

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

Sona market to H/O sankar borua via Bou bazar Road, Id: 422945084

Upazila: Ukhiya, District: Cox's Bazar

Under the package no. EMCRP/W24

January-2021



Development Design Consultants Ltd.



ACRONYMS

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

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Executive Summary

Rohingya influx in Bangladesh has been one of the highlighted issues of this decade. This has definitely modified our way of thinking for the future development of the country. This forcefully displaced population has posed challenges for the district of Cox's bazar in terms of livelihood improvement and environmental 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.

This sub-project is situated within the localities of Mohajonpara, Bou Bazar, Gunarpara, West, North and South Napitpara, West Boruapara, West Gunarpara, Chowdhurypara and Notunpara under Holdiapalong union of Ukhiya Upazila, Cox's Bazar. There are some community property resources, environmental components and other features located within 1km from the sub project, such as Chondrobonia Madrassa and Jame Mosque (500m), Chondrobonia Budhist Bihar(150m) on the north, Gita School (100m), Shyamol Prokiti Art School (100m), Trirotno Budhist Bihar(20m South-East) Rumkha GPS(30m), Rumkha Etimkhana (30m), Syad Bokhtiar Cucclone Shelter(40m), Chowdhury Central Jame Mosque(50m), Chowdhurypara Graveyard(60m), Syad Bahar High School(30m) on south side, Mohajonpara School (200ft), Triratna High School(10m SE), Ideal School (10m), Sri Sri Durga Mandir(100m), Mohajonpara Community Clinic (150m) are on east side, and on west side are Bou Bazar (10m), Central crematory/ Shib Mandir(150m), Sri Sri Kali Mondir (80m), Krishna Adit Hori Mandir(90m), Budhist Crematory (150m), jaliapalong parkul Jame Mosque (120m), Forest area(150m), Jogonnat Mondir (100m), Loknath Mondir(100m). Apart from these, no other important socio-environmental features are present near the sub-project location. Several water bodies though are located in the vicinity; water logging is not a regular phenomenon. No other sensitive environmental, cultural, archaeological, religious sites were found in the area. The proposed road is not passing through any sensitive environmental components or reserved areas. However, the construction works will generate significant amount of dust and air pollutants, create noise, and have a potential to pollute water resources and may affect several trees. All these impacts are site-specific and manageable by mitigation or offsetting measures. Good management

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

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

1 INTRODUCTION

1.1 Project Background

An estimated 730,000¹ people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033². This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

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

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

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

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

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

This document represents the Findings from Environmental Screening of the sub-project components under the package name 'Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District', with the bid package no. EMCRP/W24.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W24

Description of Sub-project: Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District, i, e., Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084 (2) Chakmapara - Monkhali bazar Road Id:422944047 (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089 (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

[A road is dropped from the package and also in reporting]

Sub-project Component no. (1) Sona market to H/O sankar borua via Bou bazar Road, Id:422945084

Component's Location:

| | | |
|--|---|-------------------------------------|
| i. ID. 422945084 | ii. Ward No.: 08 (Haldiapalong UP) | iii. Mouza: West Boruapara |
| iv. Village: Mohajonpara, Bou Bazar, Gunarpara, West, North and South Napitpara, West Boruapara, West Gunarpara, Chowdhurypara and Notunpara | v. Name of Union: Haldiapalong | |
| vi. Upazila: Ukhiya | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2021-22 | ix. Width (m): 4.9-5.5 | x. Length (m): 960m (480m-1440m) |
| xi. Distance from UZHQ: 7 Km. | | |
| GPS Coordinates | Latitude Value: 21.29683° N Longitude Value: 92.09425° E | Starting Point |
| | Latitude Value: 21.29119°N Longitude Value: 92.09016° E | Ending Point |
| Present Condition of Road | HBB, BFS | |
| Communication Source | Radio & Mobile Networks | |

Subproject interventions:

- Bituminous Carpeting options.
- 02 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 1027m and Ch.1278m
- 35m Palisading (Brick)
- 145m L-Drain
- 28m RCC U-drain
- 366m Toe Wall (height 1.0m, 1.5m & 2.0m)
- Road safety work and
- Environmental Mitigation and Enhancement works

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period (Component -1): 1 year

Estimated total cost of component: 16,303,346.56 (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. To this end, D&SC conducted consultation meeting with local community on 07 December, 2020 at Bou Bazar Gururdan shop, Refer to **Figure 2.1.1**, and Public Consultation Participants' List is attached in **Appendix-5** and sub-project pictorial overview is attached in **Appendix-6**. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

Public consultation is a living process as type of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution process may differ with time. Thus, consultation with different parties or stakeholders will be continued throughout the sub-project implementation

period and records of resolutions, whatsoever and wherever possible, will be kept in writing at the site and made available on any enquiries or requests by all parties concerned.

2.2 Summary of Public Consultation Meeting

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

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socio-economic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust pollution and noise pollution might occur as well.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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

2.3 Suggestions and recommendations of the participants

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

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.

- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.
- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

3 ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

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

3.2 Major Findings

This sub-project is situated within the localities of Mohajonpara, Bou Bazar, Gunarpara, West, North and South Napitpara, West Boruapara, West Gunarpara, Chowdhurypara and Notunpara under Holdiapalong union of Ukhiya Upazila, Cox's Bazar. The proposed road component passes through a typical but semi-developed rural setting, comprising of Chorra, ponds, canal, culverts, ditches, patches of vegetation and agricultural fields, hills or uplands, mosques, madrasas, graveyards, schools and religious institutes, shops and bazars, etc. Among important socioeconomic and sensitive features located within 1km from the sub project, Chondrobonia Madrassa and Jame Mosque (500m), Chondrobonia Budhist Bihar(150m) on the north, Gita School (100m), Shyamol Prokiti Art School (100m), Trirotno Budhist Bihar(20m South-East) Rumkha GPS(30m), Rumkha Etimkhana (30m), Syad Bokhtiar Cuclone Shelter(40m), Chowdhury Central Jame Mosque(50m), Chowdhurypara Graveyard(60m), Syad Bahar High School(30m) on south side, Mohajonpara School (200ft), Triratna High School(10m SE), Ideal School (10m), Sri Sri Durga Mandir(100m), Mohajonpara Community Clinic (150m) are on east side, and on west side are Bou Bazar (10m), Central crematory/ Shib Mandir(150m), Sri Sri Kali Mondir (80m), Krishna Adit Hori Mandir(90m), Budhist Crematory (150m), Jaliapalong parkul Jame Mosque (120m), Forest area(150m), Jogonnat Mondir (100m), Loknath Mondir(100m). Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures. Other features are located at places having sufficient distances from the road length; therefore, significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area,

safe storage of materials, etc.- all these measures will be complied fully in the field. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, 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.

The proposed sub-project is not located within any environmentally sensitive area as such and has no chance to create adverse impacts to important environmental components. During construction period 6/7 trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact

3.3.1 General Consideration

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank³ has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

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

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, 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 under this project.

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 were 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 observed creating 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. As part of specific measures, tree planation, more than the numbers needed for offsetting the felling trees, on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on plain land. A number of trees along the road side will be cut down during construction period and as an offsetting measure, 5 nos. trees will be planted for each tree fell in the periphery of the subproject. Some dispersed human settlement in the area, though at sufficient distance from the alignment, is present. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control

measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the water logging problem and facilitating optimum irrigation 02 nos. Cross Drain (dimension: 0.975mX 0.975m) at Ch. 1027m and Ch.1278m, 28m RCC U-drain will be constructed at the subproject area. Some small hills or high land is found beside the road. As a mitigation measure, 145m L-Drain works at different chainage will be constructed for draining mountain eel water during rainy season. Due to the low land in different chainage of the road some protective works (366m Toe wall & 35m Palisading brick work) are included in design and estimation. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific Environmental and Social Management Plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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

4.2 Health and Safety Measures under COVID situation

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

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

- a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, 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

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

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. There will in fact be tremendous benefits from recommended mitigation and enhancement

measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary, for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

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

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: *(Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District: EMCRP/W24).*

Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084 (2) Chakmapara - Monkhal bazar Road Id:422944047 (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089 (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 (5) Palonkhali Goyalmar Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Name of the component: Sona market to H/O sankar borua via Bou bazar Road Id:422945084

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

Estimated total cost of sub-project (in Taka): 215,285,439.30

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): 16,303,346.56

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

District: Cox's Bazar

Sub-District: Ukhiya

Union: Halদিাপালং

Name of Community/Local Area: Mohajonpara, Bou Bazar, Gunarpara, West, North and South Napitpara, West Boruapara, West Gunarpara, Chowdhurypara and Notunpara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480m to Ch. 1440m. Proposed safety and service providing structures include 02 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 1027m and Ch.1278m, 28m RCC U-drain 145m L-Drain at different chainage, and some additional protective works (366m Toe wall & 35m Palisading), which are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation (Technical Report 2020, EMCRP).

Estimated footprint / land area for this sub-project is 4,704 sq m.

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

This proposed Sona market to H/O sankar borua via Bou bazar Road belongs to Halদিাপালং union under Ukhiya Upazila. This road starts from Mohajonpara stretching 960m to 8 no. ward of West Boruapara of Halদিাপালং union. Several connecting roads fall within the road chainage. Nuru's shop is the starting point of the road along with a paddy field, and further passes along numbers of ponds, canal, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, hills or uplands, mosques, madrasas, schools and religious institutes, shops and bazars on both sides. No

other significant environmental or socioeconomic features are found near the road component. However, detail Environmental features within 500m distance of both sides of the road from the center line were collected at 300m longitudinal intervals during the survey and the findings are given in the table below:

| Chainage (m) | Left | Right | Features |
|--------------|------|-------|---|
| 480-780 | L | | Uplands, Settlements on high grounds, bamboo fence, homestead garden, culvert/cross drain, tree, household connecting road to the left, tin fence, bamboo bush, bamboo fence, shop, bou bazar, shop, open space, |
| | | R | Household connecting road to the right, crop field, electric pole, open field, existing guide wall, drain, bamboo bush, electric pole, household connecting road to the right, vegetable garden, Tower building, open space, shop, brick wall, household connecting road to the right, household connecting road to the right, shop, household connecting road to the right |
| 780-1080 | L | | Trees, open space, tin fence, electric pole, tin fence, vegetable garden, crop field, open space, |
| | | R | Shop, Settlement, trees, bush, earthen drain, U-drain, Settlement, Tin fence, shop |
| 1080-1440 | L | | Old Rumkha Palong HS, Brick wall, L-Drain, Mandir, Brick wall, Cross Drain, Drain, household connecting road to the left, crop field, trees, crop field |
| | | R | Household connecting road to the right, open field, crop field, trees, household connecting road to the right, crop field, tin fence, pond, bamboo fence, settlements, bamboo fence, crop field, culverts |



Figure: Starting point of Sona market to H/O sankar borua via Bou bazar Road Road

Overall Comments

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

It was informed to the stakeholders that the scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issues have also been brought to their attention, such as drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as have an interrupted passage during an emergency situation.

The proposed construction of village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. No significant impact is expected on the

ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub project component.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as on north side are Chondrobonia Madrassa and Jame Mosque (500m), Chondrobonia Budhist Bihar(150m) on south side are Gita School (100m), Shyamol Prokiti Art School (100m), Trirotno Budhist Bihar(20m South-East) Rumkha GPS(30m), Rumkha Etimkhana (30m), Syad Bokhtiar Cuclone Shelter(40m), Chowdhury Central Jame Mosque(50m), Chowdhurypara Graveyard(60m), Syad Bahar High School(30m) on east side are Mohajonpara School (200ft), Triratna High School(10m SE), Ideal School (10m), Sri Sri Durga Mandir(100m), Mohajonpara Community Clinic (150m), on west side are Bou Bazar (10m), Central crematory/ Shib Mandir(150m), Sri Sri Kali Mondir (80m), Krishna Adit Hori Mandir(90m), Budhist Crematory (150m), jaliapalong parkul Jame Mosque (120m), Forest area(150m), Jogonnat Mondir (100m), Loknath Mondir(100m). The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 15-16 km away from this sub-project.

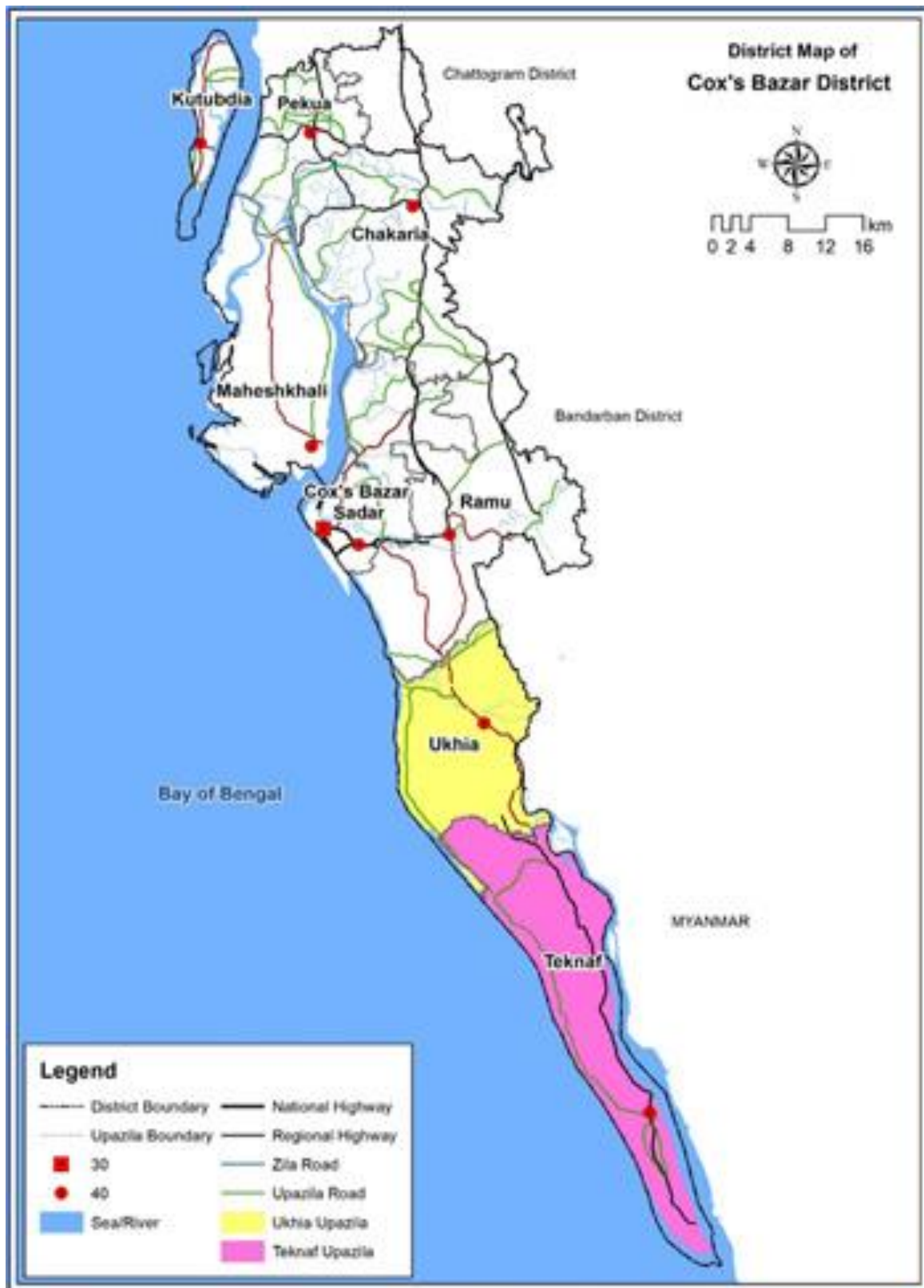


Figure 3: District Map with project location

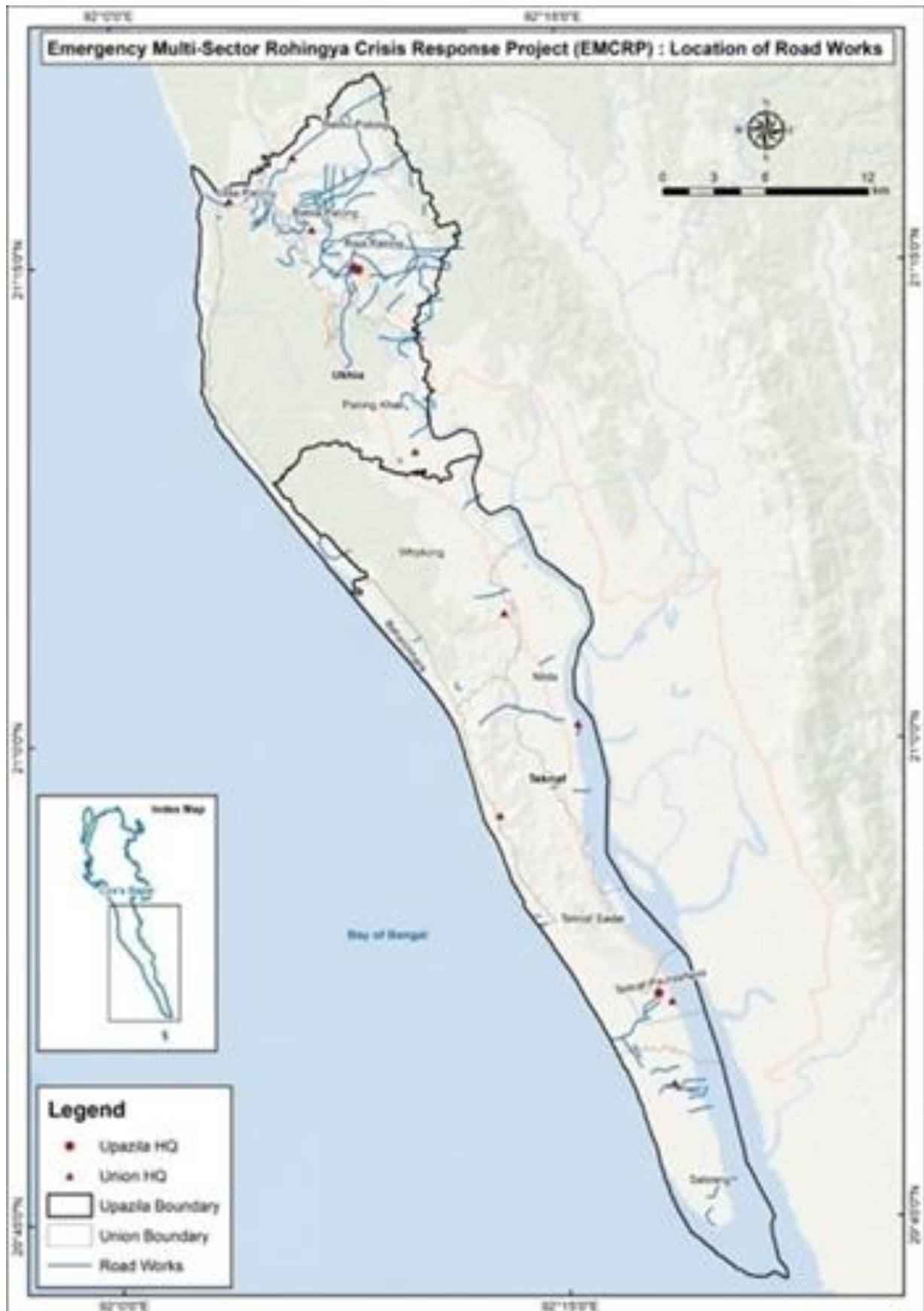


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

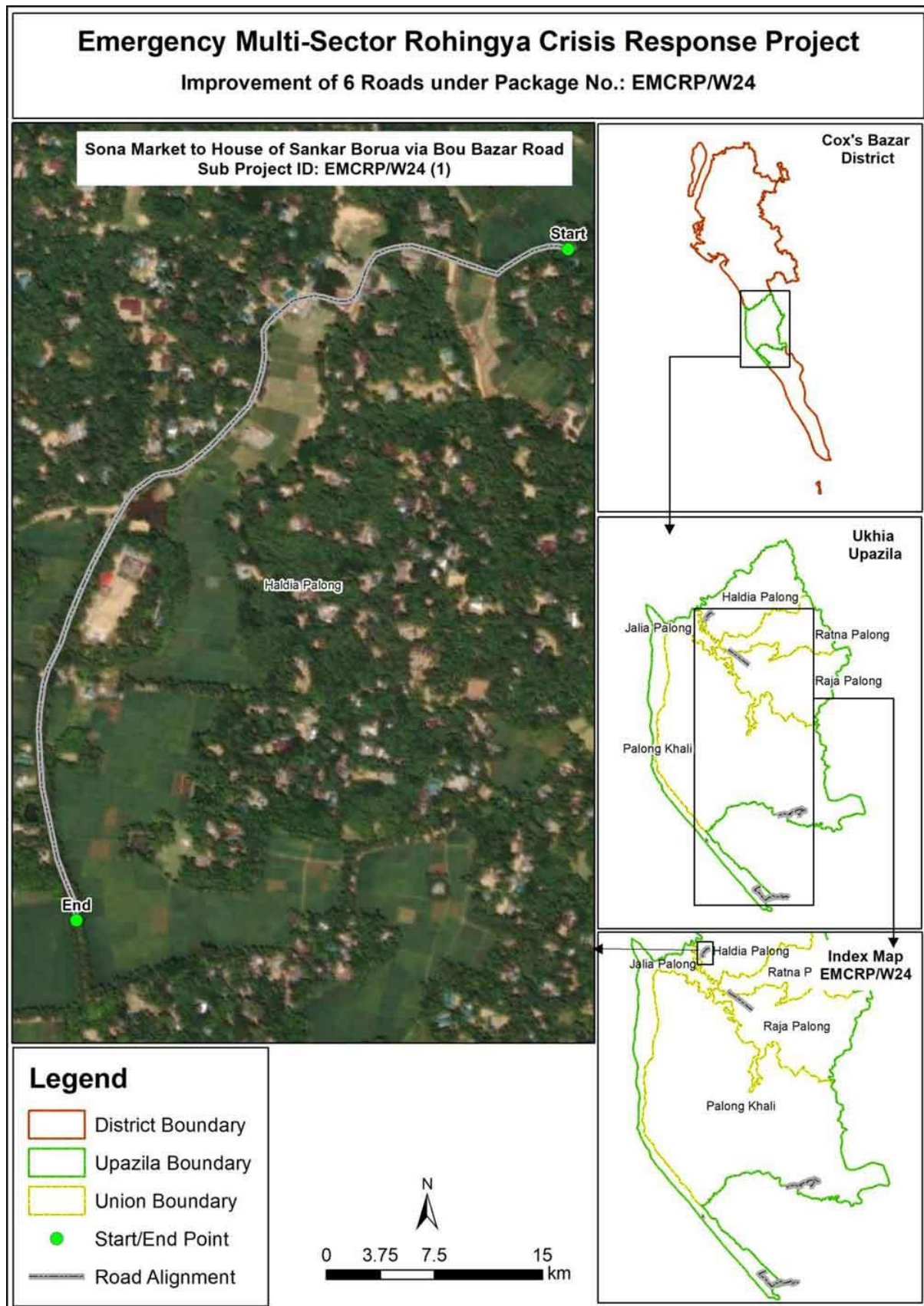


Figure 5: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480 to Ch. 1440m. Proposed safety and service providing structures 02 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 1027m and Ch.1278m, 28m RCC U-drain 145m L-Drain at different chainage, and some additional protective works (366m Toe wall & 35m Palisading) that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation.

Sub-project Location:

| Important Features | |
|---------------------------------|---|
| ID | 422945084 |
| District | Cox's Bazar |
| Upazila | Ukhiya |
| Union | Haldiapalong |
| WARD | 08 |
| Proposed Chainage | 960m (Ch: 480 to Ch: 1440m) |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21.29683° N Longitude Value: 92.09425° E |
| Road Ending Point Coordinates | Latitude Value: 21.29119°N Longitude Value: 92.09016° E |

Land ownership

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

Expected construction period: 1 Year

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

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480 to Ch. 1440m.

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

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as are Chondrobunia Madrassa and Jame Mosque (500m), Chondrobunia Budhist Bihar(150m) on south side are Gita School (100m), Shyamol Prokiti Art School (100m), Trirotno Budhist Bihar(20m South-East) Rumkha GPS(30m), Rumkha Etimkhana (30m), Syad Bokhtiar Cuclone Shelter(40m), Chowdhury Central Jame Mosque(50m), Chowdhurypara Graveyard(60m), Syad Bahar High School(30m) on east side are Mohajonpara School (200ft), Triratna High School(10m SE), Ideal School (10m), Sri Sri Durga Mandir(100m), Mohajonpara Community Clinic (150m), on west side are Bou Bazar (10m), Central crematory/ Shib Mandir(150m), Sri Sri Kali Mondir (80m), Krishna Adit Hori Mandir(90m), Budhist Crematory (150m), jaliapalong parkul Jame Mosque (120m), Forest area(150m), Jogonnat Mondir (100m), Loknath Mondir(100m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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

Sona market to H/O sankar borua via Bou bazar Road with culverts and side drains

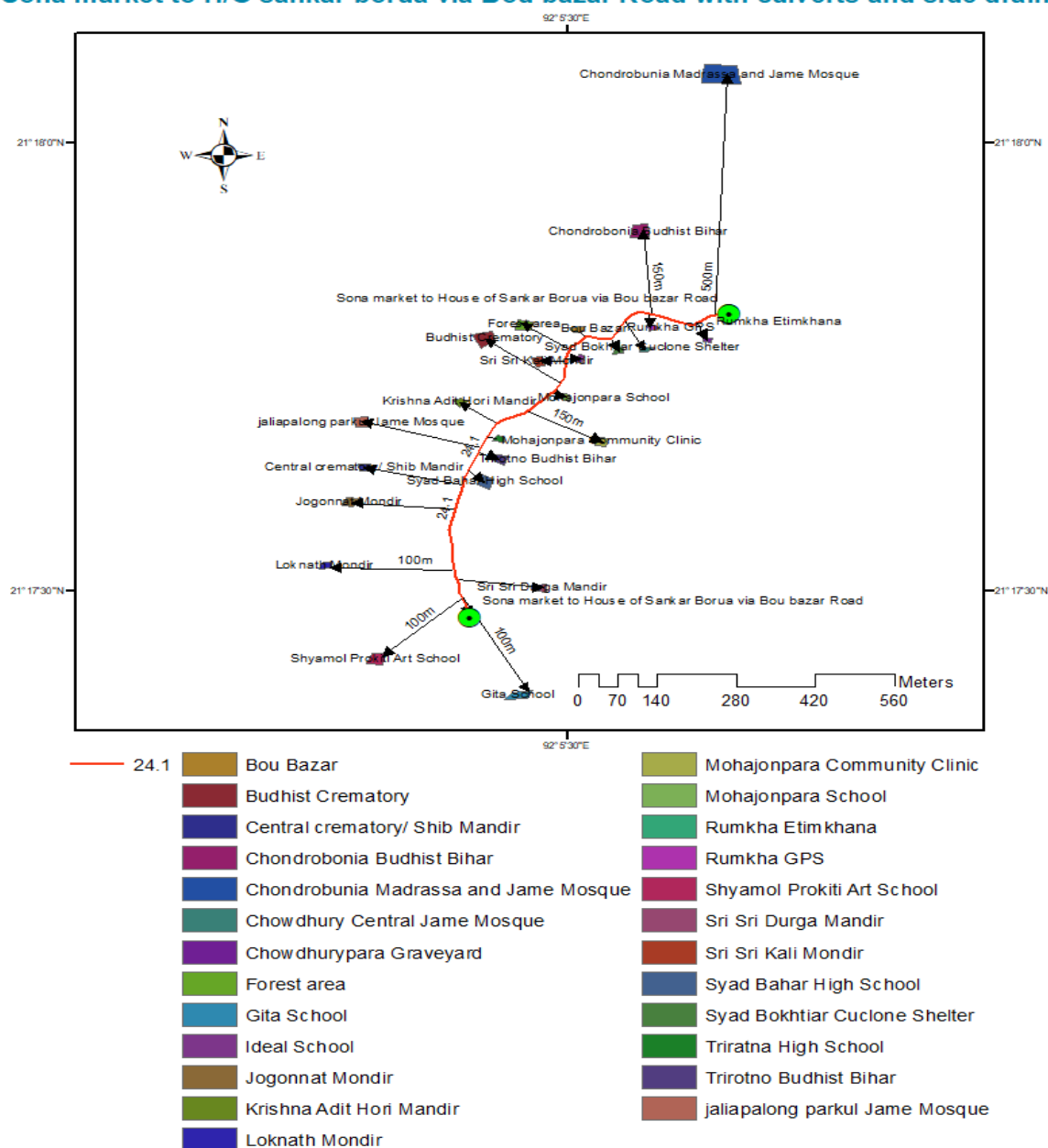


Figure B.1.1: A sketch of the project intervention area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation, several local canals, five ponds, ditches, chorra, and hills/tilas are present in the proposed sub-project area. These components or resources may receive some effects during the construction period, but not in significant level and mostly be site-specific. However, all the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. Elephant migration routes or corridors are present in this area. 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

No. Local community has undertaken social forestation in 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:
Dust

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

Noise

Noise in the Sub-project area is not a major concern because noise level is within the tolerable level. 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:

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

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

Low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. Erosion/land slide may occur only when moderate to high sloping terrains are disturbed for construction of roads.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 120 feet and deep tubewell depth is 800 feet in the area. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

Surface water quality: Five ponds, two canals and a ditch 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.

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 (60ft. to 80 ft.) are fitted in local area and most of the water usage is

sufficed from these sources.

*Data source: IWM Study Report, 2019

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

Patches of vegetation containing large and matured trees across the road side of the proposed subproject area are located within 200m radial distance.

Summary of water balance analysis (For water supply scheme only):

N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

Sona Market connecting road can be used as access road for transportation. This access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also and the route has narrow curves.

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:

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

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

i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.

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

Yes. Sona Market connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should

be consulted with local communities.

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

Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in preparatory works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 10 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 20 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.

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 25 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, trees alongside the road can be said to be on the ROW. There are 4 locations on the chainage where medium trees might need cutting. 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)

Low. This area has no water logging troubles because of the presence of natural channels (canals, drains, etc.), though during the monsoon waterlogging appears in some sections in the area for a small period of time; this problem will be resolved by the construction of sufficient numbers of drainage channels and structures. However, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

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

Existing ponds and ditches can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Proper mitigation and preventive measures must be put in place 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 creating new stagnant water bodies that can encourage mosquito breeding and other disease vectors, during the operation phase. |
| Likely direct and indirect impacts on economic development in the project areas by the sub-project: Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project. |
| Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes) :(High/Medium/Low with description) Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed. |
| Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description) Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks. |
| Activities leading to landslides, slumps, slips and other mass movements in road cuts: Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road. |
| Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains:(High/Medium/Low with explanation) Low. Concentrated outflow will be carried by proposed drains and culvert. |
| Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust, especially during the dry season and if the vehicles are maintained in good conditions. |

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

Section D: Environmental Screening Summary

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|------------------------------|----------------------------|---|---|---|--|--|
| | | | | | Indicator | Frequency |
| 1: Sub-Project Interventions | Air quality | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection | Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season. |
| | Soil impacts | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. | Monitoring on weekly basis. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|---|---|--|---|
| | | | | | Indicator | Frequency |
| | | | <p>shall be used on site to manage surface water runoff and minimize erosion.</p> <ul style="list-style-type: none"> The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures. | | | |
| | Hydrology (surface and groundwater) | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to | Water quality test (mainly GW) twice during the construction period in six months interval. |

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

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|-----------------------------|--|--|---|---|---|
| | | | | | Indicator | Frequency |
| | erosion and landslides) | | toe of the road embankment remain within the right of way and does not disturb the crop. | | | |
| | Storage of materials | Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low . | <p>With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration:</p> <ul style="list-style-type: none"> Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. Construction materials must not interrupt land contours, natural drainage pattern, and create | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. | Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | | <p>water logging or depression.</p> <ul style="list-style-type: none"> Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin. | | | |
| | Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity) | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. | Contractor, environmental specialist of D&S. | <ul style="list-style-type: none"> Complaints from community | Daily |
| | Noise pollution | Under the subproject intervention the | <ul style="list-style-type: none"> Consultation with affected people; not to operate noisy equipment during working period; No noisy work after 5.00 pm. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Number of complaints from stakeholders; Use of silencers in | Inspection by PIU and supervision consultants on |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|----------------------------------|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | overall score is low . | <ul style="list-style-type: none"> • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP. | | noise-producing equipment and sound barriers; <ul style="list-style-type: none"> • Noise Level following decibel meter (dB), if required. | monthly basis; |
| | Air pollution | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. | Visual observation and monitoring of air quality during construction period. |
| | Road Safety and Accidents | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, | Construction Contractor, environmental specialist of D&SC. | <ul style="list-style-type: none"> • Complaints from communities, pedestrians | Day basis during work time |

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

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

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

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

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

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

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

ESMP for Access and evacuation Roads: Sona market to H/O sankar borua via Bou bazar Road, Id: 422945084

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

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

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

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|---|--|--|---|
| | | <p>withdrawal of water from existing surface water sources shall be taken.</p> <ul style="list-style-type: none"> • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts. | | Specialist and Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | <ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Labour Base Camp: Conflicts with the local residents | <ul style="list-style-type: none"> • Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place. • Treated water will be made available at site for | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|---|--|--|---|
| | | <p>drinking purpose.</p> <ul style="list-style-type: none"> • Adequate accommodation arrangements for labour forces. • Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | <p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> • Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site • Wastes after completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies | <ul style="list-style-type: none"> • 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 | <p>Health & Safety Risks:</p> <ul style="list-style-type: none"> • The potential for exposure to safety events such as tripping, working at height activities, fire from hot | <ul style="list-style-type: none"> • All construction equipment will be properly inspected timely. • The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|----------------------|--|--|---------------------------------------|-----------------------------------|
| | <p>works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks.</p> <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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 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 | | of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|---|---|---------------------------------------|--|
| | | <p>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.</p> <ul style="list-style-type: none"> • 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. | | |
| Construction activity | Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna | <ul style="list-style-type: none"> • Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/or skips and emptied regularly at a designated waste disposal area away from the camp site. If no | PIU | Environmental Consultant of PIU, PSC. Union Member |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|---|--|--|--|--|
| | | 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. | | |
| Construction activity (site clearance after the construction) | Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community | Contractor must prepare a demolition and waste management plan including relevant directives from “Waste Management Plan Principles” given hereunder. | PIU / Contractor | Environmental Consultant of PIU, and Executive Engineer of Cox’s Bazar |
| Operation & Maintenance | Noise disturbances to fauna | <ul style="list-style-type: none"> • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. | UE-LGED (under the direct guidance of Executive Engineer, Cox’s Bazar) | PSC. UNO |

Waste Management Plan Principles:

The contractor shall develop a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food, and organic waste, etc.) prior to commencing of construction and submit to LGED for approval. The plans must include the following principles or

series of actions, which will be carried out/followed by the contractor and supervised by the Field level Environmental Specialist and Social Development Specialist.

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in a labor camp or construction site shall be prohibited completely

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Appendix-3: Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

| Sl no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--------|---|-----------------|----------------|------------------|
| 1 | <u>Grass Turfing</u> Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 2880 sqm | 38.15 | 109,872 |
| 2 | <u>First Aid Box</u> Supply of first aid box with standard contents and as per direction of the E.I.C. | LS | 5000 | 5000 |
| 3 | <u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C. | 960.00m | 2.56 | 2457.60 |
| 4 | <u>Motivation training</u> Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 | 10000 | 10000 |
| 5 | <u>Personal Protective Equipment</u> Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 10 sets as per direction of E.I.C. | LS | 30000 | 30000 |
| 6 | <u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological | 100 | 1000 | 100000 |

| SI no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--------|--|-----------------|----------------|------------------|
| | 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 PMU prior to the tree plantation work) at an interval of 10 feet. | | | |
| 7 | <u>Portable water supply & Temporary Sanitary Latrine</u> 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 | 12822.86 | 25645.72 |
| 8 | <u>Drinking water Facilities:</u> Providing Continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well where applicable and any other means depending on local situation, | 2 | 30000 | 60000 |
| 9 | <u>Waste disposal</u> Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | 5000 | 5000 |
| 10 | <u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractors activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic providing necessary barricades, warning signs/lights, guide signs, Flagmen, maintaining diversion roads by cutting, filling, construction, etc. or by any other means in accordance with the full satisfaction of EIC. | 1 | 15000 | 15000 |

| SI no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--|---|-----------------|--|------------------|
| 11 | <u>Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | 1 | 5000 | 5000 |
| 12 | <u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 | 30000 | 30000 |
| 13 | <u>Environmental management</u> Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C. The Safeguard personnel will take duty for roads W24(1), W24(2) and W24(4), so one-third of the personnel cost is counted here. | 1 person | Monthly basis @Tk.35000 for 12 months. One person covering 3 roads. i.e. 35,000tk X 12 months (1/12 one road). (Net payment excluding Tax & VAT) | 1,40,000 |
| Subtotal Bill for Environmental Mitigation and Enhancement Work (BDT) | | | | 537975.32 |

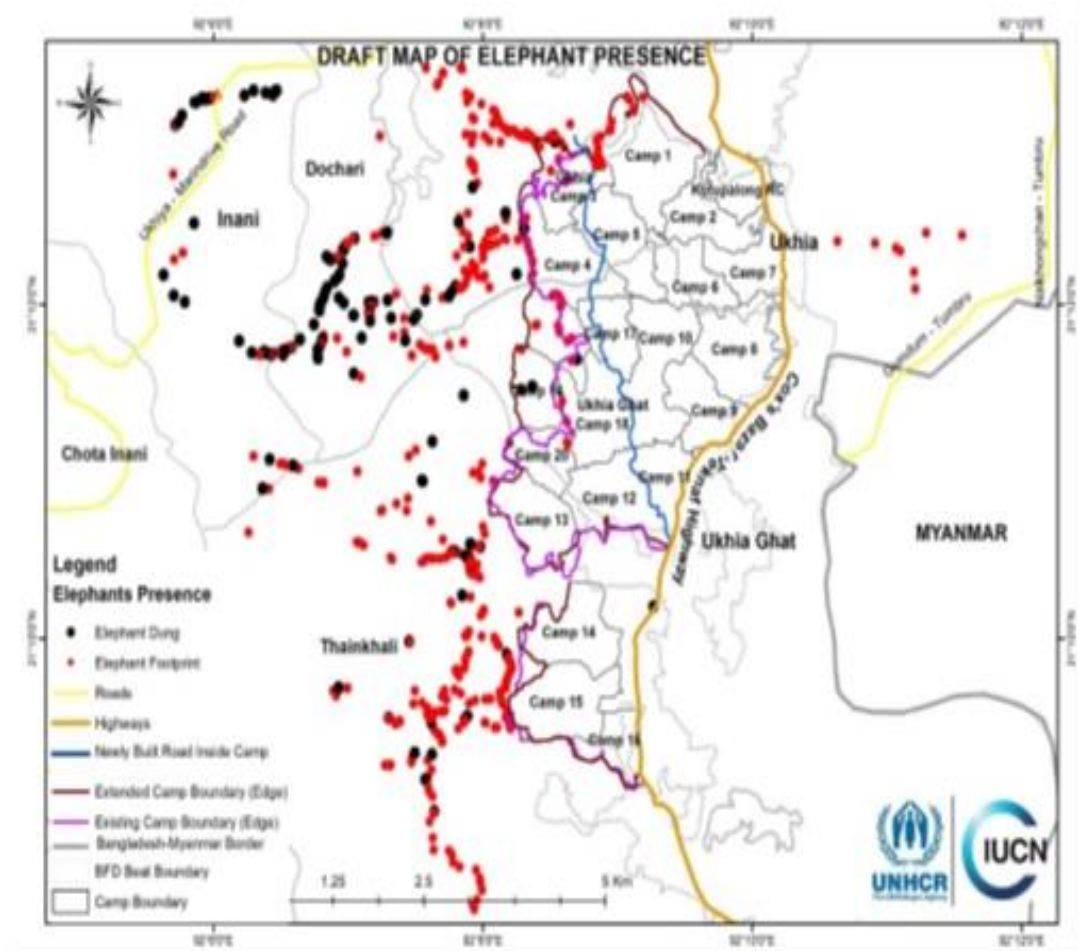
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 30 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-24.1).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------|----------------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 81 | | 101 | 50.00 | 182 | 9,100.00 | To be placed in a case/holder on the basin, for washing hands for max. 35 people a day and showering of 30 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |
| 6. | Face Shield/ Protective Safety Goggles | 16 nos. for each site | | N/A | 400.00 | 16 | 6,400.00 | For labors who work in close contact, 16 in each site |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|-----------------------------|------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 5 nos. each day in each site | | N/A | 12.00 | 1350 | 16,200.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 30 nos. for each labor camp | | 35.00 | 540 | 18,900.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 3 Can | 250.00 | 4.5 | 1,125.00 | |
| 10. | Detergent Cleaner | N/A | 1.5 kg in each camp/month | | 400.00 | 13.5 | 5,400.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | Grand Total | | | | | | 107,225.00 | |

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W24.01, Road Id No. - 422945084

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

Time: 3:30 PM Date: 04.11.20
 Location: 30m away from the 1st bus stop, near junction of the main road and the road to the village, near the bus stop.
 Facilitator: Mr. [Name] (Senior Design Engineer) LGED
 Note: The list of participants is as follows: [Name] [Address] [Phone No.] [Signature]
 No. of participants: 24/01

List of Participants (Name & Address)

| No. | Name | Age | Gender | Address | Signature |
|-----|------------|-----|--------|-----------|-------------|
| 01 | Mr. [Name] | 42 | Male | [Address] | [Signature] |
| 02 | Mr. [Name] | 60 | Male | [Address] | [Signature] |
| 03 | Mr. [Name] | 45 | Male | [Address] | [Signature] |
| 04 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 05 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 06 | Mr. [Name] | 60 | Male | [Address] | [Signature] |
| 07 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 08 | Mr. [Name] | 45 | Male | [Address] | [Signature] |
| 09 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 10 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 11 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 12 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 13 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 14 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 15 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 16 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 17 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 18 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 19 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 20 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 21 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 22 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 23 | Mr. [Name] | 40 | Male | [Address] | [Signature] |
| 24 | Mr. [Name] | 40 | Male | [Address] | [Signature] |

Public Consultation Participants' List

Appendix-6: Pictorial View of several sections of the proposed site



Overview of surrounding features of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

Chakmapara - Monkhali bazar Road, Id:422944047

Under the package no. EMCRP/W24

January-2021



Development Design Consultants Ltd.



ACRONYMS

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

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Executive Summary

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

This sub-project is situated within the localities of Monkhalipara, purbopara, majherpara, Delpara, Poshchimpara, Kunarpara, Jumpara, Chakmapara under Jaliapalong union of Ukhiya Upazila, Cox's Bazar. There are some community's property resources, environmental components and other intervention situated within 1km from the sub project, like that on north side are Health complex (50m), Mahabub Rashid Al Islami Madrassa (50m), Rashedin Nurani Madrassa(75m), Bagguna Jame Mosque (120m), Bottoli Jame Mosque/ Graveyard(110m) Seport khali khal(300m), Bagguna Graveyard (100m), Guna beel Graveyard(200m), Jumpara Mosque and Graveyard (70m), Chakmapara GPS(10m), Chakmapara Mosque(40m NE), Seport GPS(700m), Forkania Madrassa/ Mosque/ Graveyard(700m), Monkhal Khali(30m), Seport khali khabbin Malek Madrassa/ Mosque/ Orphanage (750m) on south side are Ibrahim Jame Mosque and Graveyard (50m), Chakmapara Mosque (5km)on east side are Monkhal boro mosque and graveyard (50m), Forest Office Mosque(5m), Boro Mosque Pond (50m), Monkhal GPS(25m), Monkhal Abu Huraira orphanage/Madrassa/Hefzokhana(30m), Rest house(5m), Forest Office (5m), and on west side are Chikonchora-Monkhali (10m). Otherwise, no other important environmental features are present near sub-project. Some water body located around the subproject area. So, water logging is not a regular and annual phenomenon. Apart from this structure 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 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 730,000¹ people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033². This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

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

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

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

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

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

This document represents the Findings from Environmental Screening of the sub-project components under the package name 'Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District', with the bid package no. EMCRP/W24.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W24

Description of Sub-project: Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District, i, e., Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084 (2) Chakmapara - Monkhal bazar Road Id:422944047 (3) Chaungkhal to Battali marinedrive sea beach Road d Id:422945089 (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (2) Chakmapara - Monkhal bazar Road Id:422944047

Component's Location:

| | | |
|---|---|-----------------------------|
| i. ID. 422944047 | ii. Ward No.: 09 (Monkhali Village) | iii. Mouza: Inani Brihottor |
| iv. Village: Monkhalipara, purbopara, majherpara, Delpara, Poshchimpara, Kunarpara, Jumpara, Chakmapara | v. Name of Union: Jaliapong | |
| vi. Upazila: Ukhiya | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2020-21 | ix. Width (m): 4.9-5.5 | x. Length (m): 3490 |
| xi. Distance from UZHQ: 45 Km. | | |
| GPS Coordinates | Latitude Value: 21°05'45.5" N Longitude Value: 92°07'46.0" E | Starting Point |
| | Latitude Value: 21°05'17" N Longitude Value: 92°08'59.1" E | Ending Point |
| Present Condition of Road | HBB, BFS | |
| Communication Source | Radio & Mobile Networks | |

Subproject interventions:

- Bituminous Carpeting options.
- 03 nos. of Box Culvert (dimension: 2.0mx1.5m) at Ch. 408m, Ch.782m & Ch.948m of chainage
- 18 nos. Cross Drain (dimension: 0.975m X 0.975m) at different chainage
- 01 number of 02 vent (3.0 m X 3.0 m) RCC Box Culvert at ch.3350m

- 01 number of 02 vent (3.5 m X 3.5 m) RCC Box Culvert at ch.2193m
- 01 number of 4.0m x 4.0m RCC Box Culvert at Ch. 3467m
- 860m L-Drain
- 30m RCC Retaining wall
- 1098m Toe Wall (height 1.0m, 1.5m & 2.0m)
- Road safety work and
- Environmental Mitigation and Enhancement works

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period (Component -1): 1 year

Estimated total cost of component: 71,373,276.56 (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. To this end, D&SC conducted consultation meeting with local community on 07 December, 2020 at Jafurul Islam's shop, Refer to **Figure 2.1.1**, and Public Consultation Participants' List is attached in **Appendix-5** and sub-project pictorial overview is attached in **Appendix-6**. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

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

2.2 Summary of Public Consultation Meeting

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

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socio-economic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust pollution and noise pollution might occur as well.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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

2.3 Suggestions and recommendations of the participants

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

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.

- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

3 ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

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

3.2 Major Findings

This sub-project is situated within the localities of Monkhalipara, purbopara, majherpara, Delpara, Poshchimpara, Kunarpara, Jumpara, Chakmapara under Jaliapalong union of Ukhiya Upazila, Cox's Bazar. The proposed road component passes through a typical but semi-developed rural setting, comprising of Chorra, ponds, canal, culverts, ditches, patches of vegetation and agricultural fields, hills or uplands, mosques, madrasas, graveyards, schools and religious institutes, shops and bazars, etc. Among important socioeconomic and sensitive features located within 1km from the sub project, on north side are Health complex (50m), Mahabub Rashid Al Islami Madrassa (50m), Rashedin Nurani Madrassa(75m), Bagguna Jame Mosque (120m), Bottoli Jame Mosque/ Graveyard(110m) Seport khali khal(300m), Bagguna Graveyard (100m), Guna beel Graveyard(200m), Jumpara Mosque and Graveyard (70m), Chakmapara GPS(10m), Chakmapara Mosque(40m NE), Seport GPS (700m), Forkania Madrassa/ Mosque/ Graveyard(700m), Monkhal Khali(30m), Seport khali khabbin Malek Madrassa/ Mosque/ Orphanage (750m) on south side are Ibrahim Jame Mosque and Graveyard (50m), Chakmapara Mosque (5km) on east side are Monkhal boro mosque and graveyard (50m), Forest Office Mosque(5m), Boro Mosque Pond (50m), Monkhal GPS(25m), Monkhal Abu Huraira orphanage/Madrassa/Hefzokhana(30m), Rest house(5m), Forest Office (5m), and on west side are Chikonchora-Monkhali (10m). Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, 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.

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

There is no evidence of elephant corridors in the subproject area other than 2 kilometers away where migration routes are present as per local inhabitants. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact

3.3.1 General Consideration

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank³ has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

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

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

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

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

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

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 were 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 observed creating 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. As part of specific measures, tree plantation, more than the numbers needed for offsetting the felling trees, on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

3.4 Mitigation and Management Measures

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

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

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control

measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the water logging problem and facilitating optimum irrigation 03 nos. of Box Culvert (dimension: 2.0mx1.5m) at Ch. 408m, Ch.782m & Ch.948m of chainage, 18 nos. Cross Drain (dimension: 0.975m X 0.975m) at different chainage, 01 number of 02 vent (3.0 m X 3.0 m) RCC Box Culvert at ch.3350m, 01 number of 02 vent (3.5 m X 3.5 m) RCC Box Culvert at ch.2193m, 01 number of 4.0m x 4.0m RCC Box Culvert at Ch. 3467m will be constructed at the subproject area. Some small hills or high land is found beside the road. As a mitigation measure, 860m L-Drain works at different chainage will be constructed for draining mountain eel water during rainy season. Due to the low land in different chainage of the road some protective works (1098m Toe wall & 35m Palisading brick work) are included in design and estimation. Some high land is found beside this road where, Retaining Wall (30m RCC) will be constructed to avoid landslips and soil erosion.

Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific Environmental and Social Management Plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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

3.5 Health and Safety Measures under COVID situation

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

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

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

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

3.6 Cost of Environmental Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, 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**.

4 LIMITATIONS OF THIS STUDY

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

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

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary, for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

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

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: *(Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District: EMCRP/W24).*

Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084 (2) Chakmapara - Monkhali bazar Road Id:422944047 (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089 (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Name of the component: Chakmapara - Monkhali bazar Road Id:422944047

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

Estimated total cost of sub-project (in Taka): 215,285,439.3

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): 71,373,276.56

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

District: Cox's Bazar

Sub-District: Ukhiya

Union: Jaliapalong

Name of Community/Local Area: Monkhali para, purbopara, majherpara, Delpara, Poshchimpara, Kunarpara, Jumpara and Chakmapara

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480m to Ch. 1440m. Proposed safety and service providing structures include 03 nos. of Box Culvert (dimension: 2.0mx1.5m) at Ch. 408m, Ch.782m & Ch.948m of chainage, 18 nos. Cross Drain (dimension: 0.975m X 0.975m) at different chainage, 01 number of 02 vent (3.0 m X 3.0 m) RCC Box Culvert at ch.3350m, 01 number of 02 vent (3.5 m X 3.5 m) RCC Box Culvert at ch.2193m, 01 number of 4.0m x 4.0m RCC Box Culvert at Ch. 3467m, 860m L-Drain, 30m RCC Retaining wall and 1098m Toe Wall (height 1.0m, 1.5m & 2.0m) which are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation (Technical Report 2020, EMCRP).

Estimated footprint / land area for this sub-project is 17,101 sq m.

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

This proposed Chakmapara - Monkhali bazar Road Id:422944047 belongs to Jaliapalong union under Ukhiya Upazila. This road has started from Monkhali Bottoli road stretching 3490m in 9 no. ward of Jaliapalong union. Several connecting roads fall within the road chainage. Zafrul Islam's shop is the starting point of the road along with a paddy field, and further passes along keeping numbers of

ponds, canal, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, hills or uplands, mosques, madrasas, graveyards, schools and religious institutes, shops and bazars on both sides. No other significant environmental or socioeconomic features are found near the road component. However, detail Environmental features within 500m area of both sides of the road from the center line were collected at 300m longitudinal intervals during the survey and the findings are given in the table below:

| Chainage (m) | Left | Right | Features |
|--------------|------|-------|---|
| 000-300 | L | | Paddy field, household, paddy field |
| | | R | Paddy field, tube well, paddy land, electric pole, low land |
| 300-600 | L | | Paddy land, house, bamboo fence, open field |
| | | R | House, paddy field, electric pole, coconut tree |
| 600-900 | L | | Tree garden, fence, tree garden |
| | | R | House, tree garden, house, tin shed house, connecting bottoli road to the right |
| 900-1200 | L | | Bazar, shop, tin shed, fence, shop |
| | | R | Mosque, tin fence, house, brick building, tin shed shop |
| 1200-1500 | L | | Tin shed house, tree garden, tin shed fence |
| | | R | Tin shed house, tree garden, bamboo fence |
| 1500-1800 | L | | Tree garden, paddy land, paddy land, Monkhali GPS, Army camp |
| | | R | Pond, paddy land, depressed area, chikon chora, overlapping court bazar monkhali road |
| 1800-2100 | L | | Brick building, tin shed house |
| | | R | Paddy land, low paddy land |
| 2100-2400 | L | | Baliakhali khal, bridge, pond, chora, bridge |
| | | R | Pond, paddy land, tin shed house, paddy land |
| 2400-2700 | L | | Paddy land, house, monkhali GPS, paddy land |
| | | R | Tin shed house, tree garden, temple, shop, tree garden |
| 2700-3000 | L | | Paddy land, tin shed, house |
| | | R | Tree, paddy land |
| 3000-3490 | L | | Tree land, high land, households |
| | | R | Chora, end of road |



Figure: Starting point of Chakmapara - Monkhali bazar Road

Overall Comments

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

It was informed to the stakeholders that the scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issues have also been brought to their attention, such as drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as have an interrupted passage during an emergency situation.

The proposed construction of village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. No significant impact is expected on the

ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub project component.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as on north side are Health complex (50m), Mahabub Rashid Al Islami Madrassa (50m), Rashedin Nurani Madrassa(75m), Bagguna Jame Mosque (120m), Bottoli Jame Mosque/ Graveyard(110m) Seport khali khal (300m), Bagguna Graveyard (100m), Guna beel Graveyard(200m), Jumpara Mosque and Graveyard (70m), Chakmapara GPS(10m), Chakmapara Mosque(40m NE), Seport GPS(700m), Forkania Madrassa/ Mosque/ Graveyard(700m), Monkhali Khal(30m), Seport khali khabbin Malek Madrassa/ Mosque/ Orphanage (750m) on south side are Ibrahim Jame Mosque and Graveyard (50m), Kunarpara Mosque and Hefzokhana (5km), on east side are Monkhali boro mosque and graveyard (50m), Forest Office Mosque(5m), Boro Mosque Pond (50m), Monkhali GPS(25m), Monkhali Abu Huraira orphanage/Madrassa/Hefzokhana(30m), Rest house(5m), Forest Office (5m), and on west side are Chikonchora-Monkhali (10m). The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 02-03 km away from this sub-project.

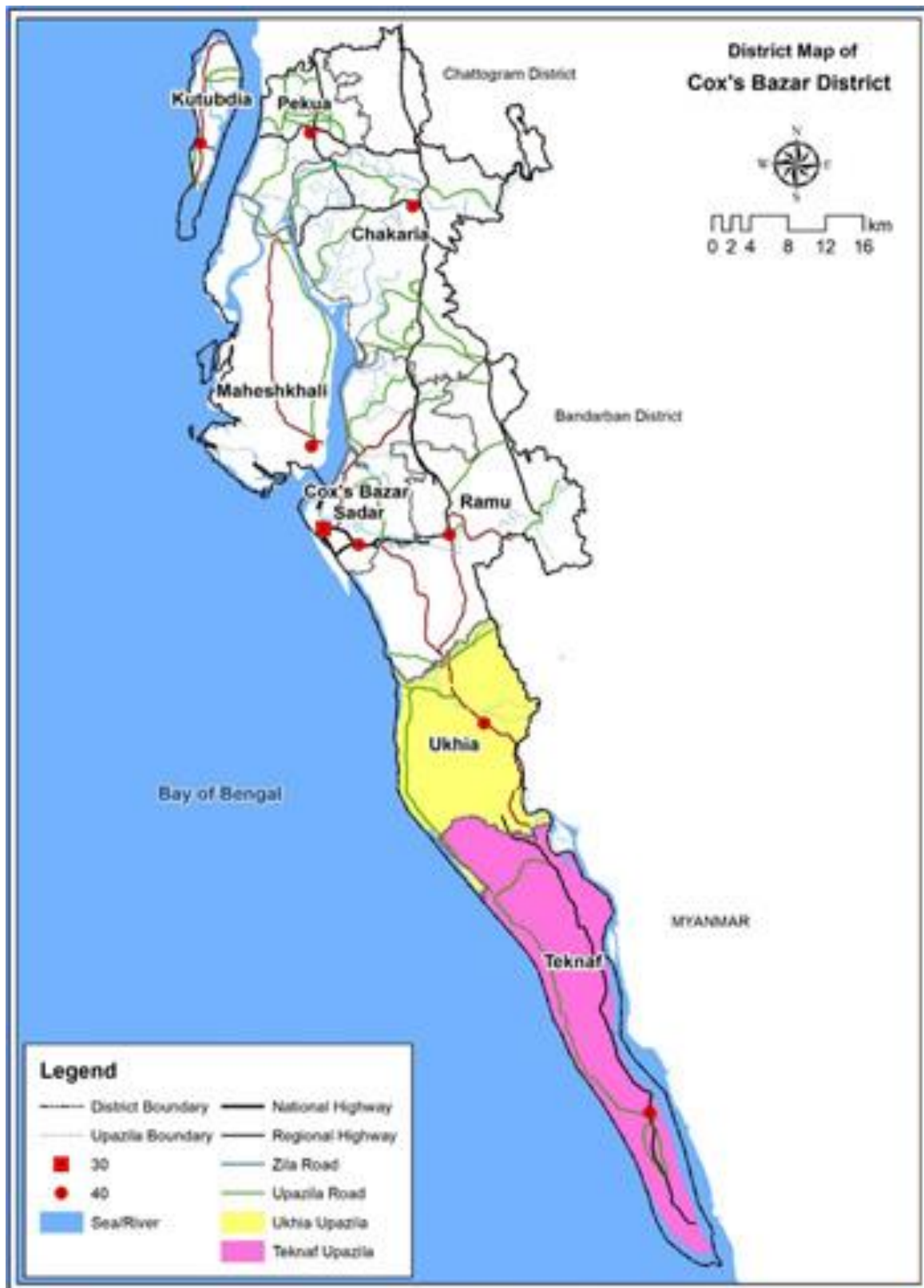


Figure 3: District Map with project location

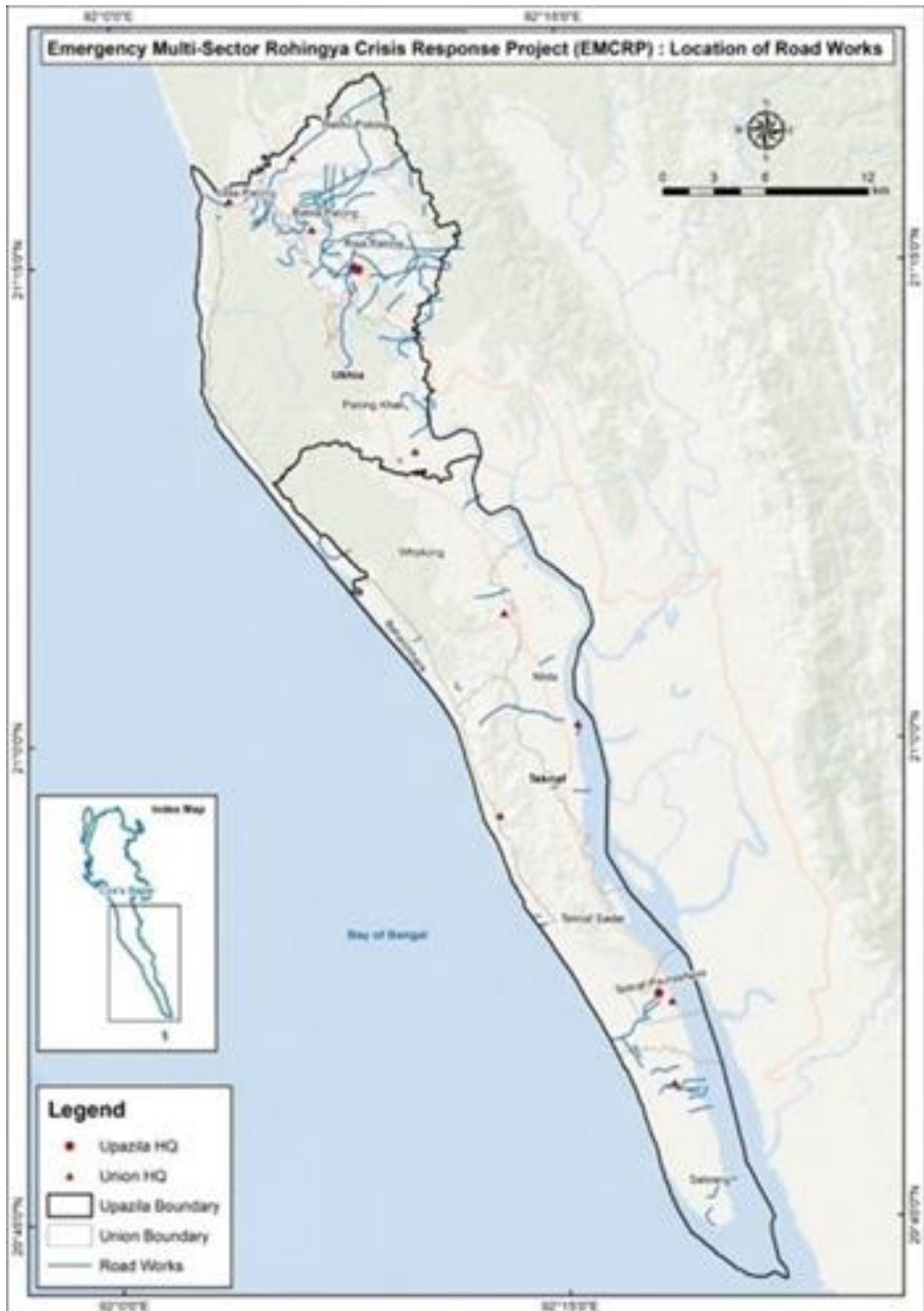


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

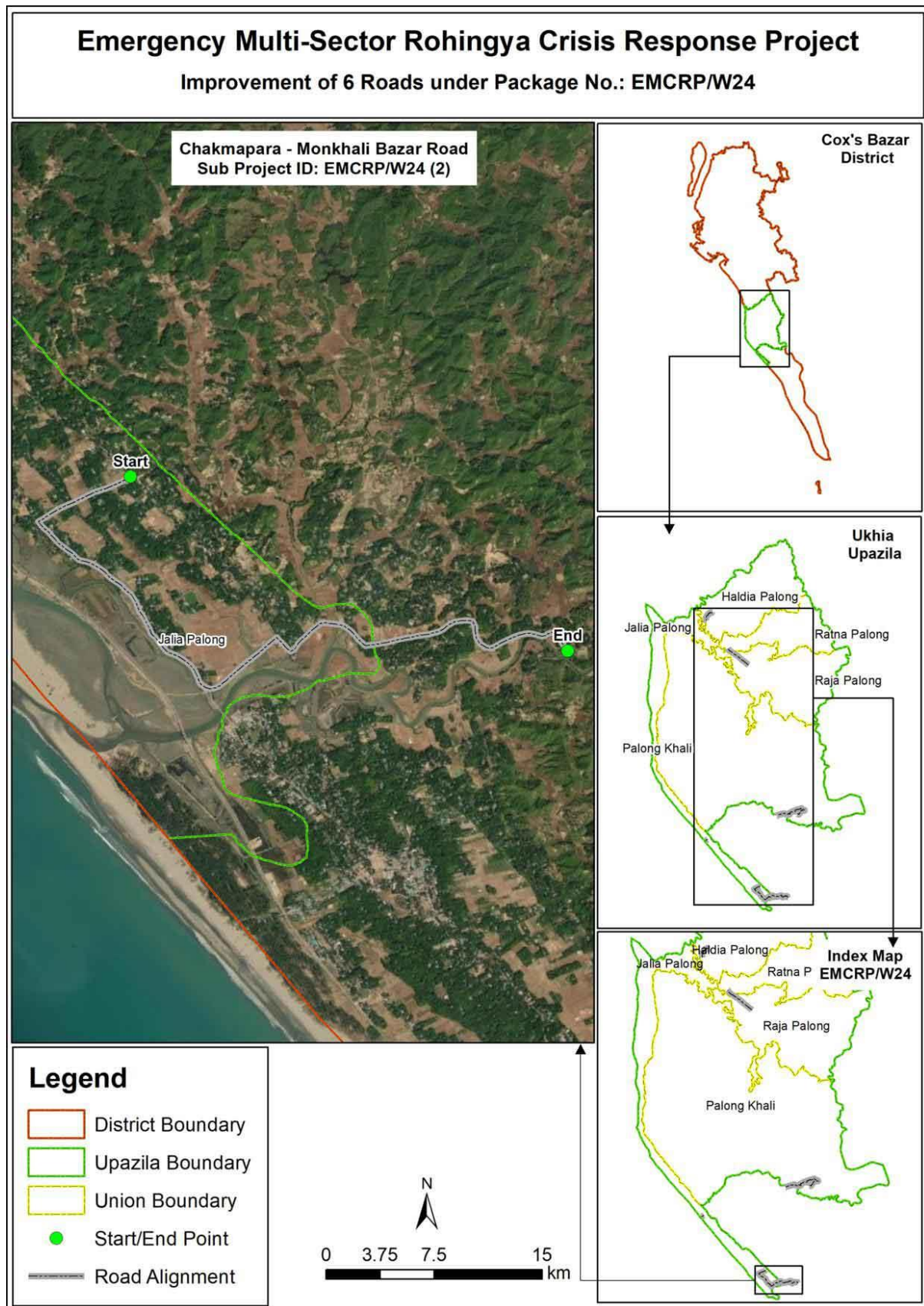


Figure 5: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.000 to Ch. 3490m. Proposed safety and service providing structures 03 nos. of Box Culvert (dimension: 2.0m x 1.5m) at Ch. 408m, Ch.782m & Ch.948m of chainage, 18 nos. Cross Drain (dimension: 0.975m X 0.975m) at different chainage, 01 number of 02 vent (3.0 m X 3.0 m) RCC Box Culvert at ch.3350m, 01 number of 02 vent (3.5 m X 3.5 m) RCC Box Culvert at ch.2193m, 01 number of 4.0m x 4.0m RCC Box Culvert at Ch. 3467m, 860m L-Drain, 1098m Toe wall & 35m Palisading brick work and Retaining Wall (30m RCC) that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation.

Sub-project Location:

| Important Features | |
|---------------------------------|---|
| ID | 422944047 |
| District | Cox's Bazar |
| Upazila | Ukhiya |
| Union | Jaliapalong |
| WARD | 09 |
| Proposed Chainage | 3490m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21°05'45.5" N Longitude Value: 92°07'46.0" E |
| Road Ending Point Coordinates | Latitude Value: 21°05'17" N Longitude Value: 92°08'59.1" E |

Land ownership

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

Expected construction period: 1 Year

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

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480 to Ch. 1440m.

- i) Some water bodies like ponds, chorra, ditches etc. were identified during visiting time.
- ii) No historical sites were identified.
- iii) Not required to relocate local community.
- iv) Some trees may be affected.
- v) Very low chance of losing of agricultural land.
- vi) Some Household Boundary made of bamboo and tin may need adjustments.
- vii) Environmental Sensitivity: There are several sites containing bio/ecological niches including patches of vegetation, ponds, ditches or other type of water bodies, which are in closer proximity along the road length and may receive some extent of detrimental impacts during the construction period; but no elephant corridor was identified in the



areas. Construction induced impacts may also affect numbers of socio-economic features along the road length; therefore a well-planned ESMP has been prepared to follow in the field.

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as are that on north side are Health complex (50m), Mahabub Rashid Al Islami Madrassa (50m), Rashedin Nurani Madrassa(75m), Bagguna Jame Mosque (120m), Bottoli Jame Mosque/ Graveyard(110m) Seport khali khal(300m), Bagguna Graveyard (100m), Guna beel Graveyard(200m), Jumpara Mosque and Graveyard (70m), Chakmapara GPS(10m), Chakmapara Mosque(40m NE), Seport GPS(700m), Forkania Madrassa/ Mosque/ Graveyard(700m), Monkhali Khal(30m), Seport khali khabbin Malek Madrassa/ Mosque/ Orphanage (750m) on south side are Ibrahim Jame Mosque and Graveyard (50m), Kunarpara Mosque and Chakmapara Mosque (5km)on east side are Monkhali boro mosque and graveyard (50m), Forest Office Mosque(5m), Boro Mosque Pond (50m), Monkhali GPS(25m), Monkhali Abu Huraira orphanage/Madrassa/Hefzokhana (30m), Rest house(5m), Forest Office (5m), and on west side are Chikonchora-Monkhali (10m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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

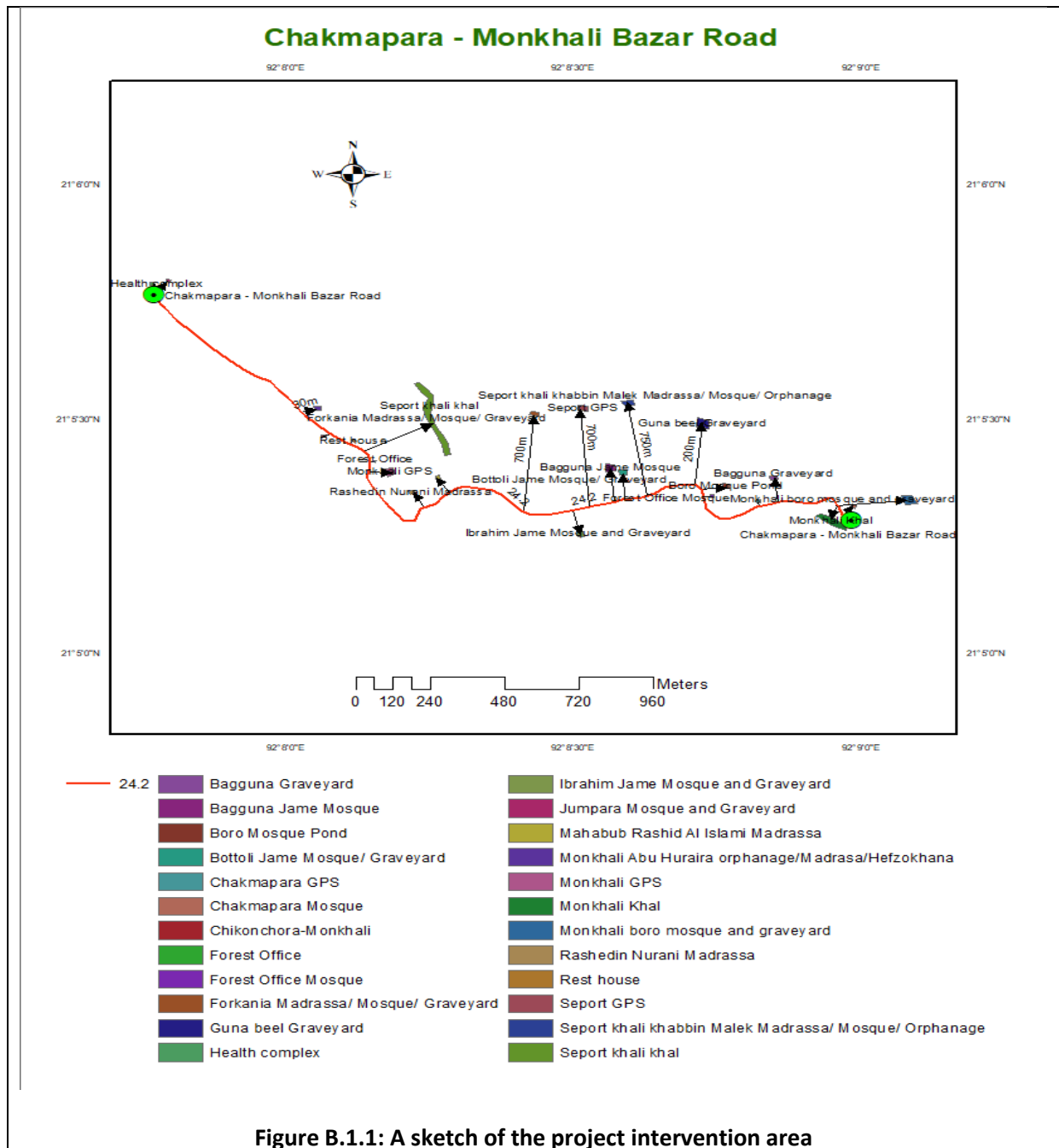


Figure B.1.1: A sketch of the project intervention area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation, several local canals, five ponds, ditches, chorra, and hills/tilas are present in the proposed sub-project area. These components or resources may receive some effects during the construction period, but not in significant level and mostly be site-specific. However, all the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. Elephant migration routes or corridors are present in this area however 2 kilometers away migration routes are present. 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

No. Local community has undertaken social forestation in 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:

Dust

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

Noise

Noise in the Sub-project area is not a major concern because noise level is within the tolerable level. 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:

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

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

Low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. Erosion/land slide may occur only when moderate to high sloping terrains are disturbed for construction of roads.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 40ft-50ft feet and deep tube well depth is 300 feet in the area. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

Surface water quality: Five ponds, two canals and a ditch 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.

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 (60ft. to 80 ft.) are fitted in local area and most of the water usage is sufficed from these sources.

*Data source: IWM Study Report, 2019

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

There is no social forestation near the proposed road.

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):

Court Bazar to Monkhali road BC road and Houyankong to Shyampur BC Road can be used as access road for transportation. This access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also and the route has narrow curves.

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:

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

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

i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.

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

Yes. Court Bazar to Monkhali road BC road and Houyankong to Shyampur BC Road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

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

Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in preparatory works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 10 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 10 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.

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 50 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, trees alongside the road can be said to be on the ROW. There are few locations on the chainage where medium trees might need cutting. 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)

Low. This area has no water logging troubles because of the presence of natural channels (canals, drains, etc.), though during the monsoon waterlogging appears in some sections in the area for a small period of time; this problem will be resolved by the construction of sufficient numbers of drainage channels and structures. However, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

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

Existing ponds and ditches can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. Chikon chora is present on the west side of the road from Ch:1158 to Ch:1720 which may be impacted through left over material pollution however guide wall is proposed in order to tackle this matter. 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.

| |
|---|
| <p>Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)</p> <p>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.</p> |
| <p>Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)</p> <p>Not applicable.</p> |
| <p>Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors:(High/Medium/Low with explanation)</p> <p>There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding and other disease vectors, during the operation phase.</p> |
| <p>Likely direct and indirect impacts on economic development in the project areas by the sub-project:</p> <p>Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.</p> |
| <p>Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes):(High/Medium/Low with description)</p> <p>Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.</p> |
| <p>Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)</p> <p>Low. 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.</p> |
| <p>Activities leading to landslides, slumps, slips and other mass movements in road cuts:</p> <p>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.</p> |
| <p>Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains:(High/Medium/Low with explanation)</p> <p>Low. Concentrated outflow will be carried by proposed drains and culvert.</p> |
| <p>Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:</p> <p>Improved road communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust, especially during the dry season and if the vehicles are maintained in good conditions.</p> |

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

Section D: Environmental Screening Summary

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|------------------------------|----------------------------|--|---|---|--|--|
| | | | | | Indicator | Frequency |
| 1: Sub-Project Interventions | Air quality | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection | Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season. |
| | Soil impacts | Under the sub-project intervention the overall score is low . | <ul style="list-style-type: none"> Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. | Monitoring on weekly basis. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|---|---|--|---|
| | | | | | Indicator | Frequency |
| | | | <p>shall be used on site to manage surface water runoff and minimize erosion.</p> <ul style="list-style-type: none"> The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures. | | | |
| | Hydrology (surface and groundwater) | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters) if requires; No visible degradation to | Water quality test (mainly GW) twice during the construction period in six months interval. |

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

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|-----------------------------|--|--|---|---|---|
| | | | | | Indicator | Frequency |
| | erosion and landslides) | | toe of the road embankment remain within the right of way and does not disturb the crop. | | | |
| | Storage of materials | Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low . | <p>With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration:</p> <ul style="list-style-type: none"> Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. Construction materials must not interrupt land contours, natural drainage pattern, and create | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. | Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | | <p>water logging or depression.</p> <ul style="list-style-type: none"> Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin. | | | |
| | Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity) | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. | Contractor, environmental specialist of D&S. | <ul style="list-style-type: none"> Complaints from community | Daily |
| | Noise pollution | Under the subproject intervention the | <ul style="list-style-type: none"> Consultation with affected people; not to operate noisy equipment during working period; No noisy work after 5.00 pm. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Number of complaints from stakeholders; Use of silencers in | Inspection by PIU and supervision consultants on |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|----------------------------------|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | overall score is low . | <ul style="list-style-type: none"> • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP. | | <ul style="list-style-type: none"> • noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required. | monthly basis; |
| | Air pollution | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. | Visual observation and monitoring of air quality during construction period. |
| | Road Safety and Accidents | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, | Construction Contractor, environmental specialist of D&SC. | <ul style="list-style-type: none"> • Complaints from communities, pedestrians | Day basis during work time |

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

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

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

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

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

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

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

ESMP for Access and evacuation Roads: Chakmapara - Monkhali bazar Road Id:422944047

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

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

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

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|---|--|--|---|
| | | <p>taken.</p> <ul style="list-style-type: none"> • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts. | | Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | <ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Labour Base Camp: Conflicts with the local residents | <ul style="list-style-type: none"> • Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|-----------------------|---|--|---------------------------------------|---|
| | | <p>forces.</p> <ul style="list-style-type: none"> Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | <p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site Wastes after completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies | <ul style="list-style-type: none"> 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 | <p>Health & Safety Risks:</p> <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. | <ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|---|---|--|--|
| | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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 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 | | |

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

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-------------------------|---|--|--|-----------------------------------|
| | <p>implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage:</p> <ul style="list-style-type: none"> ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community | | | Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | <ul style="list-style-type: none"> • Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. • Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. | UE-LGED (under the direct guidance of Executive Engineer, Cox's Bazar) | PSC. UNO |

Waste Management Plan Principles:

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

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.

- Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in a labor camp or construction site shall be prohibited completely

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Appendix-3: Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

| Sl no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--------|---|-----------------|----------------|------------------|
| 1 | <u>Grass Turfing</u> Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 10,470sqm | 38.15 | 399430.5 |
| 2 | <u>First Aid Box</u> Supply of first aid box with standard contents and as per direction of the E.I.C. | LS | 5000 | 5000 |
| 3 | <u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C. | 3490.00m | 2.56 | 8934.40 |
| 4 | <u>Motivation training</u> Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 | 10000 | 10000 |
| 5 | <u>Personal Protective Equipment</u> Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 10 sets as per direction of E.I.C. | LS | 30000 | 30000 |
| 6 | <u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological | 300 | 1000 | 300000 |

| Sl no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--------|--|-----------------|----------------|------------------|
| | condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroj, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PMU prior to the tree plantation work) at an interval of 10 feet. | | | |
| 7 | <u>Portable water supply & Temporary Sanitary Latrine</u> 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 | 12822.86 | 25645.72 |
| 8 | <u>Drinking water Facilities:</u> Providing Continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well where applicable and any other means depending on local situation, | 2 | 30000 | 60000 |
| 9 | <u>Waste disposal</u> Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | 5000 | 5000 |
| 10 | <u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractors activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic providing necessary barricades, warning signs/lights, guide signs, Flagmen, maintaining diversion roads by cutting, filling, construction, etc. or by any other means in accordance with the full | 1 | 15000 | 15000 |

| Sl no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--|---|-----------------|--|-------------------|
| | satisfaction of EIC. | | | |
| 11 | <u>Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | 1 | 5000 | 5000 |
| 12 | <u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 | 30000 | 30000 |
| 13 | <u>Environmental management</u> Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C. The Safeguard personnel will take duty for roads W24(1), W24(2) and W24(4), so one-third of the personnel cost is counted here. | 1 Person | Monthly basis @Tk.35000 for 12 months. One person covering 3 roads. i.e. 35,000tk X 12 months (1/12 one road). (Net payment excluding Tax & VAT) | 1,40,000 |
| Subtotal Bill for Environmental Mitigation and Enhancement Work (BDT) | | | | 1034010.62 |

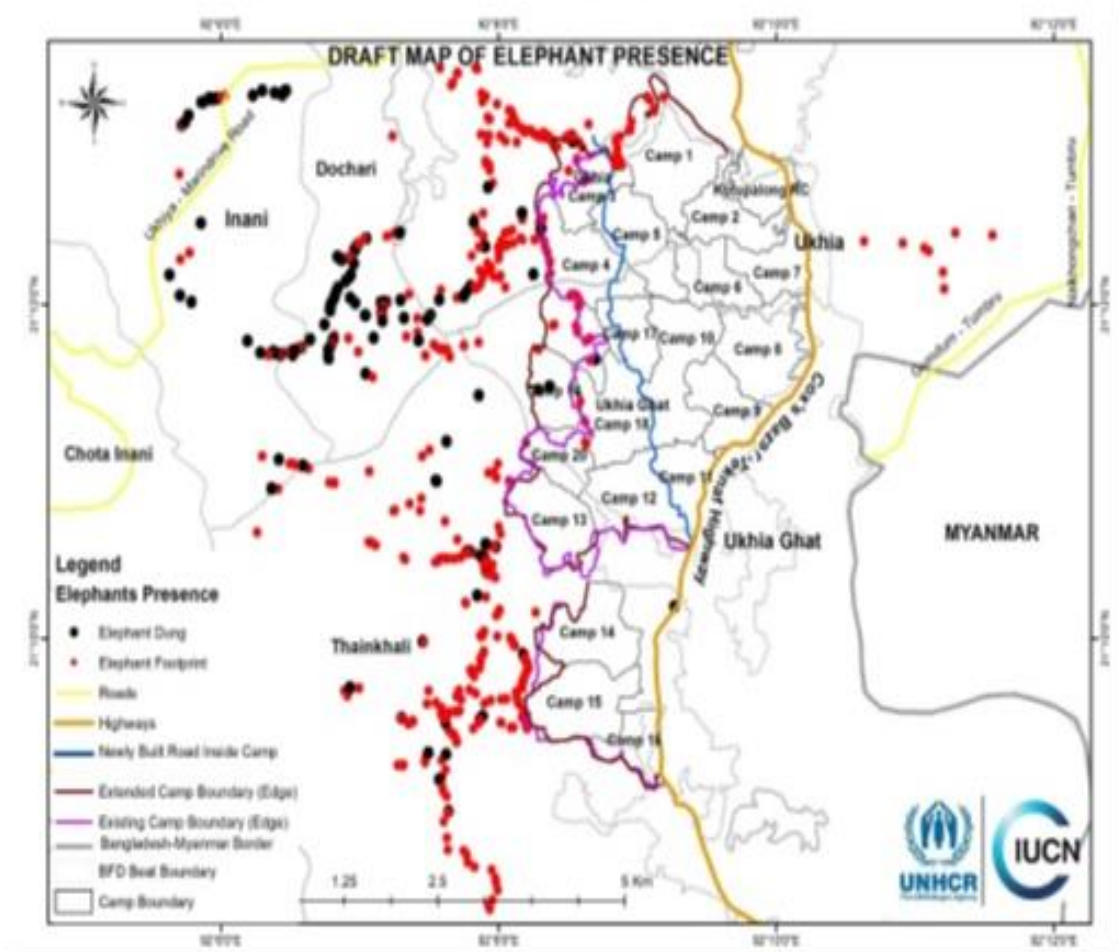
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 70 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-24.2).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------|----------------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 1,890 | | 237 | 50.00 | 2,127 | 106,350 | To be placed in a case/holder on the basin, for washing hands for max. 35 people a day and showering of 30 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |
| 6. | Face Shield/ Protective Safety Goggles | 42 nos. for each site | | N/A | 400.00 | 42 | 16,800 | For labors who work in close contact, 16 in each site |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------------------------|------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 5 nos. each day in each site | | N/A | 12.00 | 1350 | 16,200.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 70 nos. of labor for this camp | | 35.00 | 1260 | 44,100.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 2 Can | N/A | 3 Can | 250.00 | 5 | 1,250.00 | |
| 10. | Detergent Cleaner | N/A | 2 kg in each camp/month | | 400.00 | 18 | 7200.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | Grand Total | | | | | | 2,42,000.00 | |

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W24.02, Road ID No.- 422944047

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
আবর্তী সিস্টেম জেলিয়া সেক্টর প্রকল্প (EMCRP)
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

সময়: 11:30 AM
তারিখ: 07/12/2020
প্রকল্প/সেক্টর: Improvement of Chakmapara - Monihali Bazar Road
সড়ক সীমানা: Monihali - Botali Kanton Matha (Zakunul Islam Market)
জিএলইডি নং: Jaliapalong সেক্টর: 09 থানা: Inani উপজেলা: Ukhia
সড়ক আইডি নং: W24(02)

অংশগ্রহণকারীদের তালিকা (নাম ও পদবী)

| ক্রম নং | নাম | বয়স | পুরুষ/মহিলা | পেশা | স্বাক্ষর / চিত্র |
|---------|------------------|------|-------------|--------|------------------|
| ১ | (মহোদয়) হুদা | ৪৫ | পুরুষ | সহকারী | হুদা |
| ২ | ফরিদ হুদা W24.02 | ৪২ | | সহকারী | ফরিদ |
| ৬ | ফরিদ হুদা W24.02 | ৪০ | | সহকারী | ফরিদ |
| ৪ | সহকারী হুদা | ৪২ | | সহকারী | হুদা |
| ১২ | সহকারী হুদা | ৪২ | | সহকারী | হুদা |
| ৬ | সহকারী হুদা | ২৫ | | সহকারী | হুদা |
| ৭ | সহকারী হুদা | ২৭ | | সহকারী | হুদা |
| ৪ | সহকারী হুদা | ৪২ | | সহকারী | হুদা |
| ৭ | সহকারী হুদা | ৪২ | | সহকারী | হুদা |
| ২০ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২১ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২২ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৩ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৪ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৫ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৬ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৭ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৮ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |
| ২৯ | সহকারী হুদা | ৩৭ | | সহকারী | হুদা |

Public Consultation Participants' List

Appendix-6: Pictorial View of several sections of the proposed site



Overview of surrounding features of the Sub-Project

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

Chaungkhali to Battali marine drive sea beach Road, Id: 422945089

Upazila: Ukhiya, District: Cox's Bazar.

Under the package no. EMCRP/W24

January-2021



Development Design Consultants Ltd.



ACRONYMS

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

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Executive Summary

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

This sub-project is situated within the localities of Chaungkhali under Jaliapalong union, Ward 8 of Ukhiya Upazila, Cox's Bazar. There are some community's property resources, environmental components and other intervention situated within 1km from the sub project, like that Chaungkhali Uttarpara Jame mosque (200m) to the north, Chaungkhali Kindergarten (20m), Chaungkhali central mosque, hefzakhana & graveyard (300m), Chaungkhali GPS (300m) to the south side, Baitun Rahman mosque (20m), Galachira hill (500m) to the east side and Bay of Bengal (50m) to the west side. Otherwise, no other important environmental features are present near sub-project. Some water body located around the subproject area. So, water logging is not a regular and annual phenomenon. Apart from this structure 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 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 730,000¹ people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033². This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

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

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

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

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

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

This document represents the Findings from Environmental Screening of the sub-project components under the package name 'Improvement of 6 roads under Cox's Bazar District', with the bid package no. **EMCRP/W24**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W24

Description of Sub-project: Improvement of 6 roads under Cox's Bazar District:

Improvement of

(1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084

(2) Chakmapara - Monkhali bazar Road Id:422944047

(3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089

(4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089

(5) Palonkhali Goyalmara Road Id:422945097 and

(6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089

Component's Location:

| | | |
|----------------------------------|---|--------------------|
| i. ID. 422945089 | ii. Ward No.: 8 | iii. Mouza: Enani |
| iv. Village: Chaungkhali | v. Name of Union: Jaliapalong | |
| vi. Upazila: Ukhiya | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2020-21 | ix. Width (m): 4.9 | x. Length (m): 180 |
| xi. Distance from UZHQ: 38 Km. | | |
| GPS Coordinates | Latitude Value: 21.130413 N Longitude Value: 92.091009 E | Starting Point |
| | Latitude Value: 21.129572 N Longitude Value: 92.089529 E | Ending Point |
| Present Condition of Road | BFS & Earthen (Broken) | |
| Communication Source | Radio & Mobile Networks | |

Subproject interventions:

- Bituminous Carpeting options.
- 1 no. of Box Culvert (dimension: 3.0mx2.0m) at Ch. 145m of chainage
- 1 no. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 100m of chainage
- Road safety work and

- Environmental Mitigation and Enhancement works

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period (Component -1): 6 Months

Estimated total cost of component: 4,108,951.17 (Tk.)

2 PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. To this end, D&SC conducted consultation meeting with local community on 07 December, 2020 at Chaungkhali Mizanur Rahman's Shop point of the Sub-project, Refer to **Figure 2.1.1**, and Public Consultation Participants' List is attached in **Appendix-5** and sub-project pictorial overview is attached in **Appendix-6**. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

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

2.2 Summary of Public Consultation Meeting

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

affected parties and inhabitants on social and environmental issues. (iii) Consultation with interest groups and the public.

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust pollution and noise pollution might occur as well.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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

2.3 Suggestions and recommendations of the participants

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

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

3 ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

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

3.2 Major Findings

This sub-project is situated within the localities of Chaungkhali village under Jaliapalong union, Ward 8 of Ukhiya Upazila, Cox's Bazar. The proposed road component passes through a typical but semi-developed rural setting, comprising of vegetation and agricultural fields. Among important socioeconomic and sensitive features located within 1km from the sub project, Chaungkhali Uttarpara Jame mosque (200m) to the north, Chaungkhali Kindergarten (20m), Chaungkhali central mosque, hefzakhana & graveyard (300m), Chaungkhali GPS (300m) to the south side, Baitun Rahman mosque (20m), Galachira hill (500m) to the east side and Bay of Bengal (50m) to the west side. Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, 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.

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

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routes and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact

3.3.1 General Consideration

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank³ has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

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

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

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

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 intensity of precipitation has been seen to have increased in the past few years. Salinity and the occurrence of cyclonic storm surge were 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 observed creating 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. As part of specific measures, tree plantation, more than the numbers needed for offsetting the felling trees, on the road slope is suggested to soothe the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

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

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 1 no. of Box Culvert (dimension: 3.0mx2.0m) at Ch. 145m of chainage and 1 no. Cross Drain (dimension: 0.975mx0.975m) at Ch. 100m of chainage will be constructed at the subproject area. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific Environmental and Social Management Plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

Environmental quality enhancement: Under the additional financing to the EMCRP project, Forest Department of the Government of Bangladesh will afforest along 200 km of road length area,

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

4.2 Health and Safety Measures under COVID situation

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

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

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

Following the additional health and safety measures presented in that guideline, sub-project specific BOQ items have been inserted to supplement the budget considering the country-specific situation,

capacities, and scope of interventions. The additional cost to Health and Safety Measures under COVID 19 situation is shown in Appendix-3.

4.3 Cost of Environmental Enhancement Works in BOQ

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

5 LIMITATIONS OF THIS STUDY

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

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

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

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

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: EMCRP/W24- Improvement of 7 roads under Cox's Bazar District:

Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084; (2) Chakmapara - Monkhali bazar Road Id:422944047; (3) Chaungkhali to Battali marinedrive sea beach Road Id:422945089; (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089; (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Name of the component: Chaungkhali to Battali marinedrive sea beach Road Id:422945089

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

Estimated total cost of sub-project (in Taka): 215,285,439.30

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): 4,108,951.17

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

District: Cox's Bazar

Sub-District: Ukhiya

Union: Jaliapalong

Name of Community/Local Area: Chaungkhali

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1560m. Proposed safety and service providing structures include **1 no. Box Culvert** (dimension: 3.0mx2.0m) at Ch. 145m of chainage and **1 no. Cross Drain** (dimension: 0.975mmX 0.975mm) at Ch. 100m of chainage are included in the design and estimation. As part of Environmental Mitigation and Enhancement works and road safety works as barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation (Technical Report 2020, EMCRP).

Estimated footprint / land area for this sub-project is 882 sq m.

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

This proposed Chaungkhali to Battali marinedrive sea beach Road belongs to Jaliapalong union, Ward 8 under Ukhiya Upazila. This road has starts from Court Bazar-Shaplapur road on at east side stretching 180m to Marine drive at west side. One connecting road fall within the road chainage. This sub-project passes through vegetation and agricultural fields. No other significant environmental or socioeconomic features are found near the road component. However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

| Chainage (m) | Left | Right | Features |
|--------------|------|-------|---|
| 000-180 | L | | Brick boundary wall, electric pole, agricultural lands, kindergarten, ditches |
| | | R | Trees, RCC pillar with wire fencing, agricultural lands |



Figure: Starting point of Chaungkhali to Battali marinedrive sea beach Road

Overall Comments

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

It was informed to the stakeholders that the scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover other issues have also been brought to their attention, such as drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation.

The proposed construction of hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub project component.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as Chaungkhali Uttarpara Jame mosque (200m) to the north, Chaungkhali Kindergarten (20m), Chaungkhali central mosque, hefzakhana & graveyard (300m), Chaungkhali GPS (300m) to the south side, Baitun Rahman mosque (20m), Galachira hill (500m) to the east side and Bay of Bengal (50m) to the west side. The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 1 km away from this sub-project.

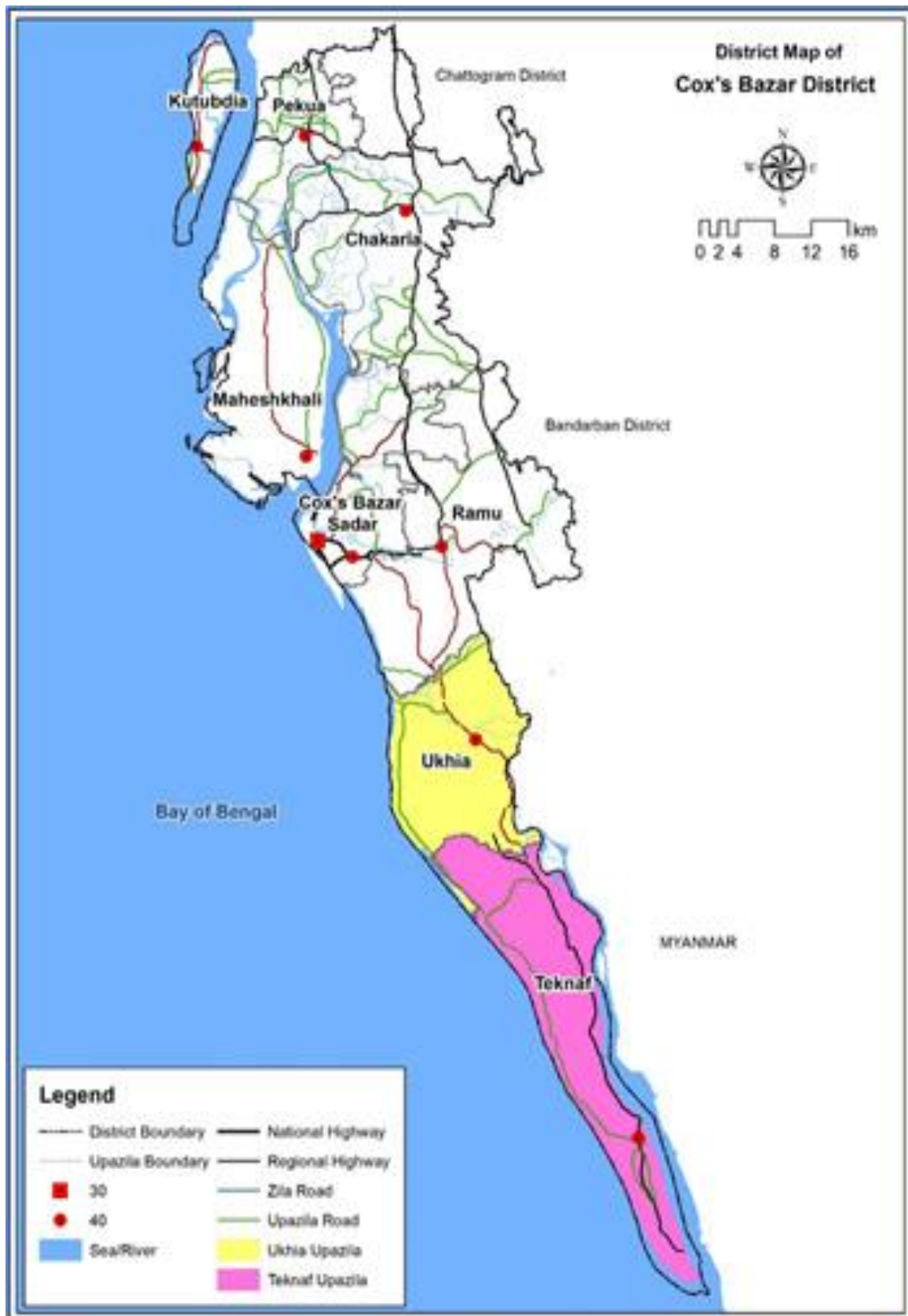


Figure 3: District Map with project location

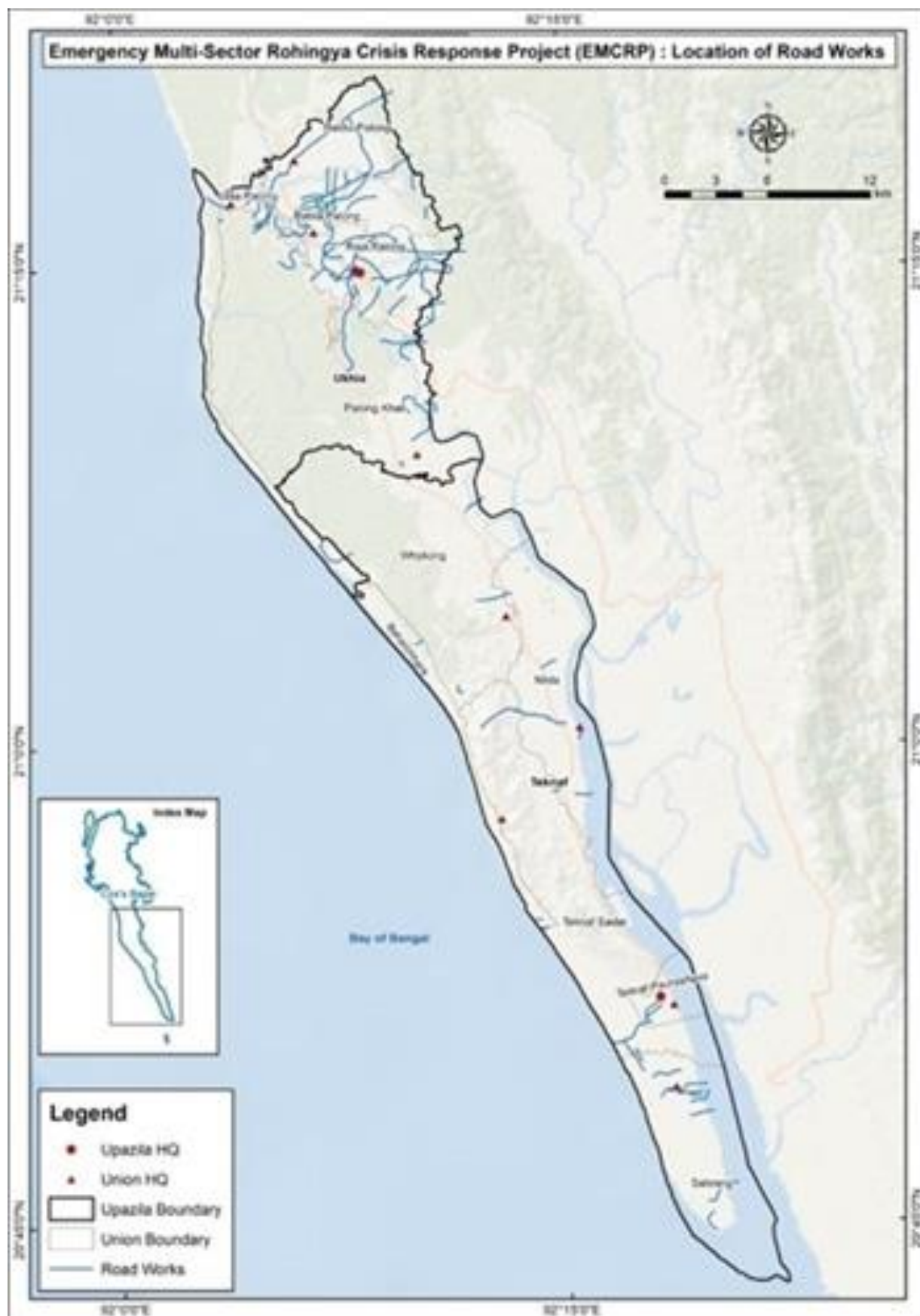


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

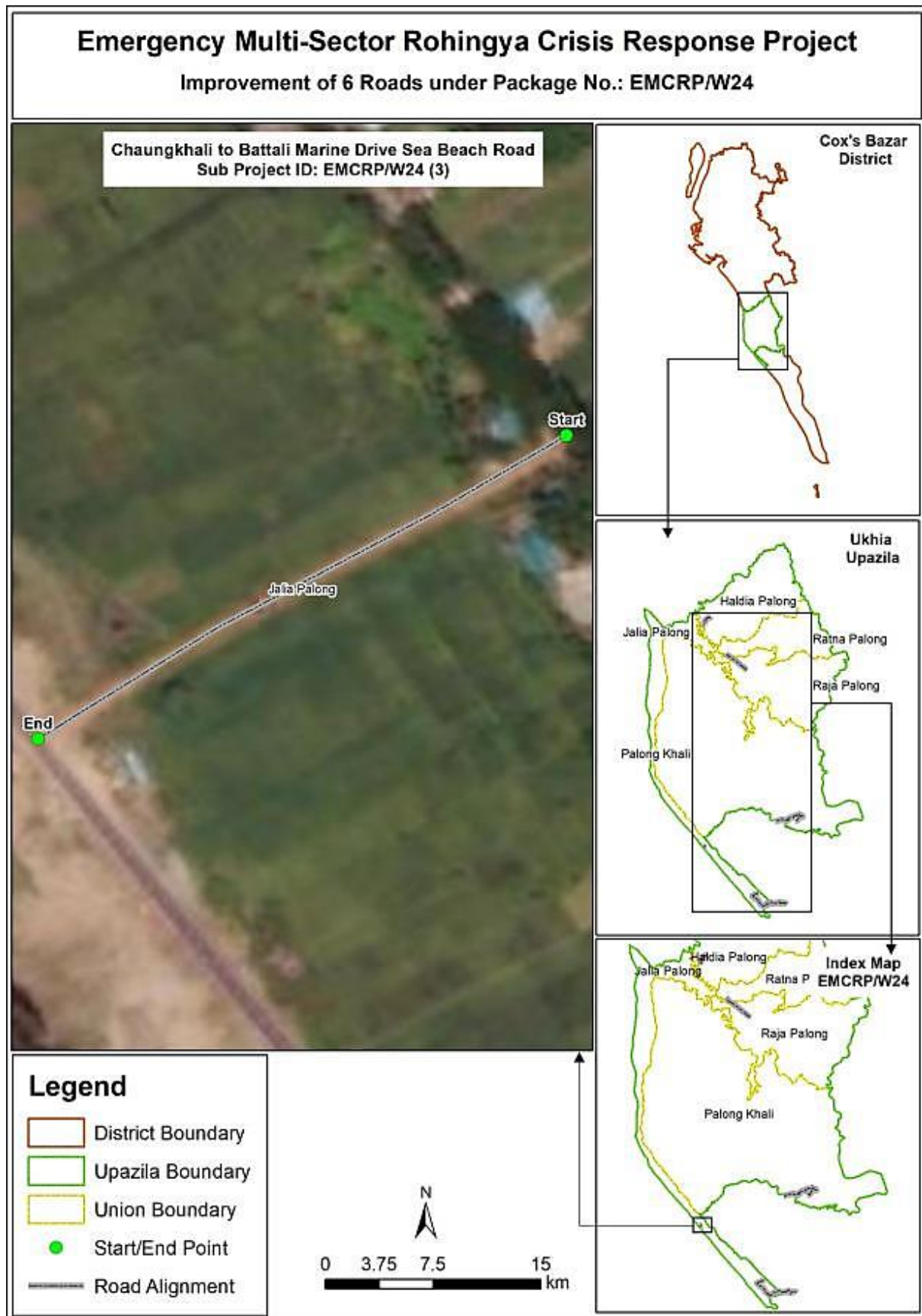


Figure 5: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 180m. Proposed safety and service providing structures include 1 nos. of Box Culvert, 1 no. Cross Drain that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation.

Sub-project Location:

| Important Features | |
|---------------------------------|---|
| ID | 422945089 |
| District | Cox's Bazar |
| Upazila | Ukhiya |
| Union | Jaliapalong |
| WARD | 8 |
| Proposed Chainage | 180m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21.130413 N Longitude Value: 92.091009 E |
| Road Ending Point Coordinates | Latitude Value: 21.129572 N Longitude Value: 92.089529 E |

Land ownership

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

Expected construction period: 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:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1560m.

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

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as Chaungkhali Uttarpara Jame mosque (200m) to the north, Chaungkhali Kindergarten (20m), Chaungkhali central mosque, hefzakhana & graveyard (300m), Chaungkhali GPS (300m) to the south side, Baitun Rahman mosque (20m), Galachira hill (500m) to the east side and Bay of Bengal (50m) to the west side. Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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

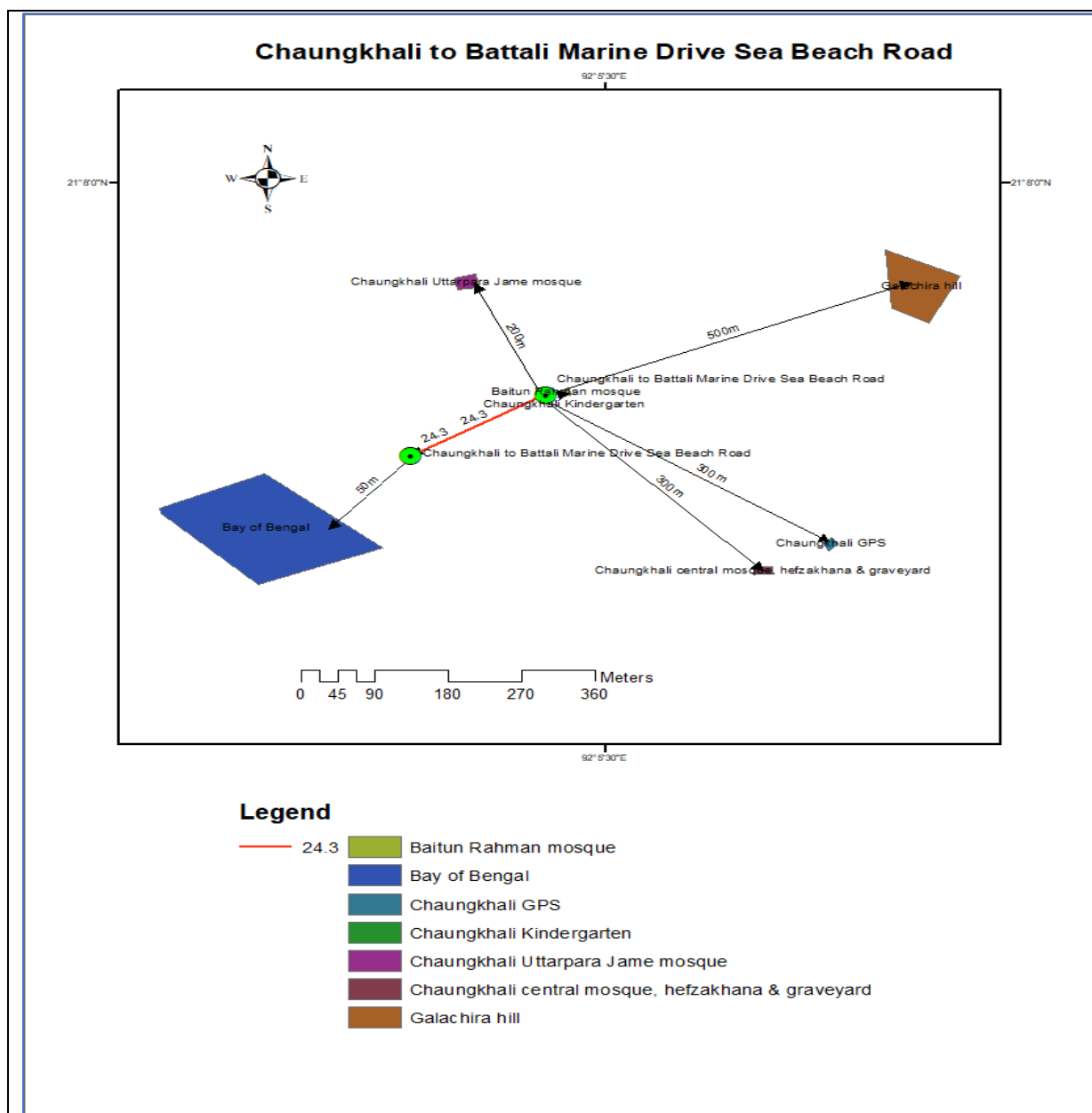


Figure B.1.1: A sketch of the project intervention area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation, agricultural fields are present in the proposed sub-project area. These components or resources may receive some effects during the construction period, but not in significant level and mostly be site-specific. However, all the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. Elephant migration routes or corridors were present near the sub-project area about 5-6 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

No. Local community has undertaken social forestation in 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:
Dust:

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

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

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

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

Low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. Erosion/land slide may occur only when moderate to high sloping terrains are disturbed for construction of roads.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80 feet and deep tubewell depth is 500 feet in the area. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

Surface water quality: Bay of Bengal, local canals/chorra etc. 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.

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 (60ft. to 80 ft.) are fitted in local area and most of the water usage is

sufficed from these sources.

*Data source: IWM Study Report, 2019

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

Patches of vegetation containing large and matured trees as well as homestead gardens across the road side of the proposed subproject area are located within 200m radial distance.

Summary of water balance analysis (For water supply scheme only):

N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

Existing 15ft. Courtbazar-Shaplapur connecting road on east side and 20ft. Marine drive connecting road on west side can be used as access road for transportation. Concerning ancillary facilities, these access roads for the sub-project are proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also and the route has narrow curves.

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:

Labor camp can be established along the road since there are available open private lands. Possible location for labor camps installation will be open space of marine drive on west side. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.

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

i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates vii) wood and viii) Bitumen 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. 15ft. Courtbazar-Shaplapur connecting road on east side and 20ft. Marine drive connecting road on west side can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

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

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

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

B.3: Construction Phase
Type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):

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, trees alongside the road can be said to be on the ROW. There are some locations on the chainage where small trees might need cutting. 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)

Low. This area has no water logging troubles because of the presence of natural channels (canals, drains, etc.), though during the monsoon waterlogging appears in some sections in the area for a small period of time; this problem will be resolved by the construction of sufficient numbers of drainage channels and structures. However, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

| |
|--|
| Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel. |
| 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: No. |
| Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) No. |
| Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) Not applicable. |
| Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding and other disease vectors, during the operation phase. |
| Likely direct and indirect impacts on economic development in the project areas by the sub-project: Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time, increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and |

indirect impacts on economic development in the project areas would be enormous by this sub-project.

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

Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)

Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.

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

Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.

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

Low. Concentrated outflow will be carried by proposed drains and culvert.

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

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

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

Section D: Environmental Screening Summary

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|------------------------------|----------------------------|--|---|---|--|--|
| | | | | | Indicator | Frequency |
| 1: Sub-Project Interventions | Air quality | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection | Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season. |
| | Soil impacts | Under the sub-project intervention the overall score is low . | <ul style="list-style-type: none"> Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. | Monitoring on weekly basis. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|---|---|--|---|
| | | | | | Indicator | Frequency |
| | | | <p>shall be used on site to manage surface water runoff and minimize erosion.</p> <ul style="list-style-type: none"> The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures. | | | |
| | Hydrology (surface and groundwater) | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to | Water quality test (mainly GW) twice during the construction period in six months interval. |

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

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|-----------------------------|--|--|---|---|---|
| | | | | | Indicator | Frequency |
| | landslides) | | remain within the right of way and does not disturb the crop. | | | |
| | Storage of materials | Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low . | <p>With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration:</p> <ul style="list-style-type: none"> Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. Construction materials must not interrupt land contours, natural drainage pattern, and create | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. | Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | | <p>water logging or depression.</p> <ul style="list-style-type: none"> Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin. | | | |
| | Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity) | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. | Contractor, environmental specialist of D&S. | <ul style="list-style-type: none"> Complaints from community | Daily |
| | Noise pollution | Under the subproject intervention the | <ul style="list-style-type: none"> Consultation with affected people; not to operate noisy equipment during working period; No noisy work after 5.00 pm. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Number of complaints from stakeholders; Use of silencers in | Inspection by PIU and supervision consultants on |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|----------------------------------|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | overall score is low . | <ul style="list-style-type: none"> • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP. | | <ul style="list-style-type: none"> • noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required. | monthly basis; |
| | Air pollution | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. | Visual observation and monitoring of air quality during construction period. |
| | Road Safety and Accidents | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, | Construction Contractor, environmental specialist of D&SC. | <ul style="list-style-type: none"> • Complaints from communities, pedestrians | Day basis during work time |

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

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

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

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

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

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

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

ESMP for Access and evacuation Roads: Chaungkhali to Battali marinedrive sea beach Road Id: 422945089

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

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

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

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|-----------------------|--|--|---------------------------------------|---|
| | | <p>water from existing surface water sources shall be taken.</p> <ul style="list-style-type: none"> • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts. | | Specialist and Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | <ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Labour Base Camp: Conflicts with the local residents | <ul style="list-style-type: none"> • Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place. • Treated water will be made available at site for drinking purpose. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|--|--|---------------------------------------|---|
| | | <ul style="list-style-type: none"> Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | <p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site Wastes after completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies | <ul style="list-style-type: none"> 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 | <p>Health & Safety Risks:</p> <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile | <ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|----------------------|---|--|---------------------------------------|-----------------------------------|
| | <p>plant and vehicles, and electrical shocks.</p> <ul style="list-style-type: none"> 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. | <p>designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting.</p> <ul style="list-style-type: none"> 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 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 | | |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|---|--|---------------------------------------|--|
| | | <p>be provided that are suitable and can do the works.</p> <ul style="list-style-type: none"> 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. | | |
| Construction activity | Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna | <ul style="list-style-type: none"> Preventative maintenance schedule should be followed. Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and | PIU | Environmental Consultant of PIU, PSC. Union Member |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|--|--|--|--|--|
| | | generating nutrient rich compost soil over time. | | |
| 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 | <ul style="list-style-type: none"> Contractor must prepare a waste management plan including following directive aspects given hereunder. | PIU / Contractor | Environmental Consultant of PIU, and Executive Engineer of Cox's Bazar |
| Operation & Maintenance | Noise disturbances to fauna | <ul style="list-style-type: none"> Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. | UE-LGED (under the direct guidance of Executive Engineer, Cox's Bazar) | PSC. UNO |

Waste Management Plan Principles:

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

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/

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

- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in a labor camp or construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|---|------------|----------------------|--------------|
| 1. | <u>Grass Turfing</u> Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 540.0 Sq.m | @38.15 Tk. Per sqm | 20,601.00 |
| 2. | <u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 180.0m | @ 2.56 BDT | 460.80 |
| 3. | <u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | <u>First Aid Box</u> Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with the government medical or labour requirements at all times, and provide, equip and maintain | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|--|----------|-----------------|--------------|
| | necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | <u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge. | 2 no. | LS @ Tk. 30,000 | 60,000 |
| 6. | <u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge. | 1 no. | LS @ Tk. 15,000 | 15,000 |
| 7. | <u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|--|----------|-----------------|--------------|
| 8. | <u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroj, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 50 nos. | @ Tk. 1000 | 50,000 |
| 9. | <u>Motivation training</u> Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | <u>Waste disposal facility</u> Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | <u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | <u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 no. | LS @ Tk. 30,000 | 30,000 |

| SI no. | Description of item | Quantity | Unit price | Total amount |
|--|--|----------|---|-------------------|
| 13. | <u>Environmental management</u> Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C. <u>[One person to be appointed for W24(3), W24(5) & W24(6)]</u> so one-third of the personnel cost is counted here] | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 3 roads i.e. 35,000Tk.*12 months*(1/3 one road). (Net payment excluding Tax & VAT). | 140,000 |
| Subtotal Bill: Environmental facilities | | | | 396,707.52 |

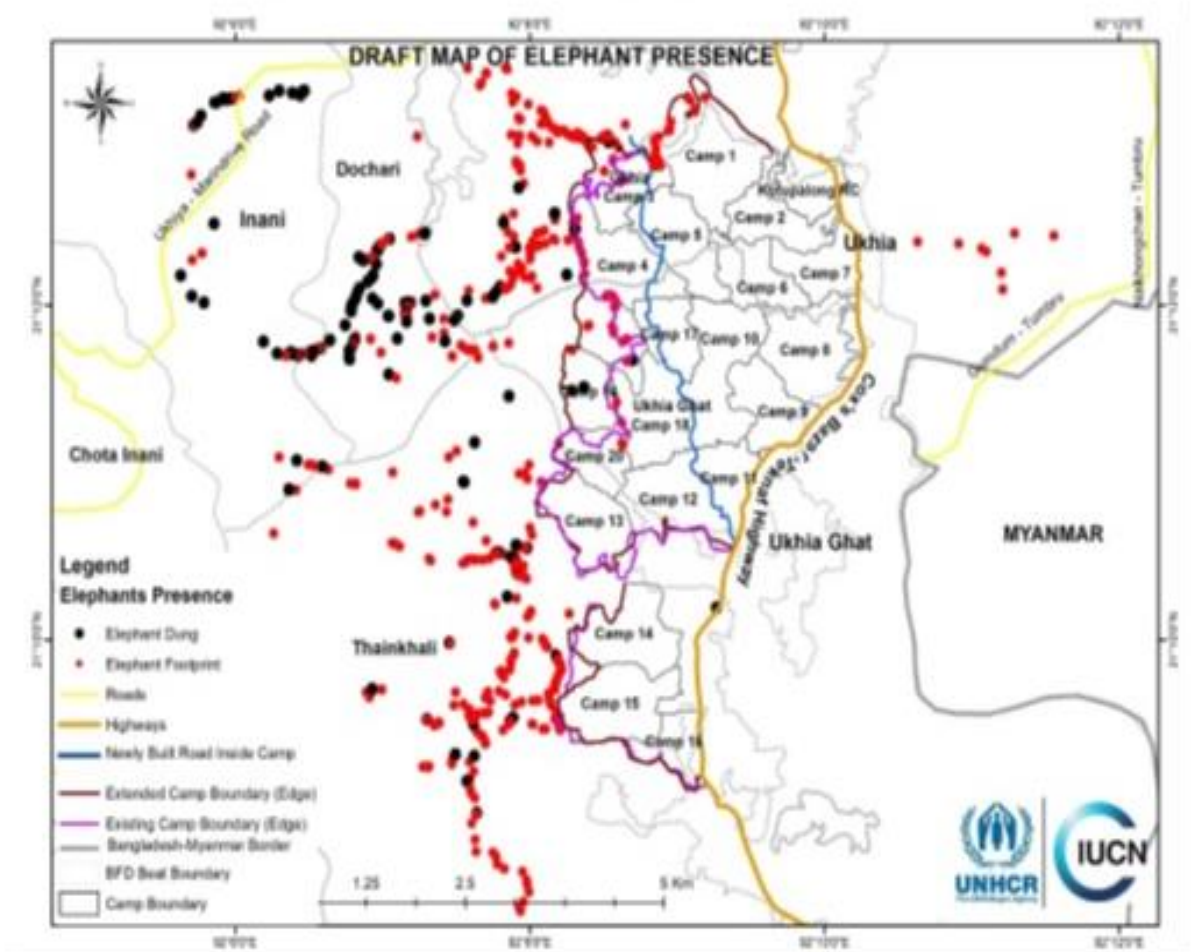
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 5 workers for 180 active working days (6 months in a year) in a contract period for one site under this package (EMCRP/W-24.3).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------|----------------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 9 | | 11 | 50.00 | 20 | 1,000.00 | To be placed in a case/holder on the basin, for washing hands for max. 8 people a day and showering of 5 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |
| 6. | Face Shield/ Protective Safety Goggles | 3 nos. for each site | | N/A | 400.00 | 3 | 1,200.00 | For labors who work in close contact, 3 in each site |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|----------------------------|------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 3 nos. each day in each site | | N/A | 12.00 | 540 | 6,480.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 5 nos. for each labor camp | | 35.00 | 60 | 2,100.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1Can | N/A | 1 Can | 250.00 | 2 | 500.00 | |
| 10. | Detergent Cleaner | N/A | 1/2 kg in each camp/month | | 400.00 | 3 | 1,200.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | Grand Total | | | | | | 62,580.00 | |

Appendix-4: Elephant Presence Map



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

EMCRP/W24.3, Road Id No.- 422945089

Focus Group Discussion

तारीख: 07/12/2020

Seabank Road

ইউনিয়ন : Jaliapalong ওয়ার্ড নং : ০৪ ডাকঘর : Inani উপজেলা : Ukhia জেলা : কক্সবাজার

সাব প্রকল্প নং: W24(04)

ਅੰਮ੍ਰਿਤਸਰ ਸ਼ਹਿਰ ਵਿਖੇ (ਜਲੀਆਂ ਦੀ ਥਾਂ)

[illegible]

Public Consultation Participants' List

Appendix-6: Pictorial View of several sections of the proposed site



Existing Surroundings of the Sub-Project site

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

R&H Road (Kasiar Bill) - Ratnapalong UP office Road, Id: 422944089

Upazila: Ukhiya, District: Cox's Bazar

Under the package no. EMCRP/W24

January-2021



Development Design Consultants Ltd.



ACRONYMS

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

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Executive Summary

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

This sub-project is situated within the localities of Hindupara, Goyalmara, Horinmara, Taturubeel, Kotbazaar under Rajapalong and Rotnapalong union of Ukhiya Upazila, Cox's Bazar. There are some community's property resources, environmental components and other intervention situated within 1km from the sub project, like that on north side are Hijulia jame Moshjid (400m), two rice mill(400m), Abu kashem Murjahan High School (20m), Moddo Rajapalong GPS (20m) on south side are Hori Mondir (30m), kalgusa jame Mosque (500m), Households, SARPBA Orthopaedic Hospital (300m), Bodho Mondir (10m SE), Buddhist Crematory (10m SE), Jadimora GPS(10m SE), Rajapalong-Jadimura Graveyard (350m SE) on east side are Baitus Sarak Mosque(20m), Ali Mura Jame Mosque(50m), Bishnu Mondir(20m), Anondo hospital (30m), Upazila Health Complex(500m SE), Rice mill (400m), Fire Service Station (500m) and on west side are Radha Krishno Mondir(20 feet), Kashiar beel crematory 80 feet SW) Modho Rajapalong Graveyard (20m), Modho Rajapalong Hefzokhana(20m), KG School(10m). Otherwise no other important environmental features are present near sub-project. Some water body located around the subproject area. So, water logging is not a regular and annual phenomenon. Apart from this structure 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 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 730,000¹ people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033². This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

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

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

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

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

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

This document represents the Findings from Environmental Screening of the sub-project components under the package name 'Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District', with the bid package no. EMCRP/W24.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W24

Description of Sub-project: Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District, i, e., Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084 (2) Chakmapara - Monkhali bazar Road Id:422944047 (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089 (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089

Component's Location:

| | | |
|---|---|------------------------|
| i. ID. 422944089 | ii. Ward No.: 02 and 09 (Kaishar beel) | iii. Mouza: Rajapalong |
| iv. Village: Hindupara, Goyalmara, Horinmara, Taturubeel, Kotbazaar | v. Name of Union: Rajapalong and Ratnapalong | |
| vi. Upazila: Ukhiya | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2020-21 | ix. Width (m): 4.9-5.5 | x. Length (m): 3280 |
| xi. Distance from UZHQ: 45 Km. | | |
| GPS Coordinates | Latitude Value: 21.25832° N Longitude Value: 92.12095° E | Starting Point |
| | Latitude Value: 21.27078°N Longitude Value: 92.10593°E | Ending Point |
| Present Condition of Road | HBB, BFS | |
| Communication Source | Radio & Mobile Networks | |

Subproject interventions:

- Bituminous Carpeting options.
- 02 nos. (3.0m X2.0m) RCC Box Culvert at Ch: 1268m Ch:1725 01 no. Box Culvert (2.0m X 1.5m) at Ch: 1637 and 03 nos. of Box Culvert (dimension: 2.0mx2.0m) at Ch:06m, Ch.1063m, & Ch.1998m of chainage

- 266m L-Drain
- 71mX3.0m RCC Retaining wall
- 307m Toe Wall (height 1.0m, 2.0m & 2.5m height)
- 482m Palisading Work (Brick)
- Road safety work and
- Environmental Mitigation and Enhancement works

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period (Component -1): 1 year

Estimated total cost of component: 68,070,993.92 (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. To this end, D&SC conducted consultation meeting with local community on 07 December, 2020 at Bimol's shop, Refer to **Figure 2.1.1**, and Public Consultation Participants' List is attached in **Appendix-5** and sub-project pictorial overview is attached in **Appendix-6**. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

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

2.2 Summary of Public Consultation Meeting

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

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socio-economic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust pollution and noise pollution might occur as well.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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

2.3 Suggestions and recommendations of the participants

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

- Slope protection should properly be established on the side of the proposed road at different chainages.
- Best available measures should be adopted to avoid potential negative environmental impacts and enhance positive impacts.
- Participants' suggestions and expectations that came out through the different forms of consultation meetings are taken into consideration to reflect their wishes and minimize the adverse impacts of construction works.

- Steps should be taken for minimizing the air pollution by spraying water at the construction sites.
- Noise pollution should be effectively minimized to a tolerable limit.

3 ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

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

3.2 Major Findings

This sub-project is situated within the localities of Hindupara, Goyalmara, Horinmara, Taturubeel, Kotbazaar under Jaliapalong union of Ukhiya Upazila, Cox's Bazar. The proposed road component passes through a typical but semi-developed rural setting, comprising of Chorra, ponds, canal, culverts, ditches, patches of vegetation and agricultural fields, hills or uplands, mosques, madrasas, graveyards, schools and religious institutes, shops and bazars, etc. Among important socioeconomic and sensitive features located within 1km from the sub project, on north side are Hijulia jame Moshjid (400m), two rice mill(400m), Abu kashem Murjahan High School (20m), Moddo Rajapalong GPS (20m) on south side are Hori Mondir (30m), kalgusa jame Mosque (500m), Households, SARPBA Orthopaedic Hospital (300m), Bodho Mondir (10m SE), Buddhist Crematory (10m SE), Jadimora GPS(10m SE), Rajapalong-Jadimura Graveyard (350m SE) on east side are Baitus Sarak Mosque(20m), Ali Mura Jame Mosque(50m), Bishnu Mondir(20m), Anondo hospital (30m), Upazila Health Complex(500m SE), Rice mill (400m), Fire Service Station (500m) and on west side are Radha Krishno Mondir (20 feet), Kashiar beel crematory (80 feet SW) Modho Rajapalong Graveyard (20m), Modho Rajapalong Hefzokhana(20m), KG School(10m). Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, 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.

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

There is no evidence of elephant corridors in the subproject area where migration routes are present as per local inhabitants. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routes and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact

3.3.1 General Consideration

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank³ has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

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

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

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

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

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 were 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 observed creating 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. As part of specific measures, tree plantation, more than the numbers needed for offsetting the felling trees, on the road slope is suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 10 nos. trees will be replanted for each tree fell in the periphery of the subproject. Some dispersed human settlement in the area, though at sufficient distance from the alignment, is present. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the water logging problem and facilitating optimum irrigation 02 nos. (3.0m X2.0m)

RCC Box Culvert at Ch: 1268m Ch:1725 01 no. Box Culvert (2.0m X 1.5m) at Ch: 1637 and 03 nos. of Box Culvert (dimension: 2.0mx2.0m) at Ch:06m, Ch.1063m, & Ch.1998m of chainage will be constructed at the subproject area. Some small hills or high land is found beside the road. As a mitigation measure, 266m L-Drain works at different chainage will be constructed for draining mountain eel water during rainy season. Due to the low land in different chainage of the road some protective works (307m Toe wall & 482m Palisading brick work) are included in design and estimation. Some high land is found beside this road where, Retaining Wall (71mX3.0m RCC) will be constructed to avoid landslips and soil erosion.

Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific Environmental and Social Management Plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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

4.2 Health and Safety Measures under COVID situation

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

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

- a. Contractor must designate one of his employees as H&S/Safeguards supervisor to lead, coordinate and interface in order to fight the COVID 19 situation under the direct guidance of COVID focal at PIU of EMCRP project.

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, 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

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

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. There will in fact be tremendous benefits from recommended mitigation and enhancement

measures and major improvements in quality of life, opportunities in business, trading jobs and ensuring social safety and security will be achieved once the scheme is in operation.

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

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

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: *(Improvement of 07 roads and construction of culverts with side drains under Cox's Bazar District: EMCRP/W24).*

Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084 (2) Chakmapara - Monkhali bazar Road Id:422944047 (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089 (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Name of the component: R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089

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

Estimated total cost of sub-project (in Taka): 215,285,439.3

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): 68,070,993.92

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

District: Cox's Bazar

Sub-District: Ukhiya

Union: Rajapalong and Ratnapalong

Name of Community/Local Area: Hindupara, Goyalmara, Horinmara, Taturubeel and Kotbazaar

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480m to Ch. 1440m. Proposed safety and service providing structures include 02nos. (3.0m X2.0m) RCC Box Culvert at Ch: 1268m Ch:1725 01 no. Box Culvert (2.0m X 1.5m) at Ch: 1637 and 03 nos. of Box Culvert (dimension: 2.0mx2.0m) at Ch:06m, Ch.1063m, & Ch.1998m of chainage, 266m L-Drain, 71mX3.0m RCC Retaining wall, 307m Toe Wall (heigh 1.0m, 2.0m & 2.5m height) and 482m Palisading Work (Brick) which are included in the design and estimation. As part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation (Technical Report 2020, EMCRP).

Estimated footprint / land area for this sub-project is 16,072 sq m.

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

This proposed R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089 belongs to Rajapalong and Ratnapalong union under Ukhiya Upazila. This road has started from Kaishar Beel, Cox's Bazar high way road stretching 3280m in 02 & 9 no. ward. Several connecting roads fall within the road chainage. Baitus Sarak Mosque is the starting point of the road along with a paddy field, and further passes along keeping numbers of ponds, canal, culverts, ditches, patches of vegetation and agricultural fields, homestead garden, hills or uplands, mosques, madrasas, graveyards, schools and religious institutes, shops and bazars on both sides. No other significant environmental or

socioeconomic features are found near the road component. However, detail Environmental features within 500m area of both sides of the road from the center line were collected at 300m longitudinal intervals during the survey and the findings are given in the table below:

| Chainage (m) | Left | Right | Features |
|--------------|------|-------|---|
| 000-300 | L | | Settlement, Drain, garden, tree, tin fence, settlement, bamboo fence, brick wall, shop, household connecting to the left, bamboo fence, tin fence |
| | | R | Crop field, tree, culvert, bamboo bush, crop field, tin fence, electric pole, bamboo fence, settlement, tree, the road has a t section, open space, |
| 300-600 | L | | household connecting to the left, brick wall, tin fence, settlement, bamboo fence, pond, bamboo fence, tin fence, household connecting to the left, |
| | | R | Open space, tin fence, settlement, bamboo fence, settlement, shop, settlement, tin fence, brick wall, tin fence, bamboo fence, brick wall, settlement, |
| 600-900 | L | | wired fence with RCC pole, brick wall, settlement Bamboo fence, pond, tin fence, marsh, brick wall, shop, |
| | | R | household connecting to the right, Wired fence with RCC pole, bamboo fence, settlement, tin fence, household connecting to the right, tin fence, bamboo fence, |
| 900-1200 | L | | Rajapalong KG school and pre-cadet school, trees, mosque, brick wall, crop field |
| | | R | brick wall, tree, building, this road crosses over a main road, Abdul kashem High School, brick wall, culvert |
| 1200-1500 | L | | Pond, Wired fence with RCC pole, Crop field, brick wall, tin fence, settlement, crop field, rubber dam, bridge, Wired fence with RCC pole, tree, crop, bamboo fence, garden |
| | | R | Crop field, tin fence, tuturu beel, tin fence, tree, culvert crop field |
| 1500-1800 | L | | Bamboo fence, garden, settlement, tin fence, bamboo fence, settlement, tin fence, |
| | | R | Bamboo fence, settlement, garden, bamboo fence, tin fence, |
| 1800-2100 | L | | Tin fence, bamboo fence, households, garden tin fence, bamboo fence, |
| | | R | Settlements, tin fence, crop field, open field, tin fence, bamboo fence, household connecting road to the right, tree |
| 2100-2400 | L | | Tin fence, bamboo fence, tuturu beel GPS, tin fence, shop, crop field, brick wall, crop field, tree |
| | | R | Tin fence, bamboo fence, tree, open field, bamboo bush, shop, bamboo fence, |
| 2400-2700 | L | | household connecting road to the left, bridge, crop field, tuturu beel, vegetable yard, trees, bamboo bush, garden, household |

| | | | |
|-----------|---|---|---|
| | | | connecting road to the left household connecting road to the left |
| | | R | Crop field, bamboo bush, vegetable yard, low grounds |
| 2700-3280 | L | | Tin fence, tree, open field, household connecting road to the left, shop, tin fence, shop, tin fence, brick wall, culvert |
| | | R | Chora, bamboo fence, tree, crop field, trees, tin fence, bush |



Figure: Starting point of R&H Road (Kasiar Bill) - Ratnapalong UP office Road

Overall Comments

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

It was informed to the stakeholders that the scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover other issues have also been brought to their attention, such as drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. They truly appreciated the initiative as they will

have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as have an interrupted passage during an emergency situation.

The proposed construction of village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub project component.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as on north side are Hijulia jame Moshjid (400m), two rice mill(400m), Abu kashem Murjahan High School (20m), Moddo Rajapalong GPS (20m) on south side are Hori Mondir (30m), kalgusa jame Mosque (500m), Households, SARPBA Orthopaedic Hospital (300m), Bodho Mondir (10m SE), Buddhist Crematory (10m SE), Jadimora GPS(10m SE), Rajapalong-Jadimura Graveyard (350m SE) on east side are Baitus Sarak Mosque(20m), Ali Mura Jame Mosque(50m), Bishnu Mondir(20m), Anondo hospital (30m), Upazila Health Complex(500m SE), Rice mill (400m), Fire Service Station (500m) and on west side are Radha Krishno Mondir(10m), Kashiar beel crematory 30m SW) Modho Rajapalong Graveyard (20m), Modho Rajapalong Hefzokhana(20m), KG School(10m). The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 02-03 km away from this sub-project.

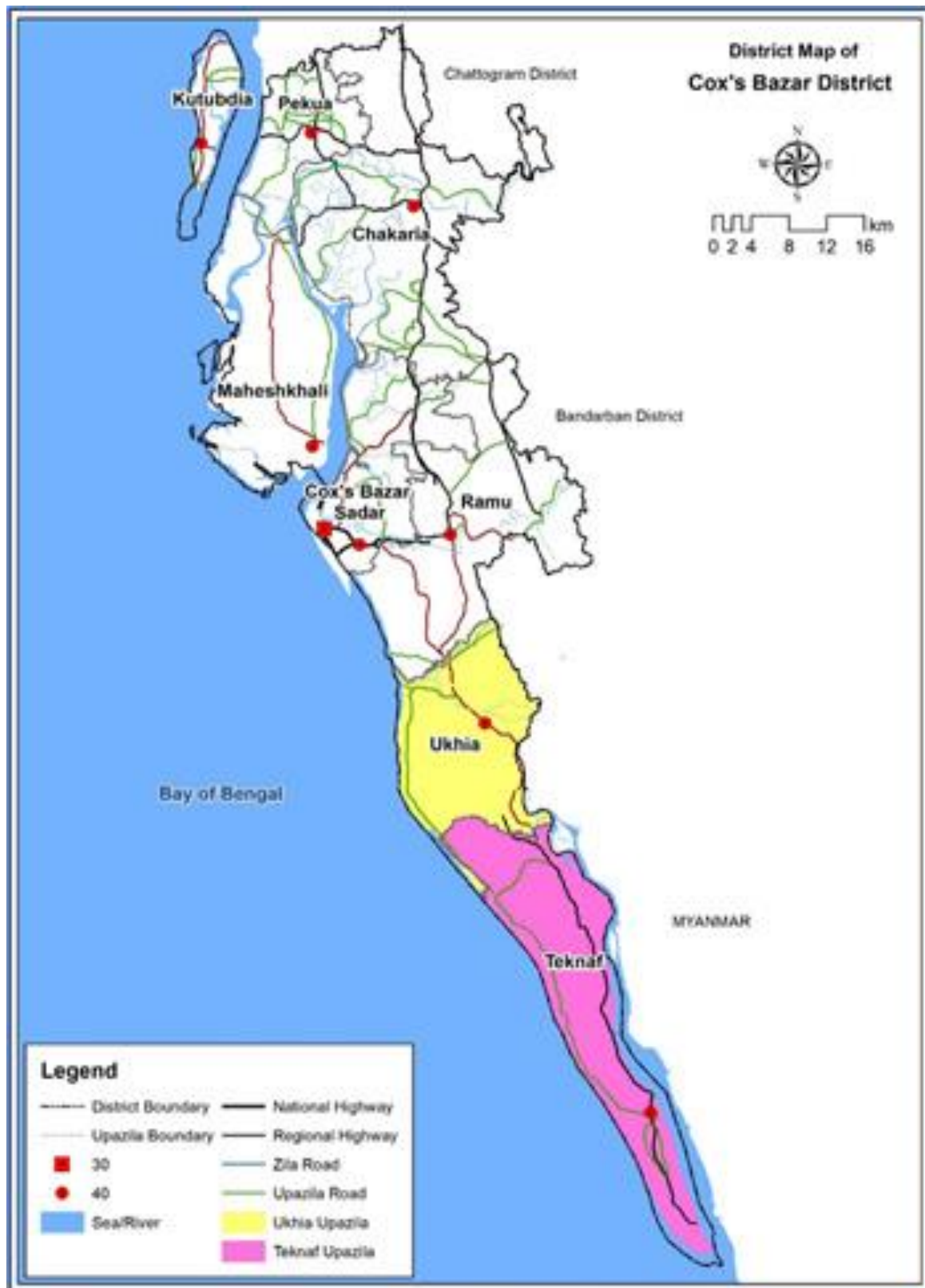


Figure 3: District Map with project location

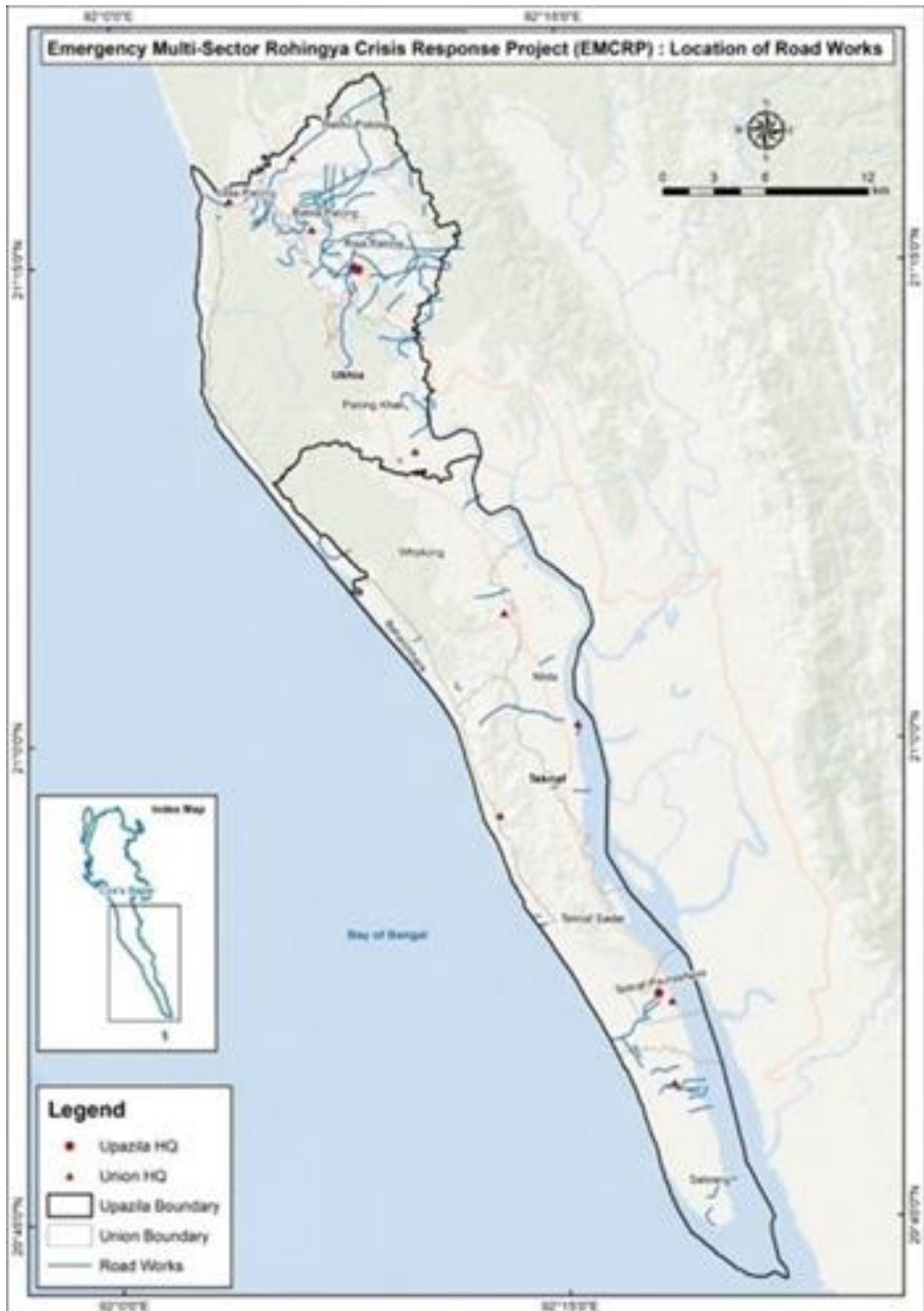


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

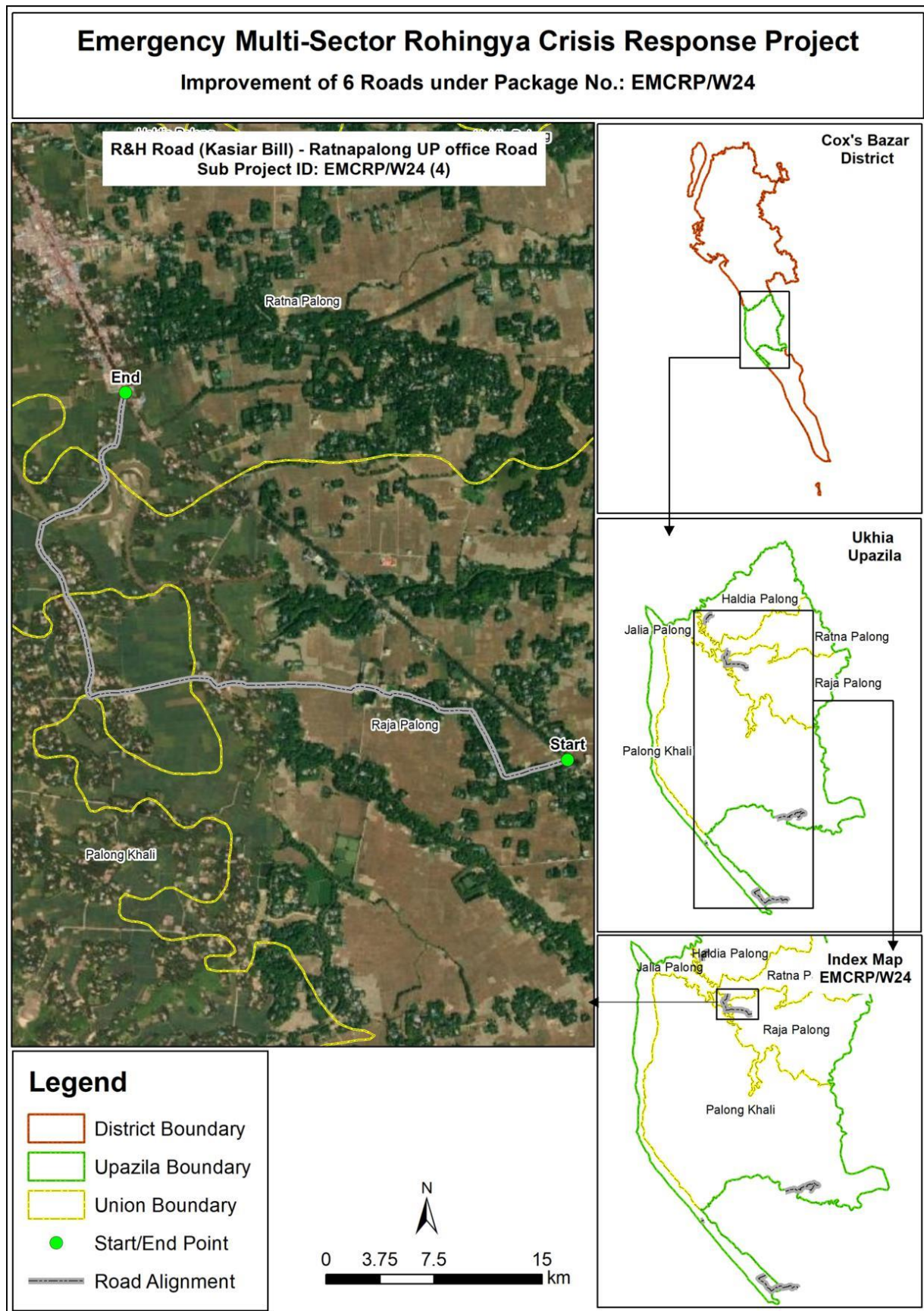


Figure 5: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.000 to Ch. 3280m. Proposed safety and service providing structures 02nos. (3.0m X2.0m) RCC Box Culvert at Ch: 1268m Ch:1725 01 no. Box Culvert (2.0m X 1.5m) at Ch: 1637 and 03 nos. of Box Culvert (dimension: 2.0mx2.0m) at Ch:06m, Ch.1063m, & Ch.1998m of chainage, 266m L-Drain, 71mX3.0m RCC Retaining wall, 307m Toe Wall (height 1.0m, 2.0m & 2.5m height) and 482m Palisading Work (Brick) that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation.

Sub-project Location:

| Important Features | |
|---------------------------------|---|
| ID | 422944089 |
| District | Cox's Bazar |
| Upazila | Ukhiya |
| Union | Ratnapalong and Rajapalong |
| WARD | 09 & 02 |
| Proposed Chainage | 3280m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21.25832° N Longitude Value: 92.12095° E |
| Road Ending Point Coordinates | Latitude Value: 21.27078°N Longitude Value: 92.10593°E |

Land ownership

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

Expected construction period: 1 Year

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

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.480 to Ch. 1440m.

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

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as are that on north side are Hijulia jame Moshjid (400m), two rice mill(400m), Abu kashem Murjahan High School (20m), Moddo Rajapalong GPS (20m) on south side are Hori Mondir (30m), kalgusa jame Mosque (500m), Households, SARPBA Orthopaedic Hospital (300m), Bodho Mondir (10m SE), Buddhist Crematory (10m SE), Jadimora GPS(10m SE), Rajapalong-Jadimura Graveyard (350m SE) on east side are Baitus Sarak Mosque(20m), Ali Mura Jame Mosque(50m), Bishnu Mondir(20m), Anondo hospital (30m), Upazila Health Complex(500m SE), Rice mill (400m), Fire Service Station (500m) and on west side are Radha Krishno Mondir(20 feet), Kashiar beel crematory 80 feet SW) Modho Rajapalong Graveyard (20m), Modho Rajapalong Hefzokhana(20m), KG School(10m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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

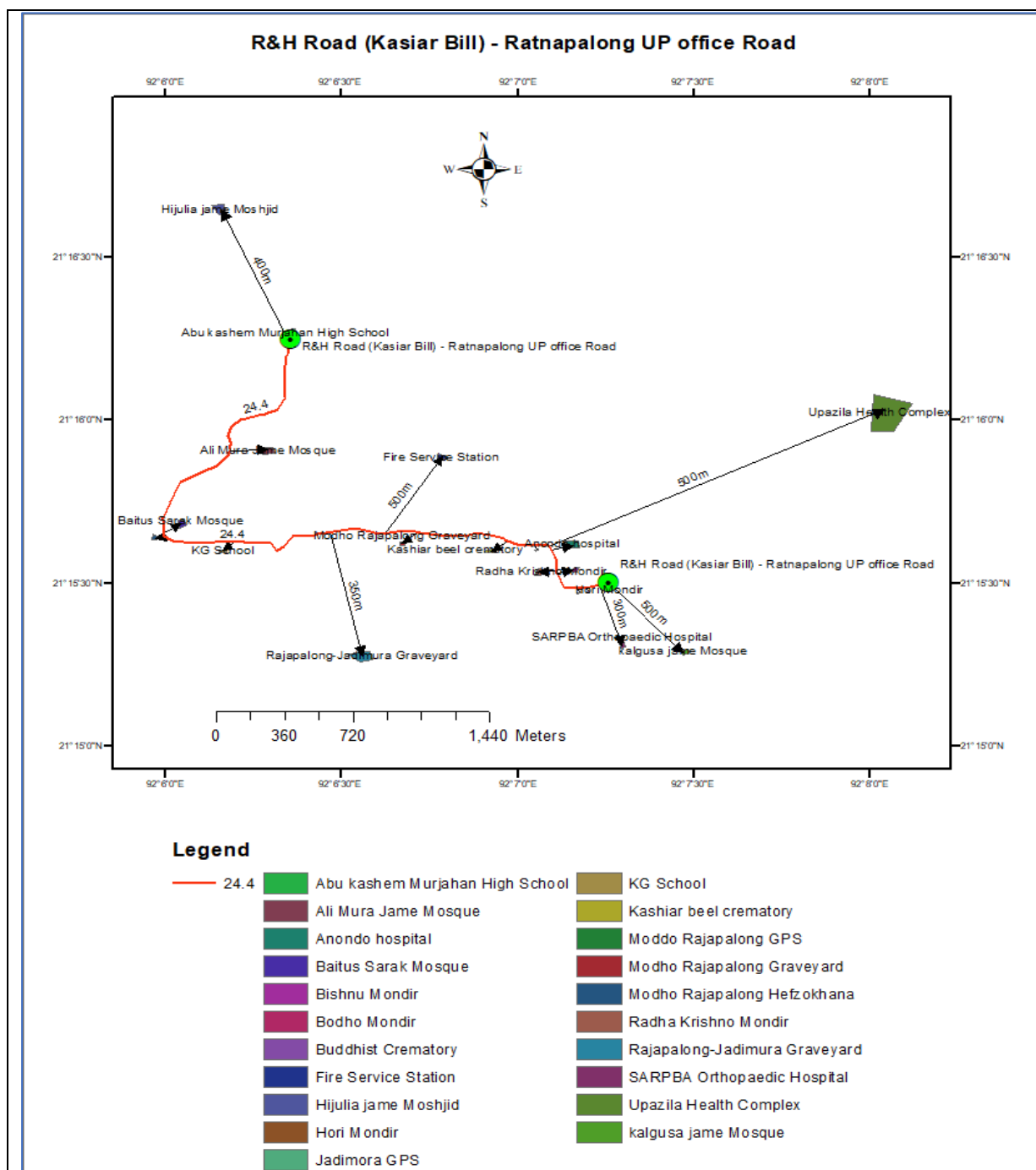


Figure B.1.1: A sketch of the project intervention area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation, several local canals, five ponds, ditches, chorra, and hills/tilas are present in the proposed sub-project area. These components or resources may receive some effects during the construction period, but not in significant level and mostly be site-specific. However, all the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. Elephant migration routes or corridors are present in this area. 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

No. Local community has undertaken social forestation in 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:

Dust

Ambient air quality data was not readily available, but quality is apparently good due to the appearance of rural vegetative settings around. Dust is slightly generated through movement of vehicles such as motor cycle, auto rickshaw, tempo, trolley, tractor etc. over the road surface which causes air pollution.

Noise

Noise in the Sub-project area is not a major concern because noise level is within the tolerable level. 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:

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

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

Low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. Erosion/land slide may occur only when moderate to high sloping terrains are disturbed for construction of roads.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80ft-100ft feet and deep tube well depth is 700 feet in the area. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

Surface water quality: Five ponds, two canals and a ditch 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.

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 (60ft. to 80 ft.) are fitted in local area and most of the water usage is sufficed from these sources.

*Data source: IWM Study Report, 2019

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

There are few social forestations near the proposed road.

Summary of water balance analysis (For water supply scheme only):

N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

Cox's Bazar-Teknaf Highway at kaisar beel can be used as access road for transportation. This access road for the sub-project is proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also and the route has narrow curves.

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:

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

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

i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates and vii) wood are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.

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

Yes. Cox's Bazar-Teknaf Highway at kaisar beel road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should

be consulted with local communities.

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

Earth/ mud, plastics, brick chips, cement dusts, and dust from bricks can be found during pre-construction time which can be identified as solid wastes. Also, brick chips, cement, sand, bamboo stalks, remnants of tin and other leftover pre-construction materials can be found after the construction of labor camp, latrines and kitchen. Negligible amount of bio and non-biodegradable Solid waste (incl. food waste, plastics, polythene, paper, etc.) may be produced from the use of working labors engaged in preparatory works of labor camp and associate facilities. Altogether amount of those produced wastes in a single day is nearly 10 kg during the pre-construction phase.

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

B.3: Construction Phase

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

Solid waste: Residual waste from the labor camps will be generated. Wastes from equipment maintenance/vehicles on-site and scrap material will be generated during construction work, which are mostly solid wastes. Waste from civil works includes brick chips, leftover sands, construction debris, etc. And the overall quantity will be tentatively 60 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 7 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, trees alongside the road can be said to be on the ROW. There are few locations on the chainage where medium trees might need cutting. 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)

Low. This area has no water logging troubles because of the presence of natural channels (canals, drains, etc.), though during the monsoon waterlogging appears in some sections in the area for a small period of time; this problem will be resolved by the construction of sufficient numbers of drainage channels and structures. However, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.

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

Existing ponds and ditches can be disturbed by the construction works, especially from the dust, soil and oil spillage during this period. However, guide wall is proposed in order to tackle this matter. 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:

Low traffic movement impacts on light but low effects of noise and air pollution, and will be managed by preventive measures, like water sprinkling twice a day, covered transport of materials and so on.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:

During the operation phase, number of vehicles and frequency will be increased, though not to a significant level. This growth has moderate potential to generate dust and blow those in the air, and contribute to health hazards and interference of plant growth.

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

Low. Over use of road and frequent movement of heavy/overloaded vehicles may cause further destruction of road-bed soils and in turn early deterioration of road pavement, which could be managed by imposing barriers at strategic locations to stop entry of such types of vehicles.

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

Not applicable.

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

There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding and other disease vectors, during the operation phase.

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

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

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

Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)

Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.

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

Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.

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

Low. Concentrated outflow will be carried by proposed drains and culvert.

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

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

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

Section D: Environmental Screening Summary

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|------------------------------|----------------------------|--|---|---|--|--|
| | | | | | Indicator | Frequency |
| 1: Sub-Project Interventions | Air quality | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection | Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season. |
| | Soil impacts | Under the sub-project intervention the overall score is low . | <ul style="list-style-type: none"> Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. | Monitoring on weekly basis. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|---|---|--|---|
| | | | | | Indicator | Frequency |
| | | | <p>shall be used on site to manage surface water runoff and minimize erosion.</p> <ul style="list-style-type: none"> The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures. | | | |
| | Hydrology (surface and groundwater) | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to | Water quality test (mainly GW) twice during the construction period in six months interval. |

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

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|-----------------------------|--|--|---|---|---|
| | | | | | Indicator | Frequency |
| | erosion and landslides) | | toe of the road embankment remain within the right of way and does not disturb the crop. | | | |
| | Storage of materials | Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low . | <p>With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration:</p> <ul style="list-style-type: none"> Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. Construction materials must not interrupt land contours, natural drainage pattern, and create | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. | Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | | <p>water logging or depression.</p> <ul style="list-style-type: none"> Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin. | | | |
| | Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity) | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. | Contractor, environmental specialist of D&S. | <ul style="list-style-type: none"> Complaints from community | Daily |
| | Noise pollution | Under the subproject intervention the | <ul style="list-style-type: none"> Consultation with affected people; not to operate noisy equipment during working period; No noisy work after 5.00 pm. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Number of complaints from stakeholders; Use of silencers in | Inspection by PIU and supervision consultants on |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|----------------------------------|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | overall score is low . | <ul style="list-style-type: none"> • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP. | | <ul style="list-style-type: none"> • noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required. | monthly basis; |
| | Air pollution | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. | Visual observation and monitoring of air quality during construction period. |
| | Road Safety and Accidents | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, | Construction Contractor, environmental specialist of D&SC. | <ul style="list-style-type: none"> • Complaints from communities, pedestrians | Day basis during work time |

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

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

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

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

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

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

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

ESMP for Access and evacuation Roads: R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089

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

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

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

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|--|--|---------------------------------------|---|
| | | <p>taken.</p> <ul style="list-style-type: none"> • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts. | | Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | <ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Labour Base Camp: Conflicts with the local residents | <ul style="list-style-type: none"> • Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place. • Treated water will be made available at site for drinking purpose. • Adequate accommodation arrangements for labour | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|---|--|---------------------------------------|---|
| | | <p>forces.</p> <ul style="list-style-type: none"> Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | <p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site Wastes after completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies | <ul style="list-style-type: none"> 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 | <p>Health & Safety Risks:</p> <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. | <ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|---|---|--|--|
| | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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 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 | | |

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

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|-----------------------------------|--|--|--|-----------------------------------|
| clearance after the construction) | ✓ Health & Safety risks to workers and local community | | | Bazar |
| Operation & Maintenance | Noise disturbances to fauna | <ul style="list-style-type: none"> Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. | UE-LGED (under the direct guidance of Executive Engineer, Cox's Bazar) | PSC. UNO |

Waste Management Plan Principles:

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

- Preventing waste from throwing, leaching, or getting access to water bodies has to be maintained strictly by the contractor. Material storage site or the primary storage of waste materials shall not be closer to any water body (running or stagnant); the distance of the water body should be at least 10m from the edging part of storage.
- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.

- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in a labor camp or construction site shall be prohibited completely

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Appendix-3: Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

| SI no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--------|---|-----------------|----------------|------------------|
| 1 | <u>Grass Turfing</u> Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 9,840 sqm | 38.15 | 375396 |
| 2 | <u>First Aid Box</u> Supply of first aid box with standard contents and as per direction of the E.I.C. | LS | 5000 | 5000 |
| 3 | <u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C. | 3280.00m | 2.56 | 8396.80 |
| 4 | <u>Motivation training</u> Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 | 10000 | 10000 |
| 5 | <u>Personal Protective Equipment</u> Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc. for 10 sets as per direction of E.I.C. | LS | 30000 | 30000 |
| 6 | <u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and | 300 | 1000 | 300000 |

| Sl no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--------|--|-----------------|----------------|------------------|
| | 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 PMU prior to the tree plantation work) at an interval of 10 feet. | | | |
| 7 | <u>Portable water supply & Temporary Sanitary Latrine</u> 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 | 12822.86 | 25645.72 |
| 8 | <u>Drinking water Facilities:</u> Providing Continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well where applicable and any other means depending on local situation, | 2 | 30000 | 60000 |
| 9 | <u>Waste disposal</u> Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | 5000 | 5000 |
| 10 | <u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractors activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic providing necessary barricades, warning signs/lights, guide signs, Flagmen, maintaining diversion roads by cutting, filling, construction, etc. or by any other means in accordance with the full satisfaction of EIC. | 1 | 15000 | 15000 |

| SI no. | Description of item | Quantity Needed | Unit price BDT | Total amount BDT |
|--|---|-----------------|--|---------------------|
| 11 | <u>Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | 1 | 5000 | 5000 |
| 12 | <u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 | 30000 | 30000 |
| 13 | <u>Environmental management</u> Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax &VAT). And as per direction of the E.I.C. The Safeguard personnel will take duty for roads W24(1), W24(2) and W24(4), so one-third of the personnel cost is counted here. | 1 person | Monthly basis @Tk.35000 for 12 months. One person covering 3 roads. i.e. 35,000tk X 12 months (1/12 one road). (Net payment excluding Tax & VAT) | 1,40,000 |
| Subtotal Bill for Environmental Mitigation and Enhancement Work (BDT) | | | | 1,009,438.52 |

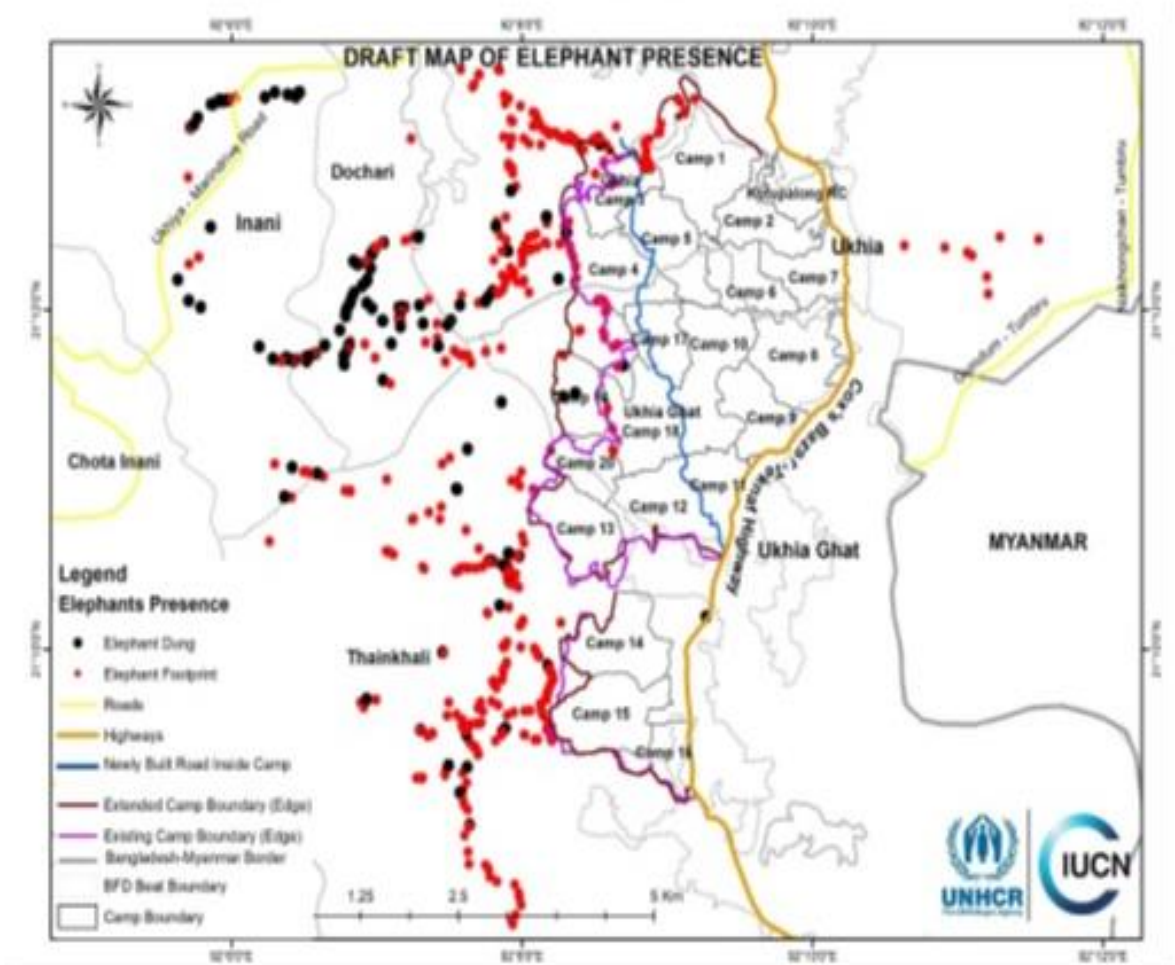
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 70 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-24.2).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------|----------------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 1,890 | | 237 | 50.00 | 2,127 | 106,350 | To be placed in a case/holder on the basin, for washing hands for max. 35 people a day and showering of 30 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |
| 6. | Face Shield/ Protective Safety Goggles | 42 nos. for each site | | N/A | 400.00 | 42 | 16,800 | For labors who work in close contact, 16 in each site |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------------------------|------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 5 nos. each day in each site | | N/A | 12.00 | 1350 | 16,200.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 70 nos. of labor for this camp | | 35.00 | 1260 | 44,100.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 2 Can | N/A | 3 Can | 250.00 | 5 | 1,250.00 | |
| 10. | Detergent Cleaner | N/A | 2 kg in each camp/month | | 400.00 | 18 | 7200.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | Grand Total | | | | | | 2,42,000.00 | |

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W24.4, Road ID No.- 422944089

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
সহীদ স্মৃতিতে প্রতিষ্ঠিত সড়কী প্রকল্পের অধীনে
Local Government Engineering Department (LGED)
Public Consultation Participants List

Focus Group Discussion

তারিখ: ১০:০০ AM তারিখ: ০৭/১২/২০
 স্থান: RSH Road (Location ০৩)-Ratanapalong, ১৭ নং অফিস, রাস্তা
 সাইনবোর্ড: ১২৫ নং, বিমান-১২৫
 স্থানীয়: কৃষ্ণকান্ত, তারিখ: ০২/০২, সময়: দুপুর ১২:০০, স্থান: কৃষ্ণকান্ত
 মোবাইল নং: ৯২৭(০৭)

সংশ্লিষ্টদের তালিকা (পরিচয় ও স্বাক্ষর)

| ক্র.সং. | নাম | বয়স | পেশা/শিক্ষা | বাস | স্বাক্ষর / উপস্থিতি |
|---------|-----------------|------|-------------|-----------|---------------------|
| ০১ | সুদান কান্তি দে | ২৯ | কৃষক | সংশ্লিষ্ট | স্বাক্ষর |
| ০২ | অরুণ দে | ৩৭ | | | অরুণ দে |
| ০৩ | বর্ষা দে | ৩৮ | | | বর্ষা দে |
| ০৪ | সুজিত দে | ৩০ | | | সুজিত দে |
| ০৫ | সুনীল দে | ৪৫ | | | সুনীল দে |
| ০৬ | ফুকা দে | ৩৮ | | | ফুকা দে |
| ০৭ | কান্তনু হরি দে | ২৯ | | | কান্তনু হরি দে |
| ০৮ | কোমল দে | ৩০ | | | কোমল দে |
| ০৯ | সঞ্জিৎ দে | ৩৭ | | | সঞ্জিৎ দে |
| ১০ | সুনীতি দে | ৩৫ | | | সুনীতি দে |
| ১১ | শিখা দে | ২৮ | | | শিখা দে |
| ১২ | কোমল দে | ৩৮ | | | কোমল দে |
| ১৩ | অরুণ দে | ৩৫ | | | অরুণ দে |
| ১৪ | বিজয় দে | ৩৫ | | | বিজয় দে |
| | | | | | |
| | | | | | |
| | | | | | |

Public Consultation Participants' List

Appendix-6: Pictorial View of several sections of the proposed site



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

Palonkhali Goyalmara Road, Id: 422945097

Upazila : Ukhiya, District: Cox's Bazar.

Under the package no. EMCRP/W24

January-2021



Development Design Consultants Ltd.



ACRONYMS

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

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Executive Summary

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

This sub-project is situated within the localities of Goyalmara, Omar miar ghona, Jutormatha & Chitakhola under Palongkhali union of Ukhiya Upazila, Cox's Bazar. There are some community's property resources, environmental components and other intervention situated within 1km from the sub project, like that Md. Ali mosque & graveyard (500m), Omor miaghona mosque (1km), Rohingya camp-16 (1km), hill of Mohiuddin (400m), Markazul Ulum Al Islamia Madrasah, hefjakhana & orphanage (5m) to the north side, Goyalmara mosque (20m), MSF hospital (8m), Goyalmara majher mosque & graveyard (10m), forest bit office (600m), Emdadul mosque (400m), Sikanderghona hill (500m) to the south side, Ukhiya-Teknaf highway (5m), Palongkhali Bhuboneswari Gita Mondir (200m) to the east side, Mosque & graveyard of Jabbar (800m), Hakim Ali GPS (700m), Palongkhali chorra (100m) to the west side. Otherwise, no other important environmental features are present near sub-project. Some water body located around the subproject area. So, water logging is not a regular and annual phenomenon. Apart from this structure 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 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 730,000¹ people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033². This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

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

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

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

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

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

This document represents the Findings from Environmental Screening of the sub-project components under the package name 'Improvement of 6 roads under Cox's Bazar District', with the bid package no. **EMCRP/W24**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W24

Description of Sub-project: Improvement of 6 roads under Cox's Bazar District:

Improvement of

(1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084

(2) Chakmapara - Monkhali bazar Road Id:422944047

(3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089

(4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089

(5) Palonkhali Goyalmara Road Id:422945097 and

(6)Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (5) Palonkhali Goyalmara Road Id: 422945097

Component's Location:

| | | |
|--|---|-------------------------|
| i. ID. 422945097 | ii. Ward No.: 7 | iii. Mouza: Palongkhali |
| iv. Village: Goyalmara, Omar miar ghona, Jutormatha & Chitakhola | v. Name of Union: Palongkhali | |
| vi. Upazila: Ukhiya | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2020-21 | ix. Width (m): 4.9 | x. Length (m): 1560 |
| xi. Distance from UZHQ: 16 Km. | | |
| GPS Coordinates | Latitude Value: 21.151442 N Longitude Value: 92.154168 E | Starting Point |
| | Latitude Value: 21.147934N Longitude Value: 92.142018 E | Ending Point |
| Present Condition of Road | HBB, Earthen & BFS | |
| Communication Source | Radio & Mobile Networks | |

Subproject interventions:

- Bituminous Carpeting options.
- 2 nos. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 702m of chainage & (dimension: 2.0mx1.0m) at Ch.1290m of chainage
- 06 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 58m, Ch. 166m, Ch. 471m, Ch. 817m, Ch. 905m & Ch. 991m of chainage

- 983.0m L-Drain at different chainage
- 55.0m Toe wall (height 1.5m & 2.0m) at different chainage
- 13.0m Brick Palisading work at different chainage
- Road safety work and
- Environmental Mitigation and Enhancement works

Implementing Agency: Local Government Engineering Department (LGED)

Expected construction period (Component -1): 1 year

Estimated total cost of component: 24,232,537.19 (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. To this end, D&SC conducted consultation meeting with local community on 07 December, 2020 at Adjacent to Goyalmara Jame mosque point/Starting point of the Sub-project, Refer to **Figure 2.1.1**, and Public Consultation Participants' List is attached in **Appendix-5** and sub-project pictorial overview is attached in **Appendix-6**. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

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

2.2 Summary of Public Consultation Meeting

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

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

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust pollution and noise pollution might occur as well.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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

2.3 Suggestions and recommendations of the participants

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

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

3 ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

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

3.2 Major Findings

This sub-project is situated within the localities of Goyalmara, Omar miar ghona, Jutormatha & Chitakhola villages under Palongkhali union, Ward 7 of Ukhiya Upazila, Cox's Bazar. The proposed road component passes through a typical but semi-developed rural setting, comprising of boundary fencing, solar lamp posts, chorra, ext. culverts & cross drains, ditches, patches of vegetation and agricultural fields, mosques, madrasa, shops, hospital or clinic, hills/uplands etc. Among important socioeconomic and sensitive features located within 1km from the sub project, Md. Ali mosque & graveyard (500m), Omor miaghona mosque (1km), Rohingya camp-16 (1km), hill of Mohiuddin (400m), Markazul Uloom Al Islamia Madrasah, hefjakhana & orphanage (5m) to the north side, Goyalmara mosque (20m), MSF hospital (8m), Goyalmara majher mosque & graveyard (10m), forest bit office (600m), Emdadul mosque (400m), Sikanderghona hill (500m) to the south side, Ukhiya-Teknaf highway (5m), Palongkhali Bhuboneswari Gita Mondir (200m) to the east side, Mosque & graveyard of Jabbar (800m), Hakim Ali GPS (700m), Palongkhali chorra (100m) to the west side. Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, 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.

The proposed sub-project is not located within any environmentally sensitive area and has no chance to create adverse impacts to important environmental components. During construction period several trees may need to cut down. Impacts on air quality during the construction phase may turn to negative. The main impacts include dust generation from crushers, vehicles and the

transportation of all types of construction materials. Noise emission from construction machineries and equipment can cause nuisance to local residents and workers. Thus, the ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routs and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact

3.3.1 General Consideration

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank³ has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

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

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

Considering the general climate change effects in Cox's Bazar area and offsetting the aggravating environmental situation due to the mass arrival of Rohingya communities, several specific measures

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

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

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 were 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 observed creating 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. As part of specific measures, tree plantation, more than the numbers needed for offsetting the felling trees, on the road slope is suggested to soothe the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on hilly plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree fell in the periphery of the subproject. Some dispersed human settlement in the area, though at sufficient distance from the alignment, is present. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 2 nos. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 702m of chainage & (dimension: 2.0mx1.0m) at Ch.1290m of chainage and 06 nos. Cross Drain (dimension: 0.975mx0.975m) at Ch. 58m, Ch. 166m, Ch. 471m, Ch. 817m, Ch. 905m & Ch. 991m of chainage will be constructed at the subproject area. Some small hills or high land is found beside the road. As a mitigation measure, L-Drain works at different chainage will be constructed for draining mountain eel water during rainy season. Due to the low land in different chainage of the road some protective works (Toe wall & Palisading work) are included in design and estimation. Further construction related activities which may result in

adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific Environmental and Social Management Plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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

4.2 Health and Safety Measures under COVID situation

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

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

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

- d. Public consultation and stakeholder engagement is to be carried out considering the prevailing risks of virus transmission in the target areas, scope of interventions and level of ICT penetrations among the target stakeholders, and so on.
- e. Necessary protocols has to be established and maintained in case of handling a sick employee or worker, and appropriate compensation to a sick disengaged labor is required to be given with due documentation.
- f. Budgeting for suggested protective measures, along with necessary supervision and monitoring for the required interventions has to be ensured.

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

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, 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

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

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

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.

- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

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

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project: EMCRP/W24- Improvement of 6 roads under Cox's Bazar District:

Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084; (2) Chakmapara - Monkhali bazar Road Id:422944047; (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089; (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089; (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Name of the component: Palonkhali Goyalmara Road Id:422945097

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

Estimated total cost of sub-project (in Taka): 215,285,439.30

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): 24,232,537.19

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

District: Cox's Bazar

Sub-District: Ukhiya

Union: Palongkhali

Name of Community/Local Area: Goyalmara, Omar miar ghona, Jutormatha & Chitakhola.

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1560m. Proposed safety and service providing structures include **2 nos. Box Culvert** (dimension: 2.0mx1.50m) at Ch. 702m of chainage & (dimension: 2.0mx1.0m) at Ch.1290m of chainage and **06 nos. Cross Drain** (dimension: 0.975mmX 0.975mm) at Ch. 58m, Ch. 166m, Ch. 471m, Ch. 817m, Ch. 905m & Ch. 991m of chainage, **983.0m L-Drain** at different chainage, **55.0m Toe wall** (height 1.5m & 2.0m) at different chainage and **13.0m Brick Palisading work** at different chainage are included in the design and estimation. As part of Environmental Mitigation and Enhancement works and road safety works as barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation (Technical Report 2020, EMCRP).

Estimated footprint / land area for this sub-project is 7,644 sq m.

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

This proposed Palonkhali Goyalmara Road belongs to Palongkhali union, Ward 7 under Ukhiya Upazila. This road has starts from Ukhiya-Teknaf highway on Goyalmara mosque at east side stretching 1560m to Citakhola Courasta more point at west side. Several connecting roads fall within the road chainage. Goyalmara Jame Mosque is the starting point on the left side of the road along with paddy field, and further passes through boundary fencing, solar lamp posts, Narayankhali chorra, ext. culverts & cross drains, ditches, patches of vegetation and agricultural fields, mosques,

madrasa, shops, hospital or clinic, hills/uplands etc. No other significant environmental or socioeconomic features are found near the road component. However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

| Chainage (m) | Left | Right | Features |
|--------------|------|-------|---|
| 000-300 | L | | Existing bill board, toilet, electric pole, bamboo fencing, brick boundary walls, open space, solar lamp post, ditch, building, shop, net fencing, MSF hospital, bamboo bushes, agricultural land |
| | | R | Solar lamp post, shop, tin shed fencing, polyclinic, agricultural lands, existing culvert on Narayankhali chorra |
| 300-600 | L | | Open land, bamboo fences, earthen household, tin shed fencing, pond, mosque, agricultural land |
| | | R | Tin shed fencing, building, Akashi trees yard, household connecting road, shop, bamboo bushes on hill, trees, household on hill, bamboo fencing |
| 600-900 | L | | Tin shed fencing, earthen household, bamboo bushes on hill, household connecting road, agricultural lands, connecting road |
| | | R | Agricultural land, electric pole, existing cross drain, bamboo fences, betelnut trees, earthen household |
| 900-1200 | L | | Ext. cross drain, agricultural land, electric poles, shop |
| | | R | Agricultural lands, homestead garden, ext. culvert, connecting road, shop, vegetables yard on hill, bamboo fencing, building, tin shed fencing |
| 1200-1560 | L | | Nurani madrasah, bamboo fencing, electric pole, agricultural lands, mango trees yard, RCC pole with wire fencing |
| | | R | Mosque, electric poles, agricultural land, tin shed fencing, bushes on hill, Akashi trees yard, bamboo fencing, vegetables yard, household connecting road, betelnut trees, mango trees yard |



Figure: Starting point of Palonkhali Goyalmara Road

Overall Comments

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

It was informed to the stakeholders that the scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover other issues have also been brought to their attention, such as drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation.

The proposed construction of hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub project component.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as Md. Ali mosque & graveyard (500m), Omor miaghona mosque (1km), Rohingya camp-16 (1km), hill of Mohiuddin (400m), Markazul Ulum Al Islamia Madrasah, hefjakhana & orphanage (5m) to the north side, Goyalmara mosque (20m), MSF hospital (8m), Goyalmara majher mosque & graveyard (10m), forest bit office (600m), Emdadul mosque (400m), Sikanderghona hill (500m) to the south side, Ukhiya-Teknaf highway (5m), Palongkhali Bhuboneswari Gita Mondir (200m) to the east side, Mosque & graveyard of Jabbar (800m), Hakim Ali GPS (700m), Palongkhali chorra (100m) to the west side. The project road crosses through several communities, agricultural lands and community level forests. No scope of disturbance to these components is anticipated.

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

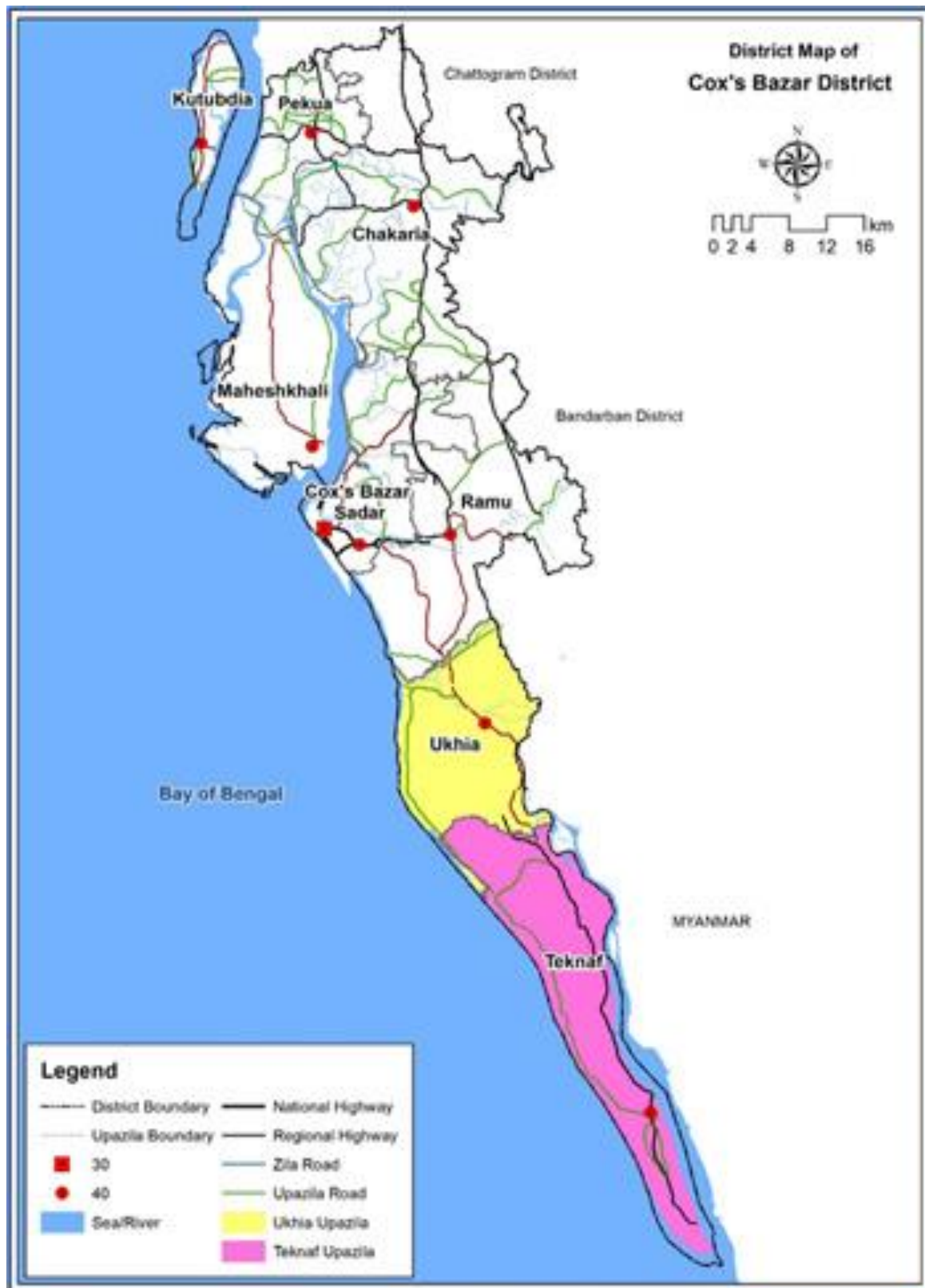


Figure 3: District Map with project location

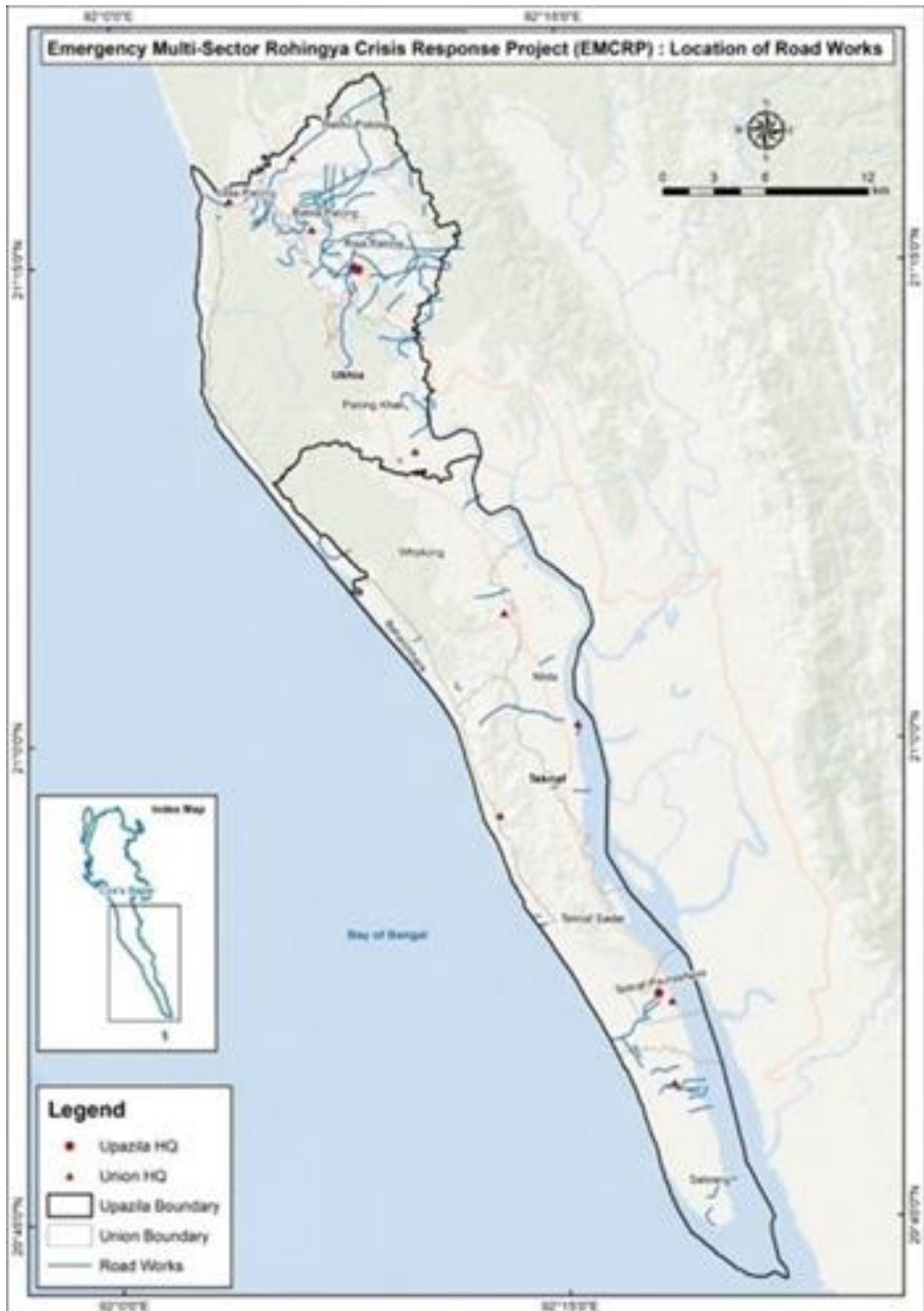


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

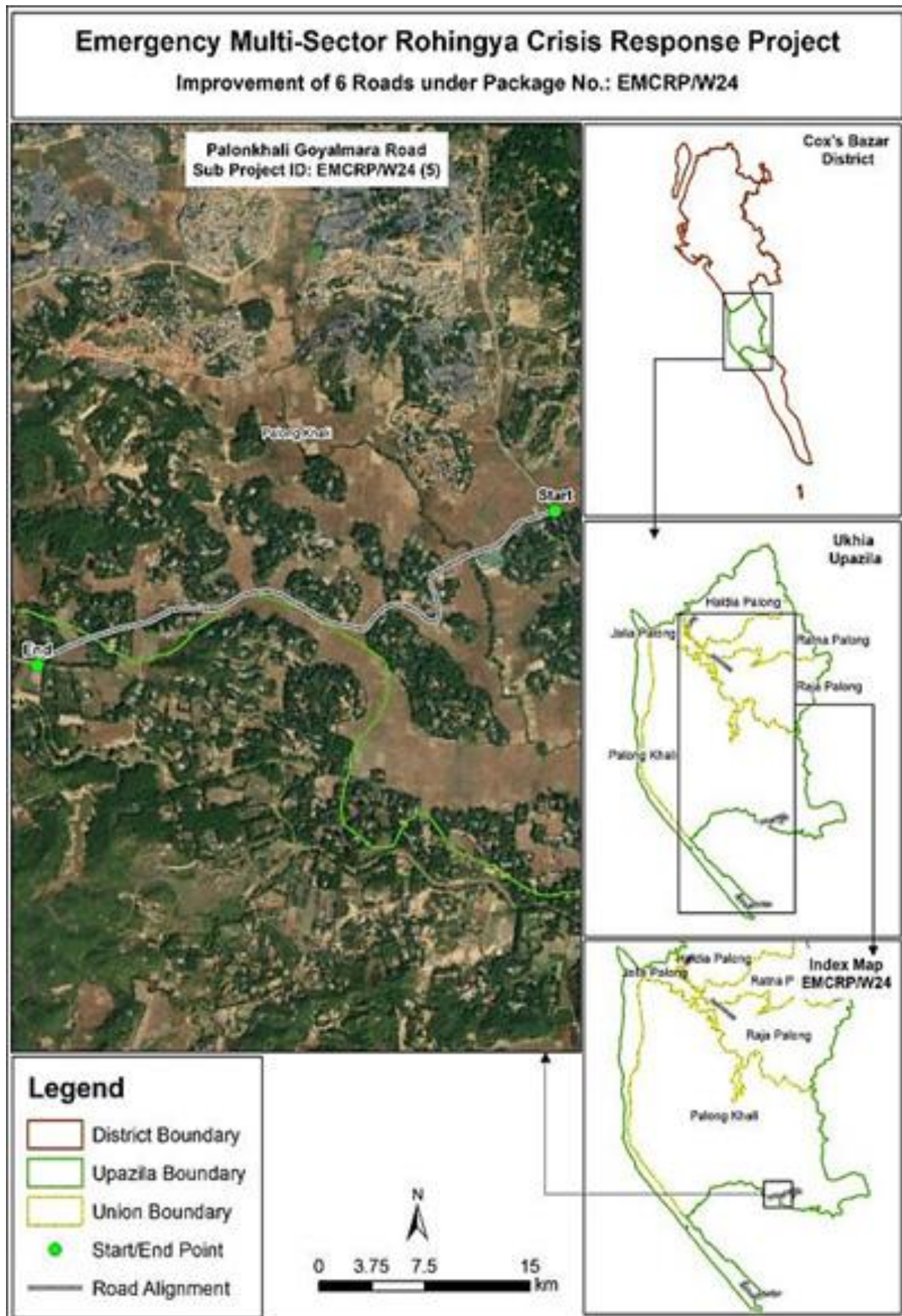


Figure 5: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1560m. Proposed safety and service providing structures include 2 nos. of Box Culvert, 6 nos. Cross Drain, 983m L-Drain at different chainage, protective works (55.0m Toe wall & 13.0m Palisading) that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation.

Sub-project Location:

| Important Features | |
|---------------------------------|---|
| ID | 422945097 |
| District | Cox's Bazar |
| Upazila | Ukhiya |
| Union | Palongkhali |
| WARD | 7 |
| Proposed Chainage | 1560m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21.151442 N Longitude Value: 92.154168 E |
| Road Ending Point Coordinates | Latitude Value: 21.147934N Longitude Value: 92.142018 E |

Land ownership

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

Expected construction period: 1 Year

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

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1560m.

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

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as Md. Ali mosque & graveyard (500m), Omor miaghona mosque (1km), Rohingya camp-16 (1km), hill of Mohiuddin (400m), Markazul Ulum Al Islamia Madrasah, hefjakhana & orphanage (5m) to the north side, Goyalmara mosque (20m), MSF hospital (8m), Goyalmara majher mosque & graveyard (10m), forest bit office (600m), Emdadul mosque (400m), Sikanderghona hill (500m) to the south side, Ukhiya-Teknaf highway (5m), Palongkhali Bhuboneswari Gita Mondir (200m) to the east side, Mosque & graveyard of Jabbar (800m), Hakim Ali GPS (700m), Palongkhali chorra (100m) to the west side. Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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

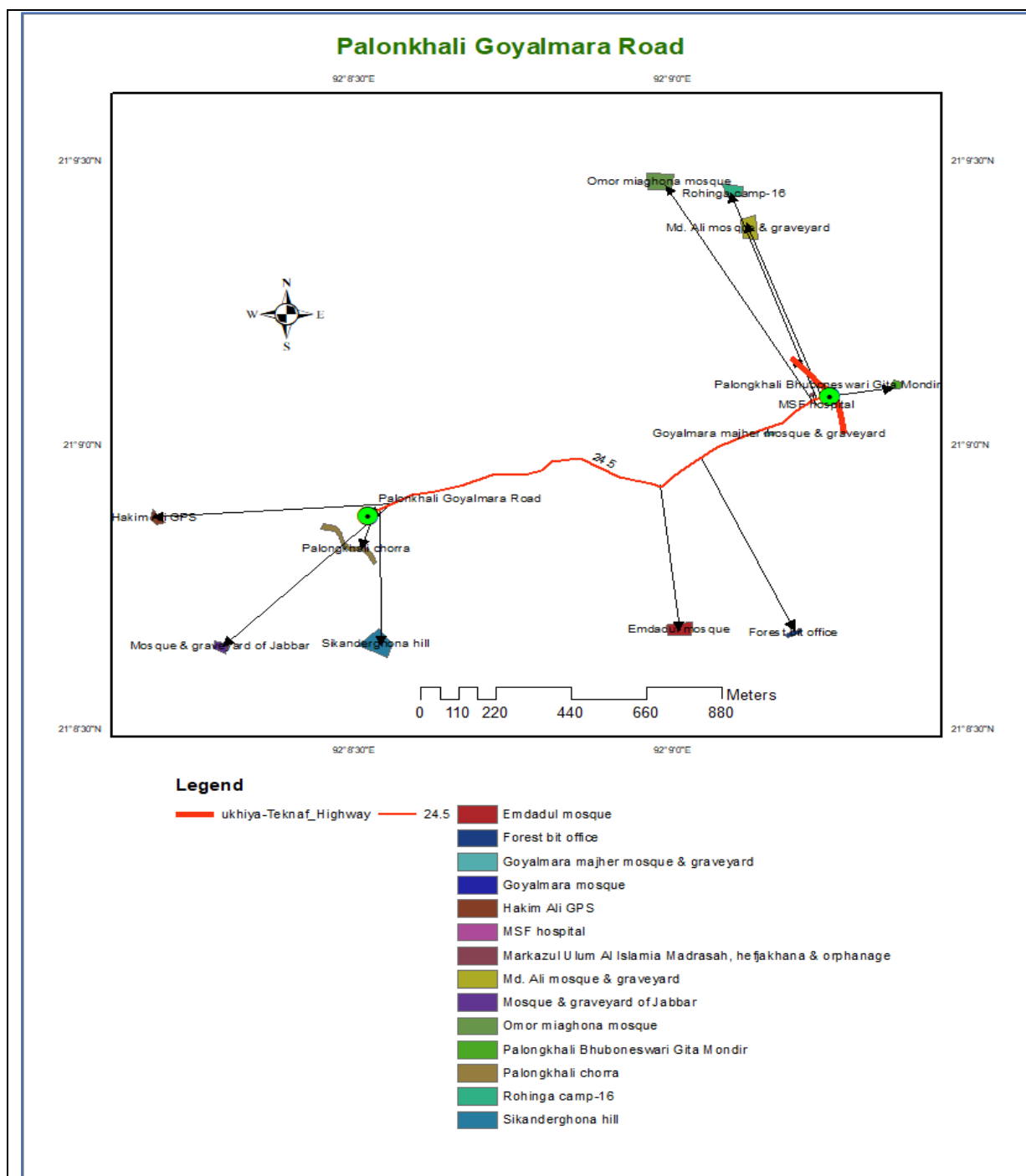


Figure B.1.1: A sketch of the project intervention area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation, several local canals, one pond, ditches, chorra, and hills/uplands are present in the proposed sub-project area. These components or resources may receive some effects during the construction period, but not in significant level and mostly be site-specific. However, all the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. Elephant migration routes or corridors were present near the sub-project area about 9-10 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

No. Local community has undertaken social forestation in 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:

Dust:

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

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

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

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

Low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. Erosion/land slide may occur only when moderate to high sloping terrains are disturbed for construction of roads.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80 feet and deep tubewell depth is 500 feet in the area. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

Surface water quality: One pond, local canals/chorra and a ditch 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.

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 (60ft. to 80 ft.) are fitted in local area and most of the water usage is sufficed from these sources.

*Data source: IWM Study Report, 2019

Status of wildlife movement:

N/A (None of the information was found about the wildlife movement in or across the area)

State of forestation:

Patches of vegetation containing large and matured trees as well as homestead gardens across the road side of the proposed subproject area are located within 200m radial distance.

Summary of water balance analysis (For water supply scheme only):

N/A

B.2: Pre construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):

Palonkhali station connecting road, Mucharkhola connecting road, Telkhola connecting road and West Palongkhali connecting road can be used as access road for transportation. Concerning ancillary facilities, these access roads for the sub-project are proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also and the route has narrow curves.

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:

Labor camp can be established along the road since there are available open private lands. Possible location for labor camps installation are, private land of Jalil and Jasim at Omor miaghona, private land of Mahmud Ali, Mohiuddin and Sayed Karim at Middle Goyalmara. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.

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

i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates vii) wood and viii) Bitumen 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. Palongkhali station connecting road, Mucharkhola connecting road, Telkhola connecting road and West Palongkhali connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

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

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

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

B.3: Construction Phase

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

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, trees alongside the road can be said to be on the ROW. There are some locations on the chainage where small trees might need cutting. 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 Low, due to presence of Narayankhali chorra on east side and Palongkhali chorra on

west side from the sub-project location. Water could not stagnant during rainy season, so no possibility of encouraging for mosquito breeding ground and 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 are two local canal or chorra exist beside the sub-project location- Narayankhali chorra and Palongkhali khal/chorra and a pond is located beside the sub-project location. But those will not be disturbed or modified during the construction phase.

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:

No.

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

No.

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

Not applicable.

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

There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding and other disease vectors, during the operation phase.

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

project:

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

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

Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)

Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.

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

Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.

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

Low. Concentrated outflow will be carried by proposed drains and culvert.

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

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

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

Section D: Environmental Screening Summary

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|------------------------------|----------------------------|--|---|---|--|--|
| | | | | | Indicator | Frequency |
| 1: Sub-Project Interventions | Air quality | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection | Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season. |
| | Soil impacts | Under the sub-project intervention the overall score is low . | <ul style="list-style-type: none"> Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. | Monitoring on weekly basis. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | | | <p>shall be used on site to manage surface water runoff and minimize erosion.</p> <ul style="list-style-type: none"> The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures. | | | |
| | Hydrology (surface and groundwater) | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to | Water quality test (mainly GW) twice during the construction period in six months interval. |

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

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|-----------------------------|--|--|---|---|---|
| | | | | | Indicator | Frequency |
| | erosion and landslides) | | toe of the road embankment remain within the right of way and does not disturb the crop. | | | |
| | Storage of materials | Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low . | <p>With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration:</p> <ul style="list-style-type: none"> Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. Construction materials must not interrupt land contours, natural drainage pattern, and create | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. | Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | | <p>water logging or depression.</p> <ul style="list-style-type: none"> Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin. | | | |
| | Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity) | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. | Contractor, environmental specialist of D&S. | <ul style="list-style-type: none"> Complaints from community | Daily |
| | Noise pollution | Under the subproject intervention the | <ul style="list-style-type: none"> Consultation with affected people; not to operate noisy equipment during working period; No noisy work after 5.00 pm. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Number of complaints from stakeholders; Use of silencers in | Inspection by PIU and supervision consultants on |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|----------------------------------|---|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | overall score is low . | <ul style="list-style-type: none"> • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP. | | <ul style="list-style-type: none"> • noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required. | monthly basis; |
| | Air pollution | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. | Visual observation and monitoring of air quality during construction period. |
| | Road Safety and Accidents | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, | Construction Contractor, environmental specialist of D&SC. | <ul style="list-style-type: none"> • Complaints from communities, pedestrians | Day basis during work time |

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

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

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

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

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

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

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

ESMP for Access and evacuation Roads: Palonkhali Goyalmara Road, Id: 422945097

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

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

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

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|-----------------------|--|--|---------------------------------------|---|
| | | <p>water from existing surface water sources shall be taken.</p> <ul style="list-style-type: none"> • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts. | | Specialist and Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | <ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Labour Base Camp: Conflicts with the local residents | <ul style="list-style-type: none"> • Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place. • Treated water will be made available at site for drinking purpose. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|-----------------------|---|---|---------------------------------------|---|
| | | <ul style="list-style-type: none"> Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | Preparation of a waste management plan covering the following aspects: <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site Wastes after completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies | <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile | <ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|---|--|--|--|
| | <p>plant and vehicles, and electrical shocks.</p> <ul style="list-style-type: none"> 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. | <p>designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting.</p> <ul style="list-style-type: none"> 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 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 | | |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|---|--|---------------------------------------|--|
| | | <p>be provided that are suitable and can do the works.</p> <ul style="list-style-type: none"> 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. | | |
| Construction activity | Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna | <ul style="list-style-type: none"> Preventative maintenance schedule should be followed. Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and | PIU | Environmental Consultant of PIU, PSC. Union Member |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|---|--|--|--|--|
| | | generating nutrient rich compost soil over time. | | |
| Construction activity (site clearance after the construction) | Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community | <ul style="list-style-type: none"> Contractor must prepare a demolition and waste management plan including relevant directives from “Waste Management Plan Principles” given hereunder. | PIU / Contractor | Environmental Consultant of PIU, and Executive Engineer of Cox’s Bazar |
| Operation & Maintenance | Noise disturbances to fauna | <ul style="list-style-type: none"> Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. | UE-LGED (under the direct guidance of Executive Engineer, Cox’s Bazar) | PSC. UNO |

Waste Management Plan Principles:

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

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

- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in a labor camp or construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|---|--------------|----------------------|--------------|
| 1. | <u>Grass Turfing</u> Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 4,680.0 Sq.m | @38.15 Tk. Per sqm | 178,542.00 |
| 2. | <u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1560.0m | @ 2.56 BDT | 3,993.60 |
| 3. | <u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | <u>First Aid Box</u> Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with | 1 no. | LS @5000 Tk. Per box | 5,000 |

| SI no. | Description of item | Quantity | Unit price | Total amount |
|--------|--|----------|-----------------|--------------|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | <u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge. | 2 no. | LS @ Tk. 30,000 | 60,000 |
| 6. | <u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge. | 1 no. | LS @ Tk. 15,000 | 15,000 |
| 7. | <u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|--|----------|-----------------|--------------|
| 8. | <u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroj, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 150 nos. | @ Tk. 1000 | 150,000 |
| 9. | <u>Motivation training</u> Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | <u>Waste disposal facility</u> Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | <u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | <u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 no. | LS @ Tk. 30,000 | 30,000 |

| SI no. | Description of item | Quantity | Unit price | Total amount |
|--|--|----------|---|-------------------|
| 13. | <u>Environmental management</u> Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C. <u>[One person to be appointed for W24(3), W24(5) & W24(6)]</u> so one-third of the personnel cost is counted here. 1 | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 3 roads i.e. 35,000Tk.*12 months*(1/3 one road). (Net payment excluding Tax & VAT). | 140,000 |
| Subtotal Bill: Environmental facilities | | | | 658,181.32 |

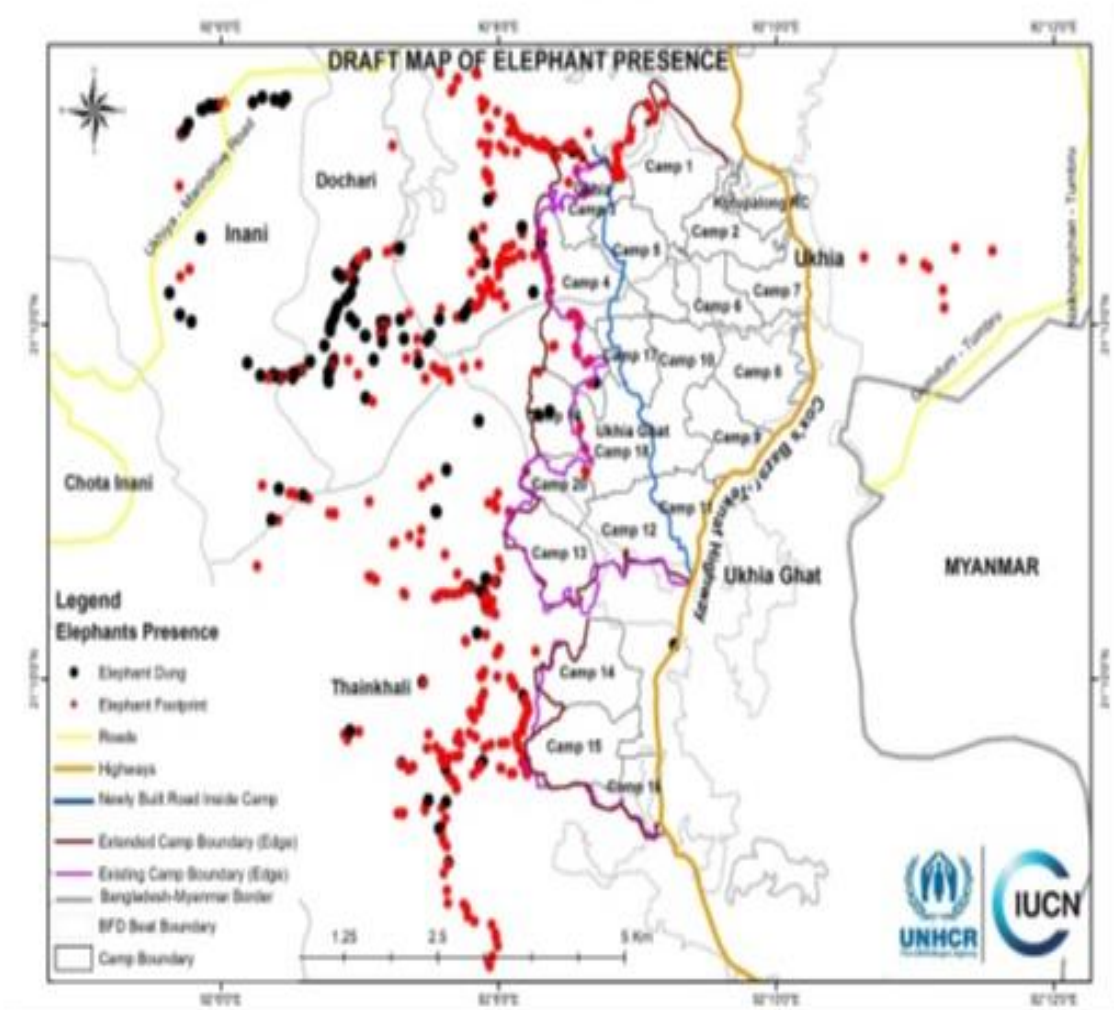
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 32 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-24.5).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------|----------------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 86 | | 108 | 50.00 | 194 | 9,700.00 | To be placed in a case/holder on the basin, for washing hands for max. 37 people a day and showering of 32 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |
| 6. | Face Shield/ Protective Safety Goggles | 20 nos. for each site | | N/A | 400.00 | 20 | 8,000.00 | For labors who work in close contact, 20 in each site |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|-----------------------------|------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 5 nos. each day in each site | | N/A | 12.00 | 1350 | 16,200.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 32 nos. for each labor camp | | 35.00 | 576 | 20,160.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 3 Can | 250.00 | 4.5 | 1,125.00 | |
| 10. | Detergent Cleaner | N/A | 1.500 kg in each camp/month | | 400.00 | 13.50 | 5,400.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | Grand Total | | | | | | 110,685.00 | |

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W24.5, Road Id No.- 422945097

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

স্বল্পী জিডিএস (এমসিআরপি) প্রকল্পের অধীনে

Local Government Engineering Department (LGED)

Public Consultation Participants List

Focus Group Discussion

তারিখ: ১২:০০ টা

তারিখ: ০৭/১২/২০২০

উপস্থাপনা/সম্পাদনা করা হয়েছে: এমসিআরপি প্রকল্পের অধীনে

সহ পরিচালক: এমসিআরপি প্রকল্পের অধীনে

স্থান: এমসিআরপি প্রকল্পের অধীনে

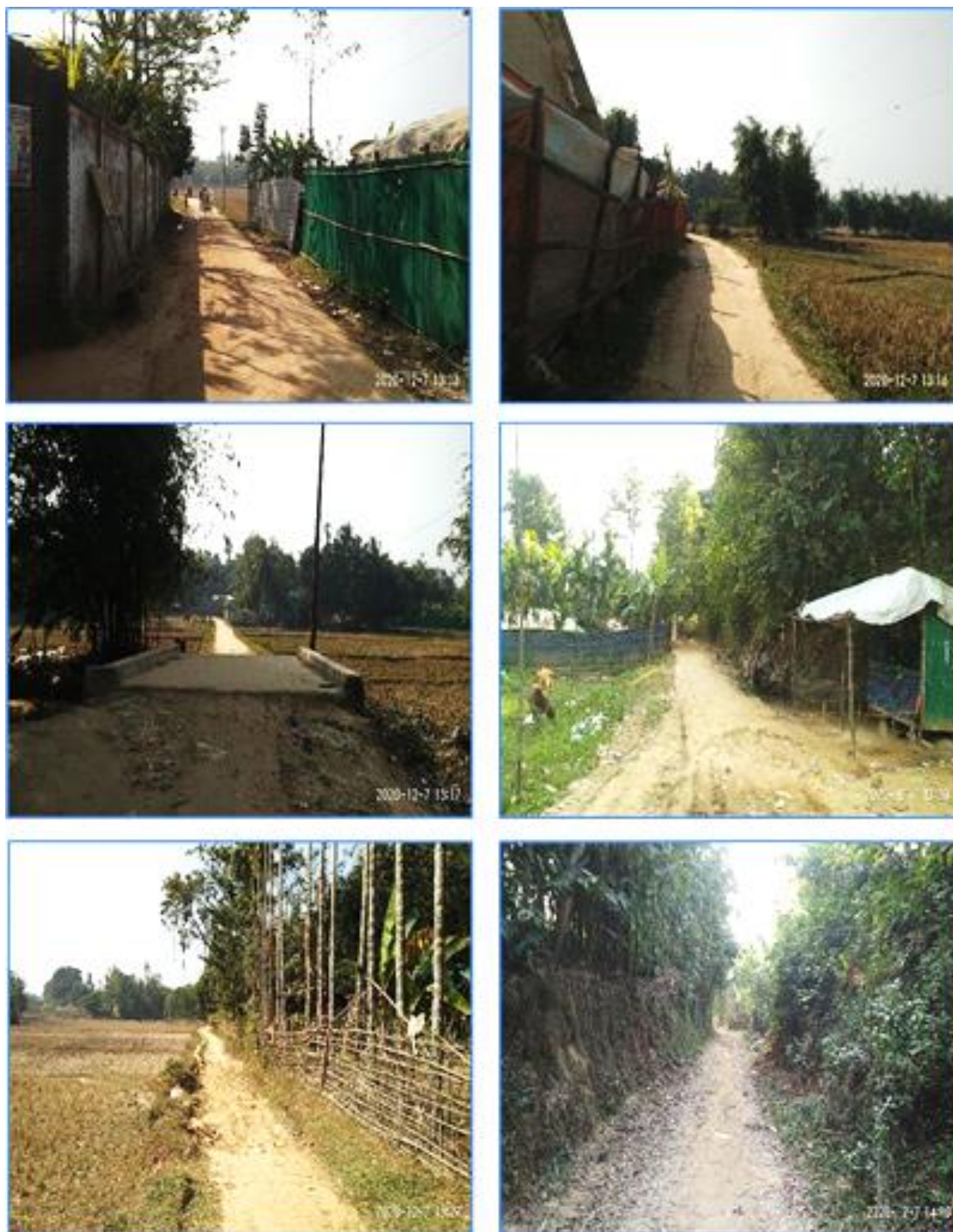
সহ পরিচালক: ২৪(৩)

স্বল্পী জিডিএস (এমসিআরপি) প্রকল্পের অধীনে

| ক্র.সং. | নাম | বয়স | পেশা/শিক্ষা | জাতীয়তা | স্বাক্ষর/স্বাক্ষর |
|---------|----------------|------|-------------|----------|-------------------|
| ০১ | স্বল্পী জিডিএস | ৩২ | স্বল্পী | এমসিআরপি | |
| ০২ | স্বল্পী জিডিএস | ৩০ | " | এমসিআরপি | |
| ০৩ | স্বল্পী জিডিএস | ২২ | " | " | |
| ০৪ | স্বল্পী জিডিএস | ২২ | " | " | |
| ০৫ | স্বল্পী জিডিএস | ২২ | " | " | |
| ০৬ | স্বল্পী জিডিএস | ২২ | " | " | |
| ০৭ | স্বল্পী জিডিএস | ২২ | " | " | |
| ০৮ | স্বল্পী জিডিএস | ২২ | " | " | |
| ০৯ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১০ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১১ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১২ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৩ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৪ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৫ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৬ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৭ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৮ | স্বল্পী জিডিএস | ২২ | " | " | |
| ১৯ | স্বল্পী জিডিএস | ২২ | " | " | |

Public Consultation Participants' List

Appendix-6: Pictorial View of several sections of the proposed site



Existing Surroundings of the Sub-Project site

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Ministry of Local Government, Rural Development and Co-operatives

Local Government Division

Local Government Engineering Department

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

Project ID: P167762

IDA Credit No. 5561-BD



Design and Supervision Consultancy

Environmental Screening Report

Baditala Road, Id: 422945102

Upazila: Ukhiya, District: Cox's Bazar

Under the package no. EMCRP/W24

January-2021



Development Design Consultants Ltd.



ACRONYMS

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

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Executive Summary

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

This sub-project is situated within the localities of Baditala, Nalbunia & East Goyalmara villages under Palongkhali union, Ward 7 & 8 of Ukhiya Upazila, Cox's Bazar. There are some community's property resources, environmental components and other intervention situated within 1km from the sub project, like that at north side Baditala mosque, hefzakhana & graveyard (100m), pond (100m), Palongkhali Bhuvaneswari Gita Mondir (150m), Futibunia GPS (800m), Futibunia mosque (1km), Baditala hill (300m) and Farmer Field School (15m), at south side Baditala Rahmania mosque, Hefzakhana & Nurani Madrasah (5m), Palongkhali bazar (300m), Palongkhali khal/chorra (320m), Palongkhali GPS (800m), Palongkhali High School (1km), Khodizatul Girl's Madrasah (900m), Palongkhali central graveyard (900m), Tazman hospital (350m) and Kedarkhola hill (200m), at east side Gonarpara hill (500m) and at west side Mucharkhola forest bit (1km), Goalmara mosque & graveyard (20m), Goalmara MSF hospital (50m), Goalmara Juter mosque & graveyard (800m), Goyalmara hill (300m), Rohingya camp-16 (500m), Palongkhali jame mosque (300m), Palongkhali central mosque (350m) and Kedarkhaola mosque (200m). Otherwise, no other important environmental features are present near sub-project. Some water body located around the subproject area. So, water logging is not a regular and annual phenomenon. Apart from this structure 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 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 730,000¹ people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033². This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District, to different disasters and improve the social service delivery system and disaster resilience to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The project is jointly being implemented by Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE) and Ministry of Disaster Management and Relief (MoDMR) under their respective mandate and scope of works. Apart from the interventions in Addressing Gender and Social Inclusiveness and Preventing Gender Based Violence with the Support from UNFPA and building Communication and Awareness among all affected parties through an effective engagement of BCCP (Bangladesh Center for Communication Programs) in the areas, LGED is implementing a good number of infrastructural facilities, namely improvement of hat bazars, roads (both inside and outside of the camps), bridges, culverts, construction of School cum multi-purpose disaster shelters, Satellite Fire Stations, Relief Distribution Center, Community Service Center and many other different types of facilities. Given the project interventions, sensitivity of the areas and volume of people in or around the sites, the project is more likely to trigger certain Operational Policies and Bank Procedures, namely Environmental Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Forest (OP/BP 4.36) and Physical Cultural Resources (OP /BP 4.11).

1.2 Objective of the Sub-Project

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

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

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

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

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

This document represents the Findings from Environmental Screening of the sub-project components under the package name 'Improvement of 6 roads under Cox's Bazar District', with the bid package no. **EMCRP/W24**.

Table 1.2.1: Significant features of the Sub-project

Package No. EMCRP/W24

Description of Sub-project: Improvement of 7 roads under Cox's Bazar District:

Improvement of

(1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084

(2) Chakmapara - Monkhali bazar Road Id:422944047

(3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089

(4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089

(5) Palonkhali Goyalmara Road Id:422945097 and

(6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Sub-project Component no. (6) Baditala Road Id: 422945102.

Component's Location:

| | | |
|--|---|-------------------------|
| i. ID. 422945102 | ii. Ward No.: 7 & 8 | iii. Mouza: Palongkhali |
| iv. Village: Baditala, Nalbunia & East Goyalmara | v. Name of Union: Palongkhali | |
| vi. Upazila: Ukhiya | vii. Sub-Project construction period: 1 year | |
| viii. Construction Year: 2020-21 | ix. Width (m): 4.9 | x. Length (m): 1675 |
| xi. Distance from UZHQ: 17 Km. | | |
| GPS Coordinates | Latitude Value: 21.148949 N Longitude Value: 92.156904 E | Starting Point |
| | Latitude Value: 21.151000 N Longitude Value: 92.154495 E | Ending Point |
| Present Condition of Road | Earthen & BFS | |
| Communication Source | Radio & Mobile Networks | |

Subproject interventions:

- Bituminous Carpeting options.
- 1 no. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 294.0m of chainage
- 13 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 18m, Ch. 151m, Ch. 444m, Ch. 522m, Ch. 682m, Ch. 840m, Ch. 892m, Ch. 940m, Ch. 1150m, Ch. 1242m, Ch. 1313m, Ch. 1538m

| |
|---|
| & Ch. 1615m of chainage • 1533.0m L-Drain at different chainage • 374.0m Toe wall (height 1.0m & 1.5m) at different chainage • 26.0m Brick Palisading work at different chainage • Road safety work and • Environmental Mitigation and Enhancement works |
| Implementing Agency: Local Government Engineering Department (LGED) |
| Expected construction period (Component -1): 1 year |
| Estimated total cost of component: 31,196,333.85 (Tk.) |

2 PUBLIC CONSULTATION AND PARTICIPATION

2.1 Methodology

Public participation and community consultation has been taken up as an integral part of environmental assessment process of the project. To this end, D&SC conducted consultation meeting with local community on 07 December, 2020 at infront of Khairul Boshor Store point/Starting point of the Sub-project, Refer to **Figure 2.1.1**, and Public Consultation Participants' List is attached in **Appendix-5** and sub-project pictorial overview is attached in **Appendix-6**. The local individuals of different ages, chairman and/or member of Union Parishad participated in that consultation meeting. A questionnaire was kept ready and responses were elicited. During these consultations, the communities were explained about the project, key interventions, benefits of the proposed component, associated social and environmental aspects.



Figure 2.1.1: Consultation meeting (FGD) with local community

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

2.2 Summary of Public Consultation Meeting

In the consultation meeting, environmental issues and their relevant impacts for the infrastructure development work such as road improvement or maintenance were discussed. The advantages and

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

D&S Consultants conducted consultation meeting with host community regarding the sub-project activities. Community representatives have no objection regarding the construction of the sub-project. They have welcomed this as blessings and pointed out that this road would help them improve their socioeconomic condition as a whole. People will have more growth in regards to economic activity which will surely bring development to their localities. They have also suggested increasing the height of the road. They were worried of facing any risks of whether this intervention may cause harm to their establishment of any kind and if their agriculture might be threatened. In reply they were assured that very low impact might accrue but the extent is very negligible. Components such as air quality might deteriorate a bit due to construction induced dust pollution and noise pollution might occur as well.

It has been revealed that this project's scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention such as proper placement facility for labors and storage facility for materials is a crucial factor. The participants expected that none of the interventions would worsen their living conditions or surrounding environment and they requested for adopting all measures to reduce/avoid the environmental hazards during the implementation phase. Tree cutting might take place for the sub-project but only a few just along the existing road. A compensation method for tree cutting must be in place such as planting five trees for every tree to fall. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM).

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

2.3 Suggestions and recommendations of the participants

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

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

3 ENVIRONMENTAL SCREENING

3.1 General

This section identifies the potential impacts that the various elements of the proposed Project may have on the physical, biological and socio-economic environment within half a kilometer of the radial distance around the site. Environmental Assessment (EA) based on this screening study for the Sub-project has been conducted to identify and determine which potential Project impacts may be significant and therefore require the application of reasonable and effective management and/or mitigation measures.

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

3.2 Major Findings

This sub-project is situated within the localities of Baditala, Nalbunia & East Goyalmara villages under Palongkhali union, Ward 7 & 8 of Ukhiya Upazila, Cox's Bazar. The proposed road component passes through a typical but semi-developed rural setting, comprising of boundary fencing, bushes, solar lamp posts, ext. culverts & cross drains, patches of vegetation and agricultural fields, mosques, shops, electric pole, hills/uplands etc. Among important socioeconomic and sensitive features located within 1km from the sub project, at north side Baditala mosque, hefzakhana & graveyard (100m), pond (100m), Palongkhali Bhuvaneswari Gita Mondir (150m), Futibunia GPS (800m), Futibunia mosque (1km), Baditala hill (300m) and Farmer Field School (15m), at south side Baditala Rahmania mosque, Hefzakhana & Nurani Madrasah (5m), Palongkhali bazar (300m), Palongkhali khal/chorra (320m), Palongkhali GPS (800m), Palongkhali High School (1km), Khodizatul Girl's Madrasah (900m), Palongkhali central graveyard (900m), Tazman hospital (350m) and Kedarkhola hill (200m), at east side Gonarpara hill (500m) and at west side Mucharkhola forest bit (1km), Goalmara mosque & graveyard (20m), Goalmara MSF hospital (50m), Goalmara Juter mosque & graveyard (800m), Goyalmara hill (300m), Rohingya camp-16 (500m), Palongkhali jame mosque (300m), Palongkhali central mosque (350m) and Kedarkhola mosque (200m). Some features may face dust and noise pollution due to having a close proximity to the road but the impacts are short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures. Other features are located at places having sufficient distances from the road length; therefore significant disturbance to all these establishments/features is not anticipated, specifically from the construction activities. However, strict construction site management system including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, proper fencing around the working area, safe storage of materials, etc.- all these measures will be complied fully in the field. Construction equipment may generate vibration at the properties immediately adjacent to the road alignment. Any vibration would result in nuisance effects to nearby faunal species, 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.

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

There is no evidence of presence of elephants in the subproject area. A few incidents of human elephant conflict have been reported in 2018. The IUCN has conducted a study on such conflict. With the support from UNHCR, IUCN has been marking elephant routes and corridors and informing local communities and stakeholders of avoiding the marked areas. As part of the mitigation options, different initiatives have been undertaken, such as formation and capacity development of Elephant Response Teams (ERTs); providing equipment to ERTs to divert in-coming elephants; and setting up elephant deterrent tools (e.g. trip alarms and watch-towers). Though the current chances of occurrence of conflicting incidence are becoming narrow, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. **Appendix-4** presents a map of elephant routes of Ukhiya Upazila which is prepared by the IUCN.

In order to offset the loss or attenuating the environmental degradation, a set of mitigation measures will be adopted, on top of general practice of standard construction procedure or following the relevant codes of practices.

3.3 Climate Change Impact

3.3.1 General Consideration

Cox's Bazar is one of the coastal districts of Bangladesh and is prone to the effects of climate change due to its geomorphological siting and climate induced effects. The hilly tracts of Cox's Bazar could foster further environmental crisis brought on by indiscriminate deforestation and diminishing groundwater reservoirs, which have been taken place in recent months as the Rohingya crisis evolved. A recent study conducted by World Bank³ has found that Cox's Bazar will be the worst-hit district in South Asia as average temperatures rise and rainfall patterns become disruptive, by 2050, if greenhouse gas emissions continue unabated.

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

Together with the above mentioned hazardous situation, availability of potable water from shallow tube wells that pump water up from about 150 feet has already reached to a critical level. Averting the problem requires new tube wells to be plumbing deeper into the poorly mapped aquifer, but

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

going deeper than 700 feet in some places may cause salt water to contaminate freshwater resources, which could be disastrous for both refugees and local residents.

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

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 were 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 observed creating 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. As part of specific measures, tree plantation, more than the numbers needed for offsetting the felling trees, on the road slope is suggested to soothe the temperature effect and increase the water retaining capacity of soil, at the same time.

4 ENVIRONMENTAL AND SOCIAL PROTECTION/SAFEGUARDS

4.1 Mitigation and Management Measures

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

The proposed road is on hilly plain land. A number of trees along the road side will be cut down during construction period and as a mitigation measure, 5 nos. trees will be replanted for each tree fell in the periphery of the subproject. Some dispersed human settlement in the area, though at sufficient distance from the alignment, is present. There are some important socio-cultural and religious and educational establishments/features along the road length, which might face construction induced impacts to some extent.

Further, some settlements located adjacent to the sub-project area might get affected during the construction period with the generated debris and dust, though for the time being. Contractor must adhere to the best practice debris management procedure and regular adoption of dust control measures (spraying of water at least twice a day) to minimize the effect to the level best. Proposed subproject area experiences water logging problem during the monsoon sometimes. Also, there are some patches of agricultural lands in the area, which needs regular supply of irrigation water. In order to averting the waterlogging problem and facilitating optimum irrigation, 1 no. of Box Culvert (dimension: 2.0mx1.50m) at Ch. 294.0m of chainage and 13 nos. Cross Drain (dimension: 0.975mmX 0.975mm) at Ch. 18m, Ch. 151m, Ch. 444m, Ch. 522m, Ch. 682m, Ch. 840m, Ch. 892m, Ch. 940m, Ch. 1150m, Ch. 1242m, Ch. 1313m, Ch. 1538m & Ch. 1615m of chainage will be constructed at the

subproject area. Some small hills or high land is found beside the road. As a mitigation measure, 1533.0m L-Drain works at different chainage will be constructed for draining mountain eel water during rainy season. Due to the low land in different chainage of the road some protective works (374.0m Toe wall & 26.0m Palisading work) are included in design and estimation. Further construction related activities which may result in adverse impacts in the surrounding environment of the sub project must be kept under close consideration and appropriate mitigation and management measures will be taken with due care and vigilance. Once the effects are minimized to its least level and controlled efficiently, it will turn into a welcoming and beneficial project for the local communities. The subproject specific Environmental and Social Management Plan has been outlined in **Appendix-2**. The mitigation measures as well as monitoring program of ESMP have also been incorporated in the management plan.

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

4.2 Health and Safety Measures under COVID situation

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

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

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

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

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

4.3 Cost of Environmental Enhancement Works in BOQ

In consideration to the above-mentioned environmental impacts and their mitigation measures for this sub-project, 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

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

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

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

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

- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- The project will create employment for those who live in the vicinity of the construction site and will provide them a short-term economic gain.
- The green belt development, if necessary for the road site, with large-growing trees at the periphery of the site will give the places a more natural and pleasing appearance.
- A comprehensive Environmental and Social Management Plan (ESMP) has been prepared to mitigate and reduce the adverse impacts that will come out from the Subproject activities.

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

Appendix-1: Filled in Environmental Screening Form

Environmental Screening Form

Sub-Project Description Form:

Name of Sub-Project:

EMCRP/W24- Improvement of 6 roads under Cox's Bazar District:

Improvement of (1) Sona market to H/O sankar borua via Bou bazar Road Id:422945084; (2) Chakmapara - Monkhali bazar Road Id:422944047; (3) Chaungkhali to Battali marinedrive sea beach Road d Id:422945089; (4) R&H Road (Kasiar Bill) - Ratnapalong UP office Road Id:422944089; (5) Palonkhali Goyalmara Road Id:422945097 and (6) Baditala Road Id:422945102 with culverts and side drains in Ukhiya Upazila of Cox's Bazar District.

Name of the component: Baditala Road Id:422945102

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

Estimated total cost of sub-project (in Taka): 215,285,439.30

Estimated construction period duration: 1 year

Estimated total cost of the component (in Taka): 31,196,333.85

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

District: Cox's Bazar

Sub-District: Ukhiya

Union: Palongkhali

Name of Community/Local Area: Baditala, Nalbunia & East Goyalmara.

Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.): The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1675m. Proposed safety and service providing structures include **1 no. of Box Culvert** (dimension: 2.0mx1.50m) at Ch. 294.0m of chainage and **13 nos. Cross Drain** (dimension: 0.975mmX 0.975mm) at Ch. 18m, Ch. 151m, Ch. 444m, Ch. 522m, Ch. 682m, Ch. 840m, Ch. 892m, Ch. 940m, Ch. 1150m, Ch. 1242m, Ch. 1313m, Ch. 1538m & Ch. 1615m of chainage, **1533.0m L-Drain** at different chainage, **374.0m Toe wall** (height 1.0m & 1.5m) at different chainage and **26.0m Brick Palisading work** at different chainage are included in the design and estimation. As part of Environmental Mitigation and Enhancement works and road safety works as barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation (Technical Report 2020, EMCRP).

Estimated footprint / land area for this sub-project is 8,207.5 sq m.

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

This proposed Baditala Road belongs to Palongkhali union, Ward 7 & 8 under Ukhiya Upazila. This road has starts from Ukhiya-Teknaf highway on Dr. Rastom's house at west side stretching 1675m to M.A Monjur's house of Palongkhali-Goyalmara at west side. Several connecting roads fall within the road chainage. Baditala Khairul Boshor Store is the starting point on the right side of the road along

with electric pole and further passes through boundary fences, solar lamp posts, ext. culverts & cross drains, water pump, patches of vegetation and agricultural fields, local trees, mosques, shops, hills/uplands etc. No other significant environmental or socioeconomic features are found near the road component. However, detail Environmental features within 100m of the both sides of the road from the center line were collected @300m longitudinal intervals during the survey and the findings are given in the table below:

| Chainage (m) | Left | Right | Features |
|--------------|------|-------|---|
| 000-300 | L | | Ext. u-drain, electric pole, building, bamboo fences, settlements on upland, bamboo bushes, trees, poultry farm, agricultural land |
| | | R | Ext. u-drain, shops, tin shed fencing, mosque, madrasah, building, earthen household, pond, garage, agricultural land |
| 300-600 | L | | RCC pillar with wire fencing, settlement on upland, shop, agricultural land, Farmer field School on upland, ext. water pump, electric pole, agricultural land |
| | | R | Brick boundary wall, betelnut yard, shop, connecting road, agricultural land, bamboo bushes on upland, settlement on upland |
| 600-900 | L | | Agricultural lands, vegetables yard, solar lamp post, earthen household, tin shed household |
| | | R | Settlement of uplands, electric poles, hill, RCC pole with wire fencing, tin shed fencing, building, bamboo fences, connecting road, shop, betelnut trees, earthen household, Akashi trees yard |
| 900-1200 | L | | Agricultural lands, bamboo bushes, settlement on upland, bamboo fencing, bushes, household connecting road |
| | | R | Bamboo fences, bamboo bushes, local trees, vegetables yard, earthen household, bushes, tin shed household |
| 1200-1500 | L | | Agricultural land, bamboo bushes on upland, bamboo fencing, earthen household, wood make fencing, tin shed households, brick boundary wall |
| | | R | Settlements on upland, bamboo fencing, Akashi trees yard, ext. water pump, electric poles, open land, Temple connecting road, agricultural lands, water pump house |
| 1500-1675 | L | | Brick boundary wall, building, agricultural land, tin shed fencing, bamboo fencing, electric pole |
| | | R | Open space, agricultural land, tin shed fences, tin shed households, electric pole, earthen household, building |



Figure: Starting point of Baditala Road

Overall Comments

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

It was informed to the stakeholders that the scope of works does not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover other issues have also been brought to their attention, such as drainage system and a bridge have also been included into the design of this project since runoff from higher grounds are also a concerning matter during rainy season.

Local people of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. They truly appreciated the initiative as they will have very good access to all the services and facilities provided by the government and different organizations, and they would be able to harness the full socio-economic benefits as well as will have an interrupted passage during an emergency situation.

The proposed construction of hillock village road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any significant adverse impacts on the important environmental features and local livelihood. No significant impact is expected on the

ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub project component.

Types of waste to be generated during construction and operation phase:

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels etc. Negligible amount of plastic, fuel etc. will be generated in equipment/stack yards. Human wastes will be generated in labor camp. Dust and noise are among the nuisance that may generate during the operation phase.

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

Within the influence area of the subproject no historical sites were identified. There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as at north side Baditala mosque, hefzakhana & graveyard (100m), pond (100m), Palongkhali Bhuvaneswari Gita Mondir (150m), Futibunia GPS (800m), Futibunia mosque (1km), Baditala hill (300m) and Farmer Field School (15m), at south side Baditala Rahmania mosque, Hefzakhana & Nurani Madrasah (5m), Palongkhali bazar (300m), Palongkhali khal/chorra (320m), Palongkhali GPS (800m), Palongkhali High School (1km), Khodizatul Girl's Madrasah (900m), Palongkhali central graveyard (900m), Tazman hospital (350m) and Kedarkhola hill (200m), at east side Gonarpara hill (500m) and at west side Mucharkhola forest bit (1km), Goalmara mosque & graveyard (20m), Goalmara MSF hospital (50m), Goalmara Juter mosque & graveyard (800m), Goyalmara hill (300m), Rohingya camp-16 (500m), Palongkhali jame mosque (300m), Palongkhali central mosque (350m) and Kedarkhaola mosque (200m). The project road crosses through several communities, agricultural lands and homestead forests. No scope of disturbance to these components is anticipated.

In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 4-5 km away from this sub-project.

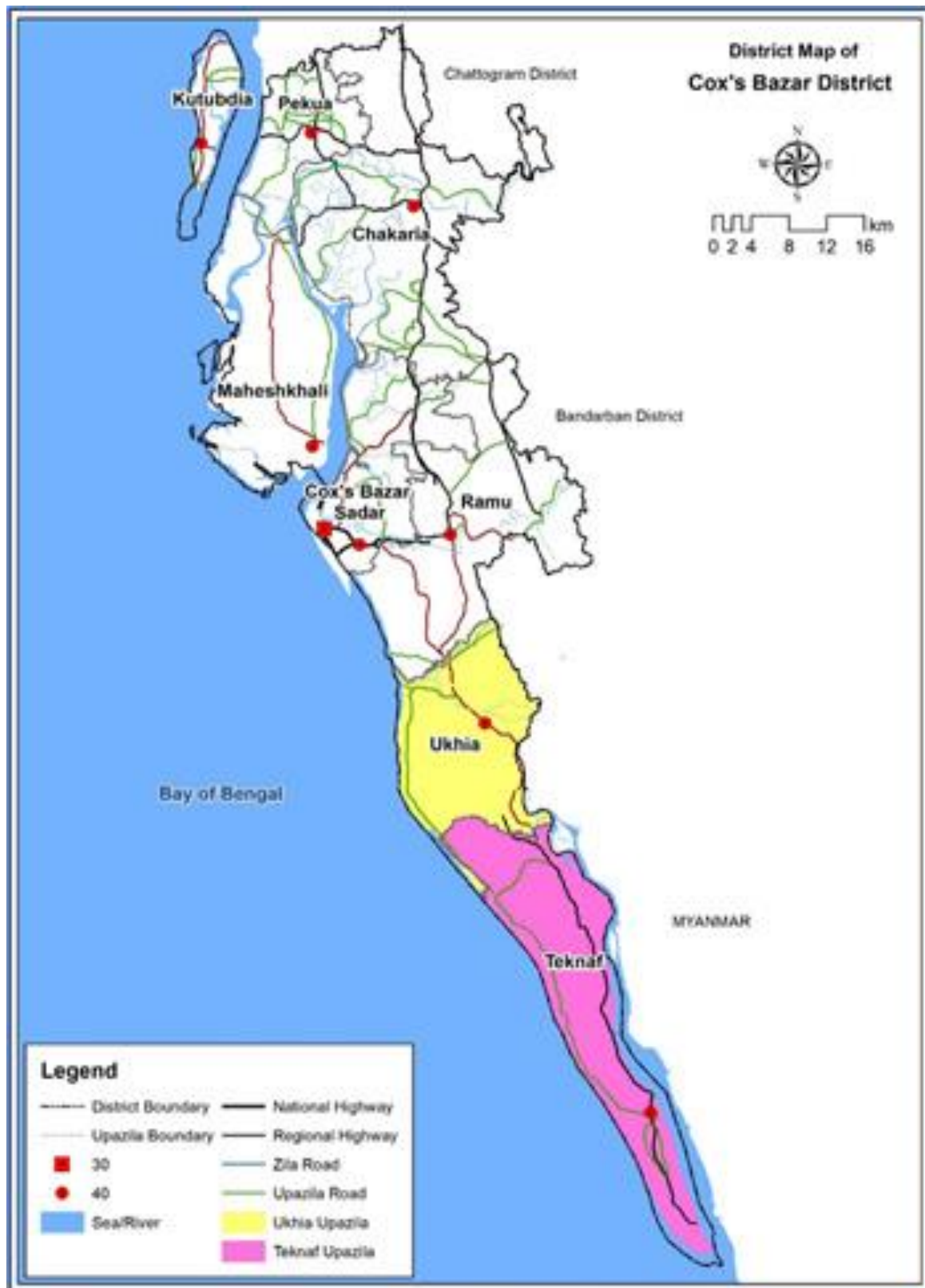


Figure 3: District Map with project location

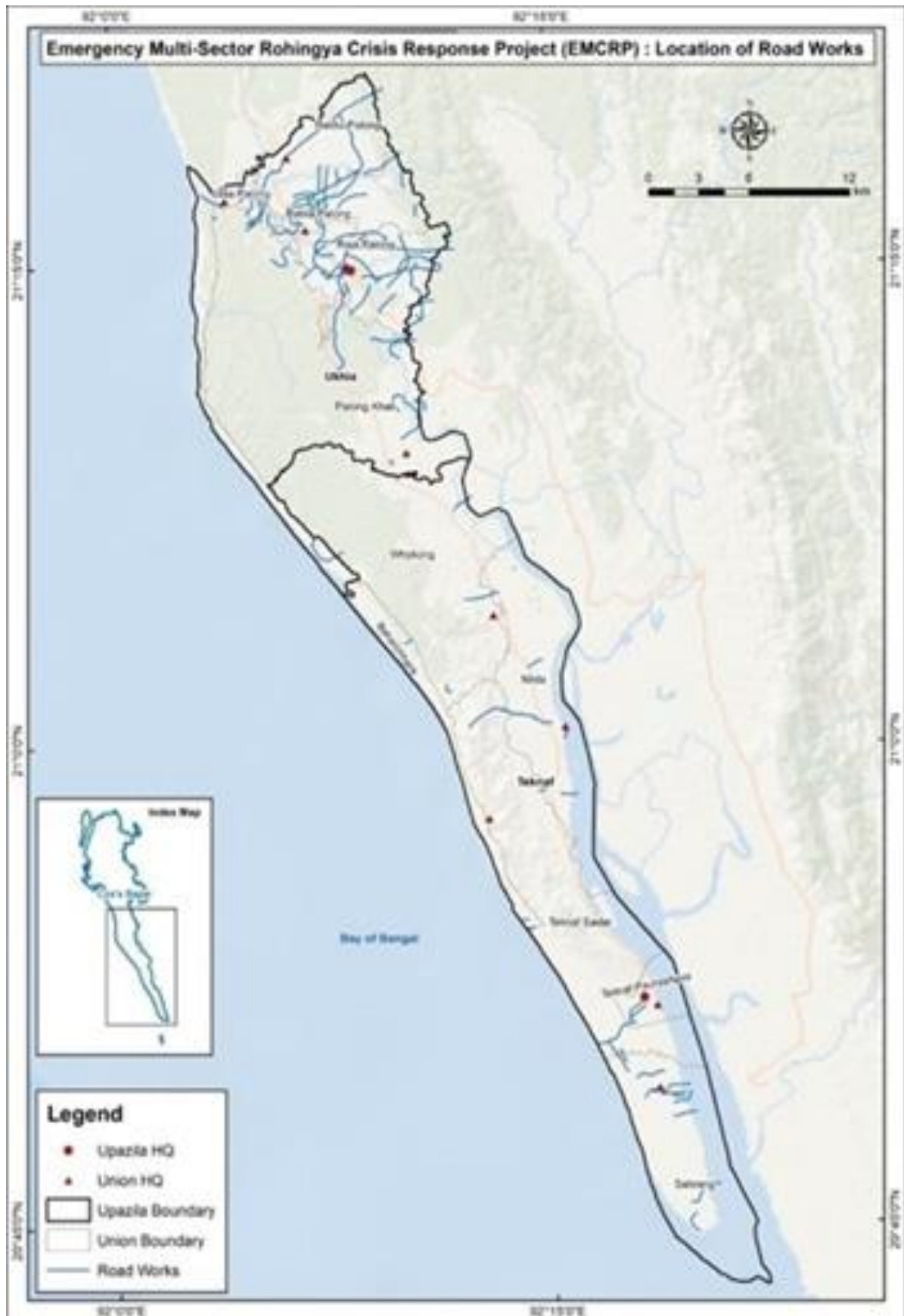


Figure 4: Location Map of Access Road (Ukhiya & Teknaf)

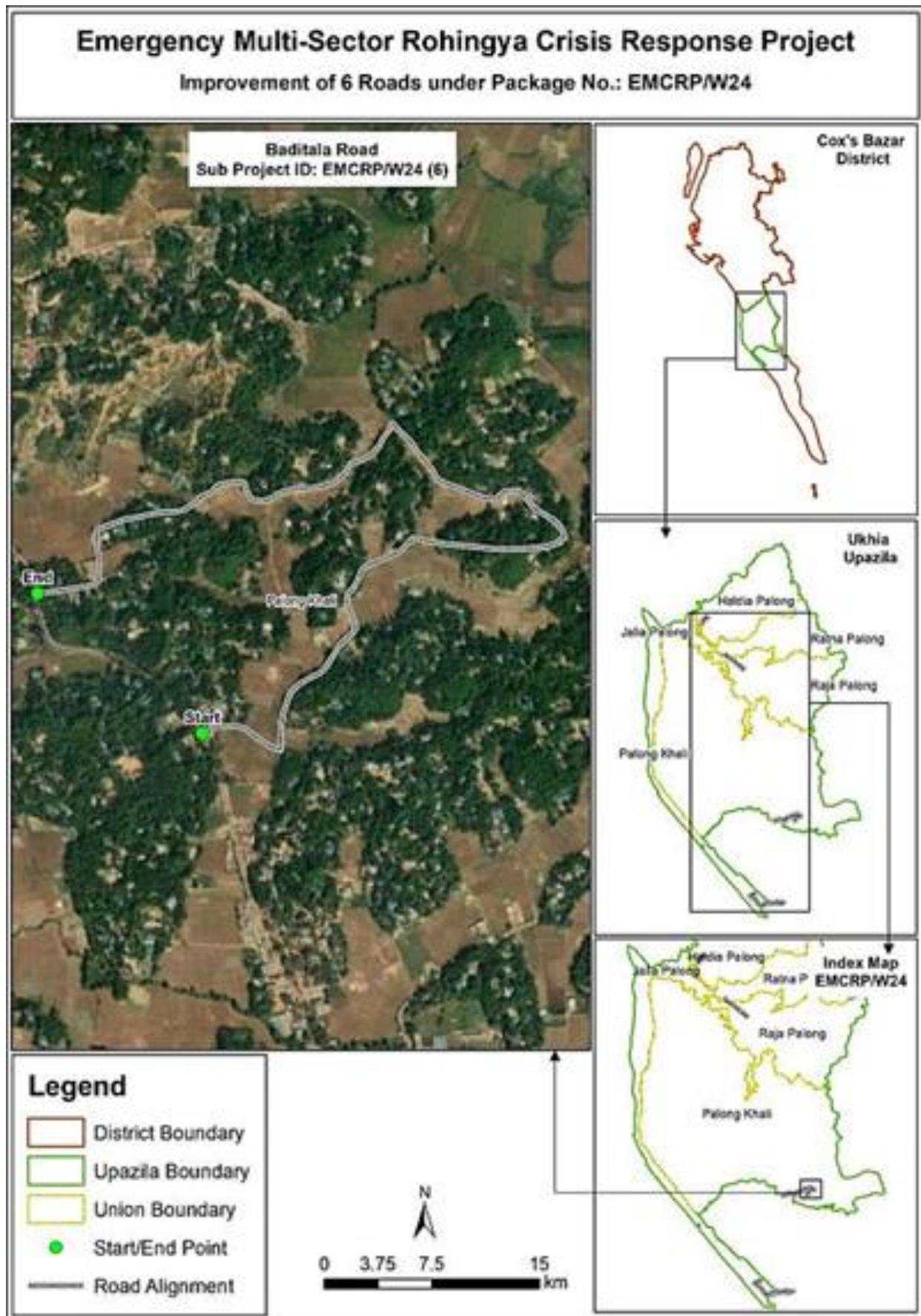


Figure 5: Upazila Map with Sub-project location

Section A: Sub-Project Overview

Description of sub-project/component interventions:

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1560m. Proposed safety and service providing structures include 1 no. Box Culvert, 13 nos. Cross Drain, 1533m L-Drain at different chainage, protective works (374.0m Toe wall & 26.0m Palisading) that are included in the design and estimation, and as part of road safety works barricades, speed bumps, warning signs/lights, guide signs, flagmen are included in the estimation.

Sub-project Location:

| Important Features | |
|---------------------------------|---|
| ID | 422945102 |
| District | Cox's Bazar |
| Upazila | Ukhiya |
| Union | Palongkhali |
| WARD | 7 & 8 |
| Proposed Chainage | 1675m |
| Road Type | Village Road |
| Proposed Intervention Type | BC |
| Road Starting Point Coordinates | Latitude Value: 21.148949 N Longitude Value: 92.156904 E |
| Road Ending Point Coordinates | Latitude Value: 21.151000N Longitude Value: 92.154495 E |

Land ownership

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

Expected construction period: 1 Year

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

The Sub-Project is categorized as a village road with a proposed design of BC from Ch.00 to Ch. 1675m.

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

Section B: Environmental Screening

B.1: Environmental feature of sub-project location

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

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

There are some community properties, environmental-religious-and-sociocultural components located within 1km from the sub project, such as at north side Baditala mosque, hefzakhana & graveyard (100m), pond (100m), Palongkhali Bhuvaneswari Gita Mondir (150m), Futibunia GPS (800m), Futibunia mosque (1km), Baditala hill (300m) and Farmer Field School (15m), at south side Baditala Rahmania mosque, Hefzakhana & Nurani Madrasah (5m), Palongkhali bazar (300m), Palongkhali khal/chorra (320m), Palongkhali GPS (800m), Palongkhali High School (1km), Khodizatul Girl's Madrasah (900m), Palongkhali central graveyard (900m), Tazman hospital (350m) and Kedarkhola hill (200m), at east side Gonarpara hill (500m) and at west side Mucharkhola forest bit (1km), Goalmara mosque & graveyard (20m), Goalmara MSF hospital (50m), Goalmara Juter mosque & graveyard (800m), Goyalmara hill (300m), Rohingya camp-16 (500m), Palongkhali jame mosque (300m), Palongkhali central mosque (350m) and Kedarkhaola mosque (200m). Besides these components, no other sensitive environmental, cultural, archaeological sites including elephant migration routes were identified. The area is not adequately forested; homestead gardening and backyard and social forestation was found gaining popularity in the area.

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

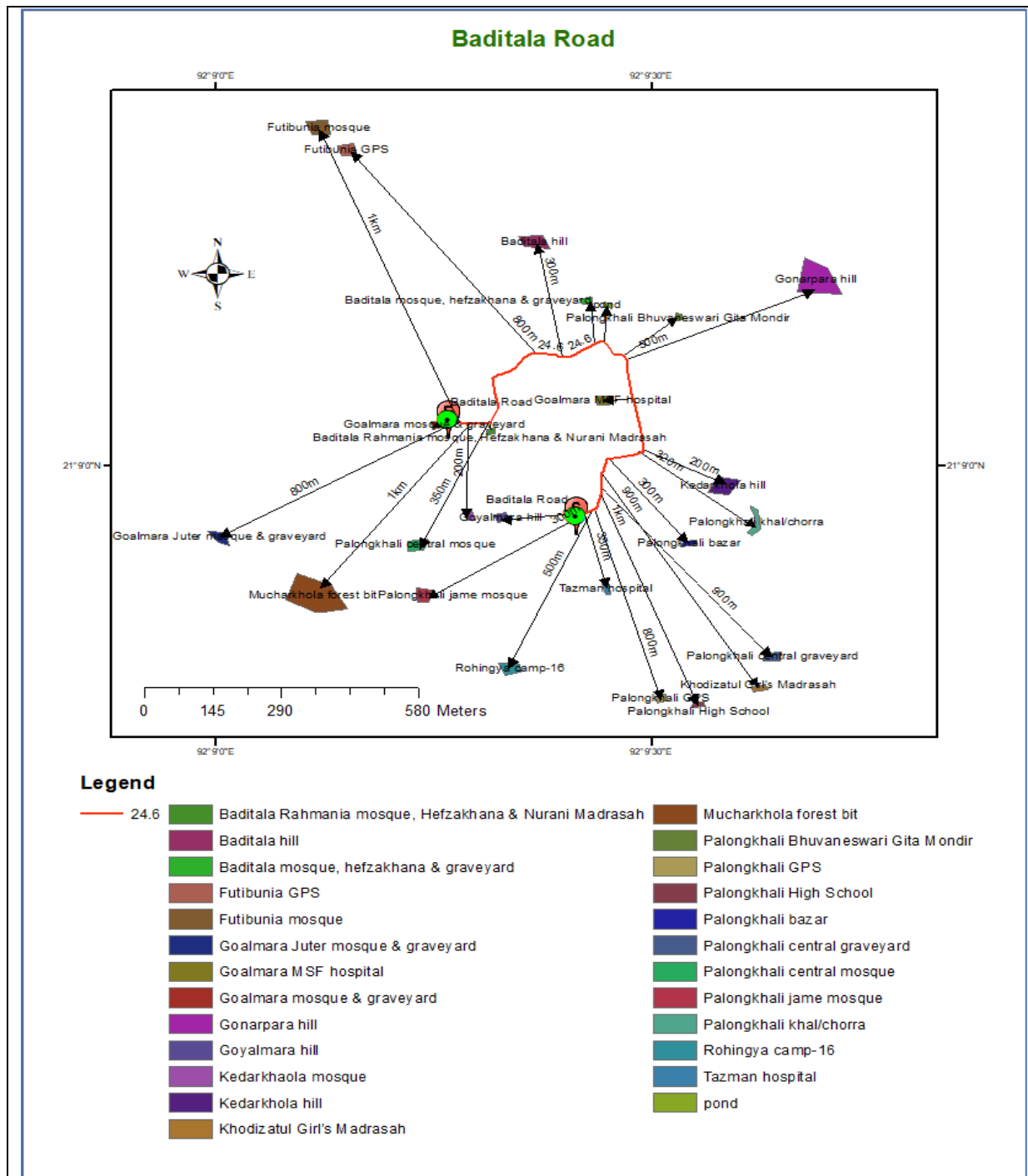


Figure B.1.1: A sketch of the project intervention area

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive areas found in the areas, except some matured vegetation, one pond, hills/uplands are present in the proposed sub-project area. These components or resources may receive some effects during the construction period, but not in significant level and mostly be site-specific. However, all the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. Elephant migration routes or corridors were present near the sub-project area about 9-10 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

No. Local community has undertaken social forestation in 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:

Dust:

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

Noise:

Noise in the Sub-project area is not a major concern because noise level is within the tolerance limit. Vehicles such as tempo, auto rickshaw, tractor, trailer, etc. move on roads adjacent to sub-project throughout the day and night generate noise but within tolerable limit in most cases.

Baseline soil quality:

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

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

Low. There is low possibility of soil erosion or landslide during construction period of targeted sub-project. Erosion/land slide may occur only when moderate to high sloping terrains are disturbed for construction of roads.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80 feet and deep tubewell depth is 500 feet in the area. But the shallow tube well is not working properly during the dry season. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers beneath the Sub-project area contains high concentration of iron. Deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have deep tube well which pump water from the confined aquifer.

Surface water quality: pond, local chorra 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.

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

| |
|---|
| <p>681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil.</p> <p>Many shallow tube wells (60ft. to 80 ft.) are fitted in local area and most of the water usage is sufficed from these sources.</p> <p>*Data source: IWM Study Report, 2019</p> |
| <p>Status of wildlife movement:</p> <p>N/A (None of the information was found about the wildlife movement in or across the area)</p> |
| <p>State of forestation:</p> <p>Patches of vegetation containing large and matured trees as well as homestead gardens across the road side of the proposed subproject area are located within 200m radial distance.</p> |
| <p>Summary of water balance analysis (For water supply scheme only):</p> <p>N/A</p> |

B.2: Pre construction Phase

| |
|--|
| <p>Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable):</p> <p>Nalbunia connecting road, Futibunia connecting road, and Farirbil connecting road can be used as access road for transportation. Concerning ancillary facilities, these access roads for the sub-project are proper in order for the equipment vehicles to arrive at the proposed location. Nonetheless, heavy four wheelers will not be a suitable option, this may cause more dust in the air also and the route has narrow curves.</p> |
| <p>Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction:</p> <p>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.</p> |
| <p>Possible location of labor camps:</p> <p>Labor camp can be established along the road since there are available open private lands. Possible location for labor camps installation, private land of Abul Bashar and Abdul Mabud (Former UP member) at Baditala. However, this will have to be done with the consent of land owner under a mutual agreement, with the supervision of the Engineer in charge.</p> |
| <p>Requirement and type of raw materials (e.g. sand, stone, wood, etc.):</p> <p>i) Bricks, ii) Sand, iii) cement, iv) Gravel, v) water, vi) Aggregates vii) wood and viii) Bitumen are the most common type of materials used for the construction of labor shed and site office during the pre-construction stage.</p> |
| <p>Identification of access road for transportation (Yes/No):</p> <p>Yes. Nalbunia connecting road, Futibunia connecting road, and Farirbil connecting road can be used as access road for transportation. Pickup, dumper trucks could be used as material transportation</p> |

vehicles. Manual head load from unloading point to different locations can be done.

Location identification for raw material storage:

Best option for raw material storage is any sufficiently available space next to the labor camp or the site office and away from steep slopes. However, this will need to arrange an open field and should be consulted with local communities.

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

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

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

B.3: Construction Phase

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

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, trees alongside the road can be said to be on the ROW. There are some locations on the chainage where small trees might need cutting. 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 Low, due to presence of Palongkhali chorra on south side from the sub-project location. Water could not stagnant during rainy season, so no possibility of encouraging for mosquito breeding ground and 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 one local canal or chorra exist in the sub-project location named Palongkhali khal/chorra and a pond is located beside the sub-project location. But those will not be disturbed or modified during the construction phase.

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:

No.

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

No.

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

Not applicable.

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

There is no possibility of creating new stagnant water bodies that can encourage mosquito breeding and other disease vectors, during the operation phase.

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

Construction or implementation of a road project substantially contributes to the development of the project areas. It surely improves the communication network, reduces the transport time,

increases the trade and business in/around the areas, and ensures access to better living conditions with amenities, better educational and job opportunities and health facilities. Thus, the direct and indirect impacts on economic development in the project areas would be enormous by this sub-project.

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

Existing drainage channels may be affected, if dust generated from frequent vehicle movement deposits on the still water level and any type of slope/soil movement is triggered. These effects are very local and can mostly be avoided by regular periodic maintenance of the road and setting barriers at several strategic points to limit the vehicle speed.

Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development:(High/Medium/Low with description)

Low. Little effects on terrestrial ecosystem are anticipated due to the dust pollution/deposition and vehicular emission, though every ecosystem has some assimilative capacity on its own to lower the associated risks.

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

Vibration effects generated from frequent and speedy movement of heavy vehicles may trigger localized landslides or mass movements, which can be avoided by placing barriers and speed breakers at different strategic locations on the road.

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

Low. Concentrated outflow will be carried by proposed drains and culvert.

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

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

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

Section D: Environmental Screening Summary

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|------------------------------|----------------------------|--|---|---|--|--|
| | | | | | Indicator | Frequency |
| 1: Sub-Project Interventions | Air quality | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> Limiting earthworks; Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> Location of stockpiles; Number of complaints from stakeholders; Covering of trucks; Records of air quality inspection | Visual monitoring of air quality and if requires, air quality test (CO, PM _{2.5,10}) once in construction period in winter season. |
| | Soil impacts | Under the sub-project intervention the overall score is low . | <ul style="list-style-type: none"> Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. Channels, earth bunds, netting, tarpaulin and or sand bag barriers | Construction Contractor monitored by Consultant and PIU | <ul style="list-style-type: none"> No visible degradation to nearby drainages, <i>khals</i> or water bodies due to soil erosion. Rain storms in construction phase. | Monitoring on weekly basis. |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|---|---|---|---|
| | | | | | Indicator | Frequency |
| | | | <p>shall be used on site to manage surface water runoff and minimize erosion.</p> <ul style="list-style-type: none"> The overall slope of the work areas and construction yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. Cut-and-fill operations on the hill slope and slope stabilization shall be carried out step by step following proper operational procedures. | | | |
| | Hydrology (surface and groundwater) | Under the subproject intervention the overall score is low . | <ul style="list-style-type: none"> All precautions to store chemicals/oil/fuel properly so that no chance of spill. Workers must specify waste dump locations to avoid littering which in turn might negatively affect surface and ground water. Monitor water quality according to the environmental management plan. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Areas for stockpiles, storage of fuels and lubricants and waste materials; Records of water quality inspection; Water Quality Test (National Drinking Water Quality Standard Parameters)if requires; No visible degradation to | Water quality test (mainly GW) twice during the construction period in six months interval. |

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

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

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|-----------------------------|--|--|---|---|---|
| | | | | | Indicator | Frequency |
| | and landslides) | | toe of the road embankment remain within the right of way and does not disturb the crop. | | | |
| | Storage of materials | Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is low . | <p>With the assistance from site management committee in Camp/respective E-I-C to identify the storage site and other requirements, which will be approved by PIU and consultants. However, following sets of requirements shall be taken into consideration:</p> <ul style="list-style-type: none"> Storage area will be sufficiently spacious so that unloading works can be performed inside the area and materials must not be rest on road side, near the water bodies, or trees and bushes, and will not be located in any crowded place. Storage area must be well fenced with guard posted at the entrance and at least 30 m distant from any water bodies. Construction materials must not interrupt land contours, natural drainage pattern, and create | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> List of materials and sources of materials; Storage areas for materials and equipment. | Monthly basis during implementation phase, as necessary through the discussion with PIU, Consultant |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|---|---|--|---|--|---|
| | | | | | Indicator | Frequency |
| | | | <p>water logging or depression.</p> <ul style="list-style-type: none"> Cement, sand, reinforced bars, stone chips, aggregates etc. must be covered with tarpaulins, and end of reinforced bars will be capped with plastic caps or covered with sacks/clothes to avoid any health injury. Chemicals and hazardous materials including oil, grease, bitumen, etc. shall be kept in a Cement concrete bunded area or on wooden stage covered with polythene/tarpaulin. | | | |
| | Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity) | Under the sub-project intervention, the overall score is low . | <ul style="list-style-type: none"> If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna. | Contractor, environmental specialist of D&S. | <ul style="list-style-type: none"> Complaints from community | Daily |
| | Noise pollution | Under the subproject intervention the overall score is | <ul style="list-style-type: none"> Consultation with affected people; not to operate noisy equipment during working period; No noisy work after 5.00 pm. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> Number of complaints from stakeholders; Use of silencers in | Inspection by PIU and supervision consultants on monthly basis; |

| Section | Main Environmental Impacts | Impact Significance* | Suggested Mitigation Measures | Person/Institution Responsible | Monitoring Suggestions | |
|---------|----------------------------------|--|--|---|--|--|
| | | | | | Indicator | Frequency |
| | | low. | <ul style="list-style-type: none"> • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per ESMP. | | noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB), if required. | |
| | Air pollution | Under the subproject intervention the overall score is low. | <ul style="list-style-type: none"> • Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph. | Construction Contractor and monitored by Consultant and PIU | <ul style="list-style-type: none"> • Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection. | Visual observation and monitoring of air quality during construction period. |
| | Road Safety and Accidents | Under the subproject intervention the overall score is low. | <ul style="list-style-type: none"> • Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, | Construction Contractor, environmental specialist of D&SC. | <ul style="list-style-type: none"> • Complaints from communities, pedestrians | Day basis during work time |

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

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

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

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

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

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

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

ESMP for Access and evacuation Roads: Baditala Road Id: 422945102

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

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

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

| Project Stage | Potential Environmental & Social Impacts/Issues | Proposed Mitigation Measures | Institutional Responsibilities | Supervision Responsibility |
|-----------------------|--|--|---------------------------------------|---|
| | | <p>water from existing surface water sources shall be taken.</p> <ul style="list-style-type: none"> • If ground water is withdrawn, adequate approvals from the appropriate department need to be collected before setting up bore wells. • Any type of consent letter or agreement for withdrawing water from either surface or underground sources will be kept on site. • Local community must be consulted before any construction works starts. | | Specialist and Gender Specialist of PIU, PSC |
| Construction Activity | Increase in road accidents | <ul style="list-style-type: none"> • Maintain safety measures during the movement of heavy machinery and equipment. • Local community will be trained up on traffic management and awareness. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Labour Base Camp: Conflicts with the local residents | <ul style="list-style-type: none"> • Awareness building session will be undertaken about prevention of child abuse, child marriage, GBV, sexual harassment, trafficking of women and children as well as illegal drug trade. Written records of this awareness building session shall be kept on site. • Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling. • Adequate facilities ensuring sanitation for labour camps will be put in place. • Treated water will be made available at site for drinking purpose. | Contractor | Social Development Specialist and Gender Specialist of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------------|--|--|--|---|
| | | <ul style="list-style-type: none"> Adequate accommodation arrangements for labour forces. Labor code of conduct is to be disclosed through consultation. | | |
| Construction Activity | Waste Management: Improper management and handling of hazardous and non-hazardous waste during construction. | <p>Preparation of a waste management plan covering the following aspects:</p> <ul style="list-style-type: none"> Residual waste from the temporary accommodation facilities Waste and from equipment maintenance/vehicles on-site Wastes after completion of construction works. So, recycling process is not applicable. Proper consents for hazardous waste management. | Contractor | Environmental Consultant of PIU, PSC |
| Construction Activity | Slipping of soil masses, dust deposition, draining or spillage of chemicals/contaminants, etc. to nearby water bodies | <ul style="list-style-type: none"> 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 | <p>Health & Safety Risks:</p> <ul style="list-style-type: none"> The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile | <ul style="list-style-type: none"> All construction equipment will be properly inspected timely. The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. Preparation of proper walkways and clearly | PIU & Contractor | Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|----------------------|---|--|---------------------------------------|-----------------------------------|
| | <p>plant and vehicles, and electrical shocks.</p> <ul style="list-style-type: none"> 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. | <p>designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting.</p> <ul style="list-style-type: none"> 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 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 | | |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|-----------------------|---|--|---------------------------------------|--|
| | | <p>be provided that are suitable and can do the works.</p> <ul style="list-style-type: none"> 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. | | |
| Construction activity | Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna | <ul style="list-style-type: none"> Preventative maintenance schedule should be followed. Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and | PIU | Environmental Consultant of PIU, PSC. Union Member |

| <i>Project Stage</i> | <i>Potential Environmental & Social Impacts/Issues</i> | <i>Proposed Mitigation Measures</i> | <i>Institutional Responsibilities</i> | <i>Supervision Responsibility</i> |
|---|--|--|--|--|
| | | generating nutrient rich compost soil over time. | | |
| Construction activity (site clearance after the construction) | Demobilization of structures, facilities and equipment used during the project implementation period (including site clearance and restoration after the construction). The impacts are similar to those listed in construction stage: ✓ Pollution from waste materials ✓ Health & Safety risks to workers and local community | <ul style="list-style-type: none"> Contractor must prepare a demolition and waste management plan including relevant directives from “Waste Management Plan Principles” given hereunder. | PIU / Contractor | Environmental Consultant of PIU, and Executive Engineer of Cox’s Bazar |
| Operation & Maintenance | Noise disturbances to fauna | <ul style="list-style-type: none"> Provision to maintain noise and vibration from the operation and maintenance of machinery and equipment by proper monitoring and measures. Provision to take necessary lighting, caution for the works and necessary maintenance should be done in day light. | UE-LGED (under the direct guidance of Executive Engineer, Cox’s Bazar) | PSC. UNO |

Waste Management Plan Principles:

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

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

- The quantity of waste materials shall be minimized by 3R (Reduce, Recycle and Reuse) approach and wastes shall be segregated accordingly, wherever practical; and stored in designated places/facilities in the site.
- Labor camp and construction site shall be maintained in a cleaner, tidy and safe condition, and appropriate facilities shall be provided and maintained as temporary storage of all wastes before transportation and final disposal. Waste, irrespective of types, shall not be stored/ piled up in the middle of the road or on such a place which may obstruct traffic movement or water runoff or might be a source of an accident or public nuisance.
- Hazardous waste viz. waste oil etc. will be collected and stored in a paved and bounded area and subsequently sold to authorized recyclers.
- Parts of construction debris (from demolishing of labor camp and toilets in the post-construction phase) can be recycled as filling materials on the ground or be sold for use as sub-base material or driveway bedding.
- All wastes generated during construction shall be disposed off in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, so as to cause less environmental impact.
- Soil contaminated with bitumen or petroleum/engine oil shall be removed from the site and stored in a specific place, and later disposed off in a designated dumping area. Careful handling of these hazardous substances in the site shall be maintained and supervised by the contractor.
- Organic wastes produced in the campsite during the construction period shall be collected and transported in vehicles covered with tarps or nets to prevent spilling waste along the route to the designated disposal site;
- Burning of any type of wastes in a labor camp or construction site shall be prohibited completely.

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Appendix-3: Cost of Environmental Enhancement Works in BOQ

In consideration to the above mentioned environmental impacts and their mitigation measures for this sub-project, the following items are included in the BOQ of this sub-project. Here should be noted that, parts of environmental management and enhancement works including construction and maintenance of alternative passage (and removal during post-construction period), drainage structures, slope protection measures, road safety measures, etc. are included in physical works and shown in the respective parts of BoQs, and therefore are not repeated here.

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|---|--------------|----------------------|--------------|
| 1. | <u>Grass Turfing</u> Turfing on embankment top and slope & any critical place with good quality turf supplied by the contractor of not less than 225mm square in dimension including placing and watering till grass is fully grown, etc. all complete as per direction of E.I.C. (Payment to be made only when grass is fully grown) | 5,025.0 Sq.m | @38.15 Tk. Per sqm | 191,703.75 |
| 2. | <u>Dust suppression measures</u> Dust suppression measures like water sprinkling on aggregates/unpaved roads, in and around the work site and as per direction of E-I-C | 1675.0m | @ 2.56 BDT | 4,288.0 |
| 3. | <u>Water Supply and Sanitation</u> Providing and maintaining adequate portable water supply, sanitation, cleanliness facilities at camp site and work site to the entire satisfaction of Engineer-in-charge. Temporary Toilet: Construction of temporary toilets in work site/ rest area complete as per design and specifications and approved by the Engineer-in-Charge. There should be 1 camp in each site. In each camp, there should be 1 no of toilet for women and 1 no of toilet for men. | 2 nos. | @12822.86 per toilet | 25,645.72 |
| 4. | <u>First Aid Box</u> Supplying, equipping and maintaining adequate first-aid box throughout the working period at worksite and site office, and erect conspicuous notice boards directing where these are situated and providing all requisite emergency medical first aid kits, including complying with | 1 no. | LS @5000 Tk. Per box | 5,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|--|----------|-----------------|--------------|
| | the government medical or labour requirements at all times, and provide, equip and maintain necessary dressing kits throughout the working period for attending minor injuries, etc. all complete as per requirement and full satisfaction of Engineer-in-charge. | | | |
| 5. | <u>Drinking Water Facilities</u> Providing continuous adequate drinking water supply at worksite and site office as well by installing necessary tube-well/s where applicable or any other means depending on local situation, also providing essential arrangement for storing drinking water by supplying portable best quality water tank equivalent to Gazi/Padma of adequate capacity depending on the number of users, including supplying 1 (one) no. best quality water filter of minimum capacity 30 liters with necessary kits, etc. all complete as per satisfaction and direction of the Engineer-in-charge. | 2 no. | LS @ Tk. 30,000 | 60,000 |
| 6. | <u>Traffic Management</u> Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for users, providing a safe working area for those involved in work on trafficked network and minimizing any disruption to smooth flow of traffic (this includes providing necessary barricades, warning signs/lights, guide signs, flagmen, maintaining diversion roads by cutting, filling, constructing, etc. or by any other means) in accordance with the full satisfaction of the Engineering-in-charge. | 1 no. | LS @ Tk. 15,000 | 15,000 |
| 7. | <u>Personal Protection Equipment for Workers</u> Providing and maintaining appropriate (safe design, fit and comfort) personal protection equipment (PPE) to ensure the highest possible protection for employees in establishing and maintaining a safe and healthful working environment at workplace, including demonstrating, providing training on proper understanding and development of skill in the use of PPE, including supplying (i) best quality safety jacket, (ii) suitable hand protection gloves, (iii) appropriate foot protection shoes, (iv) best quality safety helmets, face shields, ear muffs etc. (v) suitable eye protection goggles | LS | LS @ Tk 30,000 | 30,000 |

| Sl no. | Description of item | Quantity | Unit price | Total amount |
|--------|--|----------|-----------------|--------------|
| 8. | <u>Tree plantation</u> Tree plantation to compensate the felled down trees and enhance the ecological condition in the subproject area- preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Kathbadam, Chalta, Krisnachura, Bokul, Jarul, Polash, Kadom, Shimul, Neem, Arjun, Amloki, Horitoki, Bohera, Mahogany, Palm Tree, Chambal, Rain Tree, Shil koroj, Satim, Sishu (including protection, fencing and conservation during project defect liability period): Preferably at both sides of Road where space is available (fencing as per LGED rate schedule 5.26.14) (Contractors will also be instructed by the consultant and PIU prior to the tree plantation work) at an interval of 10 feet. | 150 nos. | @ Tk. 1000 | 150,000 |
| 9. | <u>Motivation training</u> Motivation training (twice: before and after construction start) of the Upazila Engineer 'sand Contractor's representatives on safety practice and as per direction of the E.I.C. | 1 no. | LS @ Tk. 10,000 | 10,000 |
| 10. | <u>Waste disposal facility</u> Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 11. | <u>Water Test (Drinking Water samples)</u> Water samples are to be collected periodically (half yearly) from the tube well at labor shed area for laboratory analysis of different parameters such as pH, arsenic, iron, chloride, hardness, total dissolved solids, nitrate, nitrite, coliform, electrical conductivity etc. all complete as per direction of E.I.C. (including the cost of actual fees for testing from reputed laboratory and report) as desired by E.I.C. | LS | @ Tk. 5000 | 5,000 |
| 12. | <u>Working labour shed:</u> Construction of Labor shed (Size: 30'x20') with C.I sheet Roofing, Tarza fencing and brick soling floor as per requirement and direction of the E-I-C. | 1 no. | LS @ Tk. 30,000 | 30,000 |

| SI no. | Description of item | Quantity | Unit price | Total amount |
|--|--|----------|---|-------------------|
| 13. | <u>Environmental management</u> Environmental management costs of the Environment & Social/ Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C. <u>[One person to be appointed for W24(3), W24(5) & W24(6)]</u> so one-third of the personnel cost is counted here. 1 | 1 person | Monthly basis @Tk. 35,000.00 for 12 months. One person covering 3 roads i.e. 35,000Tk.*12 months*(1/3 one road). (Net payment excluding Tax & VAT). | 140,000 |
| Subtotal Bill for Environmental Mitigation and Enhancement Work (BDT) | | | | 671,637.47 |

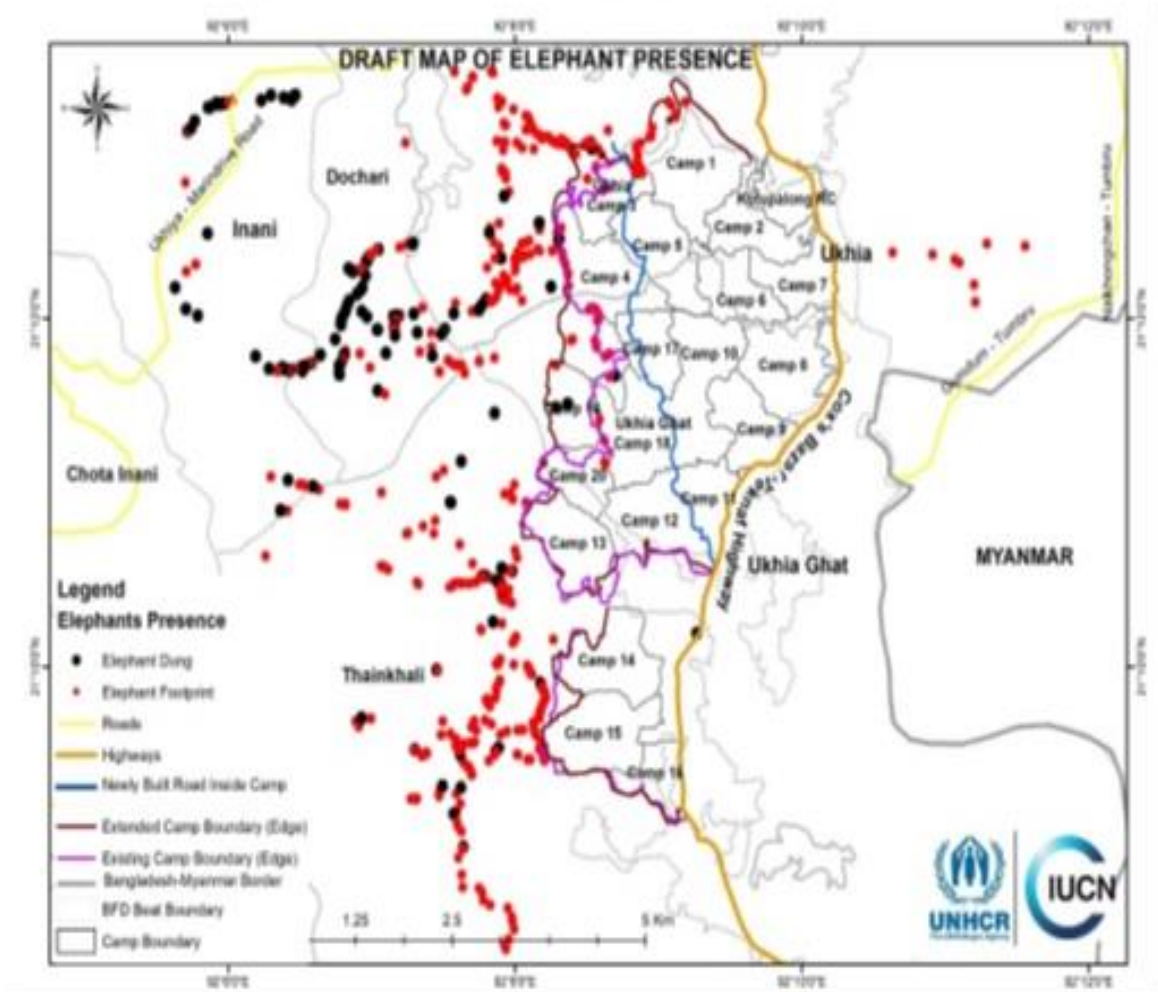
Cost of H&S Measures under COVID 19 Situations

Considering the emerged situation, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites. The cost is estimated counting 34 workers for 270 active working days (9 months in a year) in a contract period for one site under this package (EMCRP/W-24.6).

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|--------------|----------------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 1. | Non-Contact IR Digital Thermometer | 01 nos. in each site | N/A | N/A | 5,000.00 | 1 | 5,000.00 | Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site |
| 2. | Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply) | 01 nos. in each site | N/A | 01 nos. in each camp | 10,000.00 | 2 | 20,000.00 | Wash basin to be installed at favorable locations immediately after the entrance to the facility |
| 3. | Trash bin (covered)/Paddle Bin | 01 nos. in each site | N/A | 01 nos. in each camp | 550.00 | 2 | 1,100.00 | |
| 4. | Bar Soaps (150 gm each) | 92 | | 115 | 50.00 | 207 | 10,350.00 | To be placed in a case/holder on the basin, for washing hands for max. 39 people a day and showering of 34 workers in each labor camp. |
| 5. | Hand Sanitizer (2 nos. 250 ml bottle and 5 liter Can for Refill) | 2 bottles and 1 Can for each site | N/A | N/A | 4,000.00 | 1 | 4,000.00 | 2 bottles and a 5 litre can for each Site office |
| 6. | Face Shield/ Protective Safety Goggles | 22 nos. for each site | | N/A | 400.00 | 22 | 8,800.00 | For labors who work in close contact, 22 in each site |

| Sl. No. | Description of Item | Number of items to be used/kept at | | | Unit Cost (BDT.) | No. of items | Total Cost/ Price (BDT.) | Remarks/ Justification |
|---------|--|------------------------------------|-----------------------------|------------|------------------|--------------|--------------------------|--|
| | | Site Office | Working Site | Labor Camp | | | | |
| 7. | One time Mask (Disposable) for Contractors' Staffs | 5 nos. each day in each site | | N/A | 12.00 | 1350 | 16,200.00 | Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead. |
| 8. | Cloth mask for Workers | N/A | 34 nos. for each labor camp | | 35.00 | 612 | 21,400.00 | A worker will use a mask for 15 days with everyday washing |
| 9. | Floor Cleaner (1 litre Can) | 1.5 Can | N/A | 4 Can | 250.00 | 5.5 | 1,375.00 | |
| 10. | Detergent Cleaner | N/A | 1.750 kg in each camp/month | | 400.00 | 15.75 | 6,300.00 | To be used for washing clothes, masks and tools & equipment, etc. |
| 11. | Miscellaneous cost | | | | 20,000.00 | 1 | 20,000.00 | Contingency cost for medical emergency and compensation for workers, subject to proper documentation |
| | Grand Total | | | | | | 114,525.00 | |

Appendix-4: Elephant Presence Map



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

Appendix-5: List of Participants in the Consultation Meeting

EMCRP/W24.6, Road ID No. - 422945102

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

জাতীয় বিধিগত প্রক্রিয়া অনুযায়ী প্রকল্পের জন্য সেতু নির্মাণ

Local Government Engineering Department (LGED)

Public Consultation Participants List

Focus Group Discussion

তারিখ: ১০/১০/২০

সময়: ৯/১০/২০ ২০

উপ-প্রকল্প/অন্য প্রকল্পের নাম: বারিচাঁক সড়ক

যাে বিধিগত প্রক্রিয়া: জাতীয় প্রকল্পের জন্য সেতু নির্মাণ

ইতিমধ্যে: নাম: বারিচাঁক সড়ক

সংখ্যা: ১৭

সংখ্যা: ১৭

| ক্রমিক নং | নাম | বয়স | পেশা/শিক্ষা | জাতীয়তা | স্বাক্ষর / চিত্রিত |
|-----------|--------------------------|------|-------------|-----------|--------------------|
| ০১ | জায়েদ মুন্সীর চাকর | ৪৫ | মুন্সীর | বাংলাদেশি | জায়েদ মুন্সীর |
| ০২ | আব্দুল হামিদ | ২৬ | ৥ | ৥ | আব্দুল হামিদ |
| ০৩ | আব্দুল হামিদ | ৪২ | ৥ | ৥ | আব্দুল হামিদ |
| ০৪ | আব্দুল হামিদ | ২৫ | ৥ | ৥ | আব্দুল হামিদ |
| ০৫ | আব্দুল হামিদ | ৪৫ | ৥ | ৥ | আব্দুল হামিদ |
| ০৬ | আব্দুল হামিদ | ২৬ | ৥ | ৥ | আব্দুল হামিদ |
| ০৭ | আব্দুল হামিদ | ৪৫ | ৥ | ৥ | আব্দুল হামিদ |
| ০৮ | আব্দুল হামিদ | ২০ | ৥ | ৥ | আব্দুল হামিদ |
| ০৯ | আব্দুল হামিদ | ২৬ | ৥ | ৥ | আব্দুল হামিদ |
| ১০ | আব্দুল হামিদ | ৪৫ | ৥ | ৥ | আব্দুল হামিদ |
| ১১ | আব্দুল হামিদ | ২৫ | ৥ | ৥ | আব্দুল হামিদ |
| ১২ | আব্দুল হামিদ | ৪৫ | ৥ | ৥ | আব্দুল হামিদ |
| ১৩ | আব্দুল হামিদ (অবস্থান) - | ৪২ | ৥ | বাংলাদেশি | আব্দুল হামিদ |
| ১৪ | আব্দুল হামিদ | ৪০ | ৥ | বাংলাদেশি | আব্দুল হামিদ |
| ১৫ | আব্দুল হামিদ | ৪০ | ৥ | ৥ | আব্দুল হামিদ |
| ১৬ | আব্দুল হামিদ | ৩৫ | ৥ | ৥ | আব্দুল হামিদ |
| ১৭ | আব্দুল হামিদ | ৩৫ | ৥ | ৥ | আব্দুল হামিদ |
| ১৮ | আব্দুল হামিদ | ২৫ | ৥ | ৥ | আব্দুল হামিদ |
| ১৯ | আব্দুল হামিদ | ৪৫ | ৥ | ৥ | আব্দুল হামিদ |

Public Consultation Participants' List

Appendix-6: Pictorial View of several sections of the proposed site



Existing Surroundings of the Sub-Project Site