm Seal Coat.

Sub-project Location:
This sub-project is located within Thainkhali village under Palongkhali union Ukhiya upazila, Cox's Bazar. Other villages alongside the sub-project are Balukhali at east side, Bagguna at west side, Ghonarpara at south side and Moynaghona is at north side.

GPS Coordinates of Sub-project:
Starting Point: Latitude: 21˚10'39.1" N; Longitude: 92˚9'21.2" E
Ending point: Latitude: 21˚10'39.3" N; Longitude: 92˚9'1.8" E

Land ownership
Land is owned by the Government of Bangladesh.

Expected construction period: **5** (Five) months

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

i) The proposed Sub-project is located within Thainkhali village which connect with camp road of 13 & 19.
ii) Not required to relocate Displaced Rohingya People (DRP).
iii) Some DRP settlements are found alongside the road length.
iv) Agriculture land and marshland were identified within catchment area of sub-project
v) Some trees and livelihood will be affected by this construction activity.
vi) Within the influence area of the subproject no historical sites were identified.
vii) Environmental Sensitivity: No mentionable eco concerned establishment, no socio cultural site were identified and
viii) There is no evidence of presence of elephants in the subproject influence area (confirmed by the consultation with local people).

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 religious sites like mosques within the catchment area named Balukhali jame mosque (0.5Km) at east side, at west side Bagguna jame mosque(750m), Ghonarpara jame mosque (800m) at

south side and Moynaghona jame mosque (950m); besides two mosques and a homestead temple are located in the area. A learning centre and a playground are located very close by. A canal and patches of marshland are also located in the vicinity.

There are no significant sensitive environmental, cultural, archaeological sites exists in the area of this sub-project. In this sub-project area, no elephant migration routes exist (ref. IUCN).

A sketch of the project surrounding area and project influence area are shown in figure B.1.1 and locations of sensitive institutions in the project surrounding areas (30m buffer zone) are shown in figure B.1.2. and the list of sensitive areas are shown in Appendix 7.

A sketch of the project site and surroundings features in project influence area
Work Package # EMCRP/W13(5)
Name: Thainkhali –Boddhoghona Road to Tajnimarkhola Camp

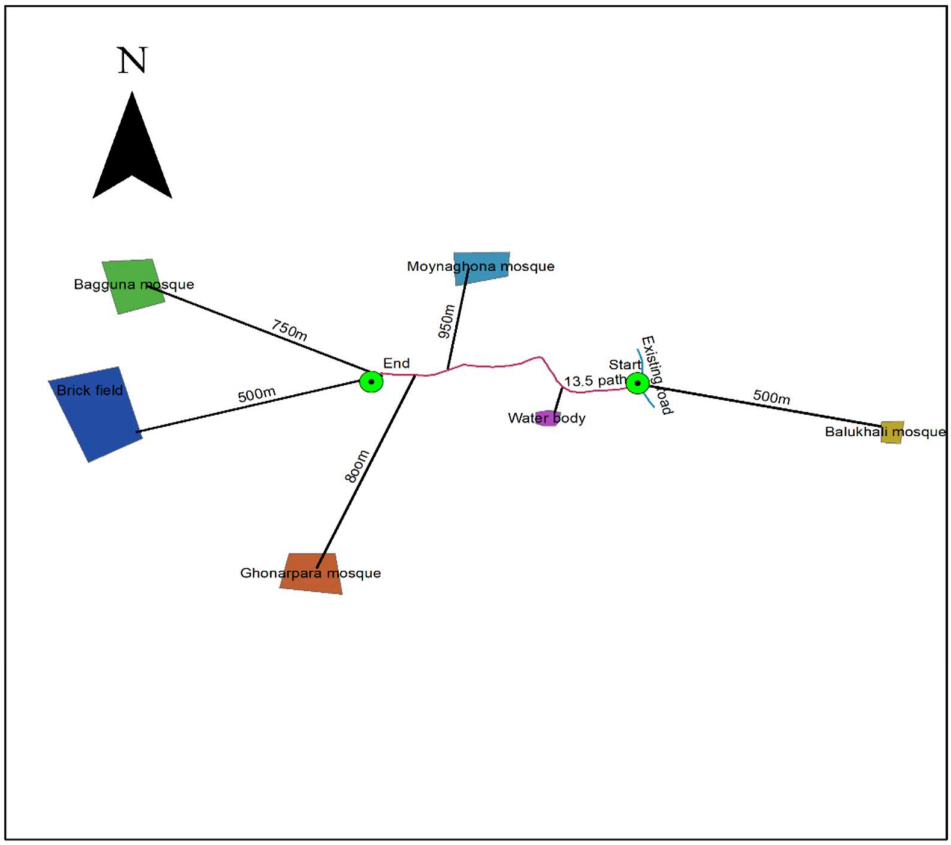


Figure B.1.1 : A sketch of the project intervention area

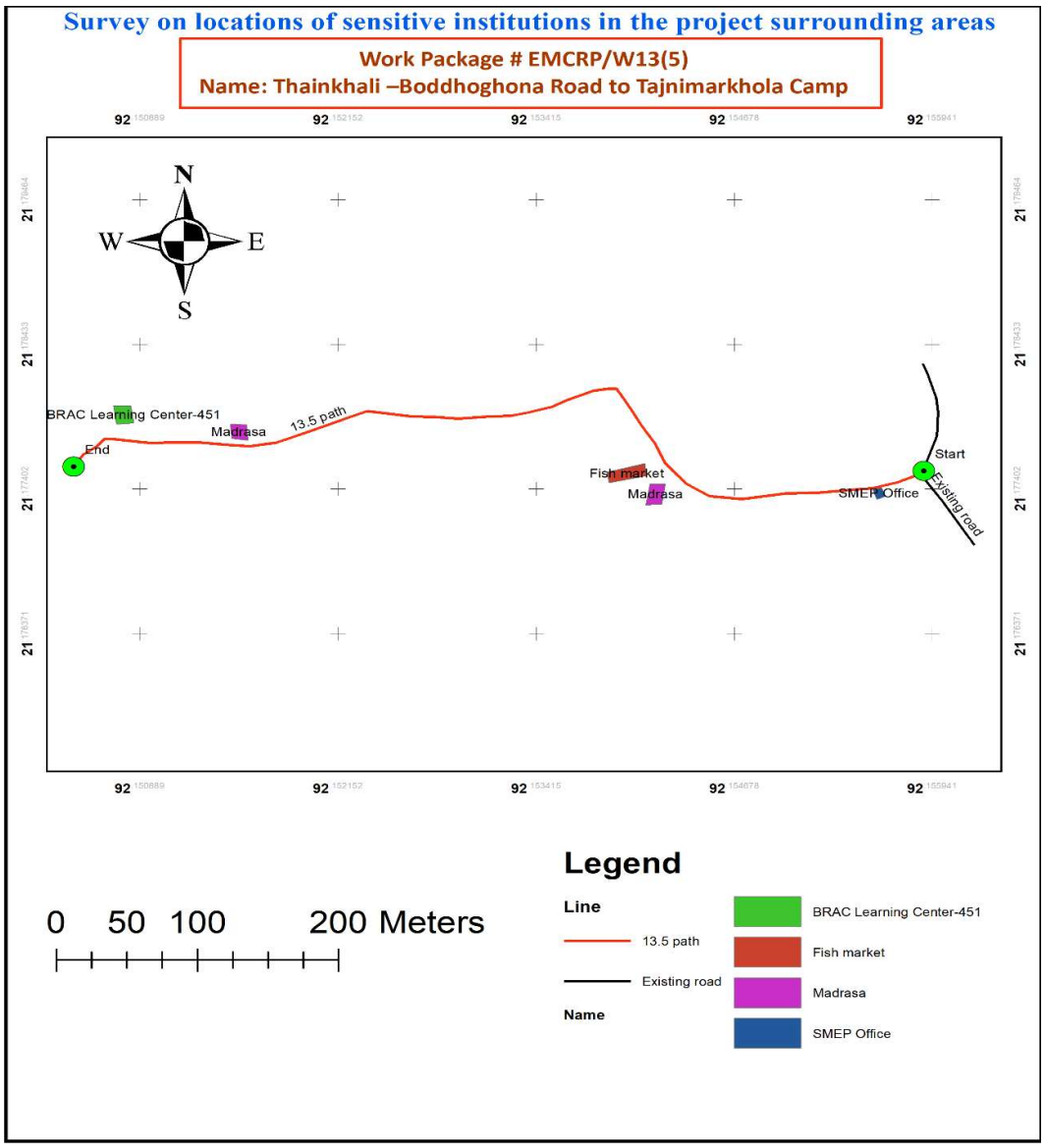


Figure B.1.2: Locations of sensitive institutions in the project surrounding areas (30m buffer zone)

Location of environmentally important and sensitive areas:

This sub-project location was once environmentally important and sensitive for containing protected forest area but this location has lost its greenery for supporting the lives and livelihood of DRP communities. A canal and patches of marshland are also located in the vicinity.

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

No. Elephant migration routes or corridors were present near the sub-project area about 8-9 years ago, but no presence of elephants or their migration routes at this moment. This information is confirmed with maps established by UNHCR/IUCN and the consultation meeting with local stakeholders.
Appendix-4 presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN

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

No. There is no natural forest land at this moment in the area. Afforestation works have been in progress by WFP and others organizations.

(3) Other issues:

No more mentionable issues raised.

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

Baseline air quality and noise levels:

Dust:

Ambient air quality data was not readily available, but quality was apparently good due to the appearance of rural vegetative settings around. But after arrival of Rohingya the number of vehicle movement on the road became too high. Dust is generated through movement of vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor, etc. over the road surface which has caused deterioration of air quality.

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerable limit. Vehicles such as motor cycle, tempo, auto rickshaw, tractor, trailer, etc. move on the road surface throughout the day and night. These vehicles generate noise but still within the tolerable limit in most cases. Noise is also originating from the communication among the Rohingya Displaced People (RDP), service providers and relief distributors.

Baseline soil quality:

The Sub-project area is located mainly in red, alluvial, muddy, sandy soil and Dupitila formation. The soils developing from the weathered sandstones tend to be sandy to clay loams.

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

Low. Potential erosion or landslide may occur when moderate to high sloping terrains are disturbed for the improvement of road. The impacts are negative but small scale, site-specific within a relatively small area and manageable by mitigation measures.

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

Surface water quality: There are a canal and patches of marshland in the vicinity which could be considered as the source of surface water in the area, but water quality data was not available during the visiting period.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil.

Many shallow tube wells (100ft. to 120 ft.) and deep tube wells (750ft. to 800ft.) are fitted in camp area and most of the water usage is sufficed from these sources.

*Data source: IWM Study Report, 2019

Status of wildlife movement:

No major land-dwelling wildlife movement is present in the targeted sub-project area

State of forestation:

This sub-project falls under a local village which connects to Rohingya camp-13 & 19 and no major forest resides near or around the target area, only some homestead forestations were identified. So, there is no practice of deforestation or loss of vegetation by the local community. This area is mostly covered with homestead gardening and backyard tree coverage. Newly plantation has been taken place at camp areas by FAO and others organizations.
Summary of water balance analysis (For water supply scheme only): N/A

B.2: Pre-construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): Concerning ancillary facilities, the access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option. Pickup trucks will be more suitable.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: An open space is required to set up a labor camp with associated facilities (toilet for male and female workers, kitchen for cooking, tube-well for water supply facility, and electricity connection) to support the workforce during construction. The space should have enough land area to accommodate a stack yard along with a site office, if possible. This open space should be selected in such a way that workers do not need to travel/walk through a longer distance to reach the sites and the place can be secured with proper fencing with a guard be posted at the entrance. The space or land area can be used on rental basis or under a mutual agreement between the owner and the contractor. The contract/consent document must be kept at the site office, whatsoever the mode of the contract is.
Possible location of labor camps: Next to the labor Camp area or the site office, and within walking distance from the sub-project location.
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.
Identification of access road for transportation (Yes/No): Yes. The existing road seems to be the best option for transporting materials unto any unloading point in the area. Head load from unloading point to different working locations is easily possible by the assigned contractor.
Location identification for raw material storage: Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in construction works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 50 kg during the pre-construction phase.
Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): During the pre-construction period wastes will be generated from some preparatory activities, such as construction of labor camp, site office, material storage/stack yard and associated facilities, etc. and removal of road pavement. All these activities also will be carried out by numbers of local labors. So, around 45 kilograms of construction related wastes, such as bricks, aggregates, leftover cements, sands, etc. will be generated, which are typical solid wastes and a negligible quantity (nearly 5 kg) of bio and non-biodegradable wastes will be generated from the daily necessities of workers and construction staffs, such as food wastes, polythene, papers, plastics, etc. Some chemical waste, like paints, oils, etc. and small amount of solid and liquid wastes from the immediate use of constructed latrines by the workers may also be generated, such as feces and urines.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Raw materials:** i) Bricks ii) Sand iii) cement iv) Gravel v) water vi) Aggregates vii) wood. **Quantity:** It is difficult to provide exact figures of raw materials on a typical pre-construction site at this level.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: Vegetation from social forestry is present in the right of way, mostly within the boundaries of adjacent households and approx. area is nearly 934 sqm, but only 8 nos. of trees might be affected during the construction activities. No borrow pits were found in the area and the current condition shows that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation) The possibility is Low, for stagnant water bodies in borrow pits, quarries for inviting mosquito breeding ground. Since the target area is on high terrain water drains onto lower grounds. However, very small amount of area holds sewage waters in different locations in camp area which can give rise to mosquito breeding.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) Low, there are no existing drainage channels (rivers, canals), but a pond is located beside the sub-project location.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Only some preparatory physical works will be carried out in this phase which has very little scope to trigger

landslide.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Since both sides of the road is more or less of similar elevation except in some upland sections along the road length and the soil and hill slope are well compacted, the scale of erosion of lands is very unlikely at this stage.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Dust impact can be high due to poor condition of the road, but other traffic movement impacts such as light or noise impact will not be significant in the pre-construction phase.

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

B.3: Construction Phase

Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.): ***Solid waste:*** Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 45 kg daily. ***Liquid wastes:*** Leftover oils or spills from machineries may have a high probability to generate liquid waste. And the quantity can be tentatively 3 kg daily.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): ***Type:*** *i) Bricks, ii) Sand, iii) cement, iv) aggregates, v) water, vi)Bitumen are the most common type of raw materials to be used in construction period.* **Quantity**: Anticipating the quantity of raw materials to be used needs detail calculation as per design, which is beyond the scope of this report, but presented in engineering design/estimates of the sub-project.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No dense vegetation is present in the right of way. However, a dense growth of shrubs and small trees alongside the road can be said to be in ROW. Aggregated Soil is not present on the ROW. However, a temporary waste dump and equipment yards require approximately 650 square meters of area altogether.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation***)*** Low. This area does not face water stagnation (except the presence of natural marshland) for long periods of time. Moreover, locals 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) Low. Local drainage channels (rivers, canals) or surface water bodies (wetlands, marshes) exist alongside the sub-project. Existing drainage channel or surface water bodies may be disturbed during the construction period.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by

induced development: (High/Medium/Low with description) Low. The improvement works will be limited within the Right of Way of this road component. Moreover, not any considerable terrestrial or aquatic ecosystem is present in that area, which could be affected significantly by the construction activities. Also, the area is not known for containing any endangered or threatened species of any kind.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Construction activities such as cut-and-fill operations, slope stabilization or any mechanical operations that follow a faulty or incomplete operational procedure may lead to small scale landslides or mass movement in road cuts or adjoining land areas. The impacts are negative but short term, site specific within a relatively small area and manageable by mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low. Potential erosion may occur when moderate to high sloping terrains are disturbed for the improvement of sub-project. The impacts are negative but short term, site specific within a relatively small area and manageable by mitigation measures.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impacts on light but low effects of noise and air pollution, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.
Chance of long-term or semi-permanent destruction of soils:(High/Medium/Low with description) Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation) There is no possibility of stagnant water bodies to be created newly for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities,

better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) A canal, marsh land and kachha drain are present alongside the road, but will not significantly affected during the operation period considering the frequency or volume of traffic to be moving over the road. Deposition of dust on the water body may create problem to the aquatic ecology, though not in significant level.
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) Low. Concentrated outflow will be carried by proposed drains and culverts.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed HBB road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions.

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

Environmental Screening Summary

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1: Sub-Project Interventions	Air Quality	Under the subproject intervention the overall score is **low**.	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor monitored by Consultant and PIU	Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection;	Visual monitoring of air quality and if requires, air quality test (CO, $PM_{2.5,10}$) once in construction period in winter season.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Soil impacts	Under the sub-project intervention the overall score is **low.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures.	Construction Contractor monitored by Consultant and PIU	No visible degradation to nearby drainages, *khals* or water bodies due to soil erosion. Rain storms in construction phase.	Monitoring on weekly basis.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Hydrology (surface and groundwater)	Under the subproject intervention the overall score is **low**.	All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan.	Construction Contractor and monitored by Consultant and PIU	(i)Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; (iii) No visible degradation to nearby drainages, *khals* or water bodies due to construction activities. (iv)Records should be kept and logged.	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	
					Indicators	Frequency
2: Pre-construction Phase	Sanitation, water supply	Under the subproject intervention the overall score is **low**.	Provide suitable housing, adequate supplies of potable water, and toilet and bathing facilities within labor camp area for the assigned laborer. Provide means for disposing of wastewater from toilets, baths and food preparation areas either through a septic tank and soak away, or holding tank with removal by vacuum truck. Records for any type of training or awareness building sessions must be kept at site.	Construction Contractor and monitored by Consultant and PIU	Site-specific H&S Plan; Records of supply of uncontaminated water; Record of Health &Safety orientation trainings; Condition of sanitation facilities for workers	Visual inspection by PIU and supervision consultants on monthly basis
	Transportation	Under the subproject intervention the overall score is **low.**	Contractor should verify vehicles for the suitability of carrying, loading and unloading of materials	Construction Contractor and monitored by Consultant and PIU	• Record of regular inspection. • Record of accidents/incidents	Monthly monitoring.
	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 with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
3: Construction Phase	Wastes	Under the sub-project intervention the overall score is **low.**	• Prepare and implement on-site waste water runoff and labor camp waste management plan approved by PIU and consultants. • Wastes must be placed in the designated bins which must be regularly emptied. These shall remain within demarcated areas and shall be designed to prevent wastes from being blown out by wind. • All waste must be removed from the site and transported to a disposal site.	Construction Contractor and monitored by Consultant and PIU	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	weekly as work progresses
	Cut and fill Activities (Cutting of hill slope and earth removal from borrow areas caused for soil erosion and landslides)	Under the sub-project intervention, the overall score is low.	• During construction cut and fill will be balanced as far as is possible. Designs shall ensure that as far as possible all cut and fill activities are balanced • Proper care will be taken during cutting and filling so that slope or toe of the road embankment remain within the right of way and does not disturb the crop.	Contractor, environmental specialist of D&SC	Location of road alignment and slope.	Daily as work progresses

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration : • Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. • Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. • Construction materials must not interrupt land contours, natural drainage pattern, and create water logging or depression. • Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury.	Construction Contractor and monitored by Consultant and PIU	-List of materials and sources of materials; -Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
			• Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin.			
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is low.	• If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialist of D&SC	Complaints from community;	Daily
	Noise pollution	Under the subproject intervention the overall score is **low.**	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP.	Construction Contractor and monitored by Consultant and PIU	Number of complaints from stakeholders; Use of silencers in noise-producing equipment and sound barriers; Noise Level following decibel meter (dB), if necessary.	Inspection by PIU and supervision consultants on monthly basis

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	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; Number of complaints from stakeholders; Records of air quality inspection.	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is **low.**	• Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC. • Local residents should be kept informed about planned Works	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	
					Indicators	Frequency
4. Post Construction	Road Safety		• Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate **traffic** detours, and sufficient **signage** & **warning** signs, Post speed limits and suitable bending on the road. • Imposing barriers at several strategic places on the road to limit the movement of overloaded or heavy vehicles. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&SC.	Construction Contractor, environmental specialist of D&SC	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**.	• Replantation of trees during monsoon period • Maintain of trees properly • Check survival of trees and replant the dead trees	Construction Contractor, environmental specialist of D&SC	Number of complaints from stakeholders; Records of trees number and tree plantation inspection.	Immediately after the construction work is over.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
5. Operational Phase	Maintenance of road and assets (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	Under the issue the overall score is **low**.	• No advertisement/boardings shall be allowed within the Right of Way limits of the project road. • Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. • Clear smooth speed breaker/rough surfaces should be clear in views. • Regular maintenance of road surface and shoulders.	LGED	Number of complaints from stakeholders	During Operation under LGED's regular maintenance program in each 3 years.

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

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

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

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

Appendix-2

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

ESMP for Access and evacuation Roads:

Project Stage	***Potential Environmental & Social Impacts/Issues***	***Proposed Mitigation Measures***	***Institutional Responsibilities***	***Supervision Responsibility***
Pre-Construction Stage	Loss of land / and other physical assets	• No land acquisition is allowed within this sub-project activities So, there are no any mitigation measures according to this impact.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of livelihood	• Under this subproject, there is no scope of negative impact of adjacent livelihoods	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Stakeholders Engagement	• All of the project stakeholders should be consulted • Separate community level consultation meeting with the potential affected HHs • Consultation meeting with host communities about the project objectives and scope of works	PIU & Contractor	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Loss of right to access	• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact. • In case of unavoidable circumstances, alternative access will be provided.	PIU	Social Development Specialist and Gender Specialist of PIU, PSC
Pre-Construction Stage	Site Selection & implementing interventions: Human-elephant	• Selection of sub-project sites and all implementing interventions must take place outside of the	PIU	Environmental Consultant of PIU,

	conflict	elephant 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 paths to avoid the flash flood or any kind of surface runoff. Keeping 20 meters distance from water bodies or natural water flow paths should be maintained, if possible. • Tubewell location within the construction site/camp should not near any kind of latrine and soak well which could be contaminated by those. • Minimize cut & fill operations, the site clearing and grubbing operations should be limited to the locations wherever necessary. • Avoid disruption to human settlement, and social, cultural and religiously sensitive areas. • Avoid disturbance to existing slop and any natural drainage system. • The contractor shall ensure that site preparation activities do not lead to any disruption to living or activities of the local residents.	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. • Contractor must provide personal protective equipment (PPE) such as ear plugs, earmuffs, helmets, etc. to the persons working in high-risk areas and wherever required.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Acceptable range of emission of CO, particulate matter [SPM (**Suspended particulate matter),**	Contractor	Environmental Consultant of PIU,

		PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes. • Dust generation due to vehicle movement on connecting road shall be controlled by watering the path at limited level		PSC
Construction Activity	Safety Issues	• Unauthorized entry is completely prohibited in our site and take necessary measures for preventing this problem • Before works start Contractor must provide proper training and guidelines on health and safety issues to the labors and associated staffs. • Records of every training must be kept at site. • All kinds of Child labour are completely prohibited in every site. • Every construction materials storage site will be well fenced by Tin and safety caution tape.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Traffic Management	• Contractors will maintain proper route for traffic management which is to be consulted with and confirmed by the Executive Engineer of Cox's Bazar. • Local traffic police department should be contacted, if traffic problem becomes more complex.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Conflicts with existing users due to the scarcity of resource base.	• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water	PIU & Contractor	Social Development Specialist and

		sources shall be taken. • If ground water is withdrawn, adequate approvals from the appropriate department need to be taken before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts.		Gender Specialist of PIU, PSC
Construction Activity	Increase in road accidents	• Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Labour Base Camp: Conflicts with the local residents	• Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour forces.	Contractor	Social Development Specialist and Gender Specialist of PIU, PSC

		• 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: • Residual waste from the temporary accommodation facilities for labor Waste and from equipment maintenance/vehicles on-site • After completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management from respective authority or Environmental Specialist at PIU in difficulties to reach that authority.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies	• Slope protection measures (proper compaction, palisading or protection walls, etc.) will be taken before starting work at any sensitive section of the road. • Dust suppression measures and material storage and handling procedure have to be undertaken with proper care and vigilance to avoid or minimize the impacts.	PIU & Contractor	Environmental and Social Development Consultant of PIU, PSC

Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. • Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project will have Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box containing adhesive bandages, antibiotic ointment, antiseptic wipes,	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

		aspirin, non-latex gloves, scissors, thermometer, etc. in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this awareness training shall be kept on site. • Adequate quantities of drinking water will be available at all Sites, on different locations within the site. • Provision to maintain proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities. • Provision to ensure all workers exposed to a risk are aware of the possible dangers and also given thorough training on how to protect themselves and there should be effective supervision to ensure that the correct methods are being used.		
Operation &Maintenance	Noise disturbances to fauna	• Provision to maintain noise and vibration from the operation and maintenance of machinery and	PIU	Environmental Consultant of PIU,

		equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light.		PSC. Union Member
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time.	PIU	Environmental Consultant of PIU, PSC. Union Member
Decommissioning during the project implementation period (including site clearance after the construction)	The impacts are similar to those listed in construction stage: • Pollution from waste materials • Health & Safety risks to workers and local community	• Contractor must prepare a demolition and waste management plan including following directive aspects given hereunder.	PIU / Contractor	Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar

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

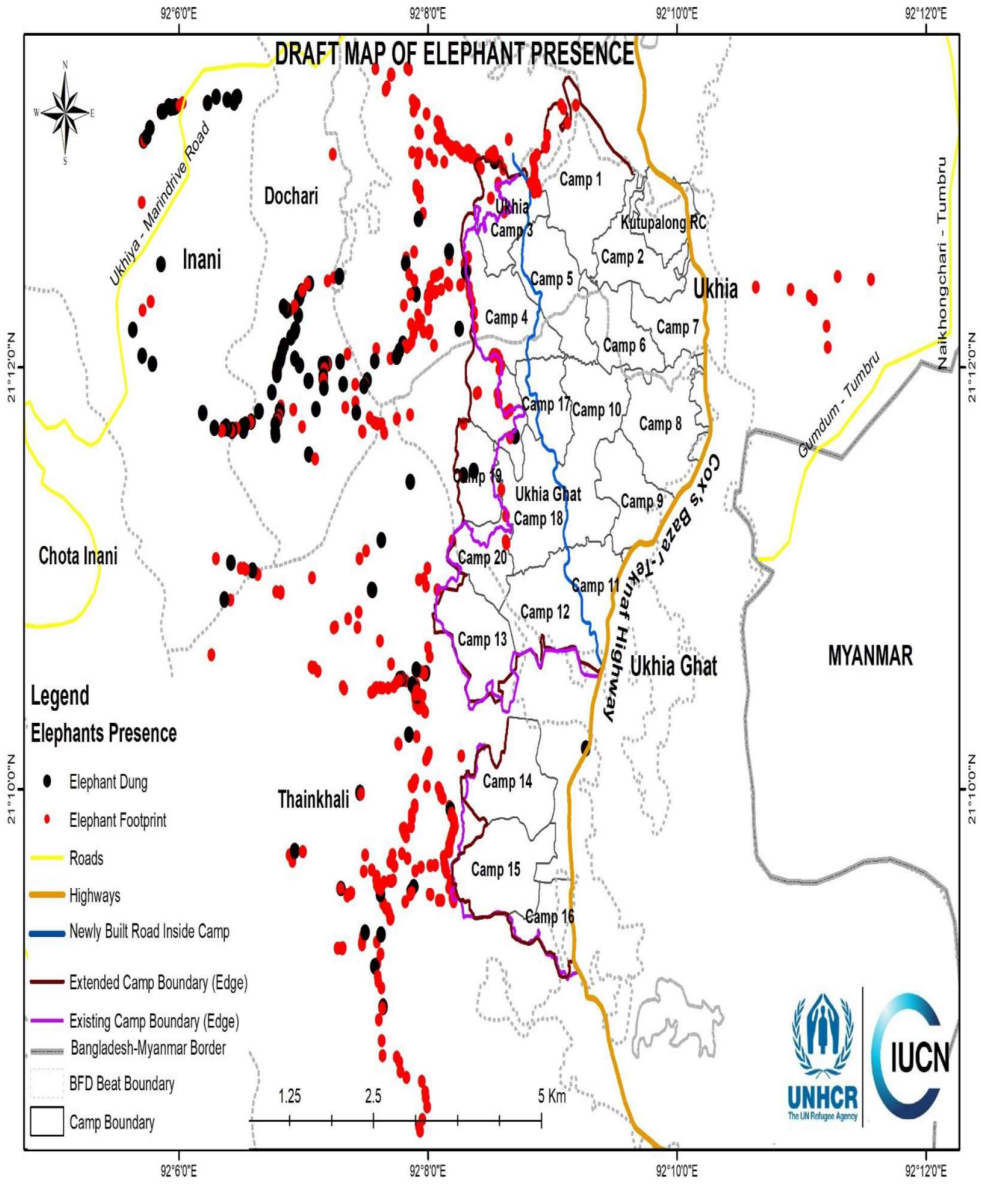
In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project.

Cost of Environmental Enhancement Works in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount
1.	**Grass Turfing** Turfing on embankment top and slope & 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)	LS	@10,000 Tk.	10,000
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	2 nos.	@5000 Tk. Per box	10,000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	km	Lump sum @ 10,000	10,000
4.	**Health safety warning sign** Health safety warning sign at the site office and as per direction of the E.I.C.	LS		15,000
5.	**Providing Safety gear** Providing Safety gear package like safety jacket, hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 20 sets as per direction of E.I.C.	LS	@ Tk. 20,000	20,000

Sl no.	Description of item	Quantity	Unit price	Total amount
6.	**Tree plantation** 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.	50nos.	@ Tk. 42.70 for each tree.	2135.00
7.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@10,000	10,000
8.	**Water filter** Supplying of best quality **Water Filter** (32 liters) including and extra set of faucets ceramic and at least 3 sets of ceramic filters as per direction of E.I.C	2 nos.	@5000 tk for each filter	10,000
9	**Construction of Labor shed**	LS		30,000
	Subtotal Bill: Environmental facilities			117,135

Appendix-4



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

Appendix-5

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Public Consultation Participants List

Time:...03:30PM........ Date..23/12/2019

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ Thainkhali to Baddagona Road to Tanjimarkhola Camp ইউনিয়নঃ পালং খালী

মত বিনিময়ের স্থানঃ মধ্যপাড়া হামিদুল হকের দোকান ডাকঘরঃ বালুখালী

উপজেলাঃ উখিয়া

জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
০১	মোঃ আলী হোসাইন	২৮	পুরুষ	তাইংখালী মধ্যপাড়া	[illegible]
০২	মোঃ আবু ছালেম	৩২	"	"	[illegible]
০৩	মোঃ ইবরাহিম	৬৫	"	"	[illegible]
০৪	মোঃ জাহির	৭৫	"	"	[illegible]
০৫	মোঃ তোফায়েল	৫৫	"	"	[illegible]
০৬	বিল্লাল হোসাইন	৬৫	"	"	[illegible]
০৭	মোঃ কাসেম	৩৫	"	"	কাসেম
০৮	মোঃ মিজান	২৬	"	"	[illegible]
০৯	মোঃ ওসমান	৪৮	"	"	[illegible]
১০	মোঃ হামজা	৪২	"	"	[illegible]
১১	মিজান মিয়া	৩৫	"	"	[illegible]
১২	মোঃ আলমগীর	৩৮	"	"	[illegible]
১৩	মোঃ মনজুর	২৫	"	"	[illegible]
১৪	মোঃ জোবায়ের	৩৪	"	"	[illegible]
১৫	মোঃ মোহাম্মদ	১০৯	"	"	[illegible]

Public Consultation Participants' List

Appendix-6

Sub-project Pictorial overview:

Tila (high land), Electric pole and local market are besides the sub-project

Bamboo made bridge, boundary pole, local drainage channel and agricultural land on the way to sub-project