GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Local Government Engineering Department (LGED)

Local Government Division

Ministry of Local Government, Rural Development, and Cooperatives

ENVIRONMENTAL ASSESSMENT (EA) REPORT

Name of the Subproject: Rampur Bhuiyan Bari Road

Package No: MGSP/FNI/2015-16/W-03

Feni Pourashava, Feni

Municipal Governance and Services Project (MGSP)

Design, Supervision, and Management (DSM) Consultancy Services

Joint Venture of

Hifab International AB, Sweden

AQUA Consultant & Associates Ltd., Bangladesh

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ABBREVIATIONS

AP	Affected person
BDT	Bangladeshi taka
BOQ	Bill of quantity
CC	Cement concrete
CIP	Capital investment plan
CP	Contingency planning
DSM	Design, supervision, and management
EA	Environmental assessment
ECR	Environmental conservation rules
EMP	Environmental management plan
EPP	Emergency preparedness planning
ES	Environmental screening
FGD	Focal group discussion
GoB	Government of Bangladesh
GRC	Grievance redress committee
GRM	Grievance redress mechanism
GRP	Grievance redress procedure
LGED	Local Government Engineering Department
MGSP	Municipal Governance and Services Project
PD	Project director
PMU	Project management unit
RCC	Reinforcement cement concrete
RP	Relevant reports
TL	Team leader
ULB	Urban local body
WB	World Bank
XEN	Executive engineer

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1 SUBPROJECT DESCRIPTION

1.1 Subproject background

This is a subproject under the Municipal Governance Services Project (MGSP) which is a continuation of Feni Pourashava's infrastructures development. Under this subproject, the existing bituminous pavement will be replaced by RCC pavement. The name of the subproject is Construction of RCC Road Work at Rampur Bhuiyan Bari Road (Start from Dhaka - Chittagong Highway to S.S.K. Road link by Takia Mazar & Rampur Saowdagor Para Road).

The significant features of the subproject are mentioned below:

Name of the subproject	Rampur Bhuiyan Bari Road
Package No	MGSP/FNI/2015-16/W-03
District Name	Feni
ULB Name	Feni Pourashava
Road side Wards Number	17 and 18
Structural design option	RCC Road
Design traffic volume	200 vehicles per day (trucks, trolleys, pick-up, etc.)
Wards population	About 50,000
Tribal people	No tribal people found in the subproject area
Land acquisition	Mostly ULB owned, therefore land acquisition is not
Estimated cost of the	50.99 million BDT
Subproject duration	6 months
Tentative start date	May, 2016
Tentative completion date	October, 2016

1.2 Location of the subproject

The subproject is located at Feni Pourashava, which is within the core Pourashava area. Feni Pourashava is located at 23.42°N and 91.24°E. This road is 2.2 km long and starts from Dhaka-Chittagong Highway to the S.S.K. Road link via Takia Bazar and Rampur Saowdagor Para Road (main road, ch 0+00 to 1+100m, link-1, ch 0+00 to 0+600m, links- 2, ch 0+00 to 0+400m and links-3, ch 0+100 to 0+200m). The location map is shown in ***Figure 1.2.1.***

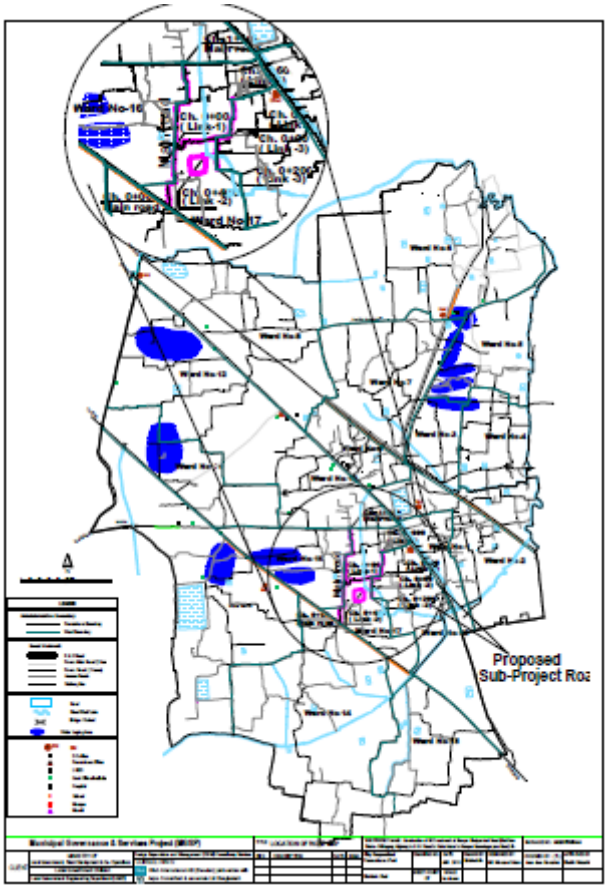

Figure 1.2.1: Location map of the subproject

1.3 Present status of the subproject site

This road acts as a connecting way of S.S.K. Road to the Dhaka-Chittagong Highway. It also connects to Takia and Islampur Road which is usually used for transporting exported and imported goods within the city and nearby districts.

20 years ago, this land was mainly used agricultural. With the construction of the bituminous road, this area has started to develop and presently has low to medium densely populated residential areas with pucca and semi-pucca built structures. These include residential buildings as well as small to large scale business facilities for shops and markets. As a result, this road has a huge traffic volume which includes different types of local vehicles as well as heavy loaded and long route vehicles for carrying necessary goods. Therefore, this traffic rapidly damages the existing bituminous carpeting road.

The proposed road is going through a busy area of the municipality. The proposed road is 2.2 Km long and 6 m wide though the existing road width varies from 4.5 m to 5.5 m. From the field visit by the consultant team, it is shown that in some places land is available. In some places ULB needs low to moderate scale demolition of road-side boundary walls, shops, and markets for road widening works. The local people state that this road is above

the flood level. Therefore, generally there is no flood event. There is also no major water logging problem here.

The site inspection revealed that though the road is not badly damaged in all sections. However, it is not good enough to carry the heavy loaded vehicles. The following ***photographs 1.3.1*** present the existing condition of this road subproject.

Photographs 1.3.1: Present situation of the road subproject

1.4 Objectives and justification of selection of this subproject

The CIP lists several subprojects. The consultant team has inspected and evaluated existing site conditions of all the subprojects. Based on the environmental and social conditions which are not complex and have low environmental and social negative impacts, the ULB priority subproject list has been specified. For quick preparation of the Project and as well as meeting the ULB demand and requirement, this road subproject has been selected. Furthermore, this is basically reconstruction of the road where land is mostly owned by the ULB. Therefore, land acquisition is not an issue. The road side's trees and built-up infrastructure will not be severely affected by the implementation of this subproject.

In fact, after completion of the subproject, it will provide easy movement facilities for both the local and outside people. Agricultural products as well as export and import goods will be

transported easily with less time. This will have significant impact on poverty reduction by enhancing economic and business activities. The land price will increase and it will accelerate the urbanization of this municipality. Therefore, as a priority, this road can be considered for improvement by rigid pavement.

1.5 Key subproject activities and implementation process

The key activities of this road subproject will include earth work, bed preparation, sand filling, palisading work, and CC and RCC works.

The materials to be used for the key activities are soil in earth work, sand, bricks chips, stone chips and reinforcement. Furthermore, kerosene/diesel will be used for vibrator. Water will be consumed in two ways for domestic purposes and for construction works such as for mixing concrete and curing. Electricity will be used for reinforcement fabrication and domestic purposes. The wood will be used for cooking by the workers at the Labor sheds.

This subproject needs low scale demolition works for widening the road. Under this subproject, the existing bituminous surface will be removed and replaced by RCC pavement.

The major equipment to be used for the implementing the subproject are brick breaking or stone breaking machine, steel cutter, dump truck, water tanker, excavator and trucks for carrying construction materials.

2 DETAILED ENVIRONMENTAL FEATURES

Generally, preparation for this road project needs a detailed conditional survey to get a clear profile. However, due to immediate requirement for the ULB and the client, the consultant team prepared this subproject scheme without any real conditional survey. For prompt action, the consulting team just visited the subproject and provided subproject preparation. Therefore, minor adjustments may be needed at a later stage.

Effort has been given for obtaining environmental features within 100 m from the center line at 100 m longitudinal intervals. The findings of this effort starting from the Dhaka-Chittagong Road are given in ***Table 2.1***:

Table 2.1: Major environmental features

Chainage (m)	Left	Right	Major environmental features
0-100	√		House with planted bamboo bush and sharp turning point which reduce the sight distance
100-200		√	Roadside land used for agricultural purposes, Electrical poles
200-300	√		Residential buildings with shops at ground floor, road side few planted trees
300-400		√	Residential buildings with shops at ground floor, electrical poles
400-500		√	Roadside semi-pucca shops with turning point, few road side planted trees
500-600	√		Residential areas with pucca and semi-pucca buildings, three storied Rampur Mosque, pond
600-700	√		Residential buildings where one five storied residential building dominates others
700-800		√	Three storied Mosque
800-900	√		Two-three storied residential buildings
900-1000		√	Pond
1000-1100		√	Under construction high rise apartment building
1100-1200		√	Low land acts as a water body
1200-1300	√		Sunbeam International School
1300-1400		√	Residential buildings with shops at ground floor
1400-1500	√		Pond, Under construction drain
1500-1600		√	Residential buildings with shops at ground floor

1600-1700		√	High rise apartment building
1700-1800		√	Residential areas with pucca and semi-pucca buildings, few road side planted trees
1800-1900	√		High rise apartment building, turning point
1900-2000		√	Residential areas with pucca and semi-pucca buildings, shops, few roadside trees, electric poles
2000-2100	√		Residential areas with shops at ground floor
2100-2200		√	Markets, electrical poles

3 BASELINE ANALYSIS OF ENVIRONMENTAL CONDITION

3.1 Physical environment

Geology, topography, and soils

The subproject area is located almost flat plain with few undulations. Local differences in elevation generally vary below 1m with only a very gentle slope. The presence of organic matter in the soil is moderate. The soils are basically non-saline.

Climate and meteorology

The climate of the subproject area can be described as Tropical Monsoon. It is characterized by warm, humid summers and cool, dry winters. From November to March, it is dry and cool while from April to May it is extremely hot during the pre-monsoon season. From June to October, the monsoon season is warm, cloudy, and wet. The warmest month is April, the coolest is January, the wettest is July and the driest is January.

Meteorological conditions of the area are more or less similar to the southern part of the country with respect to temperature, rainfall, and humidity.

The average annual rainfall is around 3,000 mm and around 70% to 80% of the rain falls during the rainy season from April to October. The highest annual rainfall during the last ten years (2002–11) was 3192 mm in 2007, and the lowest was 2,300 mm in 2005. The minimum temperature was 11.4°C in 2008 and maximum temperature was 33.6°C in 2011. The minimum humidity was 66.4% in 2010 and the maximum humidity was 79.3%.

According to the statistics of wind data from the Bangladesh Meteorological Department Climate Division, wind direction changes by month, Nevertheless, the northwest, south, and northeast winds are predominant. ***Table 3.1.1*** shows the key meteorological data from 2008 to 2011.

Table 3.1.1: Temperature, rainfall, humidity during 2008-2011

Years	Temperature(centigrade)		Rainfall (millimeter)	Humidity (%)
	Maximum	Minimum		
2008	33.6	11.6	2881	79.0
2009	33.2	15.7	3284	79.0
2010	32.5	11.7	2018	66.4
2011	24.2	11.4	3192	79.3

The construction works can be influenced by the climatic condition and meteorological components like humidity, temperature, sudden rainfall, and wind speed. During high winds, there might be possibility of quick spreading of dust generated from the construction activities. It is very risky to work during rain and in high winds because the possibility of getting injury increases. Furthermore, work under high temperature and excess humidity is extremely difficult and may create health hazards.

Hydrology (surface water, ground water, and rainwater)

Two small size ponds are located adjacent to the subproject site. Surface water in the ponds is not saline but needs treatment before drinking purpose. However, this pond water can be used both for the domestic purposes and construction works.

Groundwater is the main source of potable water in the subproject area. Deep groundwater is not saline and normally arsenic (<0.01mg/l) and iron-free. Local people usually use deep tube-well water for drinking and other domestic purposes. Salinity problems are not commonly visible. Rain water harvesting system is not common in and around the subproject area.

The construction period normally in summer season and during the summer season, generally the ground water and surface water level goes down. Therefore, ensuring the water requirements for the construction works and domestic uses are the key issue in dry summer. On the contrary, if the construction period also includes wet summer, there might be less complexity for ensuring the water requirements.

Flooding, water logging, and drainage pattern

According to previous data this area is not affected in severe flood events such as 1988, 1998, 2004 and 2007. Therefore, this area is temporarily considered as a flood free zone. Due to continuous heavy rain, this area is temporarily subjected to water logging problems. Structured drainage system in this subproject area is basically absent except for a few narrow drains that are not enough to carry storm and domestic waste water. The existing drainage system is not functional because people throw and dispose wastes in the drains. Therefore, the drain is being filled up and the land floods when it rains heavily.

Air quality and dust

Ambient air quality data have not been found. Air seems to be clean. However, due to poor maintenance of the road dust is generated especially during the movement of the vehicles and windblown dust that cause air pollution. There are no remarkable sources of air pollution such as heavy and small industries and brick fields observed in the subproject area. .

Noise level

Noise is not a major impediment for the quality of the environment in the subproject area. Vehicles such as trolleys, motor cycles, mini trucks, tractor trailers, and private cars generally move on the road during day and night. These vehicles generate noise in the subproject area. However, they are tolerable limits in most cases. No other perceptible sources of noise generation such as factories or industries were found near the subproject area.

Solid waste managementt

There is no structured solid waste management system in the subproject area. People dispose their wastes in the darkness of night and throw their solid wastes in the neighbourhood. The canal side and drain side households usually throw their solid wastes into the canal and open drains. Therefore, improper solid waste disposal by the community people creates severe public health hazards and environmental degradation.

3.2 Biological environment

Flora and fauna

There are about 20 road side planted trees which include Sishu, Korai, Mango, Jackfruit, and Coconut.

The common local birds such as Doel, Shalik, Chil, Pecha, Kak, Tuntuni, Bulbuli, and Kokil in Bengali were found. Wild animals and endangered fauna species were not found. Inside the proposed subproject area, no fauna species except some local birds were found.

Different fish species are reported to be available in roadside pond water. The commonly available fish species are carps, prawns, shrimp, cat fish, and star fish. Indigenous, brackish water and endangered fish species do not exist in the subproject area.

Biodiversity status

Public consultations discussed the outcomes and there are no special or site specific terrestrial and aquatic ecosystems heavily disturbed by this road subproject. However, the population of floral and faunal species has declined generally due to regional and national climate change (low rainfall, high temperature, high humidity, short winter period, and long dry season) due to over exploitation, poor management, demographic pressure, natural calamities, and deterioration of law and order.

3.3 Socio-economical environment

Land use

20 years ago, this land mainly used for agriculture. With the construction of the bituminous road, this area has started to develop. Presently, low to medium densely populated residential areas with pucca and semi-pucca built structures include residential buildings, and small to large scale business facilities for instance shops, markets.

Beneficiary population

This road goes through Wards number 17 and 18. As per information by the municipality, considering the wards adjacent to the road alignment, about 50,000 people will benefit directly and many others indirectly.

Education

In the subproject area, literacy among the population is 59.6 %. This is higher than the national average (51.8%). Literacy rate among males is still higher than females. (Ref: Population and Housing Census 2011).

Tribal communities

There are no indigenous or tribal people live in this subproject area. Therefore, there are no measures needed for indigenous peoples' safeguard.

Land acquisition and resettlement

This subproject is basically construction of RCC pavement by replacing bituminous pavement. Therefore, land acquisition and resettlement activities are not actively involved in the subproject intervention. The MGSP social experts will evaluate this issue and measures will be given accordingly.

Status of housing and built-up infrastructure

Feni Pourashava is still in semi-urban area where built-up infrastructure includes semi-pucca houses, pucca houses, and recently developed high-rise apartment buildings. In recent years, due to improvement of economic conditions people are building pucca houses instead of semi pucca houses. The houses of the market area are a combination of semi-pucca, and pucca. Pucca buildings are manifestation of the better economic status and higher occupational class.

Principal livelihoods and economic activities

The subproject areas are now inhabited by mixed occupational people where major income comes from non-farm activities such as small business, enterprises, jobs, transport vehicle ownership and operation, agro-business, and pisci-culture. Presently, a significant number of people work in small trades, private sector jobs, and government jobs in the town, and transport operation such as rickshaw vans. Increased awareness of social issues and NGO activities has changed the poverty scenarios of the subproject area.

Cultural heritage and protected areas

There are no protected areas and no important cultural or historical sites identified in the area. The local cultural structures are mosques, graveyards, Eid-gahs, academic institutions, religious spots, play grounds, post offices, and a dispensary.

Social conflicts, development activities and political condition

There are no visible conflicts between the local communities regarding this subproject implementation. There are many development activities implemented by the Pourashava under MGSP and other agencies. Political instability has been found in recent years in Bangladesh. However, from the middle of the 2015, the political situation seems stable. This creates a positive situation for the development activities.

4 ENVIRONMENTAL SCREENING

Environmental Screening (ES) for the subproject has been conducted with the purpose of fulfilling the requirements of GoB and WB. ES ensures that environmental issues are properly identified in terms of extent of impacts. A field visit for preparing the ES was carried out on 18 January 2016 in the subproject area. Environmental Screening Checklist, as adopted in Appendix C of the Environmental Management Framework of MGSP, was administered for identifying the impacts and their extents. The screening data and information for this subproject have been formulated and are shown in below.

1) Potential environmental impact during construction phase:

(a) Ecological impacts:

➢ Felling of trees	Significant □	Moderate □	Minor □ √	Number of tress 20
➢ Clearing of vegetation	Significant □	Moderate □	Minor □ √	
➢ Potential impact on species of aquatic (i.e., water) environment	Significant □	Moderate □	Minor □ √	

(b) Physicochemical impacts:

➢ Noise pollution	Significant □	Moderate □	Insignificant □√
➢ Air pollution	Significant □	Moderate □ √	Insignificant □
➢ Drainage congestion	Very likely □	Likely □	Unlikely □ √
➢ Water pollution	Significant □	Moderate □	Insignificant □ √
➢ Pollution from solid/ construction wastes	Significant □	Moderate □ √	Insignificant □
➢ Water logging	Significant □	Moderate □	Insignificant □ √

(c) Socio-economic impacts:

➢ Traffic congestion	Very likely □	Likely □	Unlikely □ √
➢ Health and safety	Significant □	Moderate □ √	Insignificant □
➢ Impact on archaeological and historical	Significant □	Moderate □	Insignificant □ √
➢ Employment generation	Significant □	Moderate □ √	Insignificant □

2) Potential environmental impact during operational phase:

(d) Ecological impacts:

- Potential impact on species of aquatic (i.e., water) environment — Significant □ Moderate □ Minor □ √

(e) Physicochemical impacts:

- Potential air quality and noise level — Improvement □ √ No-improvement □ Deterioration □
- Drainage congestion — Improvement □ Minor Improvement □ √ No Impact □
- Risk of Water pollution — Significant □ Moderate □ Minor □ √
- Pollution from solid waste — Improvement □ No-improvement √ Deterioration □

(f) Socio-economic impacts:

- Traffic — Improvement □ √ No-improvement□ Adverse □
- Safety — Improvement □ √ No-improvement □ Adverse □
- Employment generation — Significant □ Moderate □ √ Minor □

3) Summary of possible environmental impacts of the subproject

The proposed subproject (road improvement) is not located within any environmentally sensitive area. Thus, it is not going to create intimidation to important environmental features. In some places, drainage congestion has been observed and drainage system will be developed to minimize the water logging problem. Some earthwork will be involved; however, no agricultural productive soil will be used for the purpose. The inputs will be mainly at construction phase and limited within the subproject boundary. Moreover, mitigation measures will be taken according to the EMP for minimizing the air, dust, and noise pollution.

To get the 6.00 m width, the subproject needs low to medium scale demolition works which will have socio-economic impacts. This demolition works will generate solid waste, construction debris that should be examined and disposal should be performed accordingly. The anticipated social issues should be investigated and examined by the social experts and guidelines should be given accordingly.

Seeing that there are no adverse impacts to be caused by the implementation of this subproject, and considering the environmental impacts, this subproject can be considered as Orange-B category as per ECR-97. According to the WB classification, it can be classified

as Category B. As per ECR-97, an IEE will fulfill the requirements for getting the environmental clearance certificate from DoE.

5 SPECIFIC IMPACT AND MITIGATION & ENHANCEMENT MEASURES TO SAFEGUARD ENVIRONMENT

This subproject involves the improvement work of 2.20 km road, which passes through different types of environmental features like ponds, small shops, bazaars, markets, mosques, and schools. From the environmental study, the possible impacts of the works are mainly caused by the key activities of the subproject earth work, bed preparation, sand filling, palisading work, cement concrete and reinforcement cement concrete works. This section describes some specific impacts due to the subproject activities and their mitigation measures.

5.1 Earthwork

The road improvement work consists of earth excavation, earth filling and cutting, and removal of unsuitable materials. These works lead dust blowing, noise and vibration which disturb the local people. As no massive earthwork is involved at any specific location, several small volumes of earth from different areas will be arranged by the contractor.

Mitigation:

- Proper care will be taken by the contractor as well as ULB, during cutting and filling so that this activity does not disturb the roadside area;
- Avoid loss of topsoil for the earth work.

5.2 Tree plantation

There are about 20 planted trees along the roadsides (Sishu, Korai, Mango, Jackfruit, and Coconut) that will cut down for implementing of this subproject.

Mitigation:

- 100 (5 times of the trees to be cut) trees should be planted to compensate the ecological imbalance to be caused due to cutting of the existing trees.

Planting many trees will enhance ecological balance of the area after their successful growth.

5.3 Pollution from construction materials

Dumping of construction spoils, including accidental leakage of oil, grease, and fuel in equipment yards is a significant hazard. Both surface and groundwater might be polluted from these contaminants. Even the people to be engaged for the construction activities might endanger the physical and human habitats of the area.

Mitigation:

- Safe transport, storage, and disposal provisions for construction materials, and equipment have to be carried out in order to avoid accidental spillage and loss;
- Fuels, lubricants, and other hazardous materials should be stored over raised platforms and not directly on the ground;
- The playgrounds of the educational institutions should not be used as a stockyard or work campsite.

5.4 Air quality and dust

During the construction phase, negligible amounts of air pollutants will be emitted from the equipment and construction vehicles. Local residents in the vicinity of the work sites will be temporarily disturbed by the limited dust pollution. The overall impacts are, however, are expected to remain low.

Mitigation:

- Water should be sprayed to control the dust, which is the main way to suppress dust in the worksite. At the operational phase, there is no real risk of pollution, since the current traffic volume of motor vehicles is too small to cause severe air pollution.

5.5 Noise and vibration

Noise and vibration caused by the equipment and movement of construction vehicles may temporarily disturb nearby residents and the sensitive areas. In this subproject, sensitive areas like 3 schools and 3 mosques are likely to be affected from the roadside noise, though the impacts are limited.

Mitigation:

- Transportation of the construction materials have to be carried during the scheduled times, and mainly during the day;
- If needed, all powered mechanical equipment and machinery will be fitted with noise abating gear such as mufflers for effective sound reduction.

5.6 Water quality

The road passes by few water bodies and no remarkable sources of water pollution has been found. The water quality may deteriorate if construction materials, including borrow and fill materials, sand, construction waste, effluent from work camps, and food waste are dumped in the water bodies.

Mitigation:

- Proper construction management including waste management as well as training of operators and other workers will be provided to avoid pollution of water bodies;
- Construction waste will be disposed in specified bins (not in water bodies or lowland), for which contractor will be responsible.

5.7 Occupational health and safety

The most important risks associated with the construction activities are listed below:

- Exposure to sunlight- workers are being exposed to the sun for long hours;
- Exposure to high temperature, and humidity for a long time resulting in dehydration;
- Contact with hazardous substances and wastes pose risks of infections and diseases;
- Risk of poor air quality due to dust;
- Risk of collision (traffic);
- Risks from head loads for carrying soil and construction equipment;
- Risks of using of the machinery in motion;
- Risk associated to the sudden bad weather working conditions.

General Requirements for the Workers Health and Safety

The key salient features of the general requirements for the workers' health and safety stated is presented in ***Table 5.7.1.***

Table 5.7.1: General requirements for the workers health and safety

Issues	Requirements
Health and Hygiene	• Cleanliness at the site premises and workers living places; • Arrangement of the proper ventilation and temperature at the labor sheds; • Protection against dust and furnace by using of nose masks and covering of the head and body; • Proper disposal of wastes and effluents; • Provision of adequate latrines and separate toilets for the women; • Sufficient dustbins for the solid waste management system.

Issues	Requirements
Safety and first aid	• Using of personal protective equipment (helmet, gloves, goggles, nose mask, safety boots); • Precautions during work on or near machinery in motion; • Head loads are prohibited; however, availability of any alternative monitoring against carrying of excessive weights is needed; • First aid facilities should be provided and maintained; • Ensure one first aid box for every one hundred workers; • The first aid kit should include adhesive bandages, regular strength pain medication, gauze, and low grade disinfectant.
Compensation for accidents at work	• Contractor's responsibility for compensation- amount of compensation depends on the type of accidents (the amount of compensation should be between 50,000 BDT to 100,000 BDT and even more).
Dust and Fumes	• For any dust, fumes, or other impurities likely to be injurious to the workers, effective measures shall be taken to prevent their accumulation and its inhalation by workers.
Overcrowding	• No labor room should be overcrowded.
Latrines and urinals	• Sufficient latrines shall be provided; • Latrines shall be maintained in clean and sanitary condition; • Latrines shall be adequately lighted and ventilated.
Disposal of wastes and effluents	• Proper disposal system for solid waste and effluent is required.

6 ENVIRONMENTAL MANAGEMENTPLAN (EMP)

The purpose of the Environmental Management Plan (EMP) is to ensure that the activities are undertaken in a responsible and non-detrimental manner. The EMP will guide the environmentally sound construction of the subproject and ensure efficient lines of communication between the PMU (LGED), DSM, and contractors.

6.1 Access to information

The environmental assessment report should be translated into Bengali and disseminated locally. The copies of the report (both in English and Bengali) will be sent to all the concerned field offices of the LGED and ULB. It will also be made available to the public. The final assessment report will also be uploaded in the LGED website and the World Bank website before appraisal is completed.

6.2 Grievance redress mechanism

The project-specific Grievance Redress Mechanism (GRM) will be established by the PMU to receive, evaluate, and facilitate the solution of APs concerns, complaints, and grievances concerning the social and environmental performance of the subproject. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the subproject.

The grievance mechanism should be related to the risks and adverse impacts of the subproject. It should address APs' concerns and complaints promptly, using an understandable and transparent process that is gender responsive, and culturally appropriate. It should be readily accessible to all segments of the affected people at no costs and without retribution. The mechanism should not impede access to the country's judicial or administrative remedies. The affected people will be appropriately informed about the mechanism.

LGED has its own Grievance Redress Procedure (GRP), which it operates to address any dissatisfaction and complaints by local people regarding its activities. This procedure will be applied to address any complaints or grievances through negotiations with community leaders and representatives of APs during implementation of the MGSP.

6.2.1 Grievance redress committee (GRC)

The discussions and negotiation will be conducted by the Project Implementation Unit (PIU), and will involve the APs and Grievance Redress Committee (GRC) led by the Director of Project Management Unit (PMU) of LGED. The GRC will be formed and established at Feni Pourashava. The grievance response focal point will be available at Feni Pourashava for instant response to an aggrieved person. It will receive written complaints or suggestions, and produce them to the GRC for hearing and resolution. The GRC will have the following members:

i. Project Director (LGED head office) : Director
ii. Pourashava Mayor (ULB) : Chairman
iii. Assistant Engineer at ULB office : Member Secretary
iv. Environmental Safeguard Specialist (Consultant) : Technical Facilitator
v. Social Management Specialist (Consultant) : Technical Facilitator
vi. Senior Municipal Engineer (Consultant) : Technical Facilitator

6.2.2 Grievance resolution process

All complaints and suggestions will be received formally in the Pourashava office by the GRC Member Secretary. The complaints will largely be channeled through the GRC. Aggrieved persons can also lodge the complaints and produce suggestions directly to the ULB's Assistant Engineer. Complaints may also be received directly at the Secretariat of GRC at the Executive Engineer's office at the district level but it is more preferable to submit grievance at ULB office. A sample Grievance Redress Form will be prepared and will be sent to the GRC and ULB prior to the implementation of the subproject.

An intake register will be maintained at the office of the Member Secretary. The Pourashava Assistant Engineer will record the details of the grievances in the intake register for documentation and ensure impartiality, fairness, and transparency. The intake register will have data and information columns including (i) Case no., (ii) date of receipt, (iii) name, type of complaint, grievance, (iv) father's name, husband's name, (v) sex, (vi) complete address of the person raising the complaint, grievance, (vii) main objection (loss of land, property, or entitlement), (viii) detailed complaint story, (ix) expectation with documentary evidence and previous records of similar grievances, etc.

No GRC members are allowed to contact the aggrieved persons in advance. Rather, the concerned persons are informed to attend formal hearings at an appointed date. The GRC committee will sit for hearing the complaints of the aggrieved persons. The GRC will record

salient points presented by the aggrieved person and will examine documentary evidence submitted during informal hearings. A resolution register will be maintained by the Secretariat of GRC at the Executive Engineer's office. The resolution register will contain (i) serial no., (ii) case no., (iii) name of complaint, (iv) complaint story and expectation, (v) date of hearing, (vi) date of field investigation (if any), (vii) results of hearing and field investigation, (viii) decision of GRC, (ix) progress (pending, solved) and (x) agreement or commitments. Closing register will keep records such as, (i) serial no., (ii) case no., (iii) name of complaint, (iv) decision and response to complaints, (v) mode and medium of communication, (vi) date of closing, (vi) confirmation of complaintant's satisfaction, and (vii) management actions to avoid recurrence.

The GRC will decide within 30 days of receiving a complaint. There will also be an appeals procedure where, if a person is dissatisfied with the ruling of the GRC, he or she or a representative may attend their next meeting to present the case again. The committee will then reconsider the case in private, after which their decision is final. If the appellant is still not satisfied, he or she has the right to take the case to the public courts. A person will be responsible in the PMU to record of all the grievance cases and examine these for recurring complaints and solutions, as well as to incorporate these complaintants in the relevant reports (RPs, and IEEs or EAs). LGED and ULB will also publish the outcome of cases on public notice boards and websites. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by the PMU. The cost estimates for grievance redress are included in the cost estimates in the report.

Based on consensus, this procedure will help to resolve issues or conflicts amicably and quickly, saving the aggrieved persons from having to resort to expensive, time consuming legal action. The procedure will however, not pre-empt a person's right to go to the courts of law.

6.3 Institutional arrangement for safeguard compliance

In the institutional arrangement procedure, Project Director and Team Leader should be directly involved. The PD and TL would be supported by an environment safeguard specialist and social management expert. The ULB officials, especially engineers, would be responsible for supporting the construction supervision as well as environment and social management with the help of the DSM consultants. The civil works contractors will implement these environmental mitigation measures.

The PMU, with help of environment and social management specialist, will submit the monthly and quarterly progress reports on environmental and social compliances to the World Bank.

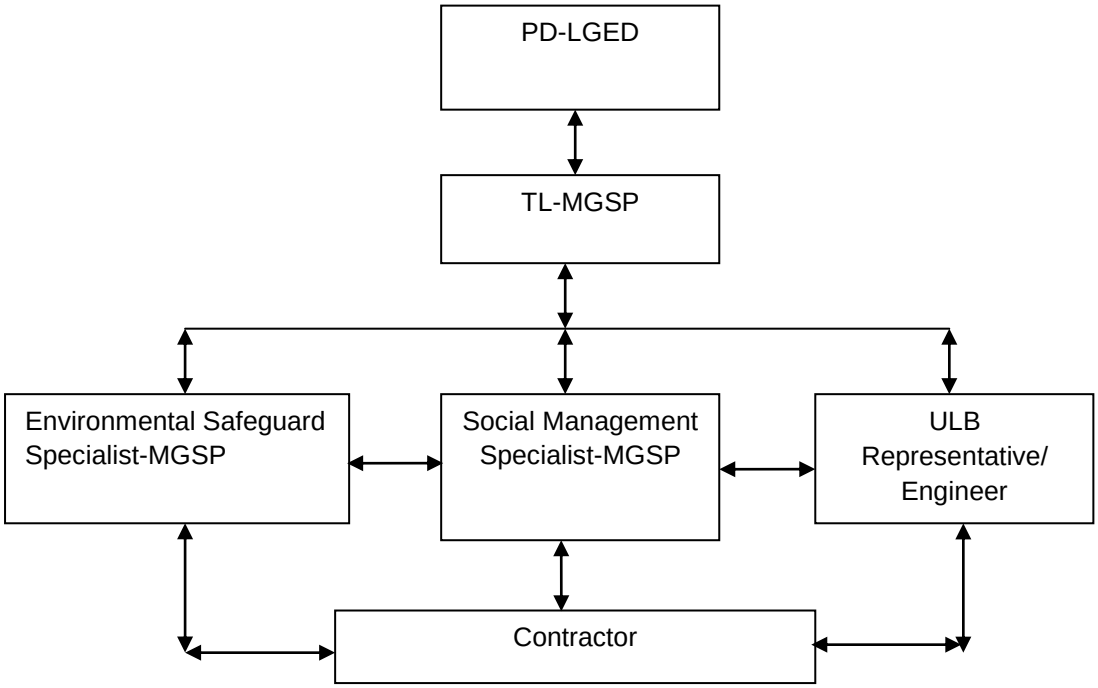

Figure 6.3.1: Environmental and social management team (Tentative)

6.4 Capacity building

A training program will be developed by the PMU to build the capability of PMU and PIU. This will be conducted by the PMU and DSM Consultants. PMU and the DSM will organize an introductory course for the training the ULBs officials, preparing them on: (i) Environmental screening, (ii) EMP implementation, including environmental monitoring requirements related to mitigation measures; and (iii) taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of the implementation. The contractor will be required to conduct environmental awareness and orientation of the workers and other support staff before deploying to the work sites in order to achieve the expected standards. A detailed training manual will be developed by the Environmental Safeguard Specialist and Social Management Specialist prior to the training program.

6.5 Emergency response and disaster management

Disaster management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular the preparedness, response, and recovery to lessen the impact of disasters. Emergency Preparedness Planning (EPP) and Contingency Planning (CP) are the processes of disaster management plan for developing strategies, arrangements, and procedures to address the humanitarian needs of those adversely affected by the crisis. There are four main types of disasters, namely: Natural disasters, Environmental Emergencies, Complex Emergencies, and Pandemic Emergencies.

For MGSP activities, ULB would identify the immediate needs, prioritize the tasks, and identify resource requirements to address the humanitarian needs of those adversely affected by the crisis. The indication of disaster and post-disaster impacts and their management have been shown in this report in the relevant impacts and mitigation section.

6.6 Environmental management action plan

The environmental management action plan has been outlined in ***Table 6.6.1***. The mitigation measures as well as monitoring program of the EMP are also incorporated in the environmental management action plan.

Table 6.6.1: Environmental Management Action Plan						
Sl. No.	**Activity/ Issues**	**Potential Impacts**	**Proposed Mitigation & Enhancement Measures**	**Responsible for implementation**	**Responsible for monitoring**	**Frequency of monitoring**
1.	Contractor's proposal for site specific temporary works	- Accurate/ proper implementation of EMP.	- Preparation of work schedule, labor camp, materials storage area, access road, waste dumping/ disposal area etc.	Contractor	-LGED/ULB -DSM	- Prior to start of construction works.
2.	Construction and operation of labor shed/ camp for workers	- Generation of sewage waste; - Generation of solid waste; - Water, soil, air & dust pollution/ environmental pollution.	- Construction of sanitary latrine/ Pit latrine with septic tank/ Ring slab system; - Erection of "no litter" sign; - Open areas/ surrounding bushes if any are not being used as toilet facility; - Provision of waste bins/ cans, where appropriate; - Litter is to be collected daily; - Bins and/or skips should be emptied regularly and waste/ debris should be disposed of at the site pre-approved by Environmental Safeguard Specialist of DSM; - Camp and working areas are kept clean and tidy at all times; - Camp is to be checked for spills of substances i.e. chemical, oil, paint, etc.	Contractor	-LGED/ULB -DSM	- Prior to start of construction works.
		- Health of workers (Occupational health and safety)	- Raising awareness about hygiene practices among workers, - Environmental awareness & safety training for all staffs, - Staff must be trained up for operating equipment. ***See Table 5.7.1 (General requirements for the workers health and safety) for details***	Contractor	-LGED/ULB -DSM	As work progresses (Daily).
		- Possible development of labor camp into permanent settlement.	- Contractor to remove labor camp at the completion of contract.	Contractor	-LGED/ULB -DSM	After completion of construction.
		Outside labor force causing negative impact on health and social well-being of local people.	- Contractor to employ local work force, where appropriate; - Promote health, sanitation and road safety awareness.	Contractor	-LGED/ULB -DSM	- As work progresses during construction phase (Daily).
3.	Construction materials storage areas	- Use of surrounding open area, play ground, road side for stockpiling of	- Proper stockpiling/ storage of construction materials at the site pre-approved by Environmental Safeguard Specialist of DSM;	Contractor	-LGED/ULB -DSM	- Prior to start of construction works,

Table 6.6.1: Environmental Management Action Plan						
Sl. No.	**Activity/ Issues**	**Potential Impacts**	**Proposed Mitigation & Enhancement Measures**	**Responsible for implementation**	**Responsible for monitoring**	**Frequency of monitoring**
		construction materials; - Creating dust/ air pollution; - Spillage of liquid/ hazardous substances i.e. oil, chemicals; - Risk of crime; - Access of students, children, animals; - Not cleaning of construction materials storage areas after completion of construction.	- Proper covering of dust producing materials with polythene sheet; - Proper fencing around the storage area if possible; - Spills/ hazardous substances should be kept at safe place to avoid soil/ water contamination; -Storage areas should be secure to minimize the risk of crime and should be safe from access by students, children, animals; - Materials storage area must be cleaned after completion of construction.			- As work progresses during construction phase (Daily).
4.	General construction works for the subproject	Drainage congestion, water logging and flooding	- Provision for adequate drainage facilities of storm water if needed; - Provision for pumping of congested water, if needed; - Ensure adequate monitoring of drainage effects, especially if construction works are carried out during the wet season.	Contractor	-LGED/ULB -DSM	As work progresses (Daily).
		Air/ Dust pollution	- Ensuring of vehicles/ equipments in well operating condition; - Sprinkle of water on dry surfaces/ unpaved roads, loose stockpile materials when dust is visible to reduce dust generation; - Maintain adequate moisture content of soil during transportation, compaction and handling; - Sprinkling and covering of loose materials of stockpiles (e.g. fine aggregates); - Avoid use of equipment e.g. stone crushers at site, which produce significant amount of particulate matter.	Contractor	- LGED/ULB - DSM	- As work progresses (Daily). - Air quality can be measured once during construction phase.
		Traffic congestion, traffic problems	- Schedule deliveries of material/ equipment during off-peak hours; - Selection of alternative routes, where possible for subproject vehicles.	Contractor	- LGED/ULB - DSM	- As work progresses (Daily).
		Noise pollution	- Use of noise suppressors, ear plug, silencer and mufflers in heavy construction equipment; - Avoid using of construction equipment producing excessive noise at night; -Avoid prolonged exposure to noise (produced by equipment) by workers;	Contractor	- LGED/ULB - DSM	As work progresses (Daily). - Noise level can be measured once during

Table 6.6.1: Environmental Management Action Plan						
Sl. No.	**Activity/ Issues**	**Potential Impacts**	**Proposed Mitigation & Enhancement Measures**	**Responsible for implementation**	**Responsible for monitoring**	**Frequency of monitoring**
			- Regulate use of horns and avoid use of hydraulic horns for the subproject vehicles.			construction phase.
		Water & Soil pollution	- Prevent discharge of fuel, lubricants, chemicals, and wastes into adjacent ponds.	Contractor	- LGED/ULB - DSM	- As work progresses (Daily); - Water quality can be measured once during construction phase.
		- Cutting down of 20 nos. of trees (Mango, Coconut, and Jackfruit).	- Re-plantation of trees (20*5=100 nos, as same species as fallen down) in the school premises & road sides.	Contractor	-LGED/ULB -DSM	-Mainly after completion of construction.
		Accidents	- Following standard safety protocol; - Environmental health and safety briefing; - Provision of protective gear.	Contractor	-LGED/ULB -DSM	Once in a week
		Spills and leaks of oil, toxic chemicals etc.	- Good housekeeping, - Proper handling of lubricating oil, chemical and fuel. - Collection, treatment & disposal of spills.	Contractor	- LGED/ULB - DSM	As work progresses (Daily).
		Improper stockpiling/ disposal of construction wastes & debris.	- Proper stockpiling/ storage of construction materials at the site pre-approved by Environmental Safeguard Specialist of DSM; - Proper covering of dust producing wastes with polythene sheet, - Proper fencing around the wastes stockpiling/ disposal area if possible; - Spills/ hazardous substances should be kept at safe place to avoid environmental contamination.	Contractor	-LGED/ULB -DSM	- As work progresses during construction phase (Daily).
	All construction works	Beneficial impact on employment generation	- Employ local people in the subproject activities as much as possible; - Give priority to poor people living in/around the Subproject areas for the works e.g. excavation which do not require skilled manpower.	Contractor	-LGED/ULB -DSM	As work progresses (Daily).

Table 6.6.1: Environmental Management Action Plan						
Sl. No.	**Activity/ Issues**	**Potential Impacts**	**Proposed Mitigation & Enhancement Measures**	**Responsible for implementation**	**Responsible for monitoring**	**Frequency of monitoring**
		General degradation of environment	Environmental enhancement measures, such as plantation, landscaping, traffic and safe signs, construction site fencing (where appropriate).	Contractor	-LGED/ULB -DSM	-Once in a week for traffic and safe signs; -Plantation and landscaping after construction work.
5.	Excavation/ Earth work/	Erosion and dust blowing	-Proper care will be taken to reduce erosion and dust.	Contractor	-LGED/ULB -DSM	As work progresses (Daily).
6.	Issues/ activities during operation & maintenance of the road	-Increase in traffic speed and accidents; -Increased traffic congestion due to movement of increased number of vehicles; -Damage to road by movement of heavy vehicles; spillage of water.	-Better traffic management; -Avoiding spillage of water on road from vehicles carrying fish/ fresh produce (through monitoring, creation of awareness).	ULB	-LGED/DSM	Once in a month
		-Increased air and noise pollution affecting surrounding areas	Traffic management, increased vehicle.	ULB	-LGED/DSM	Once in a month

6.7 Cost of environmental enhancement works in BOQ

Considering the environmental impacts and their mitigation measures for this subproject, several items are included in the BOQ to address these issues. ***Table 6.7.1*** presents the estimated cost to implement the EMP.

Table 6.7.1: Cost of environmental enhancement works in BOQ

Item No.	Description of Item	Costs (Tk)
	ENVIRONMENTAL MITIGATION & ENHANCEMENT WORKS	
	Overall environmental management in addition to compliance to the clauses 27 & 28 of GCC to the entire satisfaction of E-I-C.	
1	a) Dust suppression measures like water spraying in and around the site	50,000
	b) Dust suppression measures like water sprinkling on aggregates / unpaved roads in the work site	
	c) Air quality (SPM/ PM_{10}/ $PM_{2.5}$) Measurement. It can be measured from the pre-approved public institute/ university twice in construction phase @Tk. 10000 per sample	60,000
	d) Noise level measurement. It can be measured from the pre-approved public institute/ university at monthly basis @Tk. 5000 per measurement.	30,000
	e) Water quality (pH, BOD5/COD, NH3, Oil, Grease) measurement. It can be measured from the pre-approved public institute/ university once in construction period @Tk. 10000 per sample.	60,000
	f) Prevention of spillage, leakage of polluting materials	20,000
	g) Temporary camp site waste disposal facility improvement 2 nos (1 no of organic waste and 1 no of inorganic waste disposal facility) @Tk.20,000.00	40,000
	Providing and maintaining adequate potable water supply and sanitation facilities at camp site and work site to the entire satisfaction of E-I-C.	
2	a)Water supply: 3 nos. of tube well @ 20,000.00	60,000
	b) Sanitation facilities: 6 nos. of toilets preferably portable toilets (2 nos. for women and 4 nos. for men) @ 15,000.00	90,000
	c) Providing safety gear package like hand gloves, spectacles for eye protection, helmets, rubber shoes, first aid boxes	50,000
3	Tree plantation (including protection, fencing and conservation during project period) @1000.00 per tree (20*5*1000)	100,000
4	Clearing and grubbing	40,000
	Total	600,000

7 PUBLIC CONSULTATION AND PARTICIPATION

7.1 Methodology

In the context of preparing the Environmental Assessment (EA), participatory public consultation was conducted in the subproject site. The Feni Pourashava Mayor, Pourashava Officials, and local individuals as well as LGED and Consultant participants participated. Informal Focus Group Discussions (FGD) and a formal CIP were conducted involving the participants (Participant list is shown in ***Appendix-1***). In addition, walk-through informal group consultations were also held. The local communities were informed about subproject interventions including its benefits. Suggestions made by the participants were listed and incorporated in the EMP accordingly.


Photographs 7.1.1: Consultation meeting at Feni Pourashava with Mayor and other ULB Officials


Photographs 7.1.2: Consultant team visited the sites with the ULB representatives

7.2 Issues raised by the participants

The participants raised the issues related to infrastructure development of Feni Pourashava which mainly includes roads and drains. They have also discussed about the quality of the construction works that been already have implemented. In the CIP and FGD, the participants discussed about the requirements for the ULB's future development through a list of the subprojects that is included in ***Appendix-II.***

7.3 Feedback, suggestions, and recommendations of the participants

The participants were presented with feedback, suggestions, and recommendations listed below:

- The FGD results confirmed that an improved communication network is needed for future development of Feni Pourashava;
- Most of the participants expressed that the number of subprojects that have been selected for each financial year is insufficient;
- The participants informed that the provision of water supply, toilet, hygienic facilities, and access road is not adequate;
- Construction works should be scheduled properly and the quality of construction work should be improved;
- The participants also addressed the solid waste management issue to reduce environmental and public health hazards.

8 CONCLUSIONS AND RECOMMENDATIONS

This study enables the MGSP to understand the initial environmental impacts for the subproject as well as to formulate the relevant mitigation and monitoring plans. Based on the environmental assessment, all possible environment aspects have been adequately assessed and necessary control measures have been formulated to meet with statutory requirements.

The overall conclusion is that if the mitigation, compensation, and enhancement measures are entirely implemented, there will be no significant negative environmental impacts as a result of location, design, construction, and or operation of the proposed subproject. In fact, there will be tremendous benefits from the recommended mitigation and enhancement measures and major improvements in quality of the life that enhance economic activities, education, job creation and public health once the scheme is in operation.

The conclusions of the environmental assessment can be summarized as follows:

- The short-term negative impacts that may come such as air quality, noise, solid waste, occupational health and safety will be minimized through the mitigation plan;
- The subproject will create employment for the workforce who live in the vicinity of the construction site and will provide them a short-term economic gain.

A few key recommendations are outlined below:

- All mitigation, compensation, and enhancement measures proposed in this report should be followed by the concern authorities for implementing this subproject;
- The environmental management and monitoring plan proposed in this report also needs to be followed;
- A training program should be carried out for ULBs staff to deliver overall knowledge for environmental safeguards;
- Natural resources such as water, wood, and fuel should properly use.

APPENDIX

Appendix 1: List of the participants

Appendix 2: CIP details