Government of the People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Co-operatives
Local Government Engineering Department (LGED)

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

ENVIRONMENTAL SCREENING REPORT

Work Package: EMCRP/W17

Improvement of 7 roads and construction of culverts with side drains in Ukhiya Upazila of Cox's Bazar District.

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Development Design Consultants Ltd.

Contents

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
FDMN	Forcibly Displaced Myanmar National
FGD	Focus Group Discussion
FSM	Faecal Sludge Management
GBV	Gender Based violence
GPS	Government Primary School
GRM	Grievance Redress Mechanism
HBB	Herring Bone Bond
IEFs	Important Environmental Features
ISCG	Inter Sector Coordination Group
IUCN	International Union for Conservation of Nature
IWM	Institute of Water Modeling
LGED	Local Government Engineering Department
PIA	Project Influence Area
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 Band

1. INTRODUCTION

1.1 Project background

An estimated 730,000[1] people of Rohingya community has fled to neighboring Cox's Bazar district of Bangladesh since August 25, 2017 to escape extreme violence in Rakhine State of Myanmar, which caused the total number of Forcibly Displaced Myanmar National (FDMN) in the district to be about 923,033[2]. This huge number of displaced population account for about one-third of the total population of Cox's bazar, a district which was already facing many development challenges and suffering from resource-constrained social service delivery system even before the crisis evolved and the mass exodus of FDMN has worsened the situation further. Almost all of these displaced people are hosted in Ukhiya and Teknaf Upazila of Cox's Bazar, in extremely congested settlements in areas having very minimal access to basic infrastructure and services and is prone to natural disasters. The Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP) has been designed in order to reduce the vulnerability of Forcibly Displaced Myanmar National (FDMN) along with people from the host communities in Teknaf and Ukhiya Upazila under Cox's Bazar District and improve the social service delivery systems to both the communities. This project will follow a sustainable development pathway that is resilient to disaster and climate change effects.

The objective of the Project is to provide greater protection for the FDMN and host communities through:

- Reducing the vulnerability to natural disasters
- Improving social service delivery system and providing better communication facility through physical interventions
- Improving water and sanitation facilities
- Reducing vulnerability to accidental fire
- Provisioning better educational facilities and
- Strengthening and scaling up of GBV prevention services to the FDMN

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

1.2 Elementary information of Work Package Components:

It is imperative to recognize proposed components under Work Package-17 in Ukhiya Upazila of Cox's Bazar district in order to assess and verify its physical settings and interventions according to stipulated screening requisites from WB. Acknowledging this matter, such details are accounted for as given below in Table 1.2.1 along with visual presentation (General Upazila Map) given in Figure 1.4.1. Aerial maps for each sub-project are given in Appendix -5.

Table1.2.1: Basic Featured Information of components [Sources of data: Field survey, 2020: DDC & LGED]

Sl. No.	Component's name under W-17	GPS Coordinates	Distance from Upazila HQ	Union	Ward	Locations under Project Influence area	Existing condition of Road	Proposed Road type	Road dimension(m) (Length X Width) = Footprint (sq.m) *
1.	Panishia BGS Road, id: 422944021	Start 21°16'44" N 92°04'59" E End 26°16'26" N 92°04'22" E	10 km	Jaliapalong	01	West Panishia	HBB, Earthen	Bituminous Carpeting (BC)	(1600m X 4.9m) = 7840 sq.m
2.	Dighirpara Holudia Road, id: 422944023	Start 21.304578 N 92.115370 E End 21.295660 N 92.115572 E	12km	Holdiapalong	06	Middle Holudia, Moulovipara	HBB, Earthen	Bituminous Carpeting (BC)	(1000m X 4.9m) = 4900 sq.m
3.	West Holudia Road, id: 422944025	Start 21.305222 N 92.111718 E End 21.295513 N 92.113484 E	10km	Holdiapalong	06	Moricha Patabari, Moulovipara station area.	BFS, Earthen	Bituminous Carpeting (BC)	(1410mX4.9m) = 6909 sq.m

4.	Hijolia Horinmara Road, id:422944005	Start 21.2456820 N 92.1135532 E End $21^0$14'04.9" N $92^0$06'41.7" E	03 km	Rajapalong	03	South Horinmara	Earthen Road	Bituminous Carpeting (BC)	(1460mX 4.9m) = 7154 Sq.m
5.	Bottala Dosari Road, id: 422944006	Start 21.2487638 N 92.1255165 E End 21.2386118 N 92.1273347 E	1.5km	Rajapalong	03	Harushia Khalkachapara	Partly Earthen and partly HBB	Bituminous Carpeting (BC)	(1320mX4.9m) = 6468 Sq.m
6.	Badugona to battali Road, id: 422944026	Start 21.2529069 N 92.1384689 E End 21.2386118 N 92.1273347 E	1.5km	Rajapalong	05	Modhom Sikder Bill	Partly Earthen and partly HBB	Bituminous Carpeting (BC)	(1630mX4.9m) = 7987 Sq.m
7.	Jadomora-Horinmara Road, id: 422944038	Start 21.254491 N 92.125251 E *End* 21.2486607 N 92.1158123 E	1.8km	Rajapalong		Jadimora, Horinmara	HBB	Bituminous Carpeting (BC)	(1405mX4.9m) = 6,884.5 sq. m

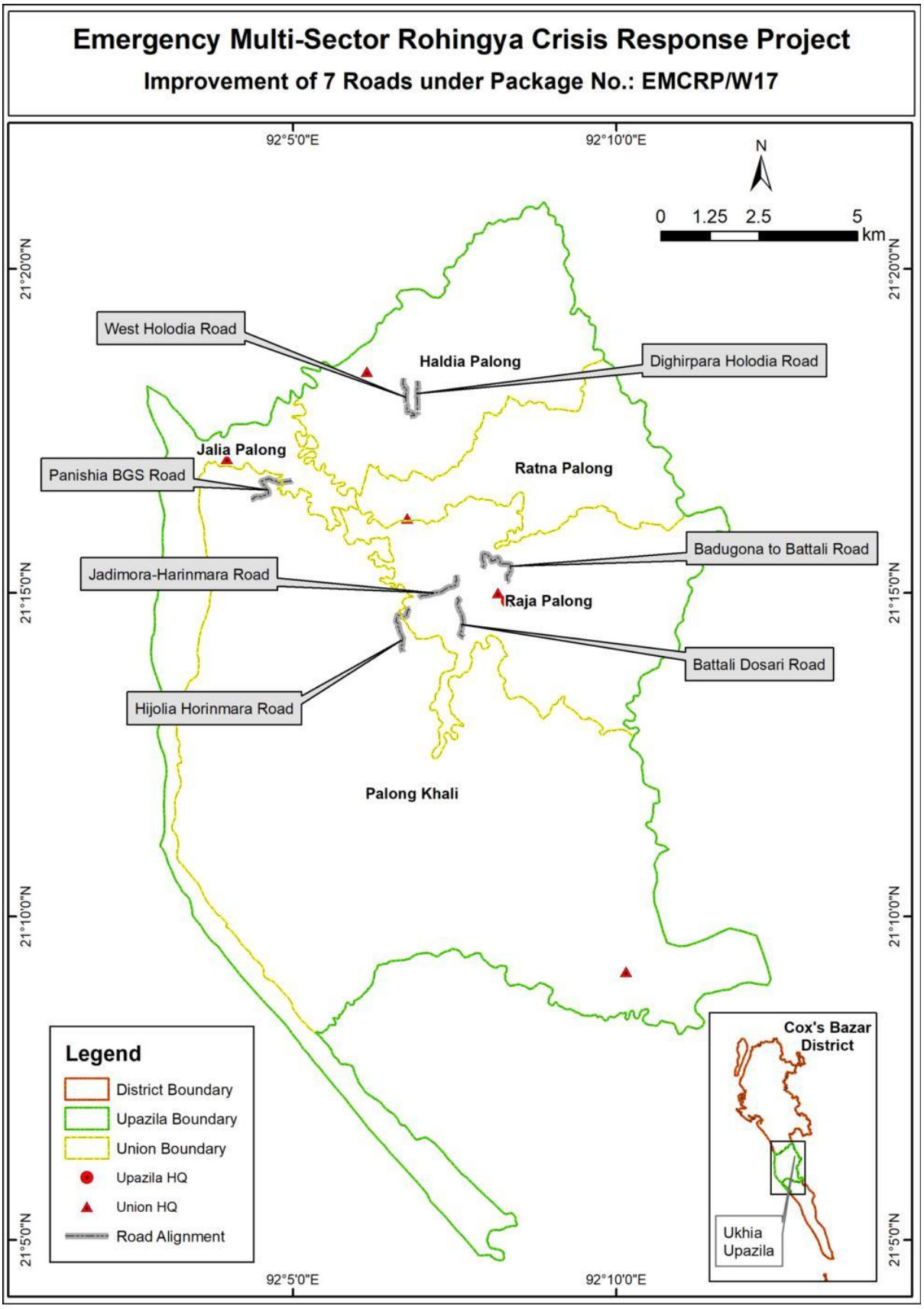


Figure 1.2.1: Map illustrating Roads of Work Package W-17 locations in the Ukhiya Upazila

1.3 Proposed intervention items of sub-projects

The roads under work package 17 have been proposed with specific need base dimensions to accommodate and ensure best quality interventions for local stakeholders and sustaining natural environmental settings. In context of governing environmental circumstances and geo-meteorological conditions, protection work items have been added to construction design for safety and sustainability of each proposed roads. These roads are abutting agriculture fields, vegetable yards and homestead vegetation which are dependent on natural water flow. Hence, construction and improvement works will descent these roads into new circumstances in some parts. These items have been included on the basis of field survey and analysis of these conditions. Please follow the table to acknowledge these items.

Table 1.3.1: Proposed safety interventions of each sub-project

W17-1: Panishia BGS Road, id: 422944021
Construction of **Earth Work**, **Bituminous carpeting** work, 8 no. of **Cross Drain** (Size: .975mmX .975mm), 9 meters of **Protection wall** from Ch: 268m-277m, 1227 meters of **L-Drain** at different chainage, 02 numbers of **Box Culvert** (2.0m x2.0m) at different chainage, 344 meters of **Toe wall** with 1.5m and 2.0m of height, 9 meters of **palisading work**, **Road safety** works, **Environmental enhancement** works.
W17-2: Dighirpara Holudia Road, id: 422944023
8 no. of **Cross Drain** (Size: .975mmX .975mm), 54 meters of **Palisading work** at different chainage, 82 meters of **L-Drain** at different chainage, 01 number of **Box Culvert** (2.0m x2.0m), 26 meters of **Retention wall** and 01 **culvert**. **Road safety** works, **Environmental enhancement** works.
W17-3: West Holudia Road, id: 422944025
5 no. of **Cross Drain** (Size: .975mmX .975mm), 67 meters of **Protection wall** from Ch: 383m-450m, 238 meters of **L-Drain** at different chainage, 02 numbers of **Box Culvert** (2.0m x2.0m) at different chainage, 103 meters of **Toe wall**, 132m **RCC Protection wall**, 199 meters of **palisading work**. **Road safety** works, **Environmental enhancement** works.
W17-4: Hijolia Horinmara Road, id:422944005
Proposed safety structures are 02 no. of **Cross Drain** (Size: .975mmX .975mm), 1043 meters of **Palisading work** at different chainage, 687 meters of **L-Drain** at different chainage, 02 numbers of **Box Culvert** (4.5m x3.5m),35 meters of **Toe wall**, 94 meters of Retention wall and 101-meter **RCC U-drain. Road safety** works, **Environmental enhancement** works.
W17-5: Bottala Dosari Road, id: 422944006
01 no. of **Cross Drain** (Size: .975mmX .975mm), 131 meters of **Toe Wall**, 03 numbers of **Box Culvert** and 54 meters of **Retention wall, Road safety** works, **Environmental enhancement** works.
W17-6: Badugona to battali Road, id 422944026
05 no. of **Cross Drain** (Size: .975mmX .975mm), 151 meters of **Toe Wall**, 04 numbers of **Box Culvert**,262 meters of **palisading wall**, 96 meters of **L-drain**, 17 meters of **RCC U-drain** and 10 meters of **Retention wall.**
W17-7: Jadomora-Horinmara Road, id: 422944038
01 no. of **Cross Drain** (Size: .975mmX .975mm), 77 meters of **Toe Wall**, 02 numbers of **Box Culvert**, 105 meters of **palisading wall**, and 158 meters of **Retention wall**.

2. PUBLIC CONSULTATION, PARTICIPATION AND SURVEY FINDINGS

2.1 Methodology

Public participation and community consultation have been taken up as an integral part of environmental assessment process of the project. As part of the impact assessment, participatory public consultation was conducted in areas of concern for proposed roads by the field level staffs and consultants from PIU and D&SC. The consultation meeting was attended by disparate social groups representing local habitants of different age groups, social class and occupations. In some cases, IUCN employees in charge of elephant watch tower were present where frequent elephant movements occur. The participants were also selected from different segments of stakeholders, and some of whom will have major active roles before, during and even after the construction works. Therefore, the meeting was organized in an informed, expressive and unbiased manner, wherefrom different views and concerns came across which will be properly taken care of during the design and construction phases. In order to serve the screening process, relevant items were thrown towards the audience to discuss and troubleshoot confusing or worrying matters regarding the proposed interventions under the proposed package work. Impacts in regards to environment and socio-economic matters during pre-construction, construction and post construction phase have been put forth. Possible mitigation measures and relevant needs have turned out during these sessions as well. Moreover, their comprehension as a stakeholder has been up lifted in light of project guidelines.

However, public consultation is a living process as the types of problems/ difficulties, involved parties or stakeholders and mode of settlement or resolution processes are more likely to 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.

All components under the work package have been put through review for locating impediments or possible adversity affecting future environment and socio-economic conditions. In order to comprehend surrounding features and impacts which may stipulate with it, screening has been acknowledged considering a Project Influence Area (PIA) of 0.5-kilometer radius, with specific items to be dealt with particular care and considered distinctively. Sensitive findings have been identified if any, and relevant mitigation or minimization measures were suggested to subdue such complication or impacts for over the project life span. Moreover, evaluation was inspired to enhance environmental features and include monitoring initiatives under ESMP budget to ensure exertion of environmental improvement propositions. Contractor's responsibility has been taken into account while identifying possible impacts through sets of intervention accounts. These steps have been initiated strictly following ESMF guidelines and requirements. Environmental screening procedure was motivated by ingredients highlighted in Appendix-2 of ESMF. During survey, detail chainage length of the sub-projects was taken into account for detailing environmental and socio-cultural features within 100 meters buffer zone of both Left and Right side from the center line of the road. Longitudinal intervals of 300 meters have helped to identify positions of located features. These findings are illustrated in Annexure-01.

2.2 Important features/establishments around the PIA

Initial screening process is conducted through direct involvement of PIU and D&SC in the influence area of the proposed component, which allows to raise significant questions and ideas towards participants. In combination of both field walk-through and inputs of audience, a register of existing features is formed. Allow the following table to describe such elements in all the work package components.

Table-2.2.1: Important features under Project Influence Area

Sl. No.	Component's name under W-17	Direction	Important features/ establishment (approx. distance from the proposed site)
1.	Panishia BGS Road, id: 422944021	North	Jaliapalong Forest office (500m), Jaliapalong baitun nur jame mosque/graveyard/hafezkhana(1km), Jaliapalong kasim Market(200m)
		South	West painnashia children graveyard (50m), Abdur Rahman Bodi GPS (20m), Chakkata baitun Nur jame mosque (100m)
		East	Modhom Painnashia Graveyard(500m), west painnashia mosque(30m)
		West	West painnashia Chakkata Panjekhana(10m), Chakkata Central mosque(10m)
2.	Dighirpara Holudia Road, id: 422944023	North	Shaher kobira Jame Mosque and Talimul Quran Nurani Madrassa(500m), Middle Holudia Bagula Market (10m)
		South	Holudia Khal(50m), Moulovipara Jame Mosque/ Graveyard (100m)
		East	Middle Holudia Dighirpar Jame Mosque/ madrassa (15m), Mouluvipara Islamia Ibtedayi Madrassa(100m), Pond (30m)
		West	Shabek Rumkha GPS (800m), West holudia GPS(400m), Pond (50m)
3.	West Holudia Road, id: 422944025	North	West Holudia Rajpoth Graveyard(250m), Mondolia Chora(500m), West Holudia GPS (300m)
		South	Holudia khal(60m), Moulovipara station (50m), Hatirghona GPS(1km), Hatirghona station(1km)
		East	Modhom Holudia Dighi (400m), Dokkhin Holdia GPS (300m), Ghatirpara Community clinic(500m), Moulovipara Islamia Ibtadia Madrassa/Graveyard(300m)
		West	Uchen Ali Miaji Jame Mosque/ Graveyard(200m), West holudia Paddo Pond(500m), West Holudia Poddopukur Jame Mosque/ Nurani Madrassa(300m), Ajunir Pukur/Pond(300m), Shabek Rumkha GPS (500m), West Holudia Budho Shoshan(800m)
4.	Hijolia Horinmara Road, id:422944005	North	Horinmara GPS (700m), Mosque (700m)
		South	Nurani madrasa/ hefjokhana (800m)
		East	Madrassa tun Nur (500m)
		West	Horinmara Mosque(15m)

Sl. No.	Component's name under W-17	Direction	Important features/ establishment (approx. distance from the proposed site)
5.	Bottala Dosari Road, id: 422944006	North	Kumarpara GPS(1km)
		South	N/A
		East	Dhushori Mosque(30m)
		West	Khoiratipara talimul Quran Madrassa/Mosque (80m), Khoirati GPS (50m)
6.	Badugona to battali Road, id: 422944026	North	Rubber Dam (500m), Sikder Bill Jame Mosque (1km), Moulovipara Jame Mosque(1km), Sikder Bill GPS (500m)
		South	Jamtoli Tahfizul Quran Hafizia Madrassa (30m), Fire Service Office (200m)
		East	Madrassa tun Nur (500m)
		West	Upazila Health Complex(500m)
7.	Jadomora-Horinmara Road, id: 422944038	North	Jadimura Buddhist temple at northeast side (60m), Raja palong madrasa and jame mosque (180m), Rajapalong primary school (100m), Rajapalongb high school (150m)
		South	Harashiya jame masque (5m), Khairatipara jame mosque (500m), A graveyard (300m), A khal crossed at 617m chainage at south, A stressed of khal is passing at 484m chainage to 600m chainage at south.
		East	Upazila health complex at northeast site (300m)
		West	Harinmara Govt. Primary school (50m)

2.3 Issues and Recommendations raised by the Participants in regards to component interventions

After facilitating the consultation sessions with a warm and informed manner at different places in the package areas, the participants and stakeholders drifted delightfully with the sessions and pointed out many issues and suggestions which were taken into account for further inclusion in design, estimation and formulation of ESMP. During the period of consultation, 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. 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. Participants were also informed of the structure and redressing procedure under project Grievance Redress Mechanism (GRM). Some key issues discussed in these parts of assessment are tabulated below to recognize participants' inputs arranged in relevance with each individual components of the sub-project. Consultation meeting summary, attendance sheets and pictures of separate meetings with proposed location for each sub-project component can be found in Table 2.3.2 and Annexure-02 and Annexure-03 respectively.

Table 2.3.1: Issues and Recommendations raised by the Participants

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
1.	W17-1: Panishia BGS Road, id: 422944021	•The participants are very much concerned with the absence of reliable path route in west painnashia area. • In case of emergency conditions even the ambulance services cannot reach these locations. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. •Elephant movement is not present. •Local community wish to have a better drainage system along with the road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable farming. •The participants have expressed their greater interest for this intervention and believe this will bring nothing but prosperity for the entire catchment dwellers.	•Local people considered that the selected site is suitable for the construction of this road from both the technical and social-environmental (direct savings in the cost of operating vehicles, time savings by travellers and freight, less accident rates, better road condition - waterproof, dust free, and much more durable) point of view. It will provide better mobility and access to services in the area. •The road should consider water flow during rainy seasons in order to ensure that the construction is not affected by mass water flow. •Wider pathway is expected for vehicle movement so that easy and comfortable travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during work periods. •They suggested for tree plantation initiatives. •They also requested to involve the local community to construction work and they will welcome any outside key labor. •During construction period, alternate route to pass through this area is available. •Since the road is passing alongside homestead gardens and agriculture fields, the

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		•Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road. • Available pathway to usher material delivering vehicles. • Labor shed availability in the target location. • Identification of material storage.	intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality safer for the people living in the area and the passersby. • Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. •On the south of the selected site, labor shed and material storage can be arranged in open fields. • An earthen road called west painnashia connecting road is available for access
2.	W17-2: Dighirpara Holudia Road, id: 422944023	•Lack of proper and strong road keeps motor vehicles from accessing these locations. • In case of emergency conditions such as ambulance services cannot reach these locations. • Heavy transports are prone to accidents due to bad road conditions. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. •Elephant movement is not present. •Local community wish to have a better drainage system along with the road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable farming. •The participants have expressed their greater interest for this intervention and believes this will bring nothing but prosperity for the entire catchment dwellers.	•Local people considered that the selected site is suitable for the construction of this road from both the technical and socio-environmental (direct savings in the cost of operating vehicles, time savings by travellers and freight, wider effects can less accident rates, this road is waterproof and also dust free, much more durable) point of view. It will provide better mobility and access to services in due time. •The road should consider water flow during rainy seasons thereby ensuring the construction is not affected by mass water flow. •Enough pathway is expected for vehicle movement so that comfort travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during work periods. •They considered small lumbering of plants and suggested tree plantation initiatives. •They also requested to involve the local community to construction work and they will welcome any outside key labor. •During construction period, alternate route to pass through this area is available. •Since the road is passing along homestead gardens and agriculture fields, the intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality from

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		•Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road • Available pathway to usher material delivering vehicles • Labor shed availability in the target location • Identification of material storage •The proposed road is to cross Holudia khal which is seasonally streamed with water. Especially in wet seasons.	degrading. •Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. • An earthen road called patabari-moricha connecting road and Sabek Rumkha GPS connecting road is available for access of material delivering vehicles. • Middle Holudia Dighir par has open space which can serve as material storage location and labor shed can be placed here as well. •Intervention should consider necessary preparations and mitigation measures so that this water stream is not restrained in any form.
3.	W17-3: West Holudia Road, id: 422944025	•They are very much concerned with absence of reliable path route in west holudia area. •Lack of proper and strong road keeps motor vehicles from accessing these locations. • In case of emergency conditions such as ambulance services cannot reach these locations. • Heavy transports are prone to accidents due to bad road conditions. •Possible dust and noise pollution during the construction works should be considered. •Safety of children and adults at the sites during construction works. •Elephant movement is not present. •Local community wish to have a better drainage system along with the road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable	•Local people considered that the selected site is suitable for the construction of this road from both the technical and socio-environmental (Direct savings in the cost of operating vehicles, time savings by travellers and freight, wider effects can less accident rates, this road is waterproof and also dust free, much more durable) point of view. It will provide better mobility and access to services in due time. •The road should consider water flow during rainy seasons thereby ensuring the construction is not affected by mass water flow. •Enough pathway is expected for vehicle movement so that comfort travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during work periods. •They considered moderate amount of lumbering and suggested tree plantation initiatives. •They also requested to involve the local community to construction work and they will welcome any outside key labor. •During construction period, alternate route to pass through this area is available. •Since the road is passing alongside homestead gardens and agriculture fields, the

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		farming. •The participants have expressed their greater interest for this intervention and believes this will bring nothing but prosperity for the entire catchment dwellers. •Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road • Available pathway to usher material delivering vehicles • Labor shed availability in the target location • Identification of material storage •The proposed road is to cross Holudia khal which is seasonally streamed with water. Especially in wet seasons. •In some parts of the road there are locations where agriculture fields are over lapping on the existing road (government land)	intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality from degrading. •Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. • An earthen road called kheachori-bhalukia-kutupalong connecting road is available for access of material delivering vehicles. • In west holudia, Open space near Ahmed Rashid's home can be used as labor shed and material storage space. •Intervention should consider necessary preparations and mitigation measures so that this water stream is not restrained in any form.
4.	W17-4: Hijolia horinmara Road (id:422944005)	•They are very much concerned with absence of reliable path route in south Horinmara area. •Lack of proper and strong road keeps motor vehicles from accessing these locations. • In case of emergency conditions such as ambulance services cannot reach these locations. • Heavy transports are prone to accidents due to bad road conditions. •Possible dust and noise pollution during the construction works should be considered. •Safety of children and adults at the sites during construction works. •Elephant movement is not present. •Local community wish to have a better drainage system along with the road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash	•Local people considered that the selected site is suitable for the construction of this road from both the technical and socio-environmental (Direct savings in the cost of operating vehicles, time savings by travellers and freight, wider effects can less accident rates, this road is waterproof and also dust free, much more durable) point of view. It will provide better mobility and access to services in due time. •The road should consider water flow during rainy seasons thereby ensuring the construction is not affected by mass water flow. •Enough pathway is expected for vehicle movement so that comfort travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during work periods. •They considered moderate amount of lumbering and suggested tree plantation initiatives. •They also requested to involve the local community to construction work and they will welcome any outside key labor.

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable farming. •The participants have expressed their greater interest for this intervention and believe this will bring nothing but prosperity for the entire catchment dwellers. •Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road however some trees will fall for this intervention at several locations, around 10 trees. • Available pathway to usher material delivering vehicles • Labor shed availability in the target location was discussed • Identification of material storage was discussed •The proposed road is to cross two small water streams which is seasonally streamed with water. Specially in wet seasons. •In some parts of the road there are locations where agriculture fields are over lapping on the existing road (government land)	•During construction period, alternate route to pass through this area is available. •Since the road is passing alongside homestead gardens and agriculture fields, the intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality from degrading. •Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. • An earthen road to the north of this project site is available for access of material delivering vehicles. •Open space near Horinmara Mosque can be used as labor shed and material storage space. •Intervention should consider necessary preparations and mitigation measures so that this water stream is not restrained in any form. •One shop owner named Ismail has claimed this road will pass over his shop's courtyard. He suggested to make adjustments as needed for the construction work. However, he was unable to show proper documents for that portion of area.
5.	W17-5: Bottala Dosari Road, id: 422944006	•They are very much concerned with absence of reliable path route in Harushia Khalkachapara area. •Lack of proper and strong road keeps motor vehicles from accessing these locations. • Big vehicles cannot use this road such as delivery trucks. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. •Elephant movement was last seen 1 year ago on the west side of ending point of the road where Khoirati GPS is located.	•Local people considered that the selected site is suitable for the construction of this road from both the technical and socio-environmental (Direct savings in the cost of operating vehicles, time savings by travellers and freight, wider effects can less accident rates, this road is waterproof and also dust free, much more durable) point of view. It will provide better mobility and access to services in due time. •The road should consider water flow during rainy seasons thereby ensuring the construction is not affected by mass water flow. •Enough pathway is expected for vehicle movement so that comfort travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		•Local community wish to have a better drainage system along with the road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable farming. •The participants have expressed their greater interest for this intervention and believe this will bring nothing but prosperity for the entire catchment dwellers. •Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road • Available pathway to usher material delivering vehicles • Labor shed availability in the target location • Identification of material storage	work periods. •They considered small lumbering and suggested tree plantation initiatives. •They also requested to involve the local community to construction work and they will welcome any outside key labor. •During construction period, alternate route to pass through this area is available. •Since the road is passing alongside homestead gardens and agriculture fields, the intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality from degrading. •Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. • Area in the target location has an open space to settle material storage and labor shed along the road. •An earthen connecting road coming from south side of the project's end point also called dhusori road is present which is part of the proposed road and available for access
6.	W17-6: Badugona to battali Road, id: 422944026	•They are very much concerned with absence of reliable path route in Modhom Sikder Bill area. •Lack of proper and strong road keeps motor vehicles from accessing these locations. • Big vehicles cannot use this road such as delivery trucks. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. •Elephant movement was last seen 1 year ago on the west side of ending point of the road where Khoirati GPS is located. •Local community wish to have a better drainage system along with the	•Local people considered that the selected site is suitable for the construction of this road from both the technical and socio-environmental (Direct savings in the cost of operating vehicles, time savings by travellers and freight, wider effects can less accident rates, this road is waterproof and also dust free, much more durable) point of view. It will provide better mobility and access to services in due time. •The road should consider water flow during rainy seasons thereby ensuring the construction is not affected by mass water flow. •Enough pathway is expected for vehicle movement so that comfort travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during work periods. •They considered small lumbering and suggested tree plantation initiatives.

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable farming. •The participants have expressed their greater interest for this intervention and believes this will bring nothing but prosperity for the entire catchment dwellers. •Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road • Available pathway to usher material delivering vehicles • Labor shed availability in the target location • Identification of material storage	•They also requested to involve the local community to construction work and they will welcome any outside key labor. •During construction period, alternate route to pass through this area is available. •Since the road is passing alongside homestead gardens and agriculture fields, the intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality from degrading. •Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. • Area in south pukuria is available for material storage and labor shed • A connecting road coming from south side called jamtoli road which connects with Cox'bazar-Teknaf highway is available for material delivery.
7.	W17-7: Jadomora-Horinmara Road, id: 422944038	•They are very much concerned with absence of reliable path route in Jadimora area. •Lack of proper and strong road keeps motor vehicles from accessing these locations. • Big vehicles cannot use this road such as delivery trucks. •Possible dust and noise pollution during the construction works. •Safety of children and adults at the sites during construction works. •Elephant movement not present. •Local community wish to have a better drainage system along with the road in order to allow waters from undulated terrains to find an uninterrupted pathway not causing harm to agriculture fields and wash away top soil of adjacent grounds residing alongside the road. It will protect the top soil for future growth of crops and aid vegetable farming.	•Local people considered that the selected site is suitable for the construction of this road from both the technical and socio-environmental (Direct savings in the cost of operating vehicles, time savings by travellers and freight, wider effects can less accident rates, this road is waterproof and also dust free, much more durable) point of view. It will provide better mobility and access to services in due time. •The road should consider water flow during rainy seasons thereby ensuring the construction is not affected by mass water flow. •Enough pathway is expected for vehicle movement so that comfort travel is achieved. •Construction site safety should be ensured to avoid any mishaps or accidents during work periods. •They considered small lumbering and suggested tree plantation initiatives. •They also requested to involve the local community to construction work and they will welcome any outside key labor. •During construction period, alternate route to pass through this area is available. •Since the road is passing alongside homestead gardens and agriculture fields, the

Sl. No.	Component's name under W-17	Issues raised and discussed	Recommendations and Comments
		•The participants have expressed their greater interest for this intervention and believes this will bring nothing but prosperity for the entire catchment dwellers. •Household fences along the road should not be affected while construction • No trees should be harmed for preparation of this road • Available pathway to usher material delivering vehicles • Labor shed availability in the target location • Identification of material storage	intervention will invite air pollution on moderate level during construction period. However, preventive actions and measures can be taken to keep air quality from degrading. •Women should be given equal priority for job engagement, and their safety should be ensured throughout the engagement period. •They have also ascertained that the selected site is free from any events related to resettlement and major environmental impacts. The adverse environmental impacts that may come in the way of air quality, noise, solid waste, occupational health & safety during the construction period, and will be limiting to short duration, yet proper management/conservative options should be adopted. •An open space is available opposite to Horinmara GPS which can be used for material storage. •A connecting road called Gunarpara road which connects with Cox'bazar-Teknaf highway is available for material delivery on site. •Labor camp can be arranged opposite of horinmara GPS also empty houses are available for rental as well.

Table 2.3.2: Particulars of Consultation Meetings

Road Package Number	*Date DD-MM-YYYY*	*Venue*	*Main Participant Groups*	*No. of Participants*
W17-1	26-01-2020	West Painnashia and Chakkata VIllage	Host Community	19
W17-2	28-01-2020	Middle Holudia, moulovibazar	Host Community	40
W17-3	28-01-2020	West Holudia, Moulovipara	Host Community	19
W17-4	28-01-2020	South Horinmara	Host Community	19

Road Package Number	***Date DD-MM-YYYY***	***Venue***	***Main Participant Groups***	***No. of Participants***
W17-5	30-01-2020	Beside Khoirati GPS	Host Community	13
W17-6	29-01-2020	Modhom Shikder bill	Host Community	17
W17-7	28-01-2020	Rajapalong Madrassa Gate	Host Community	16

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, socio-economic and environmental impacts of the proposed sub-project sites and the influence area in regards to the implementation measures, an extensive field visit was carried out in each proposed sub-project PIA. Environmental Screening form, as adopted in **Appendix 2** of the Environmental and Social Management Framework of EMCRP, was administered for identifying the impacts and their extents. The screening data and information for each sub-project under this work package and details screening summary have been formulated and shown in **Appendix-1.**

3.2 Major Findings

A complete view of current environmental conditions of individual sub-projects in relation to interested queries has been congregated in order to understand the degree of impacts corresponding with marked interventions. Interestingly, most sub-project has correspondence with its surrounding features and upholds interchangeable impacts. However, the degree is not an interchangeable factor since scale is not parallel to each of these components which is where, mitigation measure differentiation is implied. There are some cases where unique circumstances have been met with while environmental screening took place which is also accounted for and should be a matter of concern for other parts of the ESMF initiative. The significant issues observed in each sub-project are enlisted in following Table 3.2.1 with pertaining impacts. Moreover, impacts that are adventitious has also been embraced for promoting best practices.

Table 3.2.1: Concerning environmental issues relating to each proposed subproject and influence area.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
1.	Panishia BGS Road, id: 422944021	It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area neither to important environmental features.
		Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.
		No agriculture, fish farming and significant vegetation coverage is located in the ROW nor does it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Few amounts of bush (sapling) will be cut down during construction phase at different chainage.	No severe damage will occur or damage to habitat will be faced. It can be managed by introducing small plantation incentives around the proposed location.
		Elephant Movement is not present in the vicinity of the subproject location.	No impact is expected
		No heavy earth excavation work will be involved.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety initiatives.	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).
		Vibration effects generated from pilling, drilling or other construction works	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.
		Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including Modhom Painnashia Graveyard (500m), west painnashia mosque (30m) to the east. West painnashia children graveyard (50m), Abdur Rahman Bodi GPS(20m), Chakkata baitun Nur jame mosque (100m) to the south. West painnashia Chakkata Panjekhana (10m), Chakkata Central mosque(10m) to the west. Jaliapalong Forest office (500m), Jaliapalong baitun nur jame mosque/graveyard/hafezkhana (1km), Jaliapalong kasim Market (200m) to the north.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.
2.	Dighirpara Holudia Road, id: 422944023	It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area neither to important environmental features.
		Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.
		No agriculture, fish farming and significant vegetation coverage is located in the ROW nor does it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Few amounts of bush (sapling) will be cut down during the construction phase at different chainage.	No severe damage will occur or damage to habitat will be faced. It can be managed by introducing small plantation incentives around the proposed location.
		Elephant Movement is not present in the vicinity of the subproject location.	No impact is expected here
		No heavy earth excavation work will be involved.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place.
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety initiatives.	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).
		Vibration effects generated from pilling, drilling or other construction works	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.
		Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including Shaher kobira Jame Mosque and Talimul Quran Nurani Madrassa(500m), Middle Holudia Bagula Market (10m) to the North. Shabek Rumkha GPS (800m), West holudia GPS (400m) and a pond (50m) to the West. Middle Holudia Dighirpar Jame Mosque/ madrassa (15m), Mouluvipara Islamia Ibtedayi Madrassa (100m) and a pond (30m) to the East. Holudia Khal(50m), Moulovipara Jame Mosque/ Graveyard (100m) to the south.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.
3.		It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
			neither to important environmental features.
	West Holudia Road, id: 422944025	Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.
		Some, Agriculture fields falls over the road however these over lapping areas are government land. Other than this, no fish farming and significant vegetation coverage is located in the ROW nor does it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Moderate amounts of bush (sapling) clearings may need cutting at different chainage.	Low amount of damage to habitats might occur. It can be managed by introducing small plantation incentives around the proposed location.
		Elephant Movement is not present in the vicinity of the subproject location.	No impact is expected
		Earth excavation work will be involved in small scale on the different part of the chainage, specially where Holudia khal is present.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Both Solid and Liquid waste will be produced.
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety	During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		initiatives.	solid waste and sewage).
		Vibration effects generated from pilling, drilling or other construction works	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.
		Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including West Holudia Rajpoth Graveyard(250m), Mondolia Chora(500m), West hHoludia GPS (300m) to the North. Uchen Ali Miaji Jame Mosque/ Graveyard(200m), West holudia Paddo Pond(500m), West Holudia Poddopukur Jame Mosque/ Nurani Madrassa(300m), Ajunir Pukur/Pond(300m), Shabek Rumkha GPS(500m), West Holudia Budho Shoshan(800m) to the West. Modhom Holudia Dighi (400m), Dokkhin Holdia GPS(300m), Ghatirpara Community clinic(500m), Moulovipara Islamia Ibtadia Madrassa/Graveyard(300m) to the East. Holudia khal(60m), Moulovipara station (50m), Hatirghona GPS(1km), Hatirghona station(1km) to the South.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.
4.	Hijolia horinmara Road (id:422944005)	It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area neither to important environmental features.
		Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.
		Some, Agriculture fields falls over the road however these over lapping areas are government land. Other than this, no fish farming and significant vegetation coverage is located in the ROW nor does	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Vibration effects generated from pilling, drilling or other construction works	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.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place. Both Solid and Liquid waste will be produced.
		Earth excavation work will be involved where high grounds area present.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Elephant Movement is not present in the vicinity of the subproject location.	No impact is expected
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety initiatives.	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).
		Few amounts of trees will need cutting at different chainage. Around 10 trees will need cutting.	Mostly these trees are fruit bearing species. This will not cause several impacts to the habitats or locals around these areas. These trees are not directly used for economic returns. It can be managed by introducing plantation incentives around the proposed location.
		Horinmara GPS located at 700m north and a mosque located at 700m north of the subproject. Nurni madrasa cum hefjokhana located at 800m south of the subproject. A madrasa named Madrasa Tun Nur located at 500m east and a mosque named Horinmara mosque located at 15m west of the subproject.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
5.	Bottala Dosari Road, id: 422944006	It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area neither to important environmental features.
		Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.
		No agriculture, fish farming and significant vegetation coverage is located in the ROW nor does it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Few amounts of bush (sapling) clearings may need cutting at different chainage.	No severe damage will occur or damage to habitat will be faced. It can be managed by introducing small plantation incentives around the proposed location.
		Elephant Movement was present in the vicinity of the subproject location behind khoirati GPS before 1 year ago	Recently there has not been any elephant related experience of the local people and it is nor relevant to consider.
		No heavy earth excavation work will be involved.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place.
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety	During the construction period, soil may get contaminated from activities such as handling of hazardous construction materials (such as fuel, lubricants, paints, and

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		initiatives.	solid waste and sewage).
		Vibration effects generated from pilling, drilling or other construction works	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.
		Within 1 kilometer of site includes including Kumarpara GPS (1km) to the North. Khoiratipara talimul Quran Madrassa/Mosque (80m), Khoirati GPS (50m) to the West. Dhushori Mosque (30m) to the East.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.
6.	Badugona to battali Road, id: 422944026	It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area neither to important environmental features.
		Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.
		No agriculture, fish farming and significant vegetation coverage is located in the ROW nor does it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Few amounts of bush (sapling) clearings may need cutting at different chainage.	No severe damage will occur or damage to habitat will be faced. It can be managed by introducing small plantation incentives around the proposed location.
		Elephant Movement not present	No impact is expected

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		No heavy earth excavation work will be involved.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place.
		Vibration effects generated from pilling, drilling or other construction works	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.
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety initiatives. Vibration effects generated from pilling, drilling or other construction works	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).
		Within 1 kilometer of site includes including Rubber Dam (500m), Sikder Bill Jame Mosque (1km), Moulovipara Jame Mosque(1km), Sikder Bill GPS (500m) to the North. Upazila Health Complex(500m) to the West. Madrassa tun Nur (500m) to the East. Jamtoli Tahfizul Quran Hafizia Madrassa (30m), Fire Service Office (200m) to the South.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.
7.	Jadomora-Horinmara Road, id: 422944038	It is not located within any major environmentally sensitive area.	It will not cause any severe negative effects to the environmental settings of the area neither to important environmental features.
		Construction period will induce air pollution while preparing for bitumen and loading-unloading raw materials. 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.	It will invite waste production which may in turn cause minor air pollution due to deposited dust and airborne particles less than PM_{10}. Dust pollution may slightly suffocate photosynthesis however this can be minimized through regular water sprinkling as suggested in ESMP.
		Noise emission from construction machineries and equipment can cause nuisance to local residents and workers.	The ambient noise level might have potential to increase temporarily and intermittently in the close vicinity of active construction fronts.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		No agriculture, fish farming and significant vegetation coverage is located in the ROW nor does it stand over such items. Nonetheless agriculture fields and homestead gardens/forest are found beside the road.	No agriculture land or any forest coverage will get degraded or lost for construction. Liquid waste such as left-over oils or chemicals might run into these adjacent features.
		Construction works will involve chemical usage and preparation of on-site add-ons to the road. Generating scraps and residues.	The runoff from work site may enter existing pond and frustrate the water quality which will be acute however.
		Few amounts of bush (sapling) clearings may need cutting at different chainage.	No severe damage will occur or damage to habitat will be faced. It can be managed by introducing small plantation incentives around the proposed location.
		Elephant Movement not present	No impact is expected.
		No heavy earth excavation work will be involved.	Consequently air, noise and dust pollution will be occurred within a small-scale during construction period only.
		Construction related activities and setting up of labor camps along with associated facilities and their management can cause adverse impacts.	Noise pollution from pilling or drilling, air pollution caused by dust or gaseous emissions from vehicle movement, running of motorized equipment and land clearing, odors and soil pollution from leaking of latrines and fecal sludge, will more likely to take place.
		Vibration effects generated from pilling, drilling or other construction works	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.
		Jadimora Buddhist temple located at 60m northeast side of the subproject. Rajapalong madrasa and jame mosque located at 180m north, Rajapalong GPS located at 100m north and Rajapalong high school located at 150m north of the subproject. Harashiya jame mosque located adjacent to the subproject within 5m. Khairatipara jame mosque located at 500m south, a graveyard located at 300m south, a khal crossed at 617m chainage at south, A stress of khal is passing at 484m chainage to 600m chainage at south. Upazila health complex located at 300m northeast side and Horinmara GPS located at 50m west of the subproject.	No disturbance to all these establishments/features is anticipated due to construction activities for the sufficient distance from the construction site, and strict construction site management system- including restrictive work schedule during the daytime only, water-sprinkling twice a day on and around the site, safe storage of materials, etc.

Sl. No.	Component's name under W-17	Findings in regards to environmental concerns	Relevant Impacts
		Chemical spills or improper disposal of construction waste materials due to lack of worker training and misconduct of contractor's safety initiatives. Vibration effects generated from pilling, drilling or other construction works	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).

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 zero, any recurrence would be managed by the ERTs and they will be called if there appears any minute possibility to recur. A map of elephant movement is given in Annexure 04.

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 Screening

3.3.1 General Overview of the area

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

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

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

In this case, it is possible that a stationary position of the freshwater-saltwater transition zone can be established via proper management of pumping in the confined aquifer.

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

- Sea-level rise could result in a transgression of the sea and a loss of land area. This could also lead to the secondary effect of population migration in the new coastal band due to migration of the coastal population from the encroaching sea, thereby increasing domestic water needs in the new coastal area.

- A higher sea-surface elevation would change the base level for all groundwater gradients in the basin. In many aquifers, this would lead to shifts in local hydraulic gradients, inland hydraulic heads, and the rate of groundwater flow.

- A higher sea level will result in an increase in pressure in the subsea aquifer, resulting in inland movement of saltwater (aquifer seawater intrusion).

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

- Transgression of the coast implies that saline storm surges of 1 or more meters depth would penetrate beyond the new coast to new land areas. Storm surges transport saline water far inland of the coast and much of this floodwater may infiltrate the ground in areas where the aquifer is not fully saturated. Even where the aquifer is saturated, denser saline water may sink into the aquifer during the flood and later from pools of saltwater that remain following the flood.

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

3.3.2 Site Specific Screening and outcome

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

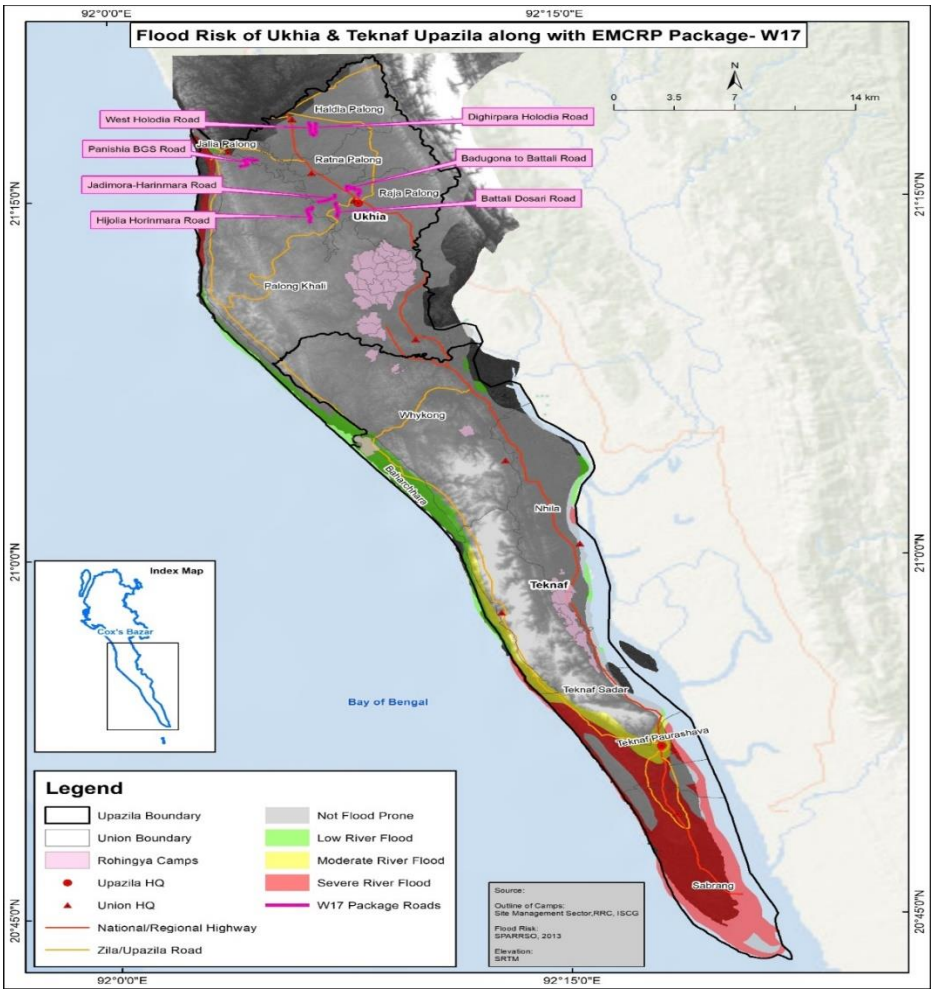


Figure 3.3.2.1: Flood inundation risk map near the subprojects (Road)

Site specific climate change impacts are often not so easy to measure or deduce plausibly while the site is confined to a narrow strip of roadways, and associated mitigation or offsetting measures are really hard to plot on the impact areas, though an overall set of measures are often considered in practical aspect. Fig: 3.3.2.1 shows the inundation risk map of the subprojects under W-17, none of the Roads are in vicinity of the severe river flood inundation area. So the risk of flooding is low around the sub-project area. Groundwater Depletion has been reported by the host community.

Tree planation on the road slopes is also suggested to sooth the temperature effect and increase the water retaining capacity of soil, at the same time.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

4.1 General

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

Table 4.1.1 Component Specific Impact and Mitigation Plan under package W17

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
1)		West painnashia mosque (30m) to the east. West painnashia children graveyard (50m), Abdur Rahman Bodi GPS (20m) to the south. West painnashia Chakkata Panjekhana (10m), Chakkata Central mosque (10m) to the west. 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.
	Panishia BGS Road, id: 422944021	Proposed safety structures are 8 no. of **Cross Drain** (Size: .975mmX .975mm) at different chainage, 9 meters of **Protection wall** from Ch: 268m-277m, 1227 meters of **L-Drain** at different chainage will be constructed for eel high land water. 02 numbers of **Box Culvert** (2.0m x2.0m) at different chainage, 344 meters of **Toe wall** with 1.5m and 2.0m of height, 9 meters of **palisading work**, **Road safety** works, **Environmental Management and enhancement** works.	Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some high land is found beside the road. So, **L-Drain** will be constructed for drainage high land eel water during rainy season. Some low land is found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
			"correct" the natural slope. There are points on the road where slope preparation cannot be done due to having low lying agriculture lands and water bodies. In such cases **Toe Wall** is proposed which helps to restrain the horizontal surface pressure. This is an adaptation technique and a precaution measure to not allow any damage to sideline existing low-lying features. There are low lands along the road where agriculture fields and ponds are present. This also excludes high chance of soil quality degradation.
2)	**Dighirpara Holudia Road, id: 422944023**	To the North Middle Holudia Bagula Market (10m), To the south Holudia Khal (50m), To the east Middle Holudia Dighirpar Jame Mosque/ madrassa (15m) and a pond (30m) and another pond located at 50m west of the subproject. Moreover, settlements and households are located adjacent to the sub-project area which might be affected during the construction period due to the debris and dust prompted from the development works.	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 safety structures are 8 no. of **Cross Drain** (Size: .975mmX .975mm), 54 meters of **Palisading work** at different chainage, 82 meters of **L-Drain** at different chainage, 01 numbers of **Box Culvert** (2.0m x2.0m), 26 meters of **Retention wall** and 01 **culvert**. **Road safety** works, **Environmental Management and enhancement** works.	Proposed subproject area arises water logging problem during the monsoon sometimes. On the other hand, some part of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some high land is found beside the road. So, **L-Drain** will be constructed for drainage high land eel water during rainy season. Some low land is found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to "correct" the natural slope.

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
3)	**West Holudia Road, id: 422944025**	To the North Holudia khal (60m), Moulovipara station (50m). Moreover, settlements as shops and households are located adjacent to the sub-project area which might be affected during the construction period due to the debris and dust prompted from the development works.	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 safety structures are 5 no. of **Cross Drain** (Size: .975mmX .975mm), 67 meters of **Protection wall** from Ch: 383m-450m, 238 meters of **L-Drain** at different chainage, 02 numbers of **Box Culvert** (2.0m x2.0m) at different chainage, 103 meters of **Toe wall**, 132m **RCC Protection wall**, 199 meters of **palisading work**. **Road safety** works, **Environmental Management and enhancement** works.	Some parts of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some high land is found beside the road. So, **L-Drain** will be constructed for drainage high land eel water during rainy season. Some low land is found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to "correct" the natural slope. There are points on the road where slope preparation cannot be done due to having low lying agriculture lands and water bodies. In such cases **Toe Wall** is proposed which helps to restrain the horizontal surface pressure. This is an adaptation technique and a precaution measure to not allow any damage to sideline existing low-lying features. There are low lands along the road where agriculture fields and ponds are present. This also excludes high chance of soil quality degradation.
4)	**Hijolia Horinmara Road,**	To the west Horinmara Mosque(15m) and settlements as shops and households are located adjacent to the sub-project area which can be subject to air pollution. However, none are on the ROW.	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.

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
	id:422944005	Proposed safety structures are 02 no. of **Cross Drain** (Size: .975mmX .975mm), 1043 meters of **Palisading work** at different chainage, 687 meters of **L-Drain** at different chainage, 02 numbers of **Box Culvert** (4.5m x3.5m),35 meters of **Toe wall**, 94 meters of Retention wall and 101-meter **RCC U-drain. Road safety** works, **Environmental Management and enhancement** works.	Some parts of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some high land is found beside the road. So, **L-Drain** will be constructed for drainage high land eel water during rainy season. **U-drain** is also considered for drainage facility that runs along the road for uninterrupted water flow. Some low land is found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to "correct" the natural slope. There are points on the road where slope preparation cannot be done due to having low lying agriculture lands and water bodies. In such cases **Toe Wall** is proposed which helps to restrain the horizontal surface pressure. This is an adaptation technique and a precaution measure to not allow any damage to sideline existing low-lying features. There are low lands along the road where agriculture fields and ponds are present. This also excludes high chance of soil quality degradation.
5)	**Bottala Dosari Road, id: 422944006**	To the east Dhushori Mosque(30m), Khoirati GPS (50m)	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 safety structures are 01 no. of **Cross Drain** (Size: .975mmX .975mm), 131 meters of **Toe Wall**, 03 numbers of **Box Culvert** and 54 meters of **Retention wall, Road safety** works, **Environmental Management and enhancement** works.	Some parts of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
			balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some high land is found beside the road where **Retention wall** will be constructed to avoid landslips and soil erosion. Some low land is found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to "correct" the natural slope. There are points on the road where slope preparation cannot be done due to having low lying agriculture lands and water bodies. In such cases **Toe Wall** is proposed which helps to restrain the horizontal surface pressure. This is an adaptation technique and a precaution measure to not allow any damage to sideline existing low-lying features. There are low lands along the road where agriculture fields and ponds are present. This also excludes high chance of soil quality degradation.
6)	**Badugona to battali Road, id: 422944026**	To the east Dhushori Mosque(30m), to the west Khoirati GPS (50m), to the south Jamtoli Tahfizul Quran Hafizia Madrassa (30m) and settlements as shops and households are located adjacent to the sub-project area which can be subject to air pollution. However, none are on the ROW.	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 safety structures are 05 no. of **Cross Drain** (Size: .975mmX .975mm), 151 meters of **Toe Wall**, 04 numbers of **Box Culvert**,262 meters of **palisading wall**, 96 meters of **L-drain**, 17 meters of **RCC U-drain** and 10 meters of **Retention wall, Road safety** works, **Environmental Management and enhancement** works.	Some parts of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some high land is found beside the road. So, **L-Drain** will be constructed for drainage high land

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
			eel water during rainy season. **U-drain** is also considered for drainage facility that runs along the road for uninterrupted water flow. Some low land is found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to "correct" the natural slope. There are points on the road where slope preparation cannot be done due to having low lying agriculture lands and water bodies. In such cases **Toe Wall** is proposed which helps to restrain the horizontal surface pressure. This is an adaptation technique and a precaution measure to not allow any damage to sideline existing low-lying features. There are low lands along the road where agriculture fields and ponds are present. This also excludes high chance of soil quality degradation. Some high land is found beside the road where **Retention wall** will be constructed to avoid landslips and soil erosion.
7)	**Jadomora-Horinmara Road, id: 422944038**	To the north Jadimura Buddhist temple at northeast side (60m), to the south Harashiya jame masque (5m) and a khal crossed at 617m chainage at south, A stressed of khal is passing at 484m chainage to 600m chainage at south. To the west Harinmara Govt. Primary school (50m). There are settlements as shops and households are located adjacent to the sub-project which can be subject to air pollution. However, none are on the ROW.	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. Additionally, contractor needs to check no debris may degrade water quality of the khal close by. They will have to place a temporary separator without raising any other concern to local interest so that no waste liquid or solid may disturb the waster body.
		Proposed safety structures are 01 no. of **Cross Drain** (Size: .975mmX .975mm), 77 meters of **Toe Wall**, 02 numbers of **Box Culvert**, 105 meters of **palisading wall**, and 158 meters of **Retention wall, Road safety** works, **Environmental Management and enhancement** works.	Some parts of the proposed road is passing by the agricultural land. **Box culvert** and **cross drain** will be constructed to terminate rainwater for one side to another side during rainy season and also help for rapidly remove excess soil water to reduce or eliminate waterlogging during monsoon and return soils to their natural field capacity and will help to maintain the water balance of both roadside agricultural land to provide a sustainable irrigated agricultural system. It will also help to prevent flood and not to allow water to overflow and also help to divert water for farming. Some low land is

Sl.	Component's name under W-17	Important Socio-Environmental and proposed safety Features	Proposed mitigation and rationale to the safety measures
			found beside the proposed road so **protection wall** and **palisading work** will be constructed during construction period for used to "correct" the natural slope. There are points on the road where slope preparation cannot be done due to having low lying agriculture lands and water bodies. In such cases **Toe Wall** is proposed which helps to restrain the horizontal surface pressure. This is an adaptation technique and a precaution measure to not allow any damage to sideline existing low-lying features. There are low lands along the road where agriculture fields and ponds are present. This also excludes high chance of soil quality degradation. Some high land is found beside the road where **Retention wall** 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 management plans have 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 Measure 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. Social Safeguard Personnel for Environmental and Social Management for Work Package-17 has also been added in the whole BOQ in order to take supervision and leadership to organize Environmental Management under Environmental Enhancement Works. The total costing and estimation have included enhancements such as Grass turfing plans, Tree plantation initiatives, Dust Suppression mechanisms. On the other hand, in order to ensure health safety and sanitary measures of workers PPE, First Aid Box, Labor shed, drinking water facility with water tests, Temporary latrine for both male and female as well as waste disposal systems has been accounted for. Ensuring sustainable labor performance in regards to environmental and social considerations motivational training has been taken into account. An overview of the estimation is given below and the detailed estimated cost to implement the ESMP is shown in **Appendix-3**.

Table 4.3.1: Summary of estimated bill of quantity

Road Package Number	Road Name	Environmental Enhancement works estimated amount (BDT)	H&S measures for COVID Situation (BDT)
W17-1	Panishia BGS Road, id: 422944021	482175.02	106,025
W17-2	Dighirpara Holudia Road, id: 422944023	372,426.82	94,275
W17-3	West Holudia Road, id: 422944025	456,967.42	106,025
W17-4	Hijolia horinmara Road (id:422944005)	463104.05	106,025
W17-5	Bottala Dosari Road, id: 422944006	445349.25	106,025
W17-6	Badugona to battali Road, id: 422944026	485,284.75	106,025
W17-7	Jadomora-Horinmara Road, id: 422944038	456,290.81	106,025
Total		**3161598.12**	**730,425**
Sub-Total (Enhancement work & H&S COVID BOQ) (BDT)		**3,892,023.12**	
Two Environmental Management Personnel for seven roads (BDT)		**8,40,000**	
Grand Total (BDT)		**4,732,023.12**	

5. MONITORING MECHANISM FOR ESMP IMPLEMENTATION

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

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

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

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

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

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

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

6. LIMITATION OF THIS STUDY

With the countrywide spread of coronavirus and its huge detrimental including fatal effects on people and livelihood had made the government of Bangladesh to impose a nationwide lockdown from March 26, 2020 onward coupled with banning on passenger traveling across the districts. This development was accompanied by all office works to be suspended or postponed. However, in the backdrop of continued fragile economic and human plight being observed across the country which

has primarily been caused by this COVID situation, Government of Bangladesh has had no other option but to reopen all the economic and official activities by early June, with strong guidance on limiting movement to the least. This neo-normal situation is still limiting the movement of consultants and supervising staffs to the proposed working sites for undertaking the screening survey along with conducting effective consultation meetings, which is in turn affecting the overall progress of the project and there might have a likely chance to remain the gaps in overall screening process and outcomes.

7. CONCLUSION AND RECOMMENDATIONS

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

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

- The communities will receive large benefits through improved infrastructural facilities, transportation & communication etc.
- The short-term negative impacts that may come by the way of air quality, noise, solid waste, occupational health & safety need to be minimized through the management plan.
- 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.

Annexure-1: Important Environmental Features (IEFs) near site

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

Table: Detailed Chainage length of the Sub-Project

Road Name	Panishia BGS Road, id: 422944021 **(W17-1)**	**Total Chainage**	1600m

Chainage (m)	**Left**	**Right**	**Features**
000-300	L		West Painnashia Chora, Paddy land, bamboo bush, temporary shop, graveyard, pan baraz, HH road
		R	Open land, wire fence, nut tree, Electric Pole, HH road, paddy land, nut tree garden
300-600	L		Bamboo fence, bamboo bush on hill, Electric Pole, Supari garden, culvert, shop
		R	Bamboo fence, supari garden, guide wall, hill, Bangladesh German Sampreeti (BGS) Office, west painnashia connecting road
600-900	L		Bamboo fence, electric pole, Agriculture land, open free land, bamboo fence
		R	Brick wall, betel leaves baraz, Akashi tree garden on hill, jack fruit tree, bamboo bush on hill
900-1200	L		Bamboo fence, Nut tree, Electric pole, hill
		R	Household on hill, mango tree, tila(high ground), shop, bamboo fence
1200-1600	L		Bamboo fence, Household on high ground, west painnashia hill, electric pole, wire fence, Abdur Rahman Bodi GPS, wash block, West Painnashia Jame mosque, chakkata connecting road, household on high ground, Electric Pole, open land, drain, Paan baraz, drain, paddy land, Electrci pole, chakkata panjekhana
		R	Bamboo fence, household on high gorund, west painnashia hill, Tubewell, Household on high ground, electric pole, electric pole, agriculture land

Road Name	Dighirpara Holudia Road, id: 422944023 **(W17-2)**	**Total Chainage**	1000m

Chainage (m)	**Left**	**Right**	**Features**
000-300	L		Brick Wall, Building, Paddy land, Electric Pole, Vegetable Yard, Middle Holudia Dighi
		R	Moricha patabari Road, Baghgula market, paddy land, electric pole, Tin fence, trees, pond, paddy land, pond, paan baraz, building
300-600	L		Brick wall, Dighirpara Jame Moaque/Madrassa/Graveyard, paddy land, Kacha household, household road, electrc pole, nut trees, nut tree

			garden
		R	Electric pole, bamboo fence, bush, pond, Electric Pole, open field, nut tree, household road, nut tree garden, pond, electric pole, paddy land, electric pole, paddy land
600-900	L		Nut tree garden, household road, bamboo fence, nut tree garden, banana tree, pond, paddy land, paan baraz, holudia khaal
		R	Paddy land, Electrci Pole, Paan Boroz, Holudia khaal
900-1200	L		Vegetable yard, nut tree, rumkha-shabek rumkha sarak
		R	Vegetable yard, household, wire fence, pond, rumkha-sabek rumkha sarak

Road Name	West Holudia Road, id: 422944025 **(W17-3)**	**Total Chainage**	1410m

Chainage (m)	**Left**	**Right**	**Features**
000-300	L		Start from patabari moricha sarak, paddy land, culvert, paan baraz, Brick wall, open land, tin shed, Household
		R	Open land, paddy land, electric pole, paan boroz, tin fence, bamboo bush, trees
300-600	L		Electrci Pole, paan boroz, paddy land, pond, mango tree, paddy land, culvert, electric pole, household road, tin fence,
		R	Electrci Pole, mohila Member House Road, paddy land, electric pole, tin fence, building, pond, electric pole
600-900	L		Tin shed house, paddy land, vegetable yard, paan boroz, holudia khal
		R	Trees, paan boroz, tin fence, pond, nut tree garden, paddy land, vegetable yard, holudia khal
900-1200	L		Paan boroz, vegetable yard, pond, nut tree, tin fence, electric pole, solar lamp post
		R	Paan boroz, vegetable yard, paddy land, nut tree
1200-1410	L		Tin fence, building, shop, moulovipara station
		R	Tin shed house, moulovibazar station

Road Name	Hijolia horinmara Road (id:422944005) **(W17-4)**	**Total Chainage**	Effective length 1460m (Ch:2500m to Ch:3960m)

Chainage (m)	**Left**	**Right**	**Features**
2500-2800	L		Paddy Field, Culvert, Paddy Field, Electrci Pole, Small trees, Electrci Pole, Vegetable Yard, Hosue connecting road to the left
		R	Paddy field, Electrc Pole, Paddy Field, Vegetable yard, Drain, House

			connecting road to the right, Tin fence, Big tree, High ground, Bamboo fence, trees, bamboo fence, trees, bamboo fence, shop, open space,
2800-3100	L		House connecting road to the left, shop, Earthen Shop, Tila, Electrci Pole, Bamboo fence, tree garden, tila, bush,
		R	House connecting road to the right, open space, small tree, bush, tila, Ismail's earthen shop*, Electric Pole, households, bamboo fence, open fence
3100-3400	L		Bamboo fence, Small tila, bush, bamboo fence, paan boroz, paddy field, culvert, paddy field, bamboo fence, paddy field, electric pole, open field
		R	Electric Pole, Paddy field, bamboo fence, bush, electric pole, bamboo fence, electric pole, bush, agriculture field, brick wall, earthen house, paddy field, electric pole, paan boroz, shop
3400-3700	L		Tin fence, vegetable yard, bridge(saku), Open field, Electric pole, Open field, Trees, paan boroz, open field, electric pole, tree, bush, bamboo fence, house connecting road to the left,
		R	Open field, Electric Pole, open field, Tree, open field, paan boroz household connecting road, vegetable yard, household connecting road, Tin shed house, bamboo fence, vegetable yard, household connecting road to the right, vegetable yard, open field
3700-3960	L		Bamboo fence, Electric Pole, agriculture field, Mosque, brick wall, bamboo fence, vegetable yard, household connecting road to the left
		R	Trees, Household connecting road to the right, bamboo fence, trees, open field, bamboo fence, tree, tila, settlement, bamboo fence, tin fence, electric pole, Rahmat Ali's House.

Road Name	Bottala Dosari Road, id: 422944006 **(W17-5)**	**Total Chainage**	1320m

Chainage (m)	**Left**	**Right**	**Features**
000-300	L		Electric Pole, Bamboo bridge(sako), khal, bamboo bush, Vegetable yard, connecting road to the left, settlement, bamboo fence, open space, 2 big trees, vegetable yard, wired fence, paddy field, connecting house road to the left, bmboo fence, paddy field.
		R	Bush, Household connecting road to the right, bamboo fence, bush, settlement(paka), house connecting road to the right, paddy field, culvert, paddy filed, house connecting road to the right, culvert
300-600	L		Paddy field, house connecting road to the left, paddy field, electric pole, paddy field, household connecting road to the left
		R	Paddy field, wire fence, connecting road, paddy field, bush, paddy field, household connecting road
600-900	L		Paddy field, electric pole, house connecting road to the left, paddy field, drain(earthen)
		R	Paddy field, culvert on the right side of the road, house connecting road, paddy field, electric pole, paddy field
900-1320	L		Paddy field, water pump, culvert, bush, (the road turned left), paddy field

		R	Paddy field, culvert on the right, Khoirati GPS, Paddy field

Road Name	Badugona to battali Road, id: 422944026 **(W17-6)**	**Total Chainage**	1630m

Chainage (m)	**Left**	**Right**	**Features**
000-300	L		Bamboo bush, paddy land, house connecting road, big trees, paddy field, house connecting road to the left, bamboo fence, big tree
		R	Paddy field, u-drain, paddy field
300-600	L		Paddy field, house connecting road to the left, paddy field, electric Madrassa, Tree, Tube Well, Vegetable yard, trees, Big tree, paddy field, shop
		R	House connecting road to the right, big tree, pond, wired boundary, paddy field, house connecting road, Paddy field, culvert, brick wall, settlement (pucca hosue)
600-900	L		Paddy field, vegetable yard, bamboo fence, house connecting road to the left
		R	Mosque, paddy field, brick wall, vegetable yard, house connecting road, paddy field, brick wall, vegetable yard,wired fence, road turning right,
900-1200	L		Vegetable yard, bamboo fence, house connecting road, Shikder Non-Gov GPS, Solar Light
		R	vegetable yard,paddy field, tila, house connecting road
1200-1630	L		Tila, tree, earthen house, bamboo fence, hosue connecting road to the left, bamboo fence, bamboo fence, tila, settlement, bamboo fence, trees, bamboo fence, house connecting road to the left, paka boundary
		R	House connecting road to the right, paddy field, vegetable yard, bamboo fence, house connecting road, brick wall, settlement on hills, bamboo fence, bamboo bush, big tree, bamboo fence, vegetable yard, settlement, tin fence, electric pole, bamboo bush, open field, tin fence, Hefzo khana.

Road Name	Jadomora-Horinmara Road, id: 422944038 **(W17-7)**	**Total Chainage**	1405m

Chainage (m)	**Left**	**Right**	**Features**
000-300	L		Shop, vegetable yard, house connecting road to the left, tin shed boundary, paddy land, bamboo bush, earth drain
		R	Shop, brick wall, paddy field. Vegetable yard, tree
300-600	L		Wired fence, vegetable yard, tree, vegetable yard, paddy yard, connecting road to the left, bamboo bush, small water body, protection wall made with wood and gunny bags, bamboo bush, electric pole
		R	Paddy field, bush, paddy field, vegetable yard, wired fence, paddy field, bush, protection wall, paddy field, bamboo fence, connecting road to

			the right, bamboo fence
600-900	L		House connecting road to the left, shop, settlement, bamboo bush, wired fence, bamboo bush, settlement, vegetable yard, paddy field, house connecting to the left, pond, brick wall, mosque, guide wall, mosque wall. Bamboo fence, paddy field, bamboo fence, settlement, trees, tin fence, bamboo fence, vegetable yard, shop
		R	RCC bridge, Electric pole, house connecting road to the roght, bamboo bush, electric pole, bush, trees, vegetable yard, electric pole, bamboo fence,
900-1200	L		Paddy field, bridge, paddy field, tin fence, bamboo fence
		R	Tin fence, settlement, paddy filed, bamboo fence, tin fence, settlement,
1200-1630	L		Bamboo fence, trees, settlement, bambbo fence, tin fence, bamboo fence, tila
		R	Tin fence, house connecting road to the right, trees, settlement, open field, shop house connecting road to the right

Annexure-2: Attendance of consultation meetings for sub-projects

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

Time:..02:45PM.......... Date..26/01/2020

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নামঃ পাইন্যাশিয়া বিভিন্ন রোড

মত বিনিময়ের স্থানঃ পশ্চিম পাইন্যাশিয়া শামসুল আলম সওদাগরের দোকান।

ইউনিয়নঃ জালিয়াপালং
ডাকঘরঃ ইনানী
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/ নারী	গ্রাম	স্বাক্ষর
১.	মো: জালাল উদ্দিন	৩২	পুরুষ	পশ্চিম পাইন্যাশিয়া	জালাল
২	মো: খালিদ আলম	৫০	"	"	খালিদ
৩.	মো: রিদওয়ান	১৯	"	"	রিদুয়ান
৪.	মো: শামসুল আলম	৪৫	"	"	শামসুল
৫.	মো: সুজাউদ্দিন	৩০	"	"	সুজা
৬.	মো: সামসু	৭০	"	"	সামসু
৭.	মো: বদিউল আলম	৩৭	"	"	[illegible]
৮.	মো: হাজী ছৈয়দ আহমদ	৮০	"	"	[illegible]
৯.	মো: নুর আলম	৬০	"	"	[illegible]
১০.	মো: আরিফ আলি	৬৩	"	"	আরিফ
১১.	মো: রানা	৪৪	"	"	রানা
১২.	মো: সাদাওয়াত	২৯	"	"	সাদাওয়াত
১৩.	মো: রবিন	৩৭	"	"	রবিন
১৪.	মো: কামাল হোসেন	৪১	"	"	কামাল
১৫.	জাহাঙ্গীর আলম	২৬	"	"	জাহাঙ্গীর
১৬.	নুর মোহাম্মদ [illegible]	৬২	"	"	[illegible]
১৭.	আবদুল্লাহ [illegible]	৪৮	"	"	আবদুল্লাহ
১৮.	মিজান	৬৮	"	"	মিজান
১৯.	[illegible]	২৭	"	"	[illegible]

Figure: Attendance of consultation meeting for W17-1

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

Time: 01:47 PM .... Date. 28/01/2020

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

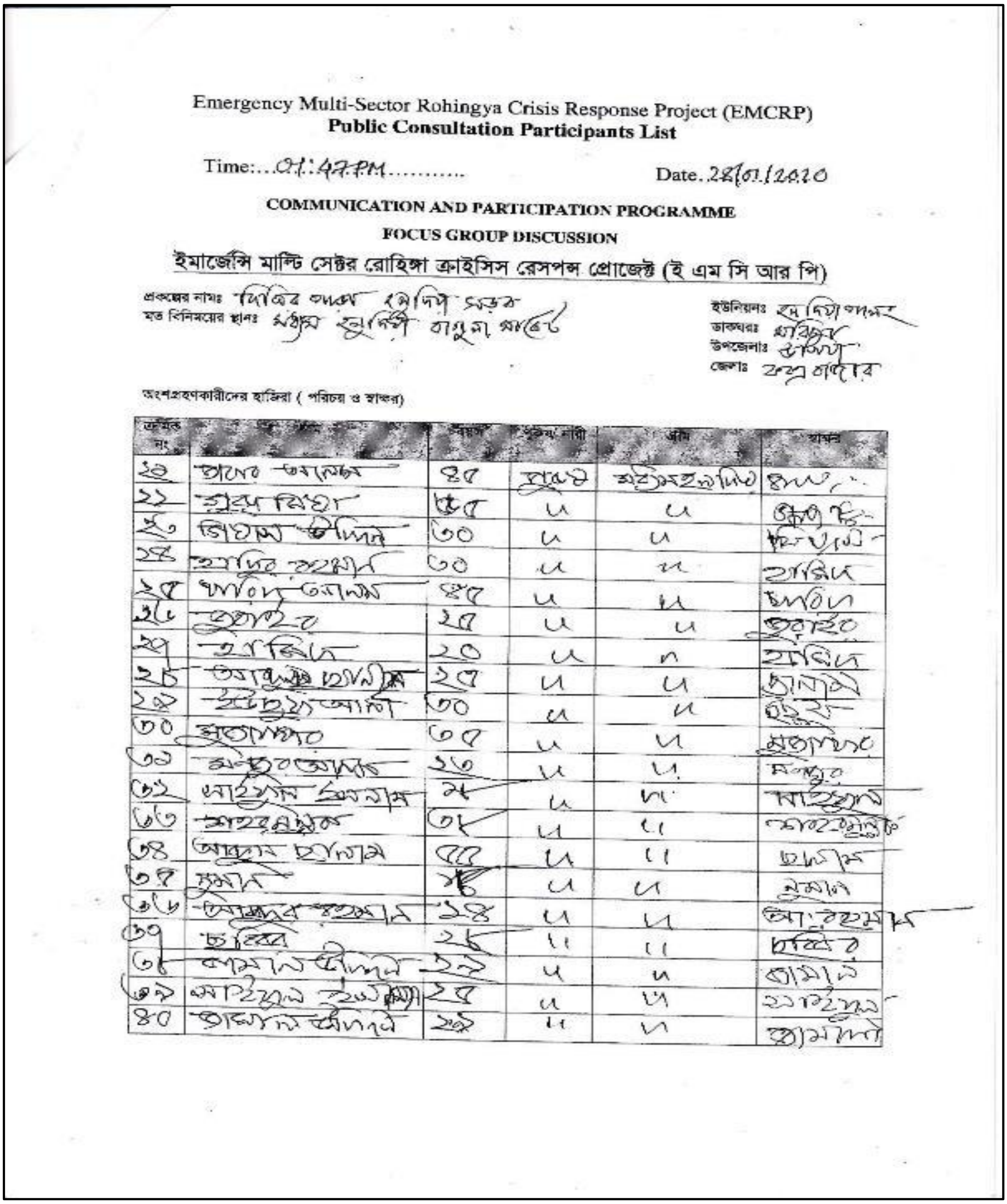
প্রকল্পের নামঃ পিচিরপাড়া হলদিয়া সড়ক
মত বিনিময়ের স্থানঃ মধ্যম হলদিয়া বাগুলা মার্কেট

ইউনিয়নঃ হলদিয়াপালং
ডাকঘরঃ মরিচ্যা
উপজেলাঃ উখিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর
১	মমতাজ বেগম লিপি	৩৯	নারী	মধ্যম হলদিয়া	[illegible]
২	জাহাঙ্গীর আলম	২২	পুরুষ	״	[illegible]
৩	[illegible]	৩২	״	״	[illegible]
৪	নুরুল ইসলাম	৩৫	״	״	[illegible]
৫	আব্দুল মতলব	৫৭	״	״	[illegible]
৬	মিজান	২৫	״	״	মিজান
৭	জিয়াদ আহমদ	৬২	״	পাতাবনিয়া বিল	[illegible]
৮	জিয়াদ আহমদ	৬৫	״	״	[illegible]
৯	সাইফুল করিম	২০	״		সাইফুল করিম
১০	আবুল কালাম	৩৫	״	মধ্যম হলদিয়া	আবুল কালাম
১১	জয়নাল আবেদিন	৩৫	״	״	[illegible]
১২	মাহমুদুল হক	২৫	״	״	[illegible]
১৩	জাহাঙ্গীর আলম	৫৫	״	״	[illegible]
১৪	জয়নাল আবেদিন	২৫	״	পাতাবনিয়া বিল	[illegible]
১৫	মো: ফয়সল	২৬	״	মধ্যম হলদিয়া	[illegible]
১৬	মাহমুদুল হক		״	״	[illegible]
১৭	হামিদুল হক	২০	״	״	[illegible]
১৮	ইসমাইল	২২	״	״	[illegible]
১৯	মো: নুরুল আলম	৪০	״	״	[illegible]
২০	জয়নাল আবেদিন	৩০	״	״	[illegible]

Figure: Attendance of consultation meeting for W17-2



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

Time:...01:47 PM.......... Date. 28/01/2020

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

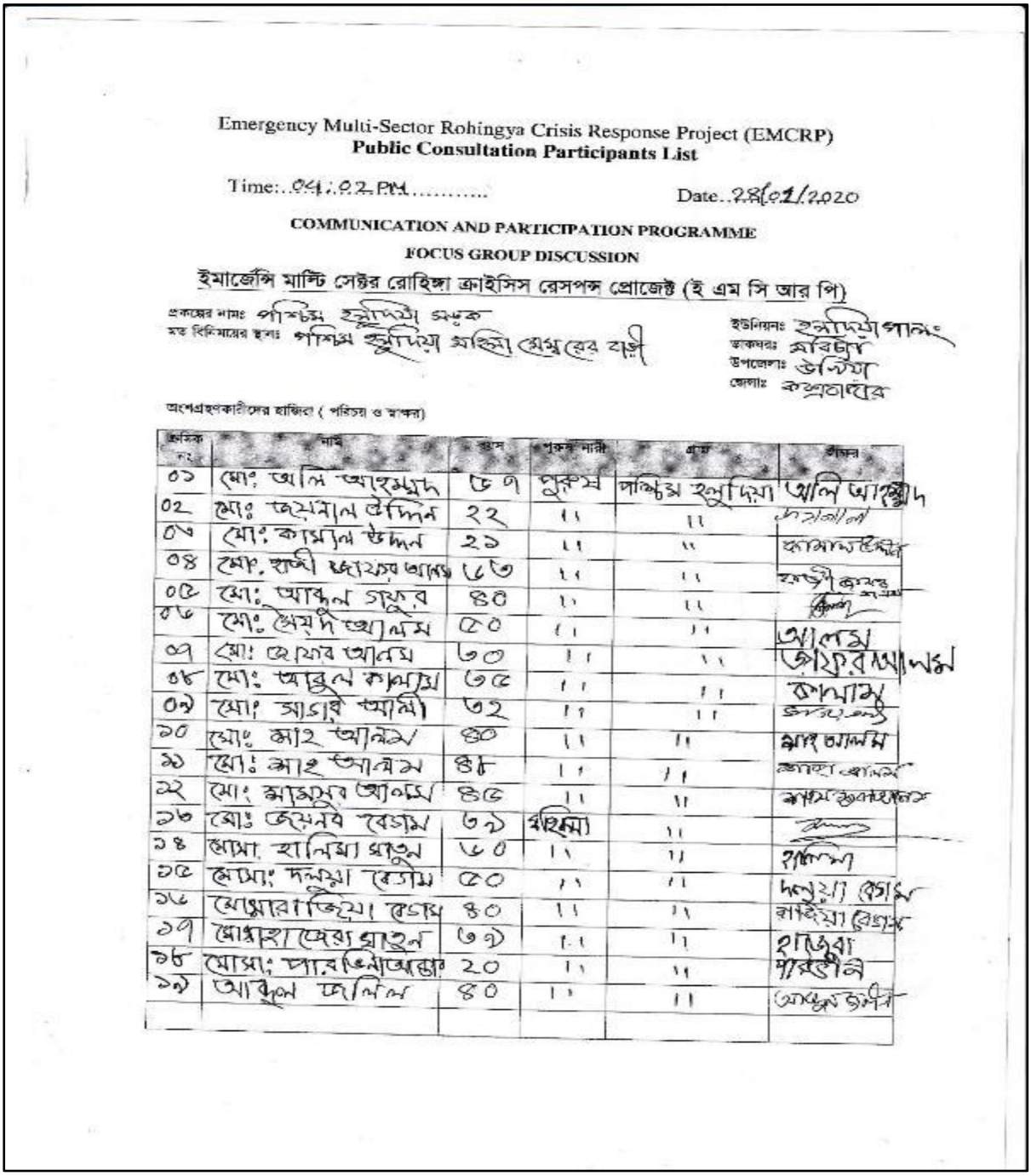
ইমার্জেন্সি মাল্টি সেক্টর রোহিঙ্গা ক্রাইসিস রেসপন্স প্রোজেক্ট (ই এম সি আর পি)

প্রকল্পের নামঃ
মত বিনিময়ের স্থানঃ

ইউনিয়নঃ
ডাকঘরঃ
উপজেলাঃ
জেলাঃ

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

Figure: Attendance of consultation meeting for W17-2



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

Time: 04:02 PM ..... Date: 28/01/2020

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

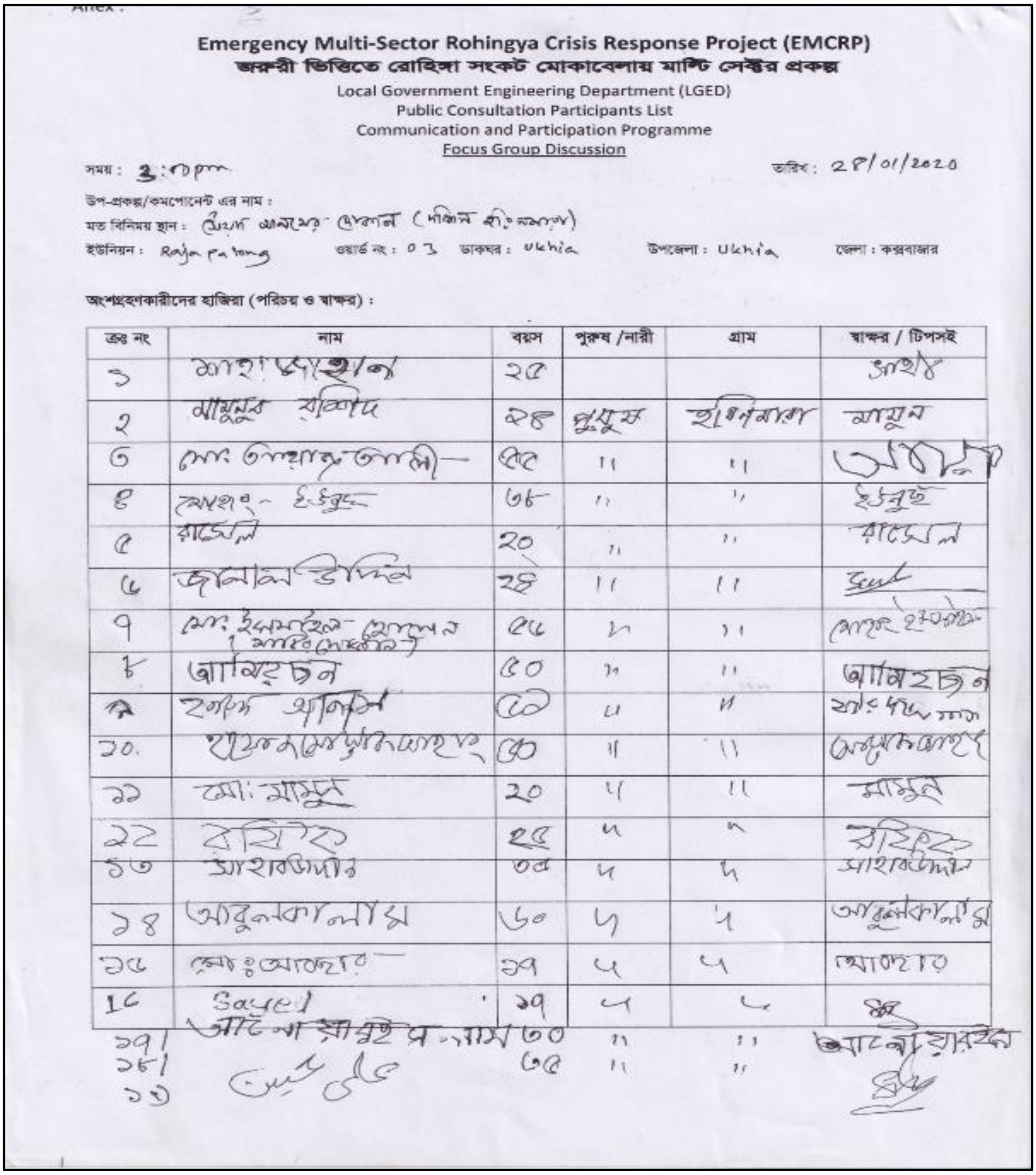
প্রকল্পের নামঃ পশ্চিম হলুদিয়া সড়ক
মত বিনিময়ের স্থানঃ পশ্চিম হলুদিয়া মাঝি মেম্বরের বাড়ী

ইউনিয়নঃ হলুদিয়া পালং
ডাকঘরঃ রাবিয়া
উপজেলাঃ উলিয়া
জেলাঃ কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর
০১	মোঃ আলি আহমদ	৫৩	পুরুষ	পশ্চিম হলুদিয়া	আলি আহমদ
০২	মোঃ জসীমল উদ্দিন	২২	"	"	জসীমল
০৩	মোঃ কামাল উদ্দিন	২৯	"	"	কামাল উদ্দিন
০৪	মোঃ হাসী জোহর আলম	৫৩	"	"	হাসী জোহর আলম
০৫	মোঃ আব্দুল গফুর	৪০	"	"	
০৬	মোঃ জৈয়দী আলম	৫০	"	"	আলম
০৭	মোঃ জোফার আলম	৩০	"	"	জাফর আলম
০৮	মোঃ আব্দুল কাসিম	৩৫	"	"	কাসিম
০৯	মোঃ আরাফী আমিন	৩২	"	"	
১০	মোঃ আহ আলম	৪০	"	"	আহ আলম
১১	মোঃ আহ আলম	৪৮	"	"	
১২	মোঃ আমিনুর আলম	৪৫	"	"	
১৩	মোঃ জেসনুর বেগম	৩১	রহিমা	"	
১৪	মোসা. হালিমা খাতুন	৬০	"	"	হালিমা
১৫	মোসাঃ দলুয়া বেগম	৫০	"	"	দলুয়া বেগম
১৬	মোসাররাফিয়া বেগম	৪০	"	"	রাবিয়া বেগম
১৭	মোহাহা জেরা খাতুন	৩১	"	"	হাজেরা
১৮	মোসাঃ পারভিনআক্তার	২০	"	"	পারভীন
১৯	আব্দুল জলিল	৪০	"	"	আব্দুল জলিল

Figure: Attendance of consultation meeting for W17-3



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

সময়: 3:00 pm তারিখ: 28/01/2020

উপ-প্রকল্প/কমপোনেন্ট এর নাম :

মত বিনিময় স্থান : [illegible]

ইউনিয়ন : Raja Palong ওয়ার্ড নং : 03 ডাকঘর : Ukhia উপজেলা : Ukhia জেলা : কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর) :

ক্রঃ নং	নাম	বয়স	পুরুষ /নারী	গ্রাম	স্বাক্ষর / টিপসই
১	[illegible]	২৫			[illegible]
২	মামুনুর রশিদ	২৪	পুরুষ	হাকিমপাড়া	মামুন
৩	মো: [illegible] আলী	৫৫	"	"	[illegible]
৪	মোহাম্মদ ইউনুস	৩৮	"	"	ইউনুছ
৫	রাসেল	20	"	"	রাসেল
৬	জালাল উদ্দিন	২৪	"	"	[illegible]
৭	মো: ইসমাইল [illegible]	৫৬	"	"	[illegible]
৮	আমির চান	৫০	"	"	আমির চান
৯	[illegible]	৫৫	"	"	[illegible]
১০.	[illegible]	৫০	"	"	[illegible]
১১	মো: মামুন	২০	"	"	মামুন
১২	[illegible]	২৫	"	"	[illegible]
১৩	সাহাবউদ্দীন	৩৫	"	"	সাহাবউদ্দীন
১৪	আবুল কালাম	৬০	"	"	আবুল কালাম
১৫	মো: [illegible]	২৭	"	"	[illegible]
16	Sayed	২৭	"	"	[illegible]
১৭	[illegible]	৩০	"	"	[illegible]
১৮		৩৫	"	"	
১৯	[illegible]				[illegible]

Figure: Attendance of consultation meeting for W17-4

17/6 (original)

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

Time: 10.30 am   Date: 30/01/24

COMMUNICATION AND PARTICIPATION PROGRAMME

FOCUS GROUP DISCUSSION

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

প্রকল্পের নাম: [illegible]
ইউনিয়ন: [illegible]
থানা: উখিয়া
উপজেলা: উখিয়া
জেলা: কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর)

ক্রমিক নং	নাম	বয়স	পুরুষ/নারী	গ্রাম	স্বাক্ষর
1	[illegible]	72	✓	[illegible]	[illegible]
2	মো: [illegible]	22	✓	[illegible]	[illegible]
3	[illegible]	36	✓	[illegible]	[illegible]
4	[illegible]	17	✓	[illegible]	[illegible]
5	মো: [illegible]	56	✓	[illegible]	[illegible]
6	মো: সেলিম	20	✓	[illegible]	সেলিম
7	মো: [illegible]	23	✓	[illegible]	[illegible]
8	[illegible]	28	✓	[illegible]	[illegible]
9	মো: [illegible] ইসলাম	26	✓	"	[illegible]
10	মো: [illegible]	37	✓	[illegible]	
11	মো: [illegible]	28	✓	[illegible]	[illegible]
12	[illegible]	20	✓	[illegible]	[illegible]
13	[illegible]	46	✓	[illegible]	[illegible]
14					

Figure: Attendance of consultation meeting for W17-5

7

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)

জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প

Local Government Engineering Department (LGED)
Public Consultation Participants List
Communication and Participation Programme
Focus Group Discussion

সময় : 2.20 Pm

তারিখ : 29/01/20

উপ-প্রকল্প/কমপোনেন্ট এর নাম : কোর্টবাজার থেকে বটতলী রোড

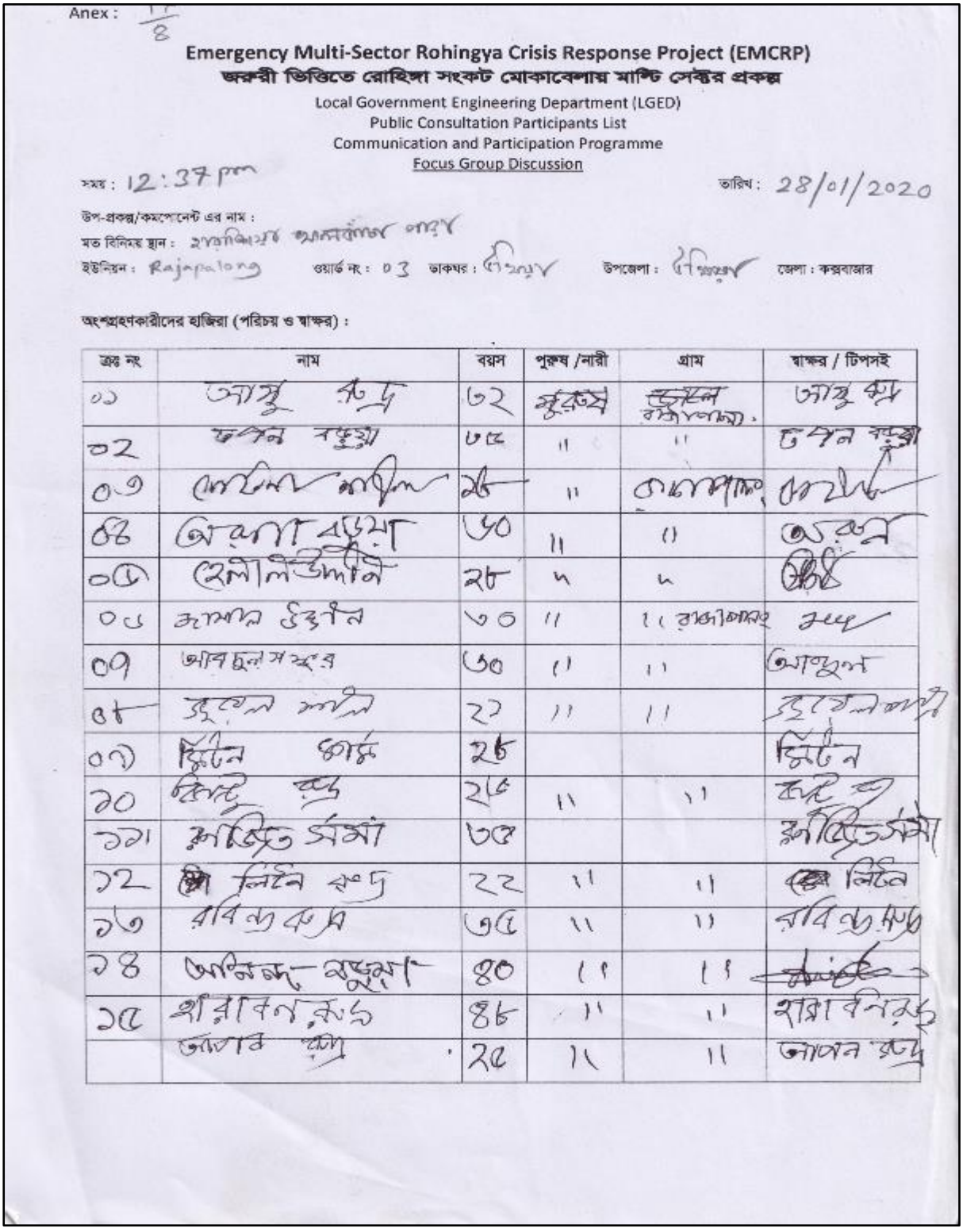
মত বিনিময় স্থান :

ইউনিয়ন : রত্নাপালং ওয়ার্ড নং : 5 ডাকঘর : উখিয়া উপজেলা : উখিয়া জেলা : কক্সবাজার

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর) :

ক্রঃ নং	নাম	বয়স	পুরুষ /নারী	গ্রাম	স্বাক্ষর / টিপসই
1.	মো: জাহেদ উল্লাহ	24	✓	[illegible]	[illegible]
2.	হা: আবদুল মালেক	48	✓	[illegible]	[illegible]
3.	আলী হোছাইন মুন্সী	60	✓	দ: পুকুরিয়া	[illegible]
4.	মোহাম্মদ রশিদ আহমদ	55	✓	"	রশিদ
5.	নাসির উদ্দিন	39	✓	"	[illegible]
6.	মুহাম্মদ ইসমাইল	42	✓	"	[illegible]
7.	মিজানুর রহমান	42	✓	"	মিজানুর রহমান
8.	দেলোয়ার	23	✓	"	[illegible]
9.	[illegible]	36	✓	"	[illegible]
10.	[illegible]	66	✓	—	জাফর
11.	[illegible]	60	✓	—	মো: আলম
12.	[illegible]	25	✓	—	ইকবাল
13.	আবদুল গফুর	88	✓	—	গফুর
14.	[illegible]	80	✓	✓	[illegible]
15.	ইসমাইল	80	✓	✓	ইসমাইল
16.	আলাউদ্দিন	22	✓	✓	[illegible]
17.	মুহাম্মদ আবদুল [illegible]	90	✓	দ: পুকুরিয়া	[illegible]

Figure: Attendance of consultation meeting for W17-6



Anex : 17/8

Emergency Multi-Sector Rohingya Crisis Response Project (EMCRP)
জরুরী ভিত্তিতে রোহিঙ্গা সংকট মোকাবেলায় মাল্টি সেক্টর প্রকল্প

Local Government Engineering Department (LGED)
Public Consultation Participants List
Communication and Participation Programme
Focus Group Discussion

সময় : 12:37 pm তারিখ : 28/01/2020

উপ-প্রকল্প/কমপোনেন্ট এর নাম :
মত বিনিময় স্থান : [illegible] ওয়ার্ড নং : 03 ডাকঘর : [illegible] উপজেলা : [illegible] জেলা : কক্সবাজার
ইউনিয়ন : Rajapalong

অংশগ্রহণকারীদের হাজিরা (পরিচয় ও স্বাক্ষর) :

ক্রম নং	নাম	বয়স	পুরুষ /নারী	গ্রাম	স্বাক্ষর / টিপসই
০১	আবু [illegible]	৬২	পুরুষ	[illegible]	আবু [illegible]
০২	[illegible]	৩৫	"	"	[illegible]
০৩	[illegible]	২৮	"	[illegible]	[illegible]
০৪	[illegible]	৩০	"	"	[illegible]
০৫	[illegible]	২৮	"	"	[illegible]
০৬	[illegible]	৩০	"	[illegible]	[illegible]
০৭	[illegible]	৩০	"	"	[illegible]
০৮	[illegible]	২২	"	"	[illegible]
০৯	[illegible]	২৮			[illegible]
১০	[illegible]	২৫	"	"	[illegible]
১১	[illegible]	৩৫			[illegible]
১২	[illegible]	২২	"	"	[illegible]
১৩	[illegible]	৩৫	"	"	[illegible]
১৪	[illegible]	৪০	"	"	[illegible]
১৫	[illegible]	৪৮	"	"	[illegible]
	[illegible]	২৫	"	"	[illegible]

Figure: Attendance of consultation meeting for W17-7

Annexure-3: Pictorial view of sub-project component location and surrounding features with public consultation

Figures: Present condition of Panishia BGS Road (W17-1) & Public Consultation meeting with Host community

Starting point of Panishia BGS Road

Trees and open field beside the road

Wired fence and bamboo fence along the road

Brick wall along the road

Paan baraz beside the road

Abdur Rahman Bodi GPS

High grounds on the side of the road having vegetation

Consultation meeting with local community

Figures: Present condition of Dighirpara Holudia Road (W17-2) & Public Consultation meeting with Host community

Homestead Gardens on the side of the road

Agriculture fields and electric pole on the side of the road

Households along the road with homestead nut tree gardens

Vegetable yard and pond on the side of the road

Bamboo fence on the side of the road

Wired fence and pond on the side of the road

Starting point of Dighirpara Holudia Road

Consultation meeting with locals of the area

Figures: Present condition of West Holudia Road, id: 422944025 (W17-3) & Public Consultation meeting with Host community

Starting point of West Holudia Road

Tin shed fence and open fields are present beside the road

Electric poles and agriculture fields are present

Holudia Khal was found on the proposed road

At some point there are agriculture fields which are over lapping on government land

Few bush and small plants were found beside the road

Pond on the side of the road

Consultation meeting with locals on the site

Starting point of Hijolia horinmara Road

Agriculture fields and trees were found on the sides of the road

High grounds/tila and trees on the side of the road

Ismail's shop on the side of the road

Electric Pole and trees on the sides of the road

Road condition is earthen with scattered bush beside

Bamboo fence and electric pole on the side

Consultation with locals

Figures: Present condition of Bottala Dosari Road, id: 422944006 (W17-5) & Public Consultation *meeting with Host community*

Starting point of Bottala Dosari Road

Bamboo bush and settlements along the road

Paddy field and vegetable yard beside the road

Trees and agriculture fields

Water pump on the side of the road

Small plants along the road with an existing culvert

RCC Bridge over Dhusori khal which is on the pathway of road

Consultation meeting with locals

Figures: Present condition of Badugona to battali Road, id: 422944026 (W17-6) & Public Consultation meeting with Host community

Starting Point of Badugona to battali Road

Agriculture Field on both side of the road

Bamboo fence and settlement beside the road

Vegetable yard on the side of the road

Brick wall on the side of the road

School on the side of the road

High ground and bamboo fence on the road

Consultation meeting with locals

Figures: Present condition of Jadomora-Horinmara Road, id: 422944038 (W17-7) & Public Consultation meeting with Host community

Starting Point Jadomora-Horinmara Road

Brick wall on the side of the road

Agriculture field and trees on the side of the road

Bush on the side of the road

Gunny bag supported shoulder on the road

Bamboo fence and homestead garden

High ground on the side of the road

Consultation meeting with locals

Appendix-1: Environmental Screening Form for examining sub-projects

Environmental Screening Form for Sub-project W17-1

Sub-Project Component Description Form:

Name of Sub-Project: EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of the Component: Panishia BGS Road, id: 422944021

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

Estimated total cost of sub-project (in Taka): 32,260,141.12 Tk.

Estimated construction period duration: 1 year

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: West Painnashia Village

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-A with a proposed design of Bituminous Carpeting involving Earth Work. Proposed safety and service providing structures are 8 no. of Cross Drain (Size: .975mmX .975mm), 9 meters of Protection wall from Ch: 268m-277m, 1227 meters of L-Drain at different chainage, 02 numbers of Box Culvert (2.0m x2.0m) at different chainage, 344 meters of Toe wall with 1.5m and 2.0m of height, 9 meters of palisading work. Road safety works are also included in the sub-project activity.

Estimated footprint / land area for this sub-project is 7840 sq. meter

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

Proposed road is situated within the catchment area of west pannishia Village and stretches nearly 1600 meters. This road starts at Courtbazar-Sonarpara road on the east and ends at west pannishia, chakkata on the west. The road area resembles to any typical semi-developed rural settings in Bangladesh having mosques, village households, agriculture fields to grow crops and vegetables and vegetation that serves as subsistent gardening. Majority of the surrounding spaces around the intervention site is covered with homestead gardens and forests. However, there are no significant eco-sensitive features on the pathway of this proposed road.

Overall Comments

The proposed component of the sub-project (Road construction) is not located within any remarkable environmentally sensitive area 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 loggings have been observed in the road area. But, some local trees like betel nut tree, rain tree, mango tree, bamboo bushes etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No

agricultural productive soil will be used for the construction purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, relevant mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

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. During the participatory public consultation meeting representatives from the local community attended and they showed no objection to the construction of this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. Water flow from undulated terrains is a factor that should be considered for construction because water flow from 1-week rain may cause the surrounding area to be logged in several places. Locals also requested to involve the local community to construction works .

Other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. Only forest is found as homestead forest on high grounds of the location.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, Degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including Modhom Painnashia Graveyard (500m), west painnashia mosque (30m) to the east. West painnashia children graveyard (50m), Abdur Rahman Bodi GPS(20m), Chakkata baitun Nur jame mosque (100m) to the south. West painnashia Chakkata Panjekhana(10m), Chakkata Central mosque(10m) to the west. Jaliapalong Forest office (500m), Jaliapalong baitun nur jame mosque/graveyard/hafezkhana (1km), Jaliapalong kasim Market(200m) to the north. Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exist.

Some human settlements and agricultural land are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. 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. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 8 no. of Cross Drain (Size: .975mmX .975mm)
- 9 meters of Protection wall from Ch: 268m-277m
- 1227 meters of L-Drain at different chainage
- 02 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 344 meters of Toe wall with 1.5m and 2.0m of height
- 9 meters of palisading work
- Road safety works
- Environmental Mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944021
District	Cox's Bazar
Upazila	Ukhiya
Union	Jaliapalong
WARD	01
Proposed Chainage	1600m
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	10km
Road Starting Point Coordinates and name	Latitude: 21°16'44" N Longitude: 92°04'59" E Road starts at Kort bazar-sonarpara road east
Road Ending Point Coordinates and name	Latitude: 26°16'26" N Longitude: 92°04'22" E Road ends at west painnashia, chakkata west

Land ownership

Government Land

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

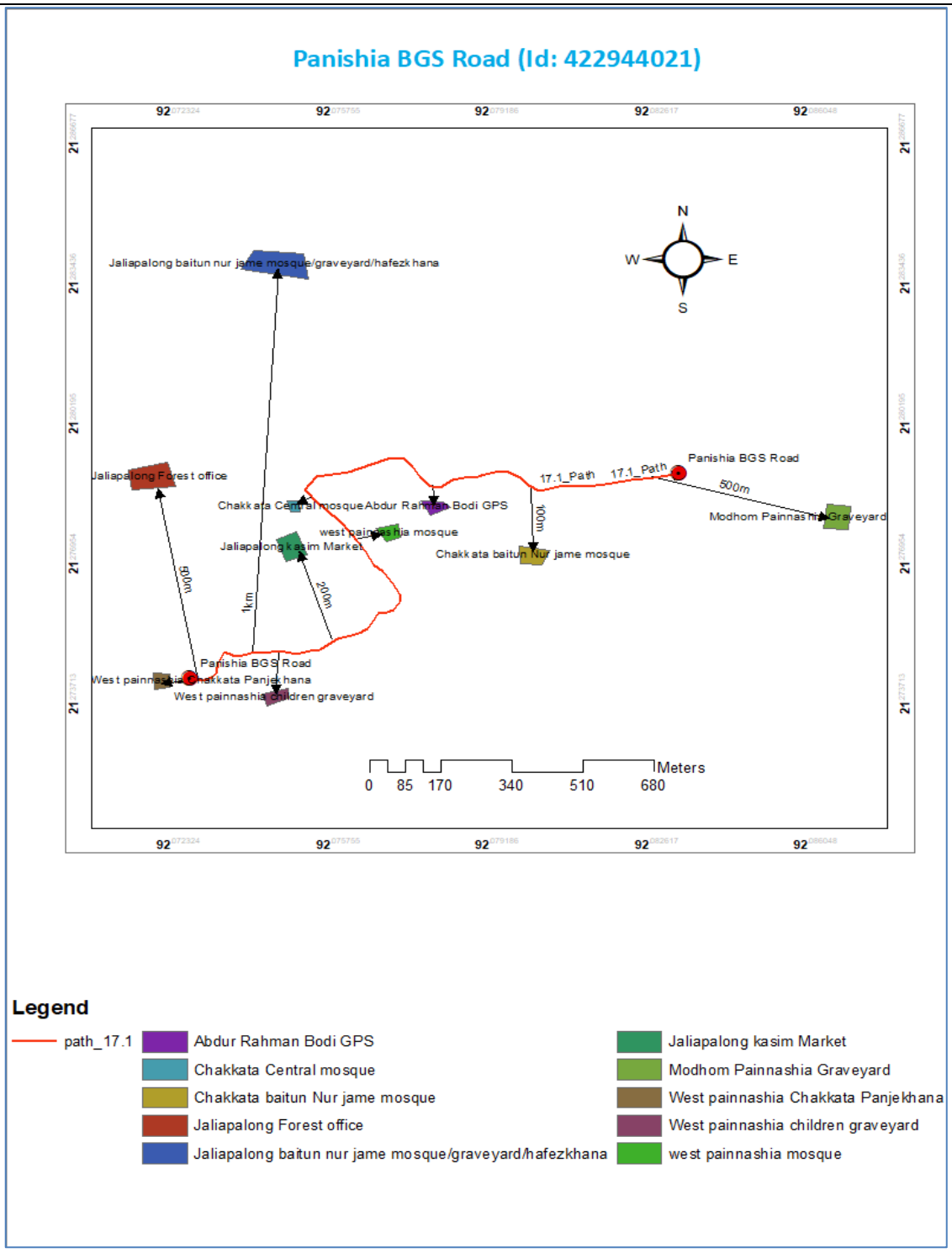
location was conducted:
Modhom Painnashia Graveyard (500m), west painnashia mosque (30m) to the east. West painnashia children graveyard (50m), Abdur Rahman Bodi GPS (20m), Chakkata baitun Nur jame mosque (100m) to the south. West painnashia Chakkata Panjekhana (10m), Chakkata Central mosque (10m) to the west. Jaliapalong Forest office (500m), Jaliapalong baitun nur jame mosque/graveyard/ hafezkhana(1km), Jaliapalong kasim Market (200m) to the north.

Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

Section B: Environmental Screening

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

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
Modhom Painnashia Graveyard(500m), west painnashia mosque(30m) to the east. West painnashia children graveyard (50m), Abdur Rahman Bodi GPS (20m), Chakkata baitun Nur jame mosque (100m) to the south. West painnashia Chakkata Panjekhana (10m), Chakkata Central mosque (10m) to the west. Jaliapalong Forest office (500m), Jaliapalong baitun nur jame mosque/graveyard/ hafezkhana (1km), Jaliapalong kasim Market (200m) to the north.
There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project. **A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas (within 30m buffer zone) are shown below.**



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which are homestead gardens and forest. Several mosques, madrasa and local settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues: N/A

*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):

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

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 60 feet to 70 feet and deep tube well depth is 700 to 800 feet. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement:

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

State of forestation:

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

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

N/A

B.2: Pre-construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An earthen road called west painnashia connecting road is available for access. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
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) aggregates v) metals vi) water vii) concretes viii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. An earthen road called west painnashia connecting road is available for access.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, dust from bricks during construction of project components will be produce. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time. Leftover

oils or spills from machinery can be a high probability generating liquid waste.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)

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

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

Environmental Screening Form for Sub-project W17-2

Work Package Description Form:

EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of Sub-Project: Dighirpara Holudia Road, id: 422944023 (W17-2)

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

Estimated total cost of sub-project (in Taka): 19,004,264.59 Tk.

Estimated construction period duration: 1 year

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**: Haldiapalong

Name of Community/Local Area: Middle Holdiapalong, Moulovipara

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-A with a proposed design of Bituminous Carpeting through construction of Earth Work. Proposed safety structures are 8 no. of Cross Drain (Size: .975mmX .975mm), 54 meters of Palisading work at different chainage, 82 meters of L-Drain at different chainage, 01 numbers of Box Culvert (2.0m x2.0m), 26 meters of Retention wall and 01 culvert. Road safety works are also included in the project activity.

Estimated footprint / land area for this sub-project is 4900 sq. meter

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

Proposed road is situated within the catchment area of Middle Holdiapalong, Moulovipara stretching 1000 meters. This road starts at Middle Holudia Bagula Market and ends Moulovipara(South). Being one of the local communities of Ukhiya upazila these locations are very familiar to any other part of rural Bangladesh having mosques, village households, ponds, agriculture fields to grow crops and vegetables and vegetation that serve as subsistent gardening. The surrounding area is dominated with agriculture practices as rice production, betel leaf production, vegetable farming etc. Majority of the surrounding space of this intervention is covered with homestead gardens and agriculture fields. However, there are no significant eco-sensitive features on the pathway of this proposed road other than few small plants and trees to consider.

Overall Comments

The proposed component of the sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area, thus not going to create intimidation to important environmental features. No drainage congestion/water loggings have been observed in the road area. But, some local trees like betel nut tree, rain tree, mango tree, bamboo bushes etc., or additional vegetation may need to

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

It has been revealed that this project's scopes of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local community attended in the participatory public consultation meeting. Their community representatives as teachers, shop owners, farmers and elders have no objection to the construction this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. On another matter, locals requested to involve the local community to construction works and material storage monitoring duties.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. Only forest is found as homestead forest on plain grounds of the location. The locality is based on plain grounds which does not have severe water logging situations. However, to pave the way for this road few numbers of small plants and shrubs may need clearing.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, Degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including Shaher kobira Jame Mosque and Talimul Quran Nurani Madrassa(500m), Middle Holudia Bagula Market (10m) to the North. Shabek Rumkha GPS (800m), West holudia GPS (400m) and a pond (50m) to the West. Middle Holudia Dighirpar Jame Mosque/ madrassa (15m), Mouluvipara Islamia Ibtedayi Madrassa(100m) and a pond (30m) to the East and Holudia Khal(50m), Moulovipara Jame

Mosque/ Graveyard (100m) to the south. Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exists. Human settlements and agricultural land are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 6-7 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 8 no. of Cross Drain (Size: .975mmX .975mm)
- 82 meters of L-Drain at different chainage
- 01 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 26 meters of Retention wall
- 54 meters of palisading work
- Road safety works
- Environmental mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944023
District	Cox's Bazar
Upazila	Ukhiya
Union	Holdiapalong
WARD	06
Proposed Chainage	1000m
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	12km
Road Starting Point Coordinates and name	Latitude: 21.304578 N Longitude: 92.115370 E Road starts at Middle Holudia Bagula Market
Road Ending Point Coordinates and name	Latitude: 21.295660 N Longitude: 92.115572 E Road ends at Moulovipara (South).

Land ownership

Government Land

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:

Shaher kobira Jame Mosque and Talimul Quran Nurani Madrassa(500m), Middle Holudia Bagula Market (10m) to the North. Shabek Rumkha GPS (800m), West holudia GPS (400m) and a pond (50m) to the West. Middle Holudia Dighirpar Jame Mosque/ madrassa (15m), Mouluvipara Islamia Ibtedayi Madrassa (100m) and a pond (30m) to the East. Holudia Khal(50m), Moulovipara Jame Mosque/ Graveyard (100m) to the south.

Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

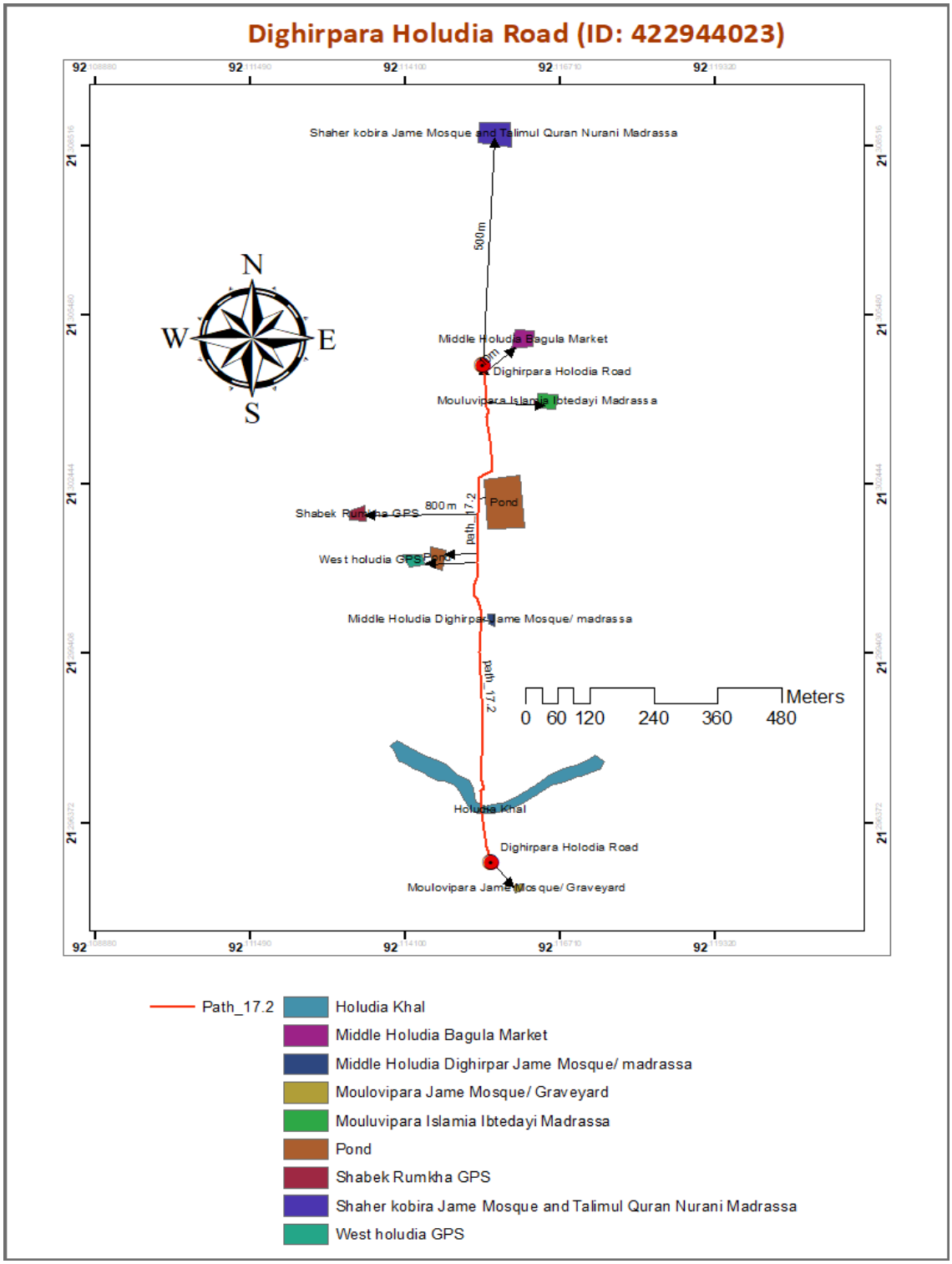
Section B: Environmental Screening

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

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
Shaher kobira Jame Mosque and Talimul Quran Nurani Madrassa(500m), Middle Holudia Bagula Market (10m) to the North. Shabek Rumkha GPS (800m), West holudia GPS(400m) and a pond (50m) to the West. Middle Holudia Dighirpar Jame Mosque/ madrassa (15m), Mouluvipara Islamia Ibtedayi Madrassa (100m) and a pond (30m) to the East. Holudia Khal(50m), Moulovipara Jame Mosque/ Graveyard (100m) to the south.

There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project.

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



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which is homestead gardens and forest. Several mosques, madrasa and local settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and

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

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues:

N/A

*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.

Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle-related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible/ preventable by mitigation measures.

Noise:

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

Baseline soil quality:

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

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

Landslide potential is low. The sub-project will be constructed on existing HBB or earthen road for the most part and no other part of the road is found to have pre-existing conditions which may lead to landslide. The impacts are negative but very small scale, site-specific within a relatively small area and adjustable by mitigation measures.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-120 feet and Deep groundwater depth is 600-800ft (Field survey, 2019). In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to

681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)
Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Patches of vegetation containing large and matured trees are present along the side of the proposed road 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): An earthen road called patabari-moricha connecting road and Sabek Rumkha GPS connecting road is available for access. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
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) aggregates v) metals vi) water vii) concretes vii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. An earthen road called patabari - moricha connecting road and Sabek Rumkha GPS connecting road is available for access.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): **Solid waste:** HBB road will be recovered through brick accumulation and sands will be used along with brick chips, bitumen materials etc. So, construction debris and other solid wastes will be generated both during construction periods. **Type**: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 8 metric ton of solid wastes including demolition materials will be produced.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time. Leftover oils or spills from machinery can be a high probability generating liquid waste.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel in the ROW or adjacent to the proposed project which needs transformation of any sort.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.

Describe possible traffic movement impacts on (unwanted) light, noise and air pollution:
No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles:
No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description)
No
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description)
No
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)
There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project:
During the operation phase, this road will improve the socioeconomic condition of the population of the catchment area by providing jobs, paving the way to get access to further development and services, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this instalment will have improved the capacity to render services and goods faster which will invite more development interventions and planning to this area having a huge positive impact in economic development.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description)
No existing drainage channels or surface water bodies found in the project area; therefore, no such effect can be anticipated
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description)
There is no protected area in or around the project sites, and no known areas of ecological interest.
Activities leading to landslides, slumps, slips and other mass movements in road cuts:
The entire sub-project component area is nearly flat; thus, no such type of impacts is anticipated.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation)
No
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation)
There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-

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

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

Environmental Screening Form for Sub-project W17-3

Work Package Description Form:

EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of Sub-Project: West Holudia Road, id: 422944025

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

Estimated total cost of sub-project (in Taka): 24,890,708.16 Tk.

Estimated construction period duration: 1 year

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**: Holdiapalong

Name of Community/Local Area: West Holudia, Moulovipara

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-A with a proposed design of Bituminous Carpeting through construction of Earth Work. Proposed safety structures are 5 no. of Cross Drain (Size: .975mmX .975mm), 67 meters of Protection wall from Ch: 383m-450m, 238 meters of L-Drain at different chainage, 02 numbers of Box Culvert (2.0m x2.0m) at different chainage, 103 meters of Toe wall, 132m RCC Protection wall, 199 meters of palisading work. Road safety works are also included in the project activity.

Estimated footprint / land area for this sub-project is 6909 sq. meter

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

Proposed road is situated within the catchment area of west Holudia Moulovipara Village stretching 1410 meters. This road starts at moricha-patabari road north and ends at moulovipara station south. Being one of the local communities of Ukhiya upazila these locations are very familiar to any other part of rural Bangladesh having mosques, village households, agriculture fields to grow crops and vegetation that serves as subsistent gardening. The surrounding area is dominated with agriculture practices as rice production, betel leaf production, vegetable farming etc. Majority of the surrounding space of this intervention is covered with homestead gardens and forests. One seasonal water stream is found abutting the road. However, there are no significant eco-sensitive features on the pathway of this proposed road.

Overall Comments

The proposed component of the sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area, thus not going to create intimidation to important environmental features. No drainage congestion/water loggings have been observed in the road area. But, some local trees like betel nut tree, rain tree, mango tree, bamboo bushes etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No

agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scopes of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local community attended in the participatory public consultation meeting. Their community representatives as teachers, shop owners, farmers and elders have no objection to the construction this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. On another matter, locals requested to involve the local community to construction works and material storage monitoring duties.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. Only forest is found as homestead forest on high grounds of the location. However, there are locations on the road which may throw challenges towards coherence of work policy. In cases, it was found that this road is passing through agricultural fields and at one point this road was found to cross holdia khal which is a seasonal stream. Few bush and small plants need clearing on the ROW at different chainage.

Types of waste to be generated during construction and operation phase:
During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, Degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including West Holudia Rajpoth Graveyard(250m), Mondolia Chora(500m), West hHoludia GPS (300m) to the North. Uchen Ali Miaji Jame Mosque/ Graveyard(200m), West holudia Paddo Pond(500m), West Holudia Poddopukur Jame Mosque/ Nurani Madrassa(300m), Ajunir Pukur/Pond(300m), Shabek Rumkha GPS(500m), West Holudia Budho Shoshan(800m) to the West. Modhom Holudia Dighi

(400m), Dokkhin Holdia GPS(300m), Ghatirpara Community clinic(500m), Moulovipara Islamia Ibtadia Madrassa/Graveyard(300m) to the East. Holudia khal(60m), Moulovipara station (50m), Hatirghona GPS(1km), Hatirghona station(1km) to the South. Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exists.

Human settlements, homestead gardens and agricultural lands are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. 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. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 5 no. of Cross Drain (Size: .975mmX .975mm)
- 67 meters of Protection wall from Ch: 268m-277m
- 238 meters of L-Drain at different chainage
- 02 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 103 meters of Toe wall with 1.5m and 2.0m of height
- 199 meters of palisading work
- Road safety works
- Environmental mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944025
District	Cox's Bazar
Upazila	Ukhiya
Union	Holdiapalong
WARD	06
Proposed Chainage	1410 meters
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	10km
Road Starting Point Coordinates and name	Latitude: 21.305222 N Longitude: 92.111718 E Road starts at Moricha patabari road (north)
Road Ending Point Coordinates and name	Latitude: 21.295513 N Longitude: 92.113484 E Road ends at Moulovipara station (south)

Land ownership

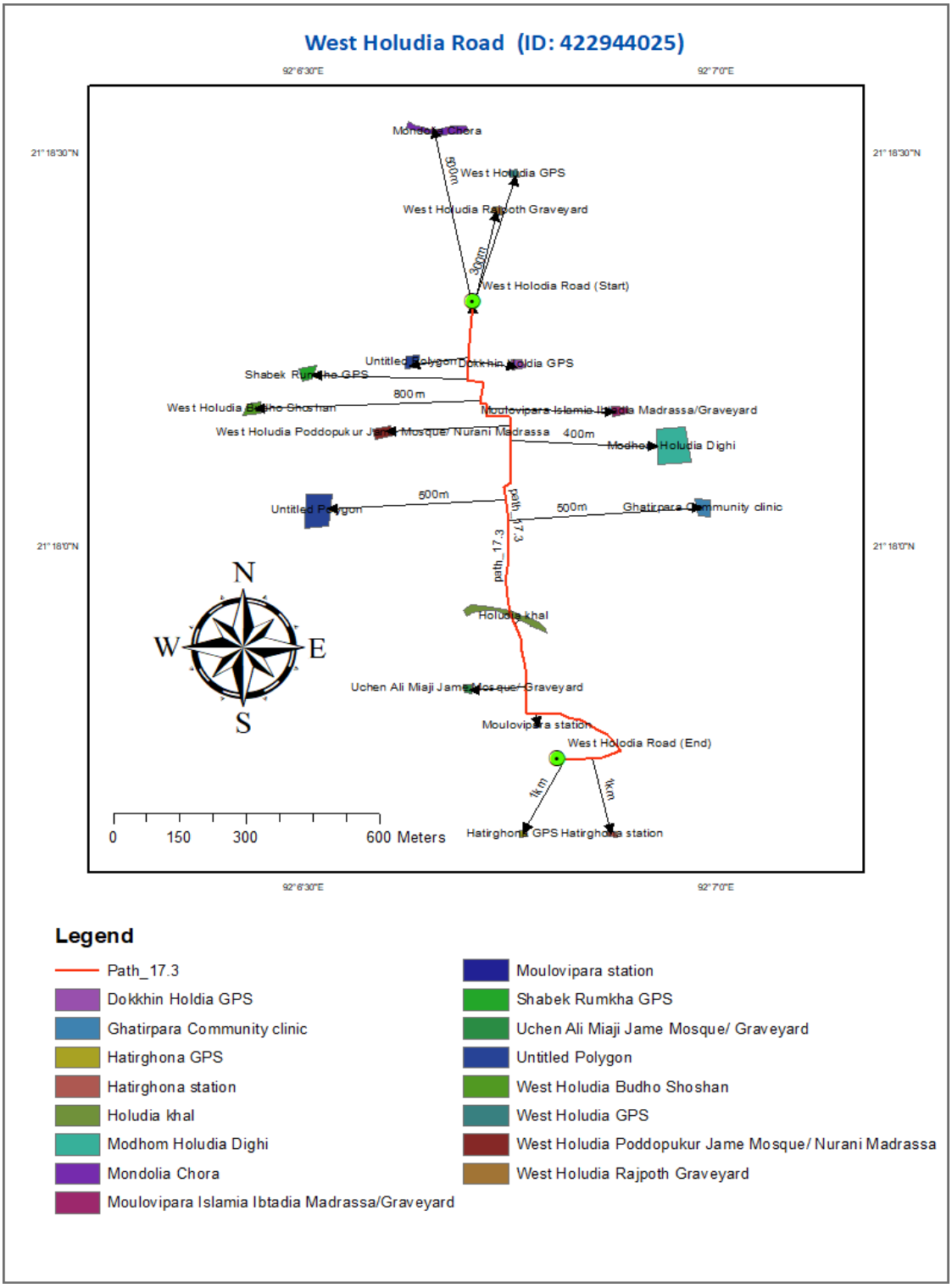
Government Land

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: West Holudia Rajpoth Graveyard(250m), Mondolia Chora(500m), West hHoludia GPS (300m) to the North. Uchen Ali Miaji Jame Mosque/ Graveyard(200m), West holudia Paddo Pond(500m), West Holudia Poddopukur Jame Mosque/ Nurani Madrassa(300m), Ajunir Pukur/Pond(300m), Shabek Rumkha GPS(500m), West Holudia Budho Shoshan(800m) to the West. Modhom Holudia Dighi (400m), Dokkhin Holdia GPS(300m), Ghatirpara Community clinic(500m), Moulovipara Islamia Ibtadia Madrassa/Graveyard(300m) to the East. Holudia khal(60m), Moulovipara station (50m), Hatirghona GPS(1km), Hatirghona station(1km) to the South. Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

Section B: Environmental Screening

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

Description of cultural properties (if applicable, including distance from site): **Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:** West Holudia Rajpoth Graveyard(250m), Mondolia Chora(500m), West hHoludia GPS (300m) to the North. Uchen Ali Miaji Jame Mosque/ Graveyard(200m), West holudia Paddo Pond(500m), West Holudia Poddopukur Jame Mosque/ Nurani Madrassa(300m), Ajunir Pukur/Pond(300m), Shabek Rumkha GPS(500m), West Holudia Budho Shoshan(800m) to the West. Modhom Holudia Dighi (400m), Dokkhin Holdia GPS(300m), Ghatirpara Community clinic(500m), Moulovipara Islamia Ibtadia Madrassa/Graveyard(300m) to the East. Holudia khal(60m), Moulovipara station (50m), Hatirghona GPS(1km), Hatirghona station(1km) to the South. There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project.



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 above.

Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which are homestead gardens and forest. Several

mosques, madrasa and local settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues: N/A

*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):

Landslide potential is low. (The sub-project will be constructed on existing HBB or earthen road for the most part and no other part of the road is found to have pre-existing conditions which may lead to landslide. The impacts are negative but very small scale, site-specific within a relatively small area and adjustable by mitigation measures.

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 60 feet to 80 feet and deep groundwater table (drinkable) varies from 400-800ft (Field survey, 2019). In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement: **N/A** (None of the information was found about the wildlife movement in or across the area)
State of forestation: Patches of vegetation containing large and matured trees are present along the side of the proposed road which are mostly homestead gardens.
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): An earthen road called kheachori - bhalukia - kutupalong connecting road is available for access. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
Possible location of labor camps: In west holudia, Open space near Ahmed Rashid's home can be used as labor shed
Requirement and type of raw materials (e.g. sand, stone, wood, etc.): i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. An earthen road called kheachori-bhalukia-kutupalong connecting road is available for access.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins. near Ahmed Rashid's home can be used as material storage
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, dust from bricks during construction of project components will be produce. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time. Leftover oils or spills from machinery can be a high probability generating liquid waste.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) water vi) concretes vii) Bamboo & wood from mobilized materials and other electro-mechanical equipment and viii) clay are the most common type of building material used in construction. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel in the ROW or adjacent to the proposed project which needs transformation of any sort.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may

appear resulting from the movement of vehicles carrying construction materials.

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

B.4: Operation Phase

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

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

Environmental Screening Form for Sub-project W17-4

Work Package Description Form:

EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of Sub-Project: Hijolia horinmara Road (id: 422944005) (W17-4)

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

Estimated total cost of sub-project (in Taka): 47,653,913.23 Tk.

Estimated construction period duration: 1 year

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

Name of Community/Local Area: South Horinmara

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

The Sub-Project is categorized as a village road-A with a proposed design of Bituminous Carpeting through construction of Earth Work. Proposed safety structures are 02 no. of Cross Drain (Size: .975mmX .975mm), 1043 meters of Palisading work at different chainage, 687 meters of L-Drain at different chainage, 02 numbers of Box Culvert (4.5m x3.5m),35 meters of Toe wall, 94 meters of Retention wall and 101-meter RCC U-drain. Road safety works are also included in the project activity.

Estimated footprint / land area for this sub-project is 7154 sq. meter

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

Proposed road is situated within the catchment area of South Horinmara stretching 1460 meters. This road starts at South Horinmara Pitch Road and ends near house of Rahmat Ali's House in South Horinmara. Being one of the local communities of Ukhiya upazila these locations are very familiar to any other part of rural Bangladesh having mosques, village households, ponds, agriculture fields to grow crops and vegetables and vegetation that serve as subsistent gardening. The surrounding area is dominated with agriculture practices as rice production, betel leaf production, vegetable farming etc. Majority of the surrounding space of this intervention is covered with homestead gardens and agriculture fields with hilly locations. In some parts, the road is imbedded in undulated terrains where most lengths are in earthen condition and rest is plain land. Most settlements are found positioned along hilly areas and some households are settled on both high and low grounds. Vegetation cover is dense in this location as well. However, there are no sensitive eco-sensitive features on the pathway of this proposed road other than few trees and small parts of hills.

Overall Comments

The proposed component of the sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area, thus not going to create intimidation to important environmental features. No

drainage congestion/water loggings have been observed in the road area. But, some local trees like betel nut tree, rain tree, mango tree, bamboo bushes etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scopes of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local community attended in the participatory public consultation meeting. Their community representatives as teachers, shop owners, farmers and elders have no objection to the construction this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. On another matter, locals requested to involve the local community to construction works and material storage monitoring duties.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. At some points of the road, there are locations where agriculture fields will need adjustments along with electric poles. Several locations will need small tree clearing as well; around 10 trees will need cutting. Due to being a hilly location, many parts will need protection wall in order to support the high grounds with relation with the road as well as few small undergrown high grounds will need adjustments at some chainage points. Nonetheless, no significant impact is expected on the ecosystem and biodiversity or any fish farming will be disturbed, due to the construction of the sub projects. Forest coverage is found in many locations along the road which are on government lands and few are homestead. The locality is based on high grounds which does not have water logging situations because water flow from hilly locations run down towards lower grounds. In other words, this road will pose challenges which can be overcome with fitting mitigation and management measures in place.

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

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site include Horinmara GPS located at 700m north and a mosque located at 700m north of the subproject. Nurni madrasa cum hefjokhana located at 800m south of the subproject. A madrasa named Madrasa Tun Nur located at 500m east and a mosque named Horinmara mosque located at 15m west of the subproject. Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exists.

Some human settlements and agricultural land are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 2-3 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 2 no. of Cross Drain (Size: .975mmX .975mm)
- 687 meters of L-Drain at different chainage
- 02 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 94 meters of Retention wall
- 35 meters of Toe wall
- 1043 meters of palisading work
- 101-meter RCC U-drain
- Road safety works
- Environmental mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944005
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
WARD	
Proposed Chainage	1460m
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	03 km

Road Starting Point Coordinates and name	Latitude: 21.2456820 N Longitude: 92.1135532 E Road starts at South Horinmara Pitch Road
Road Ending Point Coordinates and name	Latitude: $21^0$14'04.9" N Longitude: $92^0$06'41.7" E Road ends at Rahmat Ali's House

Land ownership
Government Land

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:

Horinmara GPS located at 700m north and a mosque located at 700m north of the subproject. Nurni madrasa cum hefjokhana located at 800m south of the subproject. A madrasa named Madrasa Tun Nur located at 500m east and a mosque named Horinmara mosque located at 15m west of the subproject.

Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

Section B: Environmental Screening

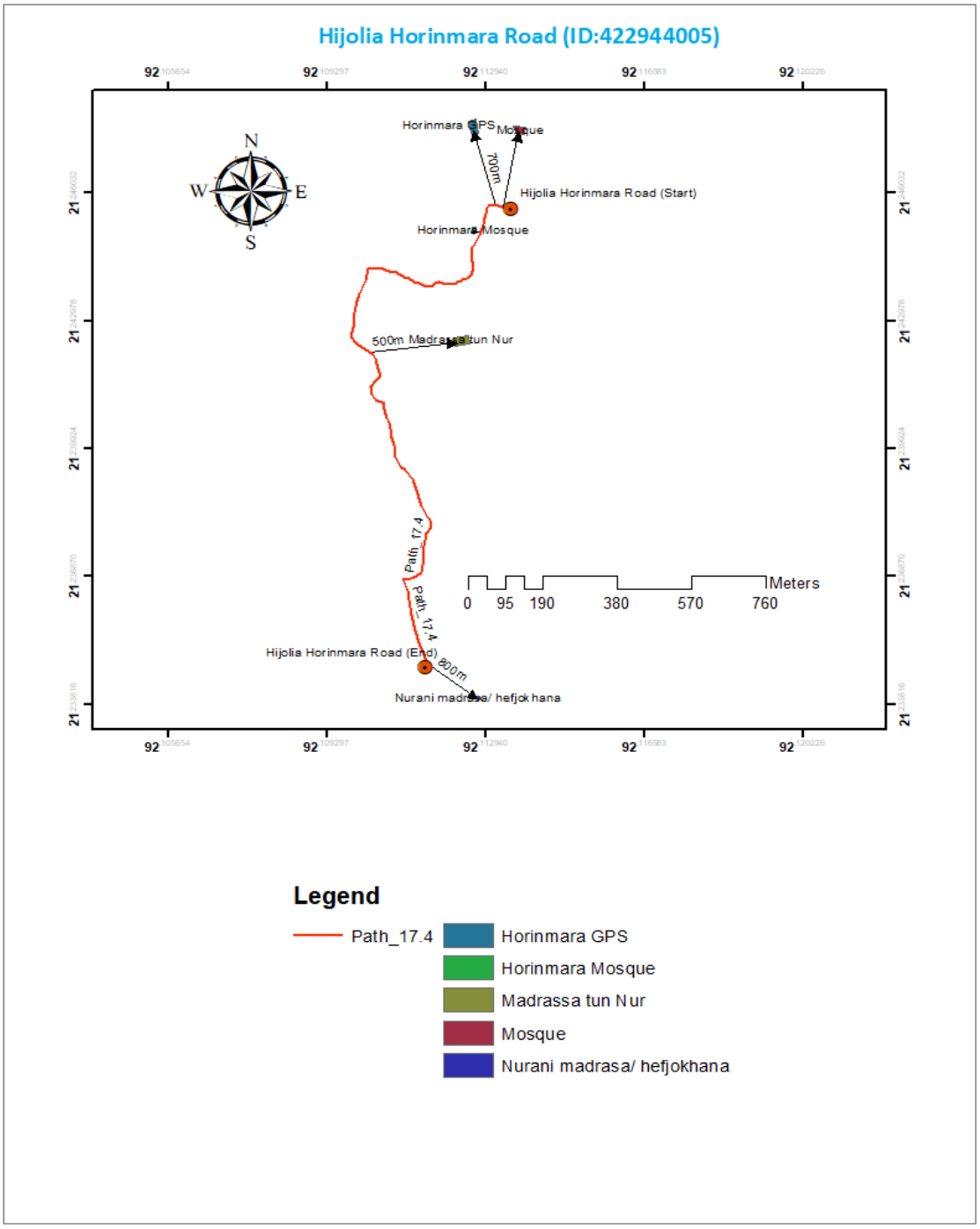
***B.1*: Environmental feature of sub-project location**

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

Horinmara GPS located at 700m north and a mosque located at 700m north of the subproject. Nurni madrasa cum hefjokhana located at 800m south of the subproject. A madrasa named Madrasa Tun Nur located at 500m east and a mosque named Horinmara mosque located at 15m west of the subproject.

There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project.

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



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which are homestead gardens and forest. Also, there are some agriculture fields which are over lapping with government land and two bamboo sako which have to be crossed in order to reach the end point. These small bamboo bridges (sako) are placed over two dry-small stream ways. Several mosques, madrasa and local settlement were found during the survey. It will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will

be followed during the entire construction period.

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues:

N/A

*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)

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

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-120 feet and deep groundwater table (drinkable) varies from 400-800ft. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement:

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

State of forestation:

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

Summary of water balance analysis (For water supply scheme only): **N/A**

B.2: Pre-construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An earthen connecting road coming from North is present. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
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) aggregates v) metals vi) water vii) concretes vii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. An earthen connecting road coming from North is present which is available for access.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): Earth/ mud, plastics, brick chips, dust from bricks during construction of project components will be produce. Also sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are

mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bitumen etc. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) Low. Two small water streams are present on the road chainage, which will be adjusted in order to pass the road to the south. This adjustment will not require to divert the stream or even cut through this stream. The narrower section of these stream will to the left will be used to usher this road which will not significantly hamper seasonal water flow.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

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) Low. During the construction of the road, Labor camp will be equipped with full functioning toilets (sanitary) for male and female persons, water supply and filtration, storage and other facilities. No fecal sludge will be produced for transferring to any disposal system during the operation period. Very little amount of solid waste consisting of mainly paper, plastic, polythene, and organic compounds is likely to be produced and higher amount of wastes including organic kitchen wastes will be produced during this period. All these wastes will be stored in covered plastic bins temporarily and later will be disposed off in a designated place away from the site and any water bodies and covered with layers of soil in a periodic manner so that no odor, water and soil quality impacts are generated. Plastic, polythene and other non-biodegradable wastes must be separated from the organic/ biodegradable wastes before disposing off underneath the soil and SMC should be made aware of this separation and disposal procedure.
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 for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this road will improve the socioeconomic condition of the population of the catchment area by providing jobs, paving the way to get access to further development and services, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this instalment will have improved the capacity to render services and goods faster which will invite more development interventions and planning to this area having a huge positive impact in economic development.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies found in the project area; therefore, no such effect can be anticipated
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the project sites, and no known areas of ecological interest.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: N/A
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) No
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions

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

Environmental Screening Form for Sub-project W17-5

Work Package Description Form:

EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of Sub-Project: Bottala Dosari Road, id: 422944006 (W17-5)

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

Estimated total cost of sub-project (in Taka): 28,481,999.02 Tk.

Estimated construction period duration: 1 year

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

Name of Community/Local Area: Harushia Khalkacha para

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

The Sub-Project is categorized as a village road-A with a proposed design of Bituminous Carpeting through construction of Earth Work. Proposed safety structures are 01 no. of Cross Drain (Size: .975mmX .975mm), 131 meters of Toe Wall, 03 numbers of Box Culvert and 54 meters of Retention wall. Road safety works are also included in the project activity.

Estimated footprint / land area for this sub-project is 6468 sq. meter

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

Proposed road is situated within the catchment area of Harushia Khalkacha para in Rajapalong union stretching 1320 meters. This road starts at Harushia Khalkacha para keeping a bamboo bridge on the left and ends in Maiarkul, Chainkhola and Dhusori connecting point. Being one of the local communities of Ukhiya upazila these locations are very familiar to any other part of rural Bangladesh having mosques, village households, ponds, agriculture fields to grow crops and vegetables and vegetation that serve as subsistent gardening. The surrounding area is dominated with agriculture practices as rice production, vegetable farming etc. Majority of the surrounding space of this intervention is covered with homestead gardens and agriculture fields. The road is mostly in plain land. Most settlements are found positioned along the road on low grounds. Vegetation cover is dense in this location as well. However, there are no sensitive eco-sensitive features on the pathway of this proposed road other than few trees and bamboo bush.

Overall Comments

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

mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scopes of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local community attended in the participatory public consultation meeting. Their community representatives as teachers, shop owners, farmers and elders have no objection to the construction this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. On another matter, locals requested to involve the local community to construction works and material storage monitoring duties.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. Only forest is found as homestead forest on plain grounds in the locality.

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

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including Kumarpara GPS (1km) to the North. Khoiratipara talimul Quran Madrassa/Mosque (80m), Khoirati GPS (50m) to the West. Dhushori Mosque (30m) to the East. Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exists. Human settlements and agricultural land are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were about 6-7 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 01 no. of Cross Drain (Size: .975mmX .975mm)
- 03 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 54 meters of Retention wall
- 131 meters of Toe wall
- Road safety works
- Environmental mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944006
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
WARD	
Proposed Chainage	1320m
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	1.5 km
Road Starting Point Coordinates and name	Latitude: 21.2487638 N Longitude: 92.1255165 E Road starts at Harushia Khalkacha para
Road Ending Point Coordinates and name	Latitude: 21.2386118 N Longitude: 92.1273347 E Road ends at Maiarkul, Chainkhola and Dhusori connecting point

Land ownership

Government Land

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:

Kumarpara GPS(1km) to the North. Khoiratipara talimul Quran Madrassa/Mosque (80m), Khoirati GPS (50m) to the West. Dhushori Mosque(30m) to the East.

Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

Section B: Environmental Screening

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

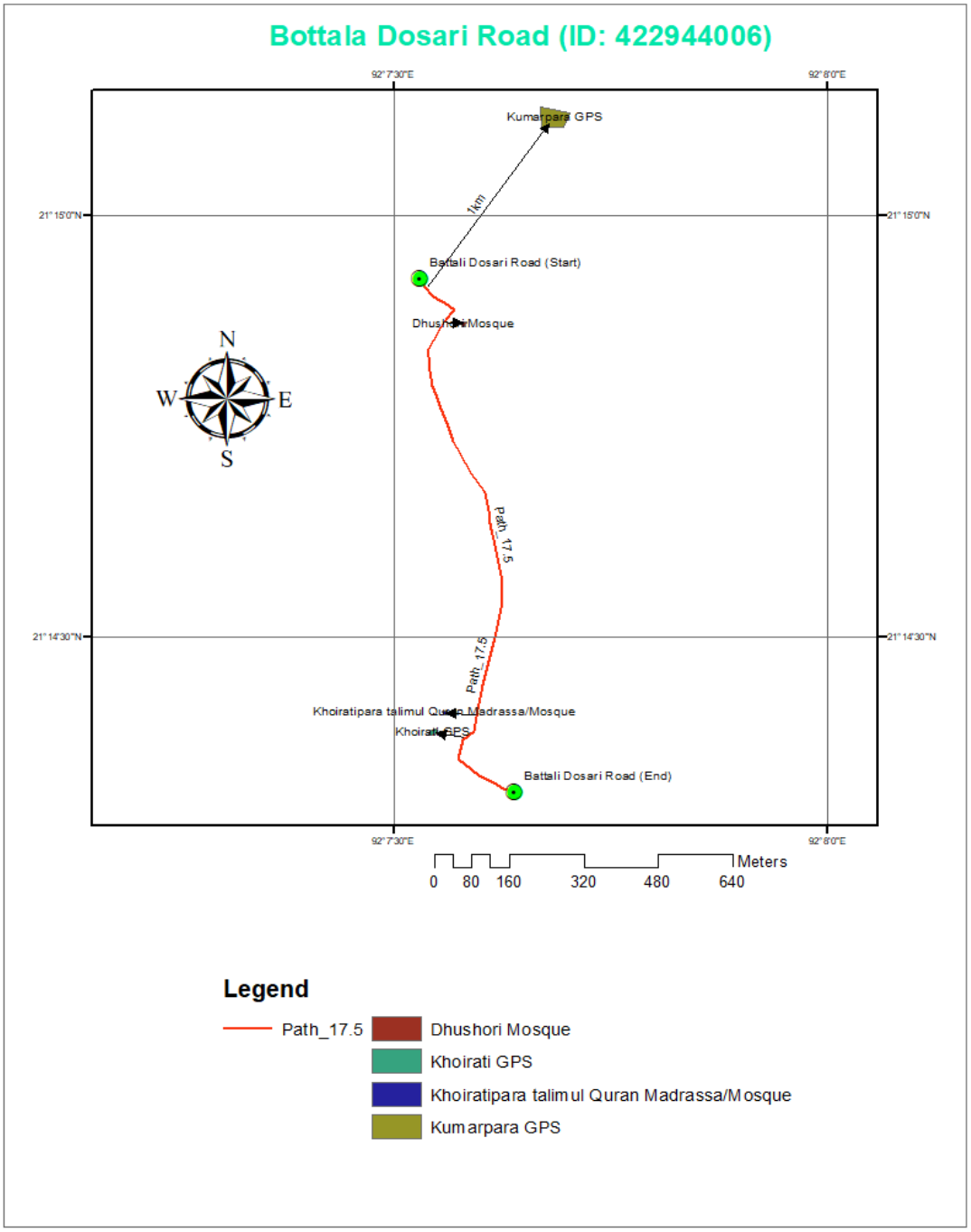
Description of cultural properties (if applicable, including distance from site):

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

Kumarpara GPS(1km) to the North. Khoiratipara talimul Quran Madrassa/Mosque (80m), Khoirati GPS (50m) to the West. Dhushori Mosque(30m) to the East.

There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project.

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



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which are homestead gardens and forest. Several mosques, madrasa and local settlement were found during the survey. Those will not be affected by the construction works since the existing (partly HBB and partly Earthen) road has not crossed over with any features that might be of concern. It will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues:

Elephants was seen 1 year ago on the west side of ending point where there is khoirati GPS is located.

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

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 80-120 feet and deep tubewell depth is 700-800 ft. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

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

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

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

B.2: Pre-construction Phase

Information on Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable): An earthen connecting road coming from south side of the project's end point also called dhusori road is present which is part of the proposed road. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
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) aggregates v) metals vi) water vii) concretes vii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. An earthen connecting road coming from south side of the project's end point also called dhusori road is present which is part of the proposed road and available for access.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): **Solid waste:** HBB road will be recovered through brick accumulation and sands will be used along with brick chips, bitumen materials etc. So, construction debris and other solid wastes will be generated both during construction periods. **Type**: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 8 metric ton of solid wastes including demolition materials will be produced.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the

quantity would be nearly 6 kg per day, which would be reduced in weight in course of time. Leftover oils or spills from machinery can be a high probability generating liquid waste.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bitumen etc. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel in the ROW or adjacent to the proposed project which needs transformation of any sort.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) No

Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) No.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility of stagnant water bodies remained for encouraging mosquito breeding and other disease vectors, during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this road will improve the socioeconomic condition of the population of the catchment area by providing jobs, paving the way to get access to further development and services, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this instalment will have improved the capacity to render services and goods faster which will invite more development interventions and planning to this area having a huge positive impact in economic development.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies found in the project area; therefore, no such effect can be anticipated
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. There is no protected area in or around the project sites, and no known areas of ecological interest.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: The entire sub-project component area is nearly flat; thus, no such type of impacts is anticipated.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) No
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions

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

Environmental Screening Form for Sub-project W17-6

Work Package Description Form:

EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of Sub-Project: Badugona to Battali Road, id: 422944026 (W17-6)

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

Estimated total cost of sub-project (in Taka): 28,387,976.48 Tk.

Estimated construction period duration: 1 year

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

Name of Community/Local Area: Modhom Shikder Beel

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-A with a proposed design of Bituminous Carpeting through construction of Earth Work. Proposed safety structures are 05 no. of Cross Drain (Size: .975mmX .975mm), 151 meters of Toe Wall, 04 numbers of Box Culvert, 262 meters of palisading wall, 96 meters of L-drain, 17 meters of RCC U-drain and 10 meters of Retention wall. Road safety works are also included in the project activity.

Estimated footprint / land area for this sub-project is 7987 sq. meter

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

Proposed road is situated within the catchment area of Modhom Shikder Beel in Rajapalong union stretching 1630 meters. This road starts at Modhom Shikder Beel and ends in Bottoli meeting with Jamtoli Road. Being one of the local communities of Ukhiya upazila these locations are very familiar to any other part of rural Bangladesh having mosques, village households, ponds, agriculture fields to grow crops and vegetables and vegetation that serves as subsistent gardening. The surrounding area is dominated with agriculture practices as rice production, vegetable farming etc. Majority of the surrounding space of this intervention is covered with homestead gardens and agriculture fields. The road is mostly in plain land. Most settlements are found positioned along the road on low grounds. Vegetation cover is dense in this location as well. However, there are no sensitive eco-sensitive features on the pathway of this proposed road other than few trees and bamboo bush.

Overall Comments

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

mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scopes of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local community attended in the participatory public consultation meeting. Their community representatives as teachers, shop owners, farmers and elders have no objection to the construction this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. On another matter, locals requested to involve the local community to construction works and material storage monitoring duties.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. Only forest is found as homestead forest on plain grounds in the locality.

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

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site includes including Rubber Dam (500m), Sikder Bill Jame Mosque (1km), Moulovipara Jame Mosque(1km), Sikder Bill GPS (500m) to the North. Upazila Health Complex(500m) to the West. Madrassa tun Nur (500m) to the East. Jamtoli Tahfizul Quran Hafizia Madrassa (30m), Fire Service Office (200m) to the South. Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exists. Human settlements and agricultural land are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. In this sub-project area, no elephant migration routes exist (ref. IUCN). Elephant migration routes were

about 3-4 km away from this sub-project. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 05 no. of Cross Drain (Size: .975mmX .975mm)
- 04 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 10 meters of Retention wall
- 151 meters of Toe wall
- 262 meters of palisading wall
- 96 meters of L-drain
- 17 meters of RCC U-drain
- Road safety works
- Environmental mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944026
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
WARD	
Proposed Chainage	1630m
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	1.5 km
Road Starting Point Coordinates and name	Latitude: 21.2529069 N Longitude: 92.1384689 E Road starts at Modhom Shikder Beel
Road Ending Point Coordinates and name	Latitude: 21.2386118 N Longitude: 92.1273347 E Road ends at Bottoli meeting with Jamtoli Road

Land ownership

Government Land

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:

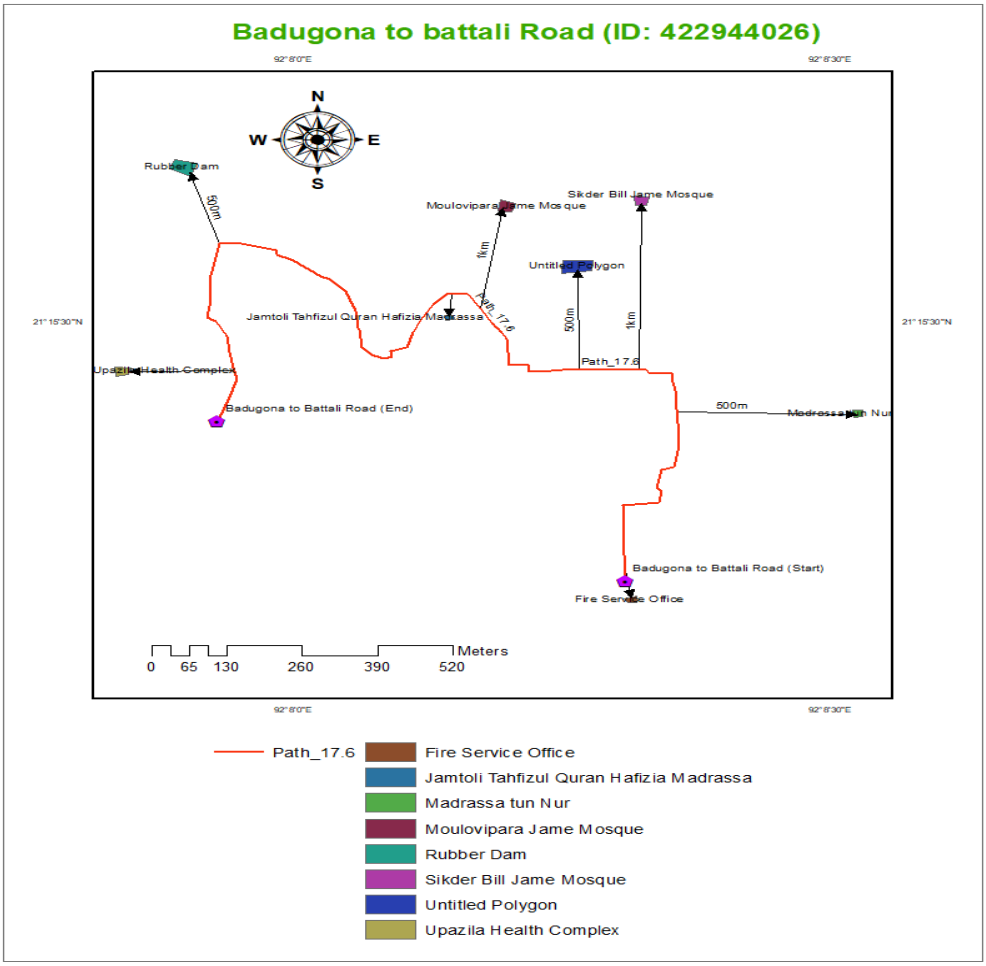
Rubber Dam (500m), Sikder Bill Jame Mosque (1km), Moulovipara Jame Mosque(1km), Sikder Bill

GPS (500m) to the North. Upazila Health Complex(500m) to the West. Madrassa tun Nur (500m) to the East. Jamtoli Tahfizul Quran Hafizia Madrassa (30m), Fire Service Office (200m) to the South.
Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

Section B: Environmental Screening

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

Description of cultural properties (if applicable, including distance from site):
Sensitive environmental, cultural, archaeological, religious sites near (within the catchment area) of site including elephant migration routes and remaining forests:
Rubber Dam (500m), Sikder Bill Jame Mosque (1km), Moulovipara Jame Mosque(1km), Sikder Bill GPS (500m) to the North. Upazila Health Complex(500m) to the West. Madrassa tun Nur (500m) to the East. Jamtoli Tahfizul Quran Hafizia Madrassa (30m), Fire Service Office (200m) to the South.
There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project.
A sketch of the project surrounding area with several features at relatively distant places and locations of sensitive institutions in the project surrounding areas are shown below.



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which are homestead gardens and forest. Several mosques, madrasa and local settlement were found during the survey. Those will not be affected by the construction works since the existing (partly HBB and partly Earthen) road has not crossed over with any features that might be of concern. It will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction period.

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues:

N/A

*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):

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

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 30-80 feet and Deep tubewell depth is 600-800ft (Field survey, 2019). In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019).

Status of wildlife movement: N/A (None of the information was found about the wildlife movement in or across the area)
State of forestation: Patches of vegetation containing large and matured trees are present along the side of 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): A connecting road coming from south side called jamtoli road which connects with Cox'bazar-Teknaf highway is available. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
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) aggregates v) metals vi) water vii) concretes vii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. A connecting road is coming from south side called jamtoli road which connects with Cox'bazar-Teknaf highway is available.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): **Solid waste:** HBB road will be recovered through brick accumulation and sands will be used along with brick chips, bitumen materials etc. So, construction debris and other solid wastes will be generated both during construction periods. **Type**: woods-bamboo, copper wires, concrete, iron, plastic, tin, etc. **Quantity:** Nearly 8 metric ton of solid wastes including demolition materials will be produced.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 6 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bitumen etc. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel in the ROW or adjacent to the proposed project which needs transformation of any sort.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

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

B.4: Operation Phase

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

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

Environmental Screening Form for Sub-project W17-7

Work Package Description Form:

EMCRP/W17- Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District

Name of Sub-Project: Jadomora-Horinmara Road, id: 422944038 (W17-7)

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

Estimated total cost of sub-project (in Taka): 40,958,413.15 Tk.

Estimated construction period duration: 1 year

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

Name of Community/Local Area: Modhom Shikder Beel

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-A with a proposed design of Bituminous Carpeting through construction of Earth Work. Proposed safety structures are 01 no. of Cross Drain (Size: .975mmX .975mm), 77 meters of Toe Wall, 02 numbers of Box Culvert, 105 meters of palisading wall, and 158 meters of Retention wall. Road safety works are also included in the project activity.

Estimated footprint / land area for this sub-project is 6,884.5 sq. meter

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

Proposed road is situated within the catchment area of Jadimora in Rajapalong union stretching 1405 meters. This road starts at jadimura Arakan Road and ends in horinmara near horinmara GPS. Being one of the local communities of Ukhiya upazila these locations are very familiar to any other part of rural Bangladesh having mosques, village households, ponds, agriculture fields to grow crops and vegetables and vegetation that serves as subsistent gardening. The surrounding area is dominated with agriculture practices as rice production, vegetable farming etc. Majority of the surrounding space of this intervention is covered with homestead gardens and agriculture fields. The road is mostly in plain land. Most settlements are found positioned along the road on low grounds. Vegetation cover is dense in this location as well. However, there are no sensitive eco-sensitive features on the pathway of this proposed road other than few trees and bamboo bush.

Overall Comments

The proposed component of the sub-project (Road construction) is not located within any remarkable environmentally sensitive area and will not cause any severe affect to the environmental settings of the area, thus not going to create intimidation to important environmental features. No drainage congestion/water loggings have been observed in the road area. But, some local trees like betel nut tree, rain tree, mango tree, bamboo bushes etc., or additional vegetation may need to clear out due to construction activities, with appropriate offsetting measures to be taken. No

agricultural productive soil will be used for the purpose. Earth will be compacted for stabilization. The inputs will be mainly at construction phase and limited within project boundary. Moreover, mitigation measures will be taken according to the ESMP for minimizing the air, dust and noise pollution.

It has been revealed that this project's scopes of works do not intend to overtake their area of lodgment and funding entity has no intention to do so. Moreover, other issue has also been brought to their attention that drainage system and a bridge have also been included into the evaluation of this project since runoff from higher grounds are also a concerning matter during rainy season.

People of the subproject area are very much optimistic about the success of the project and are also eager to participate in the project activities. The subproject is environmentally sustainable and socially acceptable. The local community attended in the participatory public consultation meeting. Their community representatives as teachers, shop owners, farmers and elders have no objection to the construction this infrastructure in the proposed site; the community also appreciated the initiative of LGED to ensure safe access and better portability. The public consultation meeting results confirmed that improvement of this road will increase socio-economic interest in the communities and make lives easier for these people. They also requested to construct the road in accessible width so that small auto and motor vehicles can pass easily. On another matter, locals requested to involve the local community to construction works and material storage monitoring duties.

The road is not located within any identified environmentally sensitive area, and therefore, does not seem to cause any adverse impact on the important environmental features. No significant impact is expected on the ecosystem and biodiversity, no agricultural land/ activities or fish farming will be disturbed, due to the construction of the sub projects. Only forest is found as homestead forest on plain grounds in the locality.

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

During construction period solid waste will be generated due to construction activities. The types of wastes are brick pit, unused sand, wood, gravels, bitumen etc. Negligible amount of plastic will come as residue. Moreover, liquid waste will include chemicals of bitumen leftovers, motor oils, used oil, Degreasing solvents etc. Human wastes and kitchen wastes will be generated from labor camps as well.

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. Sensitive environmental, cultural, archaeological, religious sites within 1 kilometer of site including Jadimura Buddhist temple at northeast side (60m), Raja palong madrasa and jame mosque (180m), Rajapalong primary school (100m), Rajapalongb high school (150m) to the north. Harashiya jame masque (5m), Khairatipara jame mosque (500m), A graveyard (300m), A khal crossed at 617m chainage at south, A stressed of khal is passing at 484m chainage to 600m chainage at south. Upazila health complex at northeast site (300m) and Harinmara Govt. Primary school located at 50m west of the subproject area.

Apart from these structures no other sensitive environmental, cultural, archaeological, religious sites exists. Human settlements and agricultural land are found around the sub-project area. No disturbance is anticipated due to construction activities to those environmental components. 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. No disturbance is anticipated due to construction activities to those social and environmental components.

Completed environmental and social screening forms are given below

Section A: Sub-Project Overview

Description of sub-project/component interventions:

This intervention will include the following items;

- Construction of Earth Work
- Bituminous carpeting work
- 01 no. of Cross Drain (Size: .975mmX .975mm)
- 02 numbers of Box Culvert (2.0m x2.0m) at different chainage
- 158 meters of Retention wall
- 77 meters of Toe wall
- 105 meters of palisading wall
- Road safety works
- Environmental mitigation and enhancement works (description of such items can be found in BOQ)

Sub-project Location:

Important Features	
ID	422944038
District	Cox's Bazar
Upazila	Ukhiya
Union	Rajapalong
WARD	
Proposed Chainage	1405m
Road Type	Village Road-A
Proposed Intervention Type	BC
Distance from Upazila HQ	1.8 km
Road Starting Point Coordinates and name	Latitude: 21.254491 N Longitude: 92.125251 E Road starts at Jadimura Arakan Road
Road Ending Point Coordinates and name	Latitude: 21.2486607 N Longitude: 92.1158123 E Road ends at Horinmara near Horinmara GPS

Land ownership

Government Land

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:

Jadimura Buddhist temple at northeast side (60m), Raja palong madrasa and jame mosque (180m), Rajapalong primary school (100m), Rajapalongb high school (150m) to the north. Harashiya jame masque (5m), Khairatipara jame mosque (500m), A graveyard (300m), A khal crossed at 617m chainage at south, A stressed of khal is passing at 484m chainage to 600m chainage at south. Upazila health complex at northeast site (300m) and Harinmara Govt. Primary school located at 50m west of the subproject area.

Within the influence area of the subproject no historical sites were identified. Also, there is no evidence of elephant movement close to subproject location (checked with local IUCN representative).

Section B: Environmental Screening

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

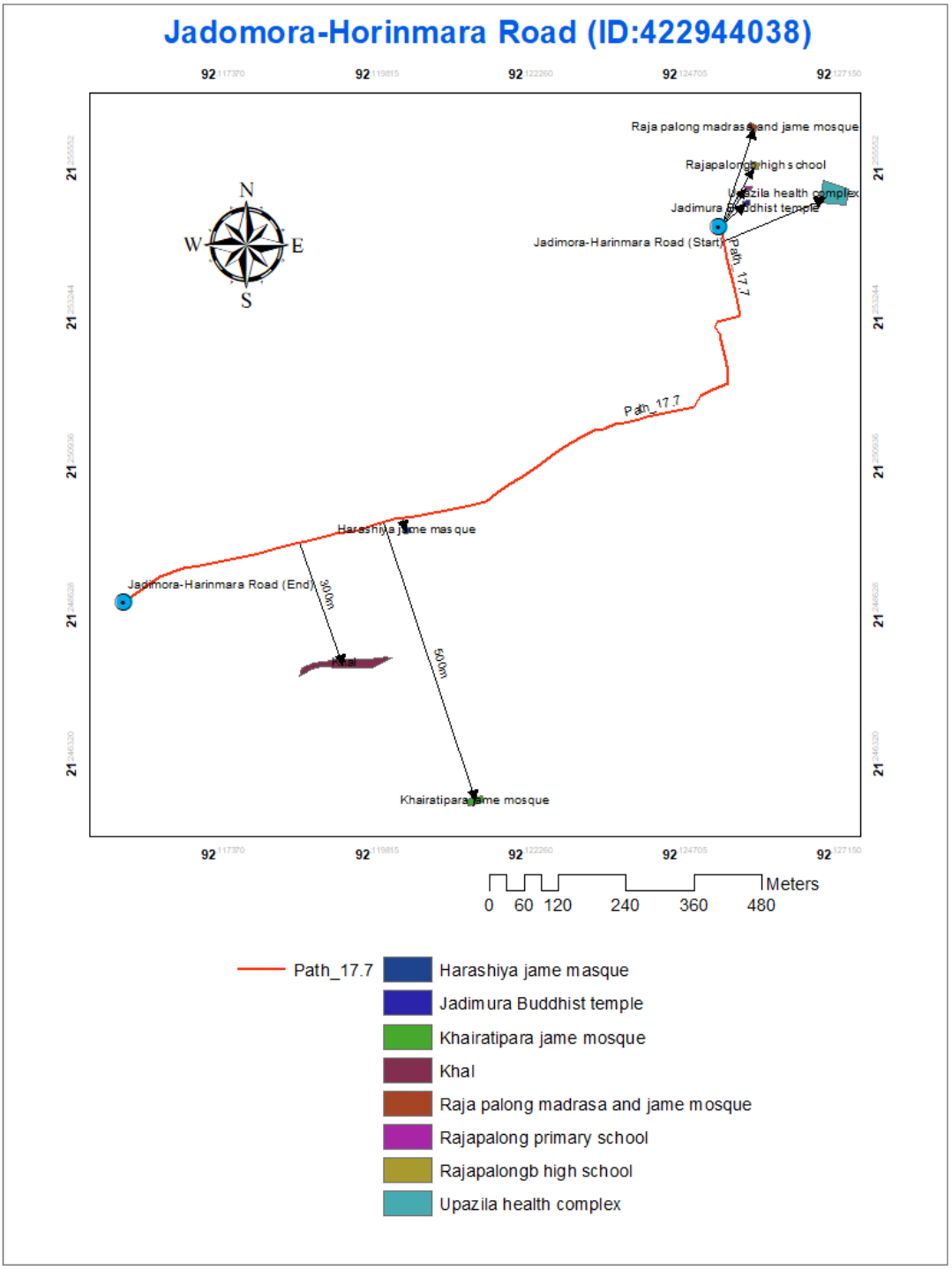
Description of cultural properties (if applicable, including distance from site):

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

Jadimura Buddhist temple at northeast side (60m), Raja palong madrasa and jame mosque (180m), Rajapalong primary school (100m), Rajapalongb high school (150m) to the north. Harashiya jame masque (5m), Khairatipara jame mosque (500m), A graveyard (300m), A khal crossed at 617m chainage at south, A stressed of khal is passing at 484m chainage to 600m chainage at south. Upazila health complex at northeast site (300m) and Harinmara Govt. Primary school located at 50m west of the subproject area.

There are no other sensitive environmental, cultural, archaeological sites within the catchment area of this sub-project.

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



Location of environmentally important and sensitive areas:

There are no environmentally important or sensitive features found in the footprint area, except matured vegetation on the sides of the road which are homestead gardens and forest. Several mosques, madrasa and local settlement were found during the survey. Those will not be affected by the construction works, as the activities will be carried out within the existing subproject boundary and necessary preventive and mitigation measures will be followed during the entire construction

period.

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

No. There is no existence of Elephant corridor/ route now, which have been checked on the basis of elephant migration route map established by UNHCR/IUCN (latest updated maps as of 22 February 2018 and later June 05, 2018).

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

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

(3) Other issues:

N/A

*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):

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

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

Groundwater is the main source of potable water in the Sub-project area. The shallow depth is about 60 feet to 70 feet and deep tube well depth is 700 to 800 feet. In the sub-project area, deep groundwater is fresh and potable, and arsenic free. Water from the shallower aquifers contains medium concentration of iron. Deep groundwater table (drinkable) varies from 600-800ft (Field survey, 2019). Local people usually use deep tube-well water for drinking and other domestic purposes. There should have been deep tube well which pump water from the confined aquifer.

Groundwater quality: pH-5.17 to 8.51, DO-2.26 to 8.14mg/l, TDS-23.40 to 320 mg/l, EC -25.7 to 681µs/cm, Fe-0.5 to 7.0 mg/l and As-Nil (IWM Study Report, 2019)

Status of wildlife movement:

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

State of forestation:

Patches of vegetation containing large and matured trees are present along the side of 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): A connecting road called Gunarpara road which connects with Cox'bazar-Teknaf highway is available. It is possible to carry the construction materials on this road to the construction site with limited traffic flow since this road has small corridor to pass large vehicles.
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction: Toilet and water supply facilities will be ensured by the contractor in the vicinity of the construction area for all the components of the sub-project, electric connection will be established with the accommodation facility due for the workforce. Electricity is available in the area.
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) aggregates v) metals vi) water vii) concretes vii) Bitumen etc.
Identification of access road for transportation (Yes/No): Yes. A connecting road called Gunarpara road which connects with Cox'bazar-Teknaf highway is available.
Location identification for raw material storage: Adjacent to labor camp or different location is available. However, this will need placement on open fields and should be consulted with local committee. Material storage area must be well fenced and materials will be covered with tarpaulins.
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.): **Solid waste:** HBB road will be recovered through brick accumulation and sands will be used along with brick chips, bitumen materials etc. So, construction debris and other solid wastes will be generated both during construction periods. **Type**: woods-bamboo, bitumen, brick chips, concrete, rubber, plastic, tin, etc. Also, sludge will be produced from labor camp latrines and kitchen waste mostly composing of organic matters as fiber, starch, carbohydrates and proteins. 10% of the kitchen waste may be classified as plastics or non-biodegradables. Solid waste may amount to 20 kg daily and sludge may amount to 5 kg per day.

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. Equipment maintenance/vehicles on-site and scrap material will occur during construction works which are mostly solid waste. Leftover oils or spills from machinery can be a high probability generating liquid waste. Waste from civil works. And the quantity will be tentatively 150 kg. **Liquid waste**: During construction period fecal sludge will be generated from the labor camp and the quantity would be nearly 9 kg per day, which would be reduced in weight in course of time.
Type and quantity of raw materials used (wood, bricks, cement, water, etc.): **Type:** i) Bricks, ii) Sand iii) cement iv) aggregates v) metals vi) water vii) concretes vii) Bitumen etc. **Quantity**: It is difficult to give exact figures of construction waste produced on a typical construction site.
Approx. area (in square meters) of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards: No such vegetation is present in the right of way. Specific soil amount is not needed for the project. The current condition explains that there is no aggregated soil on the right of way.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) The possibility is Medium, for stagnant water bodies to occur. Because water usage will be higher during the construction period. By default, this area has no water logging troubles due to being natural channels. Moreover, no possibilities of stagnation of water in long run. So, local communities have stated that they do not have severe troubles with mosquitos or other disease vectors.
Disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No pre - existing drainage channel in the ROW or adjacent to the proposed project which needs transformation of any sort.
Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) Low. Because under this intervention, there is very little scope of damage to terrestrial or aquatic ecosystems or endangered species.
Activities that can lead to landslides, slumps, slips and other mass movements in road cuts: Scope of work leading to low scale effects of landslide. The impacts are negative but short-term and site-specific. It can be managed through mitigation measures.
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with description) Low, since both sides of the road is more or less similar elevation. The concentrated outflow will be managed since the sub-project has included drains.
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: No traffic movement impact on light is anticipated, but low effects of noise and air pollution may appear resulting from the movement of vehicles carrying construction materials.

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

B.4: Operation Phase

Activities leading to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles: No
Chance of long-term or semi-permanent destruction of soils: (High/Medium/Low with description) No
Possibility of odor and water, soil quality impacts from SWM and FSM disposal system: (High/Medium/Low with description) No.
Possibility of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors: (High/Medium/Low with explanation) There is no possibility for creating borrow-pits, quarries, etc. during the operation phase.
Likely direct and indirect impacts on economic development in the project areas by the sub-project: During the operation phase, this road will improve the socioeconomic condition of the population of the catchment area by providing jobs, paving the way to get access to further development and services, which would eventually give access to broader economic development in both personal and societal level and improved living conditions. Further, this instalment will have improved the capacity to render services and goods faster which will invite more development interventions and planning to this area having a huge positive impact in economic development.
Extent of disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes): (High/Medium/Low with description) No existing drainage channels or surface water bodies found in the project area; therefore, no such effect can be anticipated
Extent of destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development: (High/Medium/Low with description) There is no protected area in or around the project sites, and no known areas of ecological interest.
Activities leading to landslides, slumps, slips and other mass movements in road cuts: N/A
Erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains: (High/Medium/Low with explanation) No
Describe possible traffic movement impacts on (unwanted) light, noise and air pollution: Improved communication will definitely increase the traffic/ vehicular movement, which must increase the light and noise pollution, but air pollution effect will not be increased significantly, as the proposed BC road will reduce the pollution generated from dust on the muddy road, especially during the dry season and if the vehicles are maintained in good conditions

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

Section D: Environmental Screening Summary of the Work Package-17

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	**Frequency**
1: Sub-Project Interventions	**Air quality**	Under the subproject intervention the overall score is **low**.	• Limiting earthworks; • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; • Requiring trucks delivering aggregates or bricks and cement to have tarpaulin cover and Limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor monitored by Consultant and PIU	• Location of stockpiles; • Number of complaints from stakeholders; • Covering of trucks; • Records of air quality inspection;	Visual monitoring of air quality and if requires, air quality test (CO, $PM_{2.5,10}$) once in construction period in winter season.
	Soil impacts	Under the sub-project intervention, the overall score is **low.**	• Precautions might be taken when rainstorms are likely, when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage	Construction Contractor monitored by Consultant and PIU	• No visible degradation to nearby drainages, • *khals* or water bodies due to soil erosion. • Rain storms in construction phase.	Monitoring as weekly basis.

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

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

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	**Frequency**
	Storage of materials	Protected and safety storage to be needed for construction materials storage. Not interrupt natural land contours, disturbance in natural drainage patterns and logging of water and the overall score is **low.**	• With the assistance from site management committee in Camp to identify the storage site and other requirements, which will be approved by PIU and consultants.	Construction Contractor and monitored by Consultant and PIU	• List of materials and sources of materials; • Storage areas for materials and equipment.	Monthly basis during implementation phase, as necessary with discussion with PIU, Consultant
	Removal of Vegetation (May cause soil erosion and their deposition on nearby crop field, affecting soil quality and productivity)	Under the sub-project intervention, the overall score is **low.**	• If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 5 trees for every tree cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.	Contractor, environmental specialist of D&SC	• Complaints from community;	Daily

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	**Frequency**
	Noise pollution	Under the subproject intervention the overall score is **low.**	• Consultation with affected people; not to operate noisy equipment during working period; • No noisy work after 5.00 pm. • Sound suppression for equipment; • Ear protection for workers. • Conduct noise quality monitoring as per EMP.	Construction Contractor and monitored by Consultant and PIU	• Number of complaints from stakeholders; • Use of silencers in noise-producing equipment and sound barriers; • Noise Level following decibel meter (dB)	Inspection by PIU and supervision consultants on monthly basis;
	Air pollution	Under the subproject intervention the overall score is **low.**	• Water spraying for dust control; construction materials with potential for significant dust generation shall be covered; no smoke emitting equipment; and limiting speed of construction vehicles in access roads and work sites to maximum of 20 kph.	Construction Contractor and monitored by Consultant and PIU	• Location of stockpiles; • Number of complaints from stakeholders; • Records of air quality inspection.	Visual observation and monitoring of air quality during construction period.
	Road Safety and Accidents	Under the subproject intervention the overall score is **low.**	• Erection of suitable signage at construction sites • Direct observation and discussion with local people • Restrict the transport of oversize loads. • Operate construction vehicles to non-peak periods (night) to minimize the traffic disruption. • Enforce on-site and access road speed limits.	Construction Contractor, environmental specialist of D&Sc.	• Complaints from communities, pedestrians	Day basis during work time

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	**Frequency**
			• The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc. • Local residents should be kept informed about planned Works			
4. Post Construction	**Road Safety**	Under the issue the overall score is **low**.	• Install traffic signs for speed limit, speed breaker where needed, Mile post and create adequate ***traffic*** detours, and sufficient ***signage*** & ***warning*** signs, Post speed limits and suitable bending on the road. • The contractor shall provide, erect and maintain informatory/safety signs written in local language, wherever required or as suggested by the Environmental Specialist of D&Sc.	Construction Contractor, environmental specialist of D&Sc	• Road signage and safety instruments at suitable locations and chainage	Immediately after the construction work is over.
	Tree re plantation	Under the issue the overall score is **low**.	• Replantation of trees during monsoon period • Maintain of trees properly • Check survival of trees and replant the dead trees	Construction Contractor, environmental specialist of D&Sc	• Number of complaints from stakeholders; • Records of trees number and tree plantation inspection;	Immediately after the construction work is over.
5. Operatio	**Maintenance of road and**	Under the issue	• No advertisement/boardings shall be allowed within the Right of Way	LGED	• Number of complaints from	During Operation under

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicator	**Frequency**
nal Phase	**assets** (Road accidents may increase due to higher number of vehicles using the roads at increased speeds)	the overall score is **low**.	limits of the project road. • Regular maintenance and cleaning of assets such as sign boards, road safety sign etc. shall be undertaken. • Clear smooth speed breaker/rough surfaces should be clear in views. • Regular maintenance of road surface and shoulders.		stakeholders;	LGED's regular maintenance program in each 3 years.

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

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

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

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

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

Appendix-2: Environmental and Social Management Plan (ESMP)

ESMP for Improvement of 7 roads and construction of culverts with side drains under Cox's Bazar District (LGED/EMCRP-W17)

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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		• Tubewell location within the construction site is not near to any kinds of latrine and soaks well which could be contaminated by those. • After completing the development, we restored the place as like before to avoid the cut and fill operational problems. • This site is in the local community, so we discussed with the local community to avoid any conflicts related local habitation, culture. • Sub project intervention must avoid of natural disturbance of existing slop and natural drainage. • The contractor ensuring sound environment for the local residents near the sub project site.		
Construction Activity	Noise from construction works	• Construction activities mostly will finish at day time within 05 PM and must confirm proper measures for avoiding any disturbance. • All Personal Protective Equipment (PPEs) must be ensured in sites before starting any kinds of construction works.	Contractor	Environmental Consultant of PIU, PSC
Construction Activity	Dust	• Acceptable range of emission of CO, particulate matter [SPM (**Suspended particulate matter)**, PM2.5, 10] and Hydrocarbons must be maintained through good construction work practices • Dust generation must be limited as a result of clearing, leveling and site grading operations with using water florescent manually and through water pipes.	Contractor	Environmental Consultant of PIU, PSC

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

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

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
	waste during construction.	facilities for labor Waste and from equipment maintenance/vehicles on-site • After completion of construction works. So, recycling process is not applicable. • Proper consents for hazardous waste management.		
Construction Activity	Health & Safety Risks: • The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks. • Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.	• All construction equipment will be properly inspected timely. • The risk assessment will be prepared and communicated prior to the commencement of work for all types of work activities on site. • Preparation of proper walkways and clearly designation as a walkway has to be ensured; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting. • Proper Signpost at any slippery areas will be ensured in construction site. • Fire extinguishers will be located at identified fire points around the site. The extinguishers must be appropriate to the nature of the potential fire. • This sub project has Proper communicative emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities' responsibilities and expertise, emergency response and evacuation procedure and personnel will be trained and drilled to test and ensure the coherence with the	PIU & Contractor	Environmental Consultant as well as Social Development and Gender Specialists of PIU, PSC

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		plan. • All people of construction site will be concerned about the safety and maintenance of Electrical equipment; works will be carried out on live systems. • Provision to first aid box in sub-project areas will be ensured. • Proper Emergency evacuation response plan will exist in sub-project area. • All safety equipment will be available in sub-project site (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), the lowest vibration tools will be provided that are suitable and can do the works. • Awareness training will be given to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, and dehydration. Written records of this 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		

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		should be effective supervision to ensure that the correct methods are being used.		
Construction activity	Odours and pollution caused by leaking latrines and faecal sludge, and solid wastes impacting surrounding water bodies, flora and fauna	• Preventative maintenance schedule should be followed. • Solid organic wastes should be stored in bins and/ or skips and emptied regularly at a designated waste disposal area away from the camp site. If no designated site is available within the reach, a dug-hole at a nearby place can be used with periodic filling with soil layer for preventing pollution and generating nutrient rich compost soil over time.	PIU	Environmental Consultant of PIU, PSC. Union Member
Construction activity (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	• 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	UE-LGED (Under the guidance of Executive Engineer, Cox's Bazar)	PSC, UNO.

Project Stage	Potential Environmental & Social Impacts/Issues	Proposed Mitigation Measures	Institutional Responsibilities	Supervision Responsibility
		works and necessary maintenance should be done in day light.		

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 Mitigation and Enhancement Works

In consideration to the above-mentioned environmental impacts and their mitigation measures for all sub-project components, individual BOQ for each sub-project has been prepared. Following tables will illustrate such items of enhancement and impact mitigation works as well as considering the emerged situation of COVID-19, following budget/cost has been estimated for the protection of workers and staffs working or engaged in construction sites.

Cost of Environmental Enhancement Works for W17-1 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	4782 sqm	@38.15 Tk. Per sqm	182433.30
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1600 meters	2.56 Tk. per meter	4096.00
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per	140 nos.	@ Tk. 1000 for each tree.	140000

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
	direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.			
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC.	1	30000	30000
	Subtotal Bill: Environmental facilities			**482175.02**

Cost of H&S Measures under COVID 19 Situations for W17-1

The cost is estimated counting 30 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-1).

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		102	50.00	183	9,150.00	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 liter can for each Site office
6	Face Shield/ Protective Safety Goggles	18 nos. for each site		N/A	400.00	18	7,200.00	For labors who work in close contact, 18 in each site
7	One-time Mask	05 nos. each day in each		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a

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				
	(Disposable) for Contractors' Staffs	site						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 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**106,025**	

Cost of Environmental Enhancement Works for W17-2 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	2994 sqm	@38.15 Tk. Per sqm	114221.10
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1000 meters	2.56 Tk. per meter	2560
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	100 nos.	@ Tk. 1000 for each tree.	100000
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC.	1	30000	30000
	Subtotal Bill: Environmental facilities			**372,426.82**

Cost of H&S Measures under COVID 19 Situations for W17-2

The cost is estimated counting 20 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-2).

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

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				
	Protective Safety Goggles							12 in each site
7	One-time Mask (Disposable) for Contractors' Staffs	05 nos. each day in each site		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8	Cloth mask for Workers	N/A	20 nos. for each labor camp		35.00	360	12,600.00	A worker will use a mask for 15 days with everyday washing
9	Floor Cleaner (1 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**94,275.00**	

Cost of Environmental Enhancement Works for W17-3 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	4134 sqm	@38.15 Tk. Per sqm	157712.10
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1410 meters	2.56 Tk. per meter	3609.60
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	140 nos.	@ Tk. 1000 for each tree.	140000

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC.	1	30000	30000
	Subtotal Bill: Environmental facilities			**456,967.42**

Cost of H&S Measures under COVID 19 Situations for W17-3

The cost is estimated counting 30 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-3).

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)	81		102	50.00	183	9,150.00	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	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 liter can for each Site office

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
		each site						
6	Face Shield/ Protective Safety Goggles	18 nos. for each site		N/A	400.00	18	7,200.00	For labors who work in close contact, 18 in each site
7	One-time Mask (Disposable) for Contractors' Staffs	05 nos. each day in each site		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8	Cloth mask for Workers	N/A	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 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**106,025.00**	

Cost of Environmental Enhancement Works for W17-4 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	4291 sqm	@38.15 Tk. Per sqm	163720.73
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1460 meters	2.56 Tk. per meter	3737.60
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	140 nos.	@ Tk. 1000 for each tree.	140000
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC.	1	30000	30000
	Subtotal Bill: Environmental facilities			**463104.05**

Cost of H&S Measures under COVID 19 Situations for W17-4

The cost is estimated counting 30 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-4).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4	Bar Soaps (150 gm each)	81		102	50.00	183	9,150.00	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	N/A	N/A	4,000.00	1	4,000.00	2 bottles and a 5 liter can for each Site office

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
		site						
6	Face Shield/ Protective Safety Goggles	18 nos. for each site		N/A	400.00	18	7,200.00	For labors who work in close contact, 18 in each site
7	One-time Mask (Disposable) for Contractors' Staffs	05 nos. each day in each site		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8	Cloth mask for Workers	N/A	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 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**106,025.00**	

Cost of Environmental Enhancement Works for W17-5 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	3835.500 sqm	@38.15 Tk. Per sqm	146324.33
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1320 meters	2.56 Tk. per meter	3379.20
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	140 nos.	@ Tk. 1000 for each tree.	140000
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC.	1	30000	30000
	Subtotal Bill: Environmental facilities			**445,349.25**

Cost of H&S Measures under COVID 19 Situations for W17-5

The cost is estimated counting 30 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-5).

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)	81		102	50.00	183	9,150.00	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 liter can for each Site office
6	Face Shield/ Protective Safety Goggles	18 nos. for each site		N/A	400.00	18	7,200.00	For labors who work in close contact, 18 in each site
7	One-time Mask	05 nos. each day in		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a

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				
	(Disposable) for Contractors' Staffs	each site						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 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**106,025.00**	

Cost of Environmental Enhancement Works for W17-6 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	4861.500 sqm	@38.15 Tk. Per sqm	185466.23
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1630 meters	2.56 Tk. per meter	4172.80
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	140 nos.	@ Tk. 1000 for each tree.	140000
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC.	1	30000	30000
	Subtotal Bill: Environmental facilities			**485,284.75**

Cost of H&S Measures under COVID 19 Situations for W17-6

The cost is estimated counting 30 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-6).

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)	81		102	50.00	183	9,150.00	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 liter can for each Site office
6	Face Shield/ Protective Safety Goggles	18 nos. for each site		N/A	400.00	18	7,200.00	For labors who work in close contact, 18 in each site

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7	One-time Mask (Disposable) for Contractors' Staffs	05 nos. each day in each site		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8	Cloth mask for Workers	N/A	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 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**106,025.00**	

Cost of Environmental Enhancement Works for W17-7 in BOQ

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
1.	**Grass Turfing** Turfing on embankment top and slope, building compound & 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)	4116.600 sqm	@38.15 Tk. Per sqm	157048.29
2.	**Aid Box** Supply of first aid box with standard contents and as per direction of the E.I.C.	01	@5000 Tk. Per box	5000
3.	**Dust suppression measures** Dust suppression measures like water sprinkling on aggregates/ unpaved roads, in and around the work site and as per direction of the E.I.C.	1405 meters	2.56 Tk. per meter	3596.80
4.	**Motivation training** Motivation training (twice: before and after construction start) of the Upazila Engineer' sand Contractor's representatives on safety practice and as per direction of the E.I.C.	LS	Lum Sum @ 10000	10000
5.	**Providing Safety gear/ (PPE)** Providing Safety gear package like hand gloves, eye protection glasses, helmets, rubber shoes, light reflecting dress etc.	LS	@ Tk. 30000	30,000
6.	**Tree plantation** Tree plantation around the shelter or road including maintenance for 2 years as per direction of E.I.C. (Coconut, Mango, Jackfruit etc. to be planted. The payment is to be made only when trees are fully grown) and as per direction of E.I.C. Total 10 nos. of trees need to be replanted around the periphery of the proposed site at an interval of 10 feet.	140 nos.	@ Tk. 1000 for each tree.	140000
7.	**Temporary Sanitary Latrine** Temporary Sanitary Latrine/ Septic Tank/ Portable Toilet: 2 nos. (1 no of Toilet for female and 1 no of Toilet for male) and as per direction of E.I.C.	2 nos.	@12822.86 per toilet	25645.72

Sl no.	Description of item	Quantity	Unit price	Total amount (BDT)
8.	**Waste disposal** Temporary camp site waste disposal facility improvement 2 nos. (1 no of organic waste and 1 no of inorganic waste disposal facility) and as per direction of E.I.C.	LS	@5000	5000
9.	**Drinking water Facility** Supplying continuous adequate drinking water supply at work site and site office as well by installing necessary tube-well/s where applicable with best quality water tank (Gazi/Padma) and water filter of minimum capacity of 30 liters with necessary kits. All complete as per satisfaction of EIC.	1	@30000 tk for each setup	30000
10.	**Test (Drinking Water samples)** **Water samples** to be collected periodically (half yearly) for Tube well at labor shed 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	@5000tk	5000
11.	**Traffic Management** Maintaining traffic management at worksite from time of commencement of contractor's activities to time of completion activities, including ensuring that the road is safe for user s and providing a safe working area for those involved in work.	LS	15000	15000
12.	**Worker labor shed** Size (30'X20') with C.I sheet roofing, Tarza fencing and brick soling floor as per requirement and direction of EIC	1	30000	30000
	Subtotal Bill: Environmental facilities			**456,290.81**

Cost of H&S Measures under COVID 19 Situations for W17-7

The cost is estimated counting 30 workers for 270 active working days (9 months) of one-year construction period for this sub- project (EMCRP/W-17-7).

Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
1	Non-Contact IR Digital Thermometer	01 nos. in each site	N/A	N/A	5,000.00	1	5,000.00	Each site office will have a thermometer for checking body temperature every morning at the entrance of the working site
2	Wash Basin with Small Water Tank, Bucket and Mug (or piped water supply)	01 nos. in each site	N/A	01 nos. in each camp	10,000.00	2	20,000.00	Wash basin to be installed at favorable locations immediately after the entrance to the facility
3	Trash bin (covered)/Paddle Bin	01 nos. in each site	N/A	01 nos. in each camp	550.00	2	1,100.00	
4	Bar Soaps (150 gm each)	81		102	50.00	183	9,150.00	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 liter can for each Site office
6	Face Shield/ Protective Safety Goggles	18 nos. for each site		N/A	400.00	18	7,200.00	For labors who work in close contact, 18 in each site

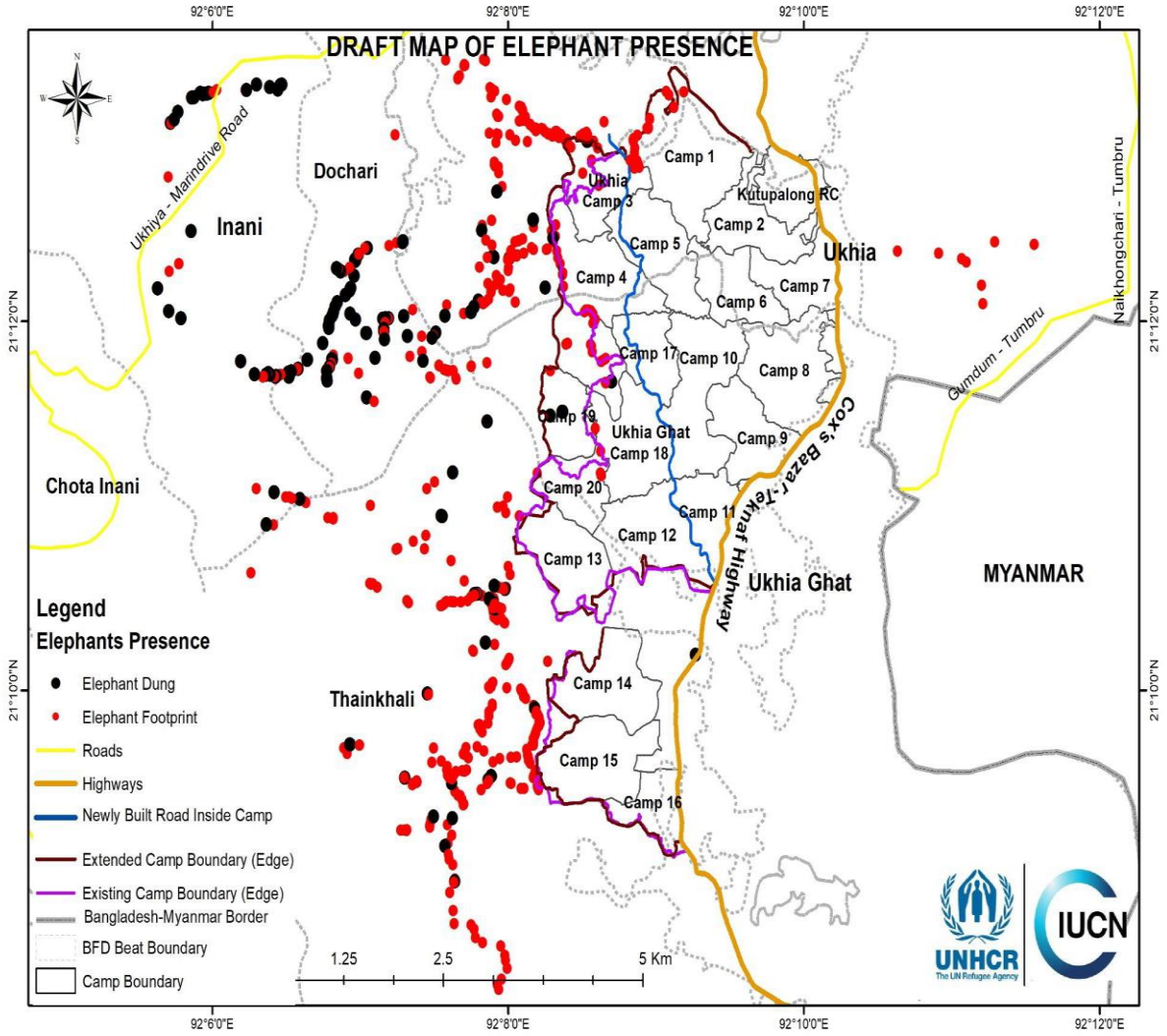
Sl. No.	Description of Item	Number of items to be used/kept at			Unit Cost (BDT.)	No. of items	Total Cost/ Price (BDT.)	Remarks/ Justification
		Site Office	Working Site	Labor Camp				
7	One-time Mask (Disposable) for Contractors' Staffs	05 nos. each day in each site		N/A	12.00	1350	16,200.00	Reusing N95/KN95 mask will not be a manageable option in field scenario, one time disposable medical/surgery mask a good option instead.
8	Cloth mask for Workers	N/A	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 liter Can)	1.5 Can	N/A	2 can	250.00	3.5	875.00	
10	Detergent Cleaner	N/A	1 kg in each camp/month		400.00	09	3,600.00	To be used for washing clothes, masks and tools & equipment, etc.
11	Miscellaneous cost				20,000.00	1	20,000.00	Contingency cost for medical emergency and compensation for workers, subject to proper documentation
Grand Total (BDT)							**106,025**	

Social Safeguard Personnel for Environmental and Social Management for Work Package-17

Another item is to be added in the whole BOQ in order to take supervision and leadership to organize Environmental Management under Environmental Enhancement Works. This item is added as described below;

Sl.	Description	Road Package No.	Quantity	Unit	Unit Rate	Total Amount
1.	Environmental Management Costs of the Environmental & Social Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & Transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C ***(One Safeguard Personnel for R1, R2, R3 & R4)***	R1 R2 R3 R4	12	Months	LS	4,20,000
2.	Environmental Management Costs of the Environmental & Social Safeguard Personnel for Environmental and Social Management and Monitoring during construction and operation phase for their salary & Transport (Net payment excluding Tax & VAT). And as per direction of the E.I.C ***(One Safeguard Personnel for R5, R6& R7)***	R5 R6 R7	12	Months	LS	4,20,000
	Total		**24**			**8,40,000**

Appendix-4: Elephant Migration Route/Presence Map



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

Appendix-5: Location Map of Sub-project Components

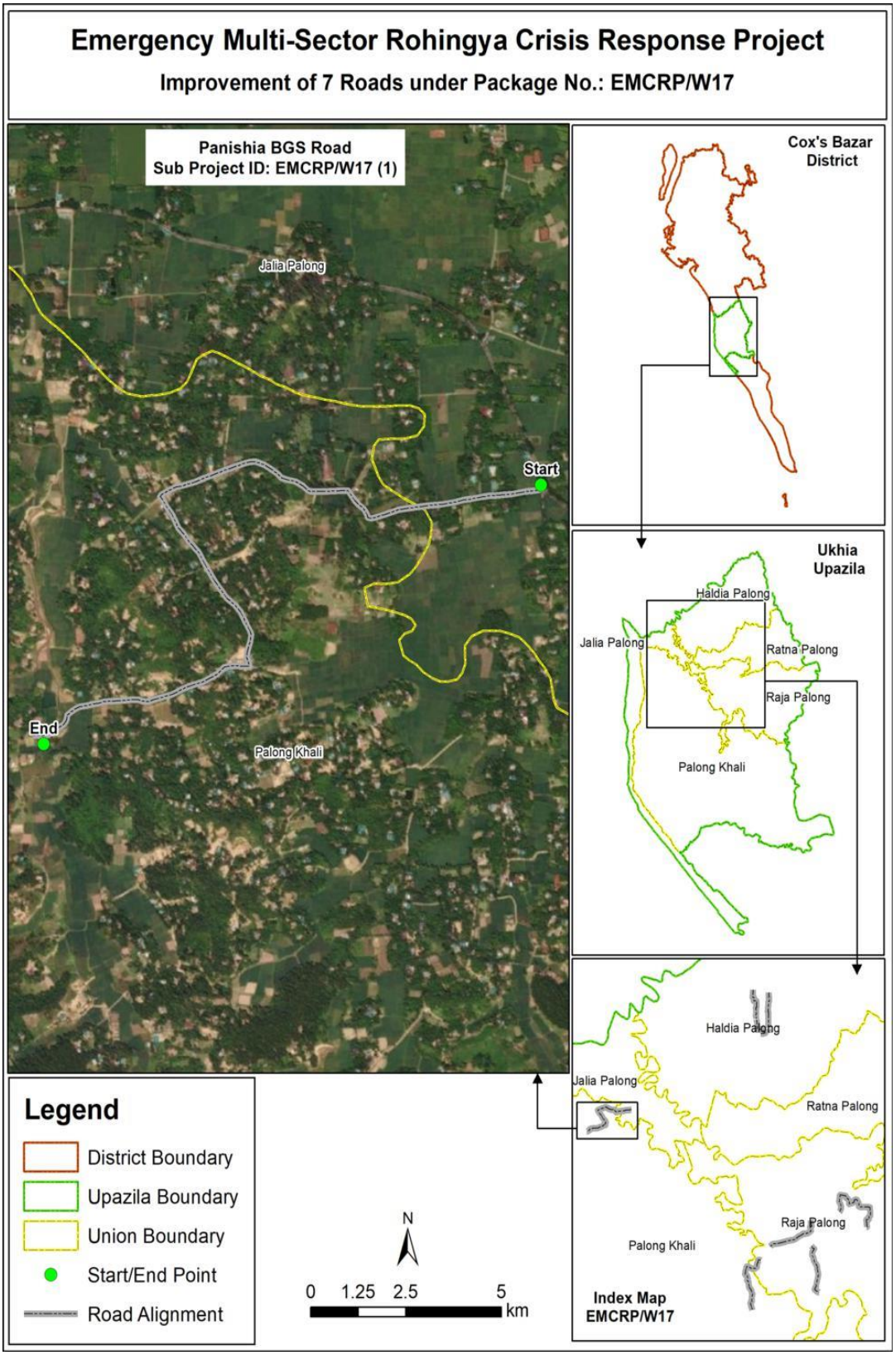


Figure: Location Map of W17-1

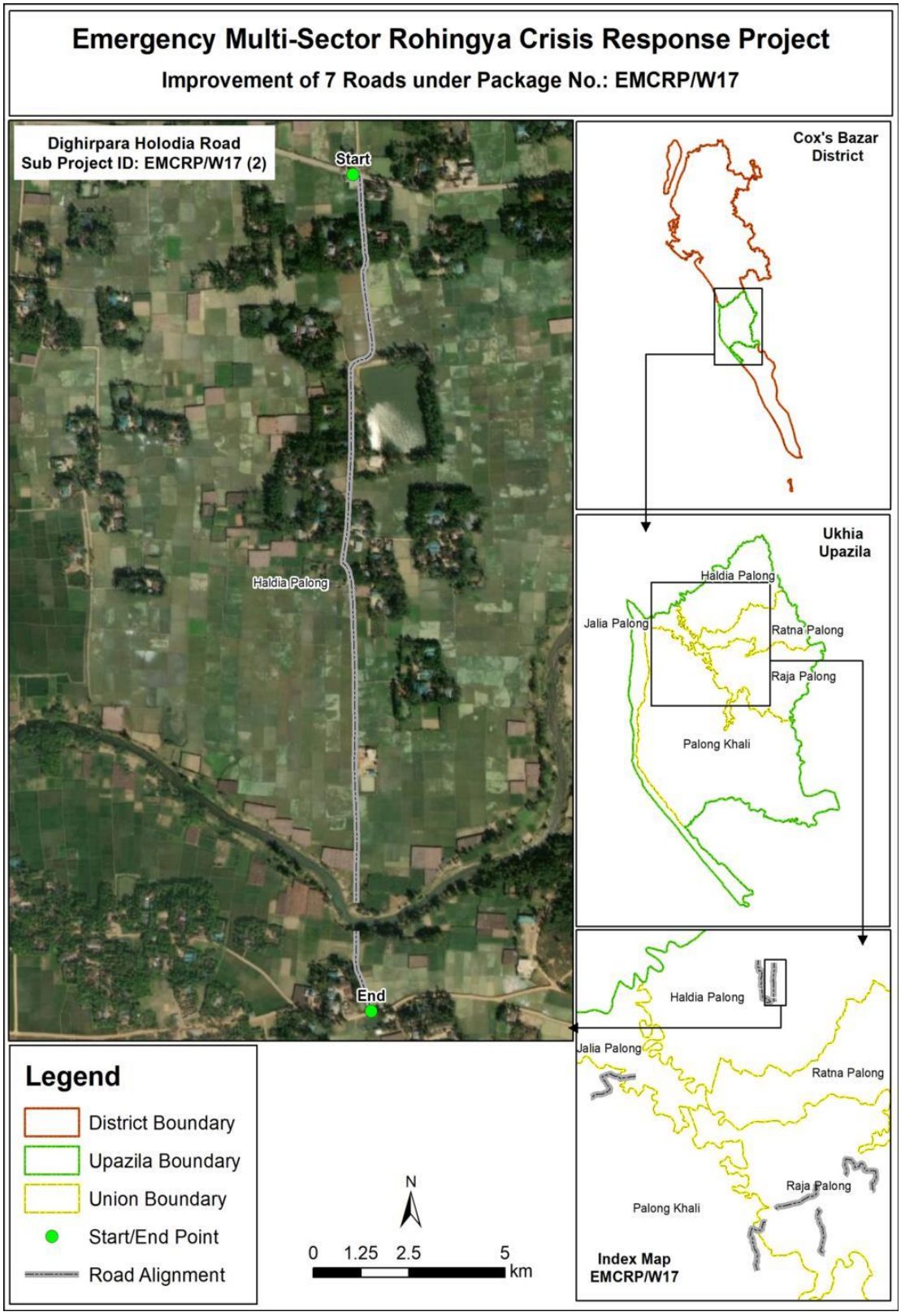


Figure: Location Map of W17-2

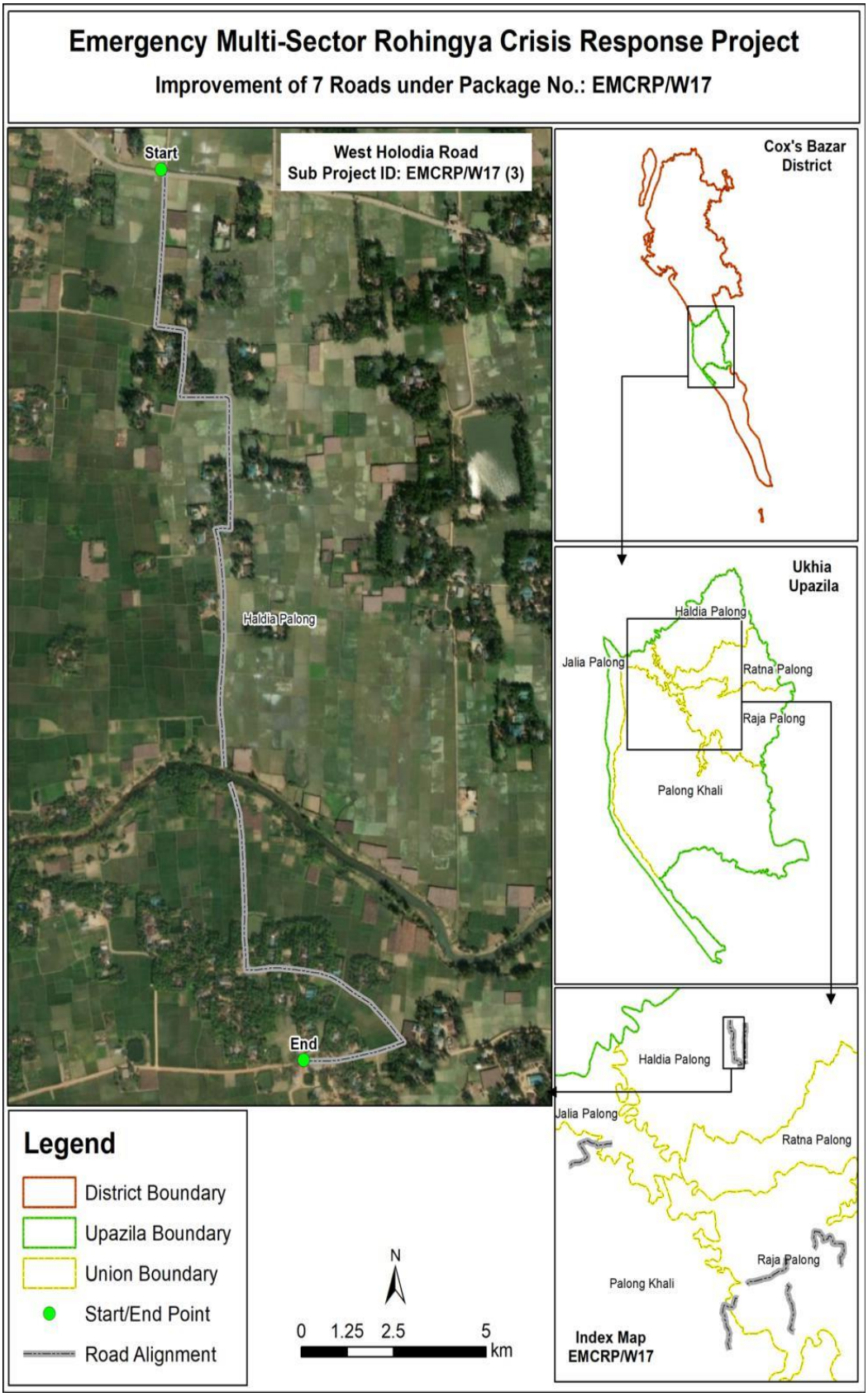


Figure: Location Map of W17-3

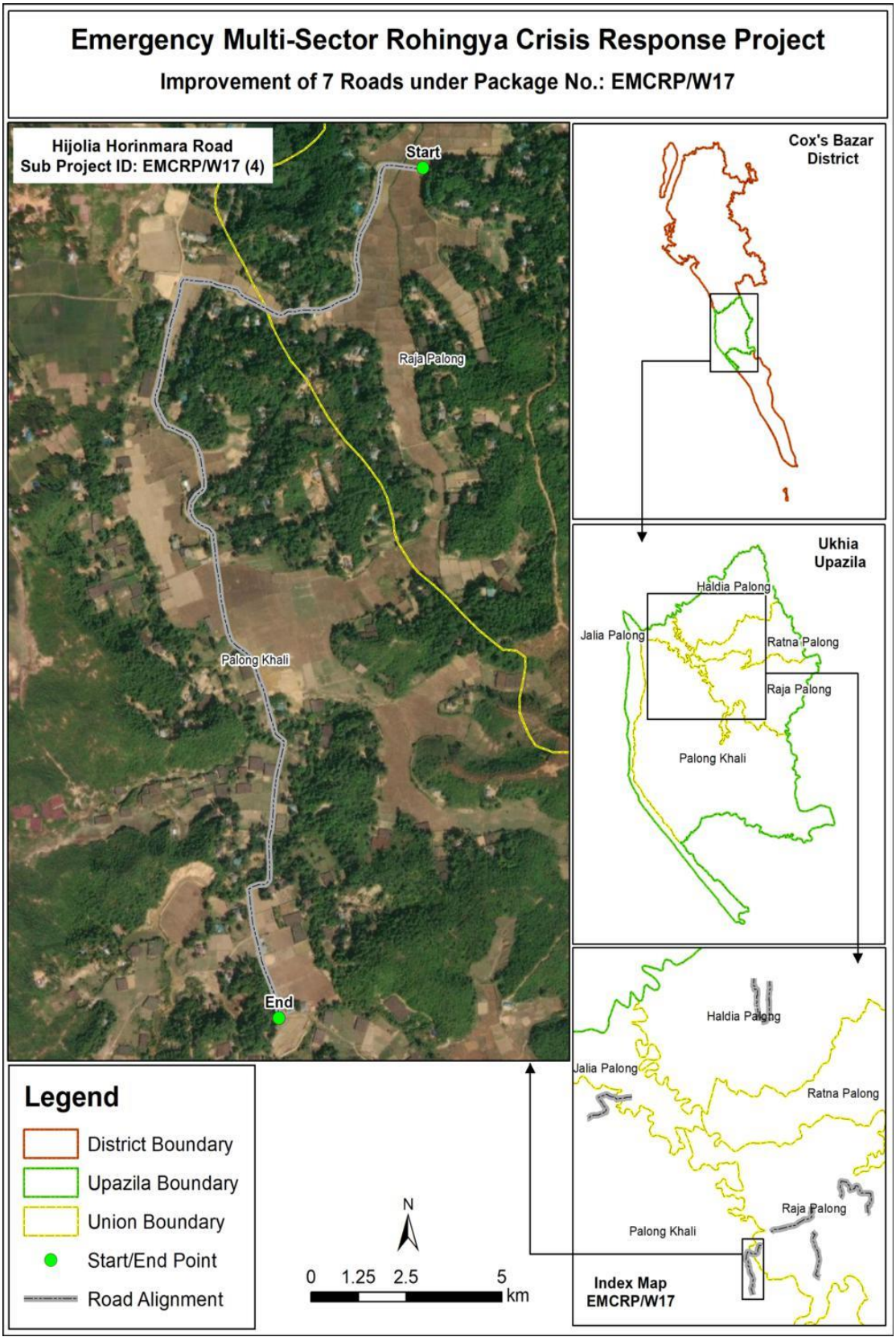


Figure: Location Map of W17-4

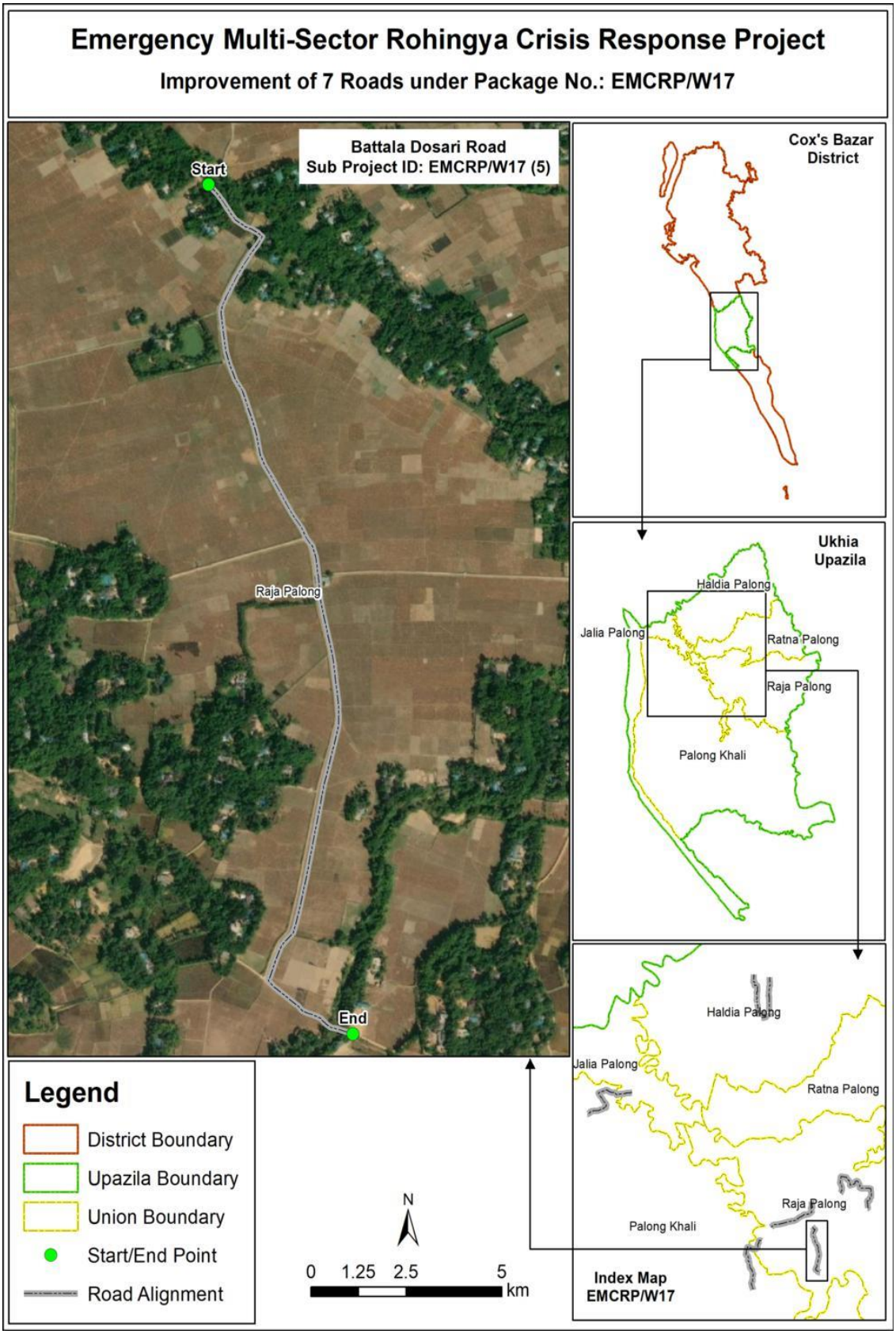


Figure: Location Map of W17-5

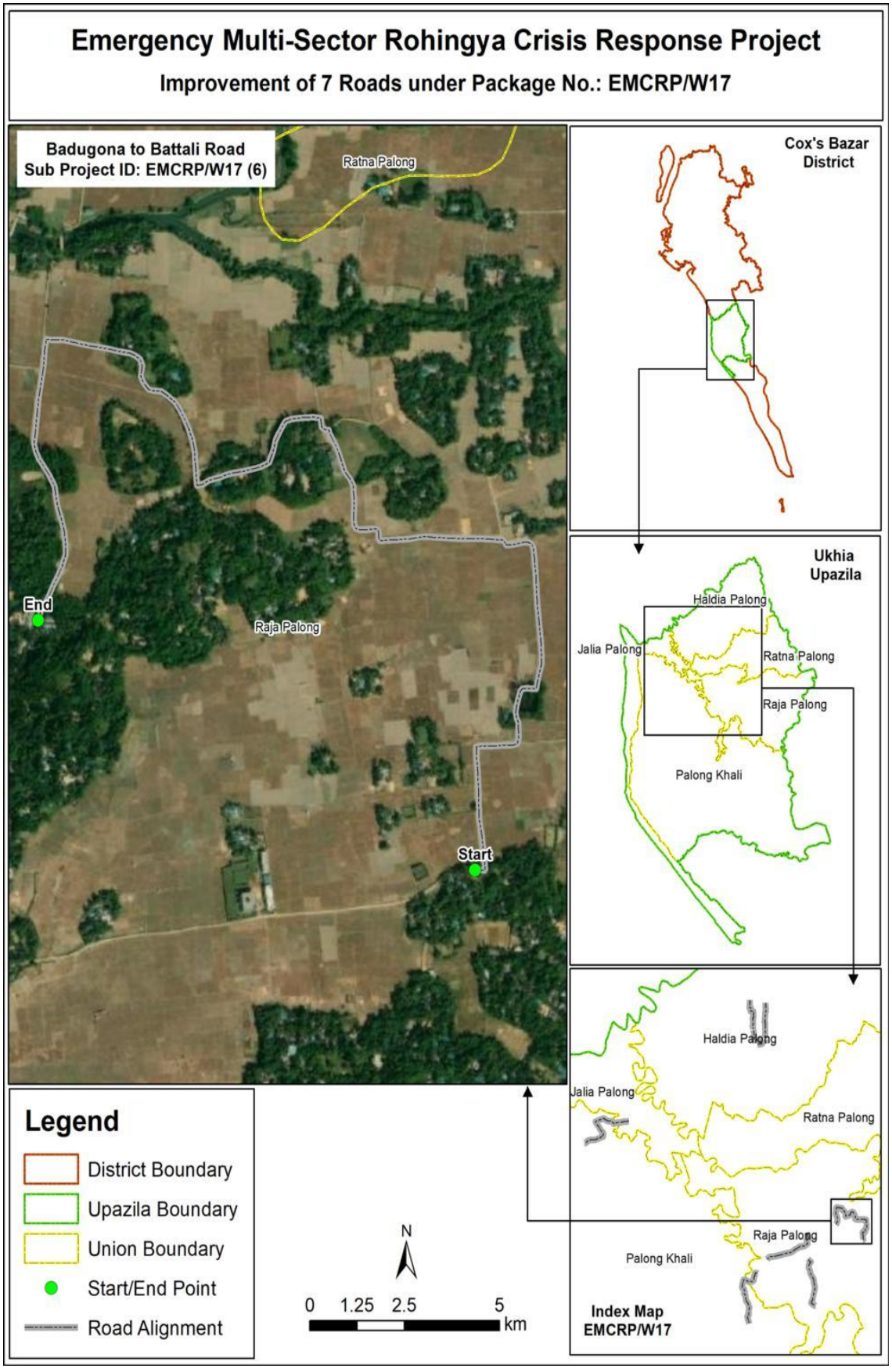


Figure: Location Map of W17-6

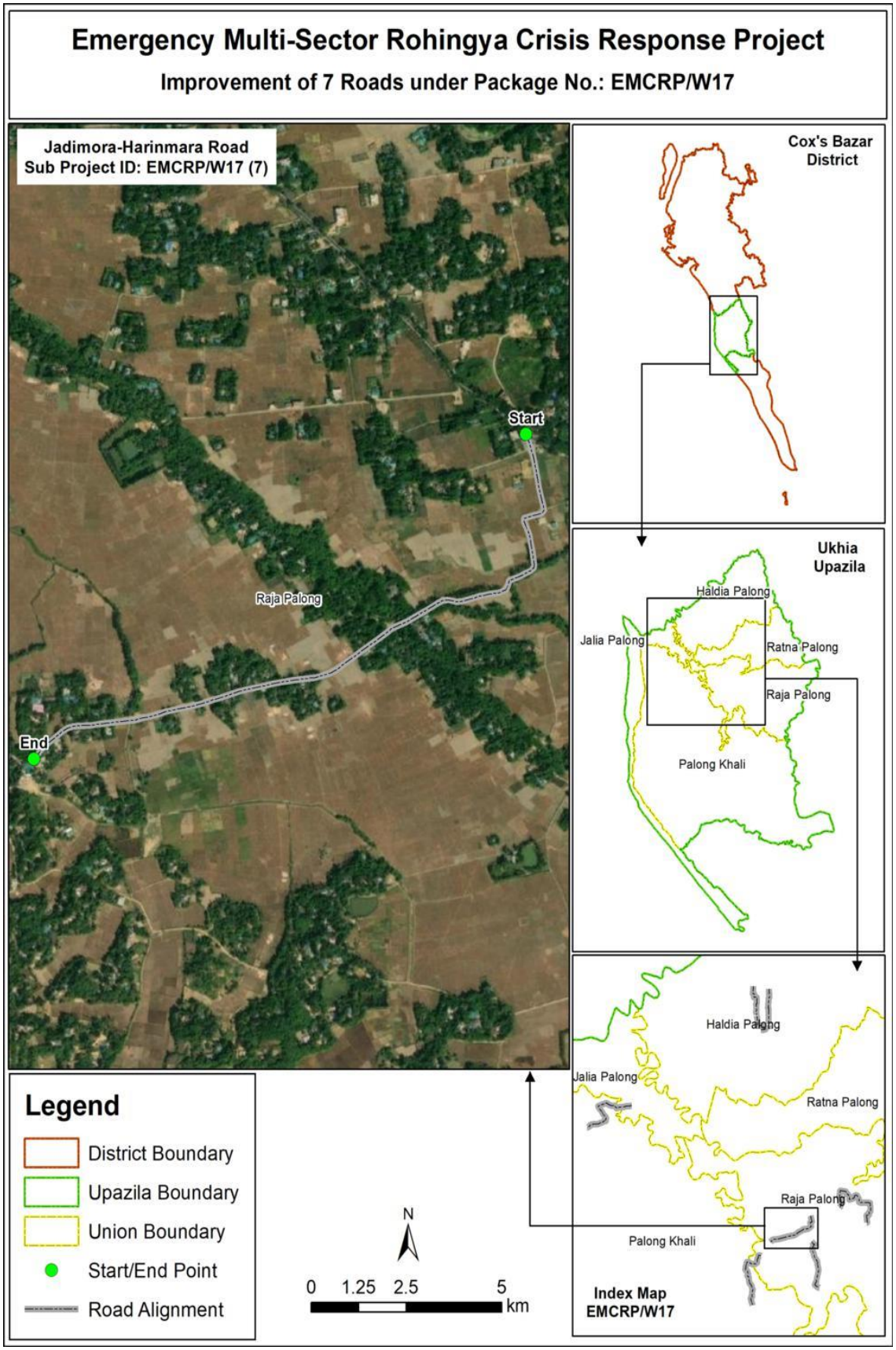


Figure: Location Map of W17-7