GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Improvement of Road, Drain and Street Light Facilities at Different Location of Dhamrai Pourashava

Dhamrai Pourashava, Dhaka

Package No. - 01

BANGLADESH MUNICIPAL DEVELOPMENT FUND
(BMDF)

MUNICIPAL GOVERNANCE AND SERVICES PROJECT
(MGSP)

October-2018

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ABBREVIATIONS

AP (AP's)	Affected Person
BDT	Bangladeshi Taka
BOQ	Bill of Quantity
BMDF	Bangladesh Municipal Development Fund
CC	Cement Concrete
CIP	Capital Investment Plan
CP	Contingency Planning
EA	Environmental Assessment
ECR	Environmental Conservation Rules
EMP	Environmental Management Plan
EPP	Emergency Preparedness Planning
ES	Environmental Screening
EMF	Environmental Management Framework
FGD	Focal Group Discussion
GoB	Government of Bangladesh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GRP	Grievance Redress Procedure
MGSP	Municipal Governance and Services Project
MD	Managing Director
PPEs	Personal Protective Equipment's
PMU	Project Management Unit
RCC	Reinforcement Cement Concrete
RP	Relevant Reports
OHWT	Over Head Water Tank
ULB	Urban Local Body
WB	World Bank
XEN	Executive Engineer

EXECUTIVE SUMMARY

BACKGROUND

With financial assistance from the World Bank, Bangladesh government has undertaken Municipal Governance and Services Project (MGSP). Under the MGSP the LGED will implement about 20 types of subprojects in 26 ULBs, which include 22 Pourashava and 4 City Corporations; while the BMDF will implement about 13 types of sub-projects in 119 Pourashava. The overall objective of the Project is the construction, rehabilitation, expansion and implementation of subprojects of essential existing infrastructure and utility facilities for the urban sector of Bangladesh; to develop a well-structured augmentation/rehabilitation program and implement according to prioritization. However, among 119 ULBs of BMDF, for Dhamrai Pourashava has allocation for the improvement of road, drain and street light facilities under this project. Hence, under this Subproject Packge-1, Dhamrai Pourashava has taken initiative to construct 4.7km road and 3.8km drain and installation of 5.8km streetlight at different area of the Pourashava. All of the proposed location is solely owned by the Pourashava and it is also within the right of way of the Pourashava. The existing right-of-way is mostly clear, and for which no acquisition for land is required. Moreover, there will be no widening of road work except the improvement of existing damaged road with new BC and RCC pavement. During implementation of the proposed subproject component, potential environmental impacts stem from poor or improper location, planning and design practice. Construction impacts in a local setting and within the local community can be significant, even though of short duration and limited extent.

Government of Bangladesh (GOB) law and WB policy require that the environmental impacts of development projects be identified and assessed as part of the planning and design process, and that action be taken to minimize any adverse impacts on local people, their livelihoods, culture and the environment. This is perform by the environment screening or impact assessment process which has become an integral part of all WB lending operations, project development and implementation. This Project Report gives the findings of the Environmental Assessment Study undertaken as an integral part of the design and construction process.

None of the subproject interventions are proposed within locations in or near sensitive ecosystems. The subproject has been categorized as ‘Orange-B category as per ECR-97 and as well as accordance with WB Safeguard Policy and an EA is carried out that provides mitigation measures for impacts and a monitoring and reporting protocol.

PURPOSE OF THE STUDY

The objective of the overall assignment is to carry out an Environmental Assessment (EA) and to prepare comprehensive Environmental Impact statement for the implementation of the proposed subproject. The study is intended to meet the requirements of the Government of Bangladesh, World Bank’s safeguard policy and the subproject specific EA.

STUDY APPROACH AND METHODOLOGY

For the preparation of the subproject appraisal, environmental screening has been performed for all the subproject components. Baseline data on subproject design was generated through discussion with the client and review of subproject documentation, and from secondary and primary source. In addition, photographs of the significant aspects was taken to assist in describing the baseline environmental conditions of the subproject area. Opinions formed were revalidated through field work entailing site investigations and Interviews with representatives of the relevant Pourashava officials, beneficiary and affected people within the subproject influence zone.

SUMMARY OF SUBPROJECT-RELATED IMPACTS AND BENEFITS

The following presents a summary of the potential impacts to natural, social, economic, and cultural resources as a result of the proposed roadway and drainage improvement subproject.

Impact Category	Impact Assessment
Land Use	Existing land use adjacent to the roadways will not change as a result of the subproject (but the land value will be increased).
Site Clearing Work	Road side trees and natural grown vegetation to be cut down for the site clearing and ensure uniform road width.
Noise	Moderate adverse impacts to adjacent residential and commercial properties, during construction works. Change in noise levels will not exceed State regulatory thresholds at any location
Tribal People	No minority, or tribal populations exist on site or within the immediate area and, therefore, no impacts will fall on such populations. The subproject will not adversely impact the character of the community surrounding the roadway.
Air Quality	No measurable impacts are anticipated
Water Quality	Though, the drains are designed only for the storm water; however, storm water may carry wash-out materials which may disturb the aquatic environment of the outfall. In addition, dumping of solid wastes, household wastewater into the drain and illegal toilet connections may create pollution in the aquatic environment. Throwing of waste material into the adjacent water bodies, i.e. Bongshai River, pond, khal, and low land may degrade the surface water quality.
Threatened and Endangered Species	There is no threatened and endangered species in the subproject area. So, no impacts are anticipated to threatened or endangered species habitat.
Drainage Congestion	Drainage congestion is minor. However, erratic rainfall may create drainage congestion for short term.

Pollution of Construction Debris	Improper collection and disposal of the generated wastes materials may degrade the quality of the surrounding environment and degrade the aesthetic value.
Traffic Congestion	Vehicle movement and possibility of traffic congestions on the road is unlikely.

Benefit Category	Benefit Assessment
Traffic Safety	Substandard roadway elements will be eliminated, reducing potential crashes. Additional roadway features such as lighting, and pavement drainage will contribute to the improvements in motorized vehicles and pedestrian safety.
Socio-economy	Increased job opportunity for locals. Economy related to material supply etc. expected to boom.
Water logging	RCC pipe drain will improve drainage facilities and prevent the accumulation of the stagnant water on the road surface. This will prevent formation of muddy and slippery surface on the road.

CONSULTATION, DISCLOSURE AND GRIEVANCE REDRESS

The stakeholders were involved in developing the EA through discussions on-site and public consultation, after which views expressed were incorporated into the EA and in the planning and development of the subproject. The EA will be made available at public locations in the Pourashava and will be disclosed to a wider audience via WB, BMDF and Pourashava websites. The consultation process will be continued and expanded during subproject implementation to ensure that stakeholders are fully engaged in the subproject and have the opportunity to participate in its development and implementation. A grievance redress mechanism is described within the EA to ensure any public grievances are addressed quickly.

MONITORING AND REPORTING

The PMU-BMDF, and PIU (Pourashava), will be responsible for safeguard monitoring. The PIU (Pourashava) will submit monthly monitoring reports to PMU-BMDF, and the PMU-BMDF will send quarterly monitoring reports to WB.

BASELINE ENVIRONMENT

Baseline environment is concerned with existing physical, chemical and biological conditions of the area where the plant is going to be set up. The surface water, and noise level have been analyzed to evaluate the primary baseline of the area. The data of air quality will be analyzed prior to the construction, to evaluate the baseline data. The main objective of examining the present environment is to provide an environmental baseline against which potential impacts from development and operational phases of the project can be compared. In physicochemical component, parameters are included as; land, water quality, soil quality, air quality, climate and noise. Biological environment covers general description on floral and faunal species in the study area. Socio-economic environment presents social structure, housing pattern, etc.

FORECAST AND EVALUATION OF IMPACTS

To maintain logical sequence of the EA process, the possible mitigation/enhancing measures for significant impacts are discussed in the chapter-6. Beneficial impacts and enhancement during development and operation phase have been identified and found that the subproject will ensure safe potable water to the dwellers of Pourashava.

ENVIRONMENTAL MANAGEMENT PLAN

Environmental management is concerned with the implementation of the measures necessary to minimize or offset adverse impacts and benefit enhancement measures identified. In order to be effective, environmental management must be fully integrated with the overall project management effort. A monitoring program needs to be put in place to assess any adverse impacts on the environment. Sections **7-1**and**7-2** set out the management measures to be taken with regard to controlling the potential impacts which could occur during the construction and operational phases of the subproject, and indicates responsibilities for the various actions concerned.

INSTITUTIONAL ARRANGEMENTS

BMDF is the Executing Agency (EA) responsible for management, coordination and execution of all activities funded under the loan. BMDF has established a Project Management Unit (PMU) to manage all aspects of loan project implementation, coordinate construction of subprojects across all towns, and ensure consistency of approach and performance. The Environmental and Social Safeguard Specialists have been appointed to coordinate social and environmental issues. Environmental review of subproject and monitoring implementation of mitigation measures are primary functions of the Environmental and Social Safeguarded Specialist within the PMU.

The EA has been prepared by the Environmental Consultant of ULB assisting the PMU-BMDF at the time of the detailed design. Costs for mitigation measures and monitoring are considered at the time of bid document preparation and in contract procurement. A Project Implementation Unit (PIU) will be established at the Dhamrai Pourashava, staffed by Dhamrai Pourashava and supported by PMU-BMDF staff. The PIU-engineers are trained in ensuring the environmental safeguard compliance issues during implementation (capacity building has already ensured by BMDF).

The PIU will hire Construction Contractors (CC) to build component of the infrastructure. Environmental Specialists within the PMU will assist PIU to ensure that the construction packages comply with environmental safeguards and the Environmental Monitoring Plan contained in the EA. Inspection of progress in construction will be undertaken locally by the PIU, supported by the PMU-BMDF. During implementation, the contractor will submit monthly progress reports to the PIU, which includes a section on EMP implementation. The PIU will submit reports to the PMU for review. The PMU will review progress reports to ensure that all the mitigation measures are properly implemented. The PMU will consolidate monthly reports and submit quarterly reports to WB for review.

CONCLUSIONS AND RECOMMENDATIONS

The present EA report finds that though there are certain adverse environmental impacts associated with the construction activities under consideration, these are manageable.

The impact on the social environment is positive through creation of job and business opportunities for local residents from the subproject. The subproject will help in the accelerating socioeconomic growth, and improving quality of road and drainage network. The subproject has been designed to comply with

the country's environmental laws and regulations, and WB environmental safeguard policy especially on physicochemical, Ecological and socio-economic parameter. The subproject management will take steps to ensure that the interventions meets the World Bank's environmental standards. Given the management measures and monitoring commitments by the ULB for the subproject, environmental impact of the subproject will be manageable.

INTRODUCTION

Background of the Project

The Government of Bangladesh (GoB) intends to enhance the capacity of urban local bodies (ULBs) in development and management of urban infrastructure, and improve municipal governance and services through undertaking the Municipal Governance and Services Project (MGSP) in selected Pourashava and City Corporations. The Local Government Engineering Department (LGED) and the Bangladesh Municipal Development Fund (BMDF) will implement the project with participation of the selected ULBs. The project will be financed by IDA, with GoB contribution for land acquisition and management, and Municipalities equity for accessing BMDF competitive finance. Under the MGSP the LGED will implement about 20 types of subprojects in 26 ULBs, which include 22 Pourashava and 4 City Corporations; while the BMDF will implement about 13 types of sub-projects in 119 Pourashava.

Both the LGED and the BMDF intends to ensure that the proposed infrastructure takes into account the environmental concerns in accordance with the Environment Conservation Rules 1997, and the World Bank Safeguard Policies. In this regard under MGSP a framework approach has been adopted for EA; the EA has two major components: (a) Overall environmental assessment, and (b) Development of Environmental Management Framework (EMF). Hence, to meet the regulatory requirement EA is mandatory to implement any subproject under MGSP.

Subproject Background

Dhamrai Pourashava is located under the Dhaka Zila at a distance of about 39 km from G. P.O (zero point) and the North West part of the Dhaka Zila. It lies between coordinates of 23.50 - 24.02E north latitude and 90.02 - 90.14E at east longitude. It is bounded by Bongshai River, Sharifbag mouza of Dhamrai union on the north, kullah union on the south, Bongshai River and Pathalia union on the east Sambag and kullah on the west. Dhamrai Thana was established in 1914 and turned in an Upazilla in the year of 1985[1]. In 1999 Dhamrai Pourashava was established with an area of 6.98 km^2 and its present population is 145390 [2]. Total length of the road in the Pourashava is 65.60km which includes 17.82 km pucca road, 23.57km HBB road and 24.21km Katcha road. Pucca and RCC pipe drain covers 4.8km in the Pourashava area [1]. As per Pourashava information, 4500 numbers of streetlight is available in the Pourashava.

The present infrastructure provision in the Pourashava are in precarious state. Drain are mostly clogged that cannot drain out the storm water during heavy rain and natural drainage system have either been filled up or occupied by land grabber creating water logging during monsoon period. Traffic in Pourashava is increasing day by day with the increases in population and demand. The substandard road and drain network cannot cope with the growing demand. Under the above circumstances, it is right time to think about solving the problem Pourashava that might otherwise be emerged critically in the future. To overcome all likely problem to come in future, the Pourashava should go for planned development. Hence, this subproject directly will contribute for the infrastructure development of the Pourashava. This subproject includes the following components: BC Road, RCC Road, RCC Cover Drain and Footpath and Street Light. The significant features of the subproject are mentioned below:

1 Master Plan of Dhamrai Pourashava, LGED, 2020-231

2 At a glance of Pourashava, Dhamrai, Dhaka.

Name of the Subproject	(a) Improvement of Dhamrai Bazar Road from Kayetpra Baily Bridge to Jatrabari Mur by 50mm Dense Carpeting in ward no-01 & 03.(Ch:0.00-1000 m). (b) Construction of 900mm Internal dia RCC Pipe Drain both side of Dhamrai Bazar Road from Upazilla gate to Jatrabari Mur & one side of Bypass Road from Abduls Subhan School to Bongshi River via AC Land Office, via Tangail School & Shima Auto Rice Mill in ward no-01 & 03.(Ch:0.00-1650m) (c) Construction of Footpath both side of Dhamrai Bazar Road from Jatrabari Mur to Upazilla gate by Tiles, in ward No-02. (Ch:0.00-450m) (d) Construction of 600mm Internal dia RCC pipe Drain from Ayongong Mur to Bongshi River Branch, in Ward no-01. (Ch.: 0.00-650m). (e) Construction of RCC Road from H/O Abdul to Shantipara at Ayngon, in Ward no-01. (Ch.0.00-500m). (f) Supplying, Fitting & Fixing (Street light) Electric line starting from Jatrabari Bus Stand to kayetpara Baily Bridge via Dhamrai Bazar, Upazilla Compound to Boro Bazaar Mondir & Dhulivita Bus stand to Choto Chandrail Poura Border in ward no 01, 02, 03 & 09. (Ch:0.00-2100m) (g) Supplying, Fitting & Fixing (Street light), Electric line starting from H/O Abdul to Shantipara at Ayngon, in Ward no-01. (Ch.: 0.00-500m). (h) Construction of RCC Road from Boro Bazar Mur to Bogarbil via T & T Office Mur, Mohila Madrasha & H/O Nobin Journalist, in ward No-02. (Ch.: 0.00-1500m) (i) Construction of 800mm Internal dia RCC Pipe Drain from Boro Bazar Mur to Bongshi River via T & T Office Mur, Mohila Madrasha & H/O Nobin Journalist, in ward No-02 (Ch.: 0.00-1500m) (j) Supplying, Fitting & Fixing of Street light from Boro Bazar Mur to Bogarbil via T & T Office Mur, Mohila Madrasha & H/O Nobin Journalist, in ward No-02. (Ch.: 0.00-1500m) (k) Construction of RCC (Bandimara Road) Road from Jatrabari-Dulivita Road to Cosmos (Dhaka Aricha Highway) Via Bandimara Jame Mosque, in ward no-03. (Ch.0.00-1700m) (l) Supplying, Fitting & Fixing of Street light (Bandimara road) from Jatrabari-Dulivita road to Cosmos (Dhaka Aricha high way) Via Bandimara Jame Mosque, in ward no-03. (Ch. 0.00-1700m)

Package No.	MGSP/ Dhamrai/ 2017-18/W-01
District Name	Dhaka
ULB Name	Dhamrai Pourashava
Structural Design Option	BC Road, RCC Road, RCC Pipe Drain, and Street Light
Jurisdiction area:	Wards no. 1, 2, 3 and 9
Beneficiary Population	About 79,000
Tribal People	None
Land Acquisition	Not required
Estimated Cost	107.8 million in BDT
Subproject Duration	18 months
Tentative Start Date	December- 2018
Tentative Completion Date	May-2020

Aims of the Study

This report presents the finding of an Environmental Assessment (EA) of road, drain and street light subproject. The objective of the study is to provide an examination and assessment of the principal environmental impacts of the subproject activities. The outline of an environmental management plan also suggested with an indication of the extent of work to be done to keep the development and environment compatible. In this context, it should be noted that the term "environment" and its derivatives have been used in a wide sense, which covers not only physical and chemical aspect, but also the human dimension. The specific objectives of this EA are to:

1. Present a brief discussion on the EA process and its role in the planning and implementation of development subprojects;
2. Present a general description of the subproject and the process;
3. Present a description of the pre-project environment;
4. Delineate the significant environmental issues found and believed to be involved;
5. Identify the environmental impacts of the subproject and quantify them to the extent possible;
6. Suggest plan for management of the environment, during the implementation and operation.
7. To present the findings for public input.
8. To provide sufficient information to serve as a record for environmental approvals and consultations as required by law.

Scope of the EA

The EA report was prepared on the basis of proposed engineering works, field investigations, stakeholder consultation, primary and secondary data collection, screening of all baseline environmental parameters, environmental quality baseline monitoring, and review of other similar project reports in Bangladesh. The study conducted on 1 and 2 June in the year of 2018. The EA covers the general environmental profile of the subproject area including physical, ecological, environmental, social, cultural and economic resources. Baseline environmental monitoring (primary data) was carried out on water (surface), and noise quality measurements. The EA includes an overview of the

potential environmental impacts and their severity, and proposes necessary mitigation measures and environmental management plan for each of the identified and anticipated impacts. Four numbers of public consultations were conducted as part of the EA.

Methodology of the EA

The methodology used for this study is based on the procedures described in Environmental Guidelines, (Volume 1 and 2)[3] published by Local Government Engineering Department (LGED) and Bangladesh Municipal Development Fund (BMDF) and the other relevant regulation of Bangladesh as well as World Bank Guidelines for Environmental and Social Considerations

1. Scoping workshop organization with various stakeholders at the beginning of the subproject preparation activities;
2. Reconnaissance survey was taken up to collect baseline information in devised formats;
3. Analysis of collected data was carried out;
4. Documentation of baseline conditions was done by doing on site environmental monitoring
5. Analysis and assessment of various alternatives was taken up;
6. Identification and assessment of various impacts was done;
7. Formulation of mitigation, and avoidance measures was done for identified impacts;

3 Environmental Assessment Volume 1: Overall Environmental Assessment [Draft Final Report], September 2013. Municipal Governance and Services Project (MGSP), Local Government Engineering Department (LGED) and Bangladesh Municipal Development Fund (BMDF), Ministry of Local Government, Rural Development and Cooperatives, Government of the People's Republic of Bangladesh;

Environmental Assessment Volume 2: Environmental Management Framework (EMF) [Draft Final Report], September 2013. Municipal Governance and Services Project (MGSP), Local Government Engineering Department (LGED) and Bangladesh Municipal Development Fund (BMDF), Ministry of Local Government, Rural Development and Cooperatives, Government of the People's Republic of Bangladesh.

SUBPROJECT DESCRIPTION

Subproject Setting

The subproject component such as road, drain, footpath and street light are located at different jurisdiction area (ward no. -1, 2, 3, and 9) of the Dhamrai Pourashava. Locations for various improvements are shown in Figure 2.1. All improvements will be constructed within existing right-of ways of Dhamrai Pourashava. The subproject area consist of mixed land use pattern of commercial, agricultural and residential area of the Pourashava. Topographic view of the subproject sites area shown in Figure 2-2, 2-3, .2-4 and 2-5.

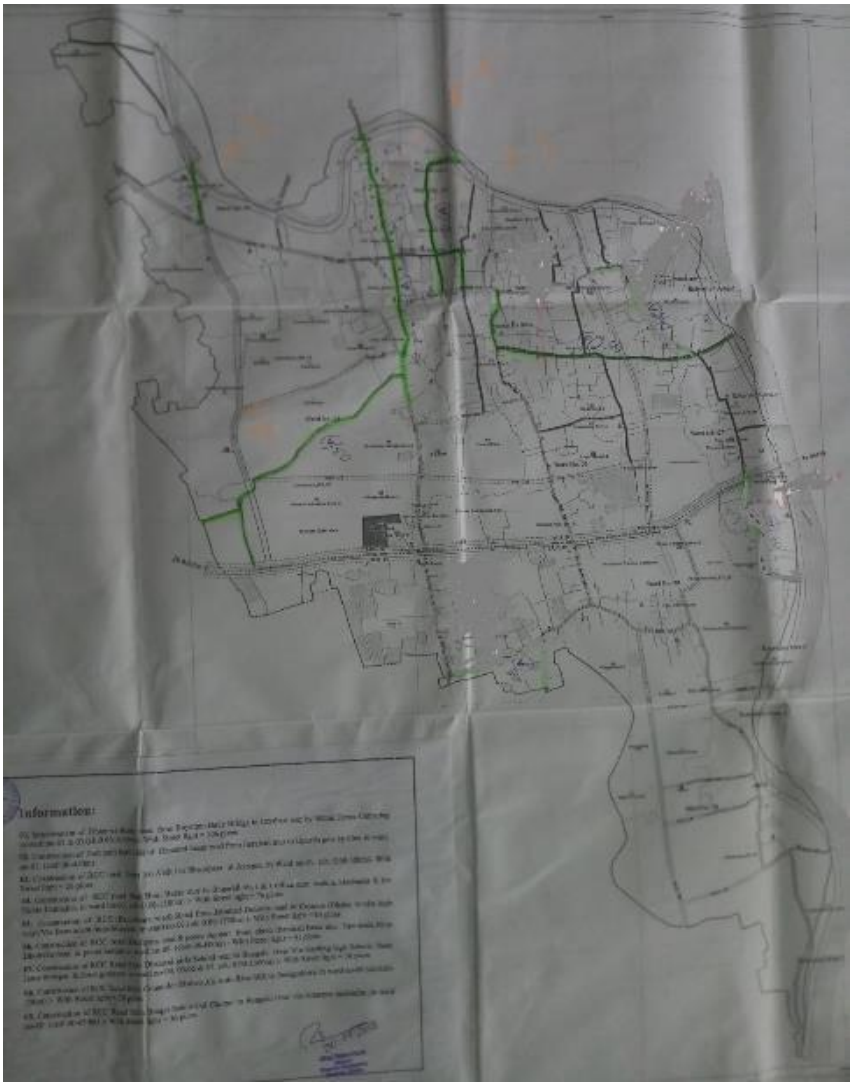

Figure Error! No text of specified style in document.**-1: Location of various improvements in Base Map of Pourashava**

Figure Error! No text of specified style in document.**-2: Topographic Features of Kayetpra Baily Bridge to Jatrabari Mur and Abdul Subhan School to Bongshai River**

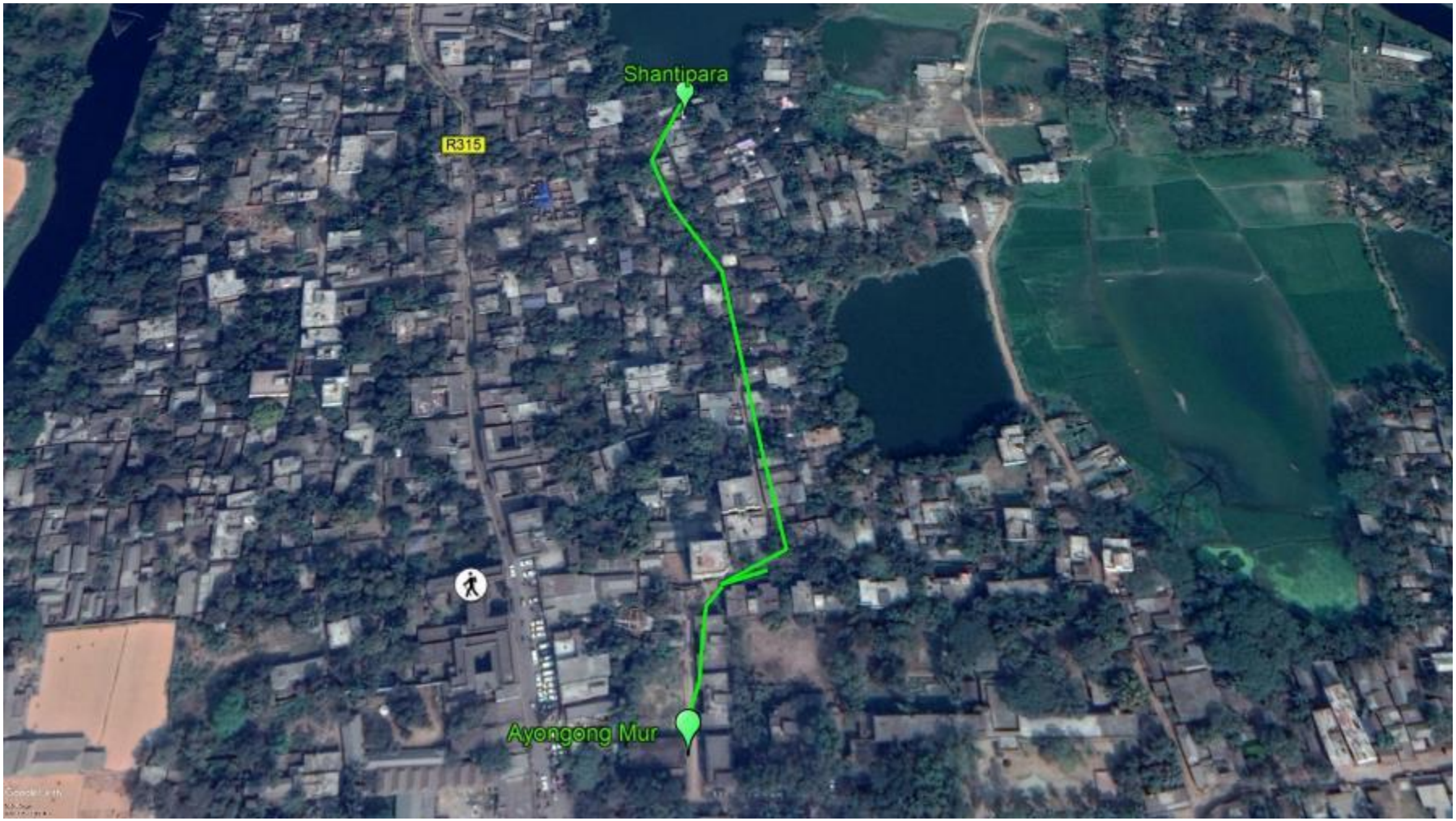

Figure Error! No text of specified style in document.**-3: Topographic Features of Ayongong Mur to Shantipara**

Figure Error! No text of specified style in document.**-4: Topographic Features of Cosmos Road**

Subproject Scope of its Components

For improvement of road, different sites of this subproject will be constructed with different paved width by BC and RCC road, depending on the availability of the space and site condition. The road improvements total 4.70 km in length. Subgrade and base courses of the existing pavement will be rebuilt on some roads and as well as to provide uniform road width, whereas elsewhere new materials will be placed on top of the existing roadway and extension portion materials. Additionally, at Boro Bazar Mur Road from Ch.850m to 1500m (approximately) is earthen road and also low elevated road in compression to adjacent area. This portion needed to be elevated up to the design level by filing materials to prepare base and sub base.

Drains will be constructed along roadways on one or both sides or median of the road depending on site condition, and to meet the design criteria (catchment area, intensity of the precipitation and outfall condition etc.) being 600mm, 800m and 900mm diameter of RCC Pipe drain. Total length of the proposed drain is 3.8km long. Furthermore, total 5.8km solar street lighting also will be installed at one side of the different subproject sites.

Present Status and Need for the Subproject

Kayetpra Baily Bridge to Jatrabari Mur Road site includes construction of - road, drain, footpath and street light. Proposed BC road is starts from Kayetpra Baily Bridge (Ch. 0.00m) and ends at Jutrabari Mur (Ch.1000m). This road goes through Dhamrai Bazar area and in front of the Upazilla complex of Dhamrai. From Ch. 550-1000m (Approximately) is the busy area due to commercial activities of Dhamrai Bazar. Rest of the portion is residential area. This road is situated under word no 1, 2 & 3 of the Dhamrai Pourashava. Width of the proposed road from Ch. 0-550m varies from 3.3 to 4.5m whereas from Ch. 550-1000m paved width is on average 7-11m. First half of this road is badly damaged and seconded half is partially damaged. Due to long time use of heavy vehicles in the bazar area, bituminous carpeting roads severely damaged containing cracks, pot holes, edge broken and depressions are prevalent. The proposed damaged road and non-uniform width have become inadequate to accommodate the growing high volume of traffic and thereby causing severe traffic jams especially from Upazilla Gate to Jatrabari Mur. After implementation of the subproject the problems will be alleviated and road users will be benefitted. In this context, new roads is proposed from Ch. 0-100m. In addition, there is no proper walkway in the bazar area. Hence, due to scatter movement of pedestrian (customers) is aggravating the traffic congestion and road accident frequent especially at bazar area. Therefore, to minimize the traffic congestion, and road accident as well as ensure the safer movement of the pedestrian, footpath is proposed at both side of the road from Upazilla gate to Jatrabari Mur.

Drainage facility is inadequate and inappropriate in this site. There is RCC and brick drain at few section of the both side of Upazilla Gate to Jatrabari Mur Road. These drain are discontinuous. Those drains are also damaged and carries insufficient capacity and blocked by silted up by various waste material like polythene, pit bottle and residual waste of bazar area. Thus, existing drain does not functioning properly to drain off the storm water. This discontinuous and blocked natures is responsible to delay discharge and overflow of drain water especially after heavy rainfall.

Therefore, water stagnates on the road and causes water logging its adjacent to the area which hampers the normal traffic operations as well as activities of the bazar. Thus, daily lives and livelihood of the influence area individuals also being affected especially at monsoon period. To improve the

water logging problem, construction of new drain is needed. Hence, under this subproject, the proposed RCC pipe drain will be constructed at both side of the road from Upazilla Gate to Jatrabari Mur. Present condition of the Kayetpra Baily Bridge to Jatrabari Mur Road site is further elaborated in the following ***figure-2-6.***

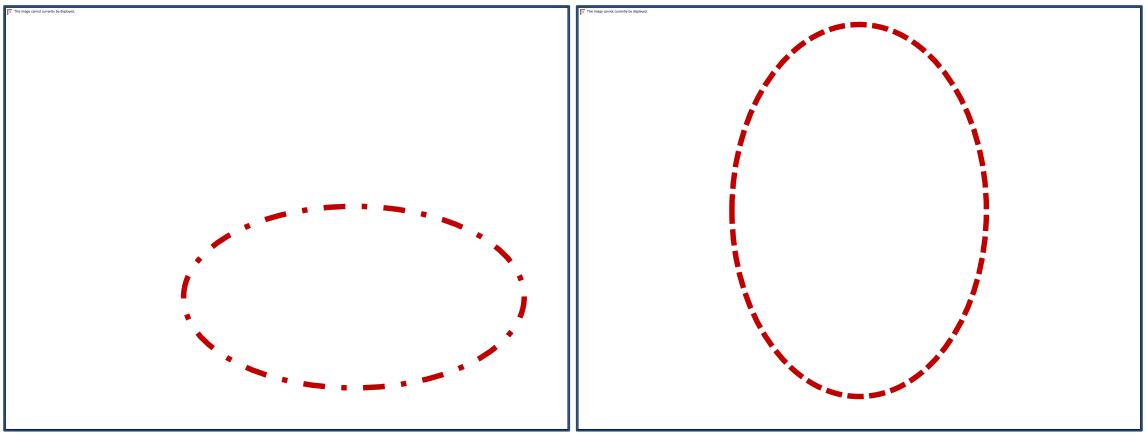

Figure Error! No text of specified style in document.**-5: Present Condition of the Kayetpra Baily Bridge to Jatrabari Mur Site**.

At **Abdus Subhan School to Bongshi River** there is functional drain at right side of the road except from Abdus Subhan School to Jatrabari Mur. But this drain cannot manage the storm water at both side of the road. Therefore, after rainfall storm water from the left side of the road stagnates on the road and nearby area. Thus, after heavy rain this area become flooded for short time and creates inconvenient to the road user. In addition, BC road is damaged by losing their wearing course with the frequent contract of water at monsoon period. To mitigate this adverse situation RCC pipe drain of 800mm diameter is proposed at left side of the Abdus Subhan School to Bongshi River. Present condition of the Abdus Subhan School to Bongshi River site is further elaborated in the following ***figure-2-7***

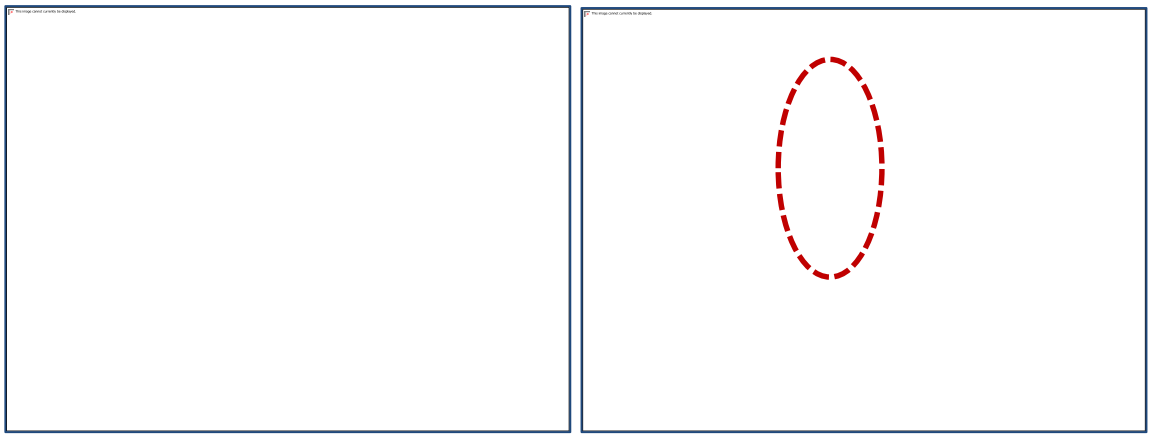

Figure Error! No text of specified style in document.**-6: Present Condition of the Abdus Subhan School to Bongshi River Site**

Figure Error! No text of specified style in document.**-7: Present Condition of the Outfall (Bongshai River near Shima Auto Rice Mill)**

At Ayongong Mur site only construction of drain is included. This site starts at Ayongong Mur and ends at Brach of Bongshai River. It is located within the jurisdiction of the ward no-01 of the Dhamrai Pourashava. Currently, there is no drain. Therefore, during monsoon period storm water stagnates on the road and subproject area become flooded. Resulting traffic movement is interrupted. Thus, RCC pipe drain of 600mm diameter has been proposed from Ch. 0-650m.The storm water will be discharged at Bongshi River. Present condition of the Ayongong Mur site are further elaborated in the following ***figure 2-9.***

Figure Error! No text of specified style in document.**-8: Present Condition of the**

Ayongong Mur Site

Figure Error! No text of specified style in document.**-9: Present Condition of the Outfall (Branch of Bongshai River)**

Under this subproject, at **Shantipara** only construction of RCC road is involved. This road starts at H/O Abdul and ends at Shantipara at Ayngon. This is purely rural area of the Pourashava comprising of residential and agricultural activities and it is situated at ward no -01 of the Pourashava. The existing road is HBB (Ch.0-300m) and earthen (Ch. 250-500) road. Exiting HBB road is damaged and uneven due to missing of bricks. While earthen road is very much uneven and narrow in width with lower elevation in comparison to HBB portion. In addition, this earthen portion during monsoon period become muddy and slippery which is very much inconvenient to the road user. Therefore, Pourashava has taken initiative to construct RCC road from H/O Abdul to Shantipara at Ayngon (Ch. 0-500m). Along the proposed road from Ch.400-500m, Bongshai River is flowing. Thus, to protect the embankment sliding at that particular section guide wall need to be constructed. The present condition of the Shantipara Site is further elaborated in the following ***figure 2-11.***

Figure Error! No text of specified style in document.**-10: Present Situation of the H/O Abdul to Shantipara Site**

At Boro Bazar Mur to Bogarbil Road includes- RCC road and RCC Pipe drain. Proposed site starts at Boro Bazar Mur and ends at Bongshai River. This road passes through T & T Office. This road comprising of mixed land use pattern of having agricultural, commercial and residential area. Existing road consist of BC, HBB and earthen. From Ch. 0-400m is BC road which is partially damaged and non-uniform. While from Ch. 400-850m is HBB road and rest of the part is earthen road. Existing HBB road is badly damaged due to missing of brick. Therefore, lots of holes have been created. In addition, earthen road is narrow in width and very much uneven and low elevated in comparison to the remaining portion as well adjacent to the area. Therefore, during monsoon period this earthen portion turn in to the muddy and slippery surface from stagnant water which become unsuitable to the pedestrian. Moreover, due to extensively damaged condition this road does not permit the motorized vehicles movement. Therefore, three rice mill along this road have been stopped their production which will have adverse impact on the local economy. Therefore, to cope the increasing traffic demand as well as pedestrian demand, this damaged road need to be improved. Hence, from Ch. 0-1500mm RCC road is proposed to provide better transport facilities. Adjacent to the proposed road there is pond and low land. Therefore, to provide road stability guide wall near pond and low land have been proposed.

In the subproject site, there is brick drain at different segment of the road. However, existing drain is discontinuous and blocked by various waste material. Thus, storm water cannot properly discharge by this drain, resulting after rainfall overflow drain water stagnant on the road until drying up. Hence, at few portion of the subproject sites become inundated. Therefore, to overcome this adverse condition, RCC Pipe drain of 800mm diameter is proposed from Boro Bazar Mur to Bogarbil Road. The present situation of the subproject site is further elaborated in the following ***figure- 2-12***

Figure Error! No text of specified style in document.**-11: Present Situation of the Subproject Site**

Figure Error! No text of specified style in document.**-12: Present Situation of the Outfall**

At Bandimara Road, only RCC road will be constructed. Proposed road starts at Jatrabari-Dulivita Road and ends at Cosmos (Dhaka Aricha Highway). It is situated within the jurisdiction of the ward no. 03 of the Dhamrai Pourashava. The subproject site is mostly agricultural setting with moderate houses.

Exiting road is mostly earthen road. However, at last 150m (Approximately) and at first 100m (Approximately) is HBB road. The existing road is also narrow in width. Currently, only at dry season few motorized vehicles can use the road. But during monsoon period this road become unsuitable to motorized vehicles. Even during monsoon period pedestrian movement on this road is very much inconvenient to the local people due to muddy and slippery surface. Therefore, to overcome the suffering of the road user, 1700m long RCC pavement is proposed. The present situation of the subproject site is further elaborated in the following ***figure 2-14***

Figure Error! No text of specified style in document.**-13: Present Situation of the Subproject Site (Cosmos Road)**

Furthermore, there are no adequate street light facilities in the subproject area. Therefore its interrupts traffic operation and pedestrian's safety at night. Hence, 5800m street light will be installed at different sites deepening on the subproject demand.

Justification of Selection of the Subproject

Based on CIP, Dhamrai Pourashava prepared the priority list of the subprojects. The PMU and hired consultant of Pourashava have inspected the site as a part of the reconnaissance survey. After site inspection, it is revealed that the anticipated impacts due to the subproject implementation will not be severe. Hence, considering the low environmental and social impacts due to this subproject implementation, both PMU and CONSULTENT OF POURASHAVA recommended this subproject. The subproject site is mostly located on the existing right of way. In addition, Pourashava is owned the land. Hence, land acquisition is not an issue for subproject implementation. After completion, the subproject has significant benefit to the community people. Hence, considering the benefit that will derive after construction, this subproject has been selected.

Key Subproject Activities and Implementation Process

The general activities for the subproject includes: Site clearing & grubbing works, construction of the semi-pucca site office, construction of the labor shed and relocation of the electric poles and GI poles.

The key activities for BC Road include: dismantling of the damaged BC and HBB road, earth work in box cutting, earth filling work, sand filling on the road bed, mechanical compaction, brick work on edging, compacted aggregate sand sub base course, preparation of compacted WBM base, providing prime coat, laying pre-mixed dense bituminous surfacing wearing course.

The key activities of the RCC Road include: dismantling of the damaged sub-base and base course works; earth work in box cutting; sand filling on the road bed; sand and brick

chips mix in the sub-base; mechanical compaction; polythene sheet laying work and placing cc blocks as per need; fabrication of the ribbed or deformed bar reinforcement; reinforced cement concrete work.

The key activities for RCC Pipe Drain include: earth work in excavation of the foundation, brick flat soling, bailing out of water as per requirement, sand filling for the preparing foundation bed, fabrication of the ribbed or deformed bar, reinforced cement concrete work, manufacturing and laying precast RCC pipes for pipe drain, fitting and fixing pipe joint.

The key activities for Street Light include: assembling, fitting, fixing, installation, testing and commissioning of the GI pole, erection of tubular pole, earthling the electrical installation, fixing of the wire rack, fixing of the overhead conductor, providing, fixing and fitting of the water tight street light, fitting and fixing main and sub-main switch with fuse supplying and fitting of sub-distribution board.

Category of subproject

For road and drain

1. According to ECR 1997: Orange B
2. According to WB classification : Category B

Considering the anticipated environmental impacts, primarily drain and road can consider as Orange-B as per ECR-97. According to the WB classification, it can classify as Category *B.*

For Street Light

3. According to ECR 1997: Green
4. According to WB classification: Category

Considering the environmental impacts, the street light can be considered as Green category as per ECR-97. According to the WB classification, it can be classified as Category C.

Analysis of Alternatives

This section examines alternatives to the proposed subproject site, technology, design, and operation in terms of their potential environmental impacts, and the feasibility of mitigating these impacts. It also states the basis for selecting alternative options for the component. The analysis of alternatives for the subproject components was carried out as part of the feasibility study, and has been taken forward.

1. Zero or No Project Alternative

The No Project option in respect to the proposed subproject implies that subproject area people will deprive from benefit of improve transport and drainage facilities and Pourashava as well.

The No Project option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

1. The economic status of local people would remain unchanged.
2. No employment opportunities will be created for the local residents who will work in the sub project area.

3. Development of infrastructural facilities (roads and associated infrastructure) will not be undertaken.
4. Water logging problem of the subproject area would not to be improved.
5. Maximize usage and utilization of this township will not to be achieved

6. Analysis of the Alternative Routes/ Alignments/ Location

(i) Analysis of alternative routes/ alignments for road:

This is an improvement subproject where the existing BC, HBB and earthen road will be replaced by the new BC and RCC pavement using the same alignment. Therefore, analysis of alternatives routes/ alignment is not really applicable

(ii) Analysis of alternative routes/ alignments for drain:
The following three alignments can primarily be considered for alternative analysis.

Route/Alignment	Advantages	Disadvantages
Alternative-1 (both sides of the road)	-Easier house connection -Ease of construction without much disruption to traffic	-Two drainage lines need to be constructed -Expensive-it needs more money, area and time.
Alternative-2 (median/center of the road)	-Single drain needs to be constructed along the median	-Difficult to make house connection
Alternative-3 (one side of the road)	-Single drain needs to be constructed -It is suitable for single lane road	-Difficult to make house connections from other side of the road -It is not suitable for more than single lane road.

As per sites requirement three alternative has been recommended. Designer will be decided with the assistance of ULB engineer which one is suitable for the subproject areas.

(ii) Analysis of alternative routes/ alignments for street light

The following four alignments can be primarily considered for alternative analysis.

Routes/ Alignment	Advantages	Disadvantages
Alternative -1 (both sides of the road)	-Easier lighten both sides -Ease of fixing and fitting without much disruption to traffic	-Two street light lines to be fixed and fitted -Expensive- it needs more costing and area
Alternative -2 (median/ center of the road)	-Single street light needs to be fixed and fitted along the median -It lighted both sides of the road	-Difficult to make electric connection -Economical, costing and area
Alternative -3 (One side of the road)	-Single street light need to be fixed and fitted -It suitable for single lane road	-It is lighted one side of the road more than other side -It is not suitable for more than one lane road
Alternative -4 (Staggered)	-Street light are fixed and fitted at the zigzag position	-Difficult to make electric connection

	-It cover both sides of the road	

The selected design is alternative 3. Because one side of the street light facilities is enough to meet the demand.

7. Analysis of the Alternative Designs

(i) Analysis of the alternative designs for road:

For a road subproject, alternative designs may include asphalt road, CC road and RCC road. Through a comparative study considering the advantages of the BC road, CC road and RCC road, the consultants examined which one is feasible. General advantage and disadvantage of the BC, CC and RCC roads are shown in following table.

Design Alternatives	Advantages	Disadvantages
Alternative 1: Bituminous Carpeting (BC) Road	1. Low Construction cost 2. Provide smooth surface 3. Aesthetic value is high	4. Frequency of maintenance is relatively high; 5. Early damaged in heavy rainfall
Alternative 2: CC Road	6. Do not require frequent repairing like BC roads. 7. Durability is more than BC road but less than RCC road	8. Concrete roads do not require frequent maintenance but if damaged the whole concrete slab needs to be replaced. 9. Costly higher than BC road
Alternative 3: RCC Road	10. Capacity of passing heavy loaded vehicles 11. RCC road is not damaged in heavy rainfall 12. Frequency of maintenance is relatively low.	13. High construction cost 14. Provide relatively less smooth surface

From environmental point of view RCC and CC road is more feasible. However, bituminous road provides comparatively smooth surfaces which have more aesthetic value than rough surface that provided by RCC and CC road. Most importantly, provision of the further expansion of the utility services for instance water supply line, gas line is key issue for road selection which is complex and difficult for RCC and CC road. Therefore, considering the low construction cost and high aesthetic value and as a whole to meet the Pourashava demands, BC road is recommended by the designer at Dhamrai Bazar Road. While, rest of the road is proposed RCC road considering the long term durability and less impact on the environment.

(ii) Analysis of alternative designs for drain:

For a drain subproject, alternative designs may include RCC drain, Pipe drain and earthen drain. The following table discusses the general advantages and disadvantages of RCC drain, Pipe drain and earthen drain.

Design	Advantages	Disadvantages
Alternative 1: RCC drain	15. Not prone to encroachment 16. Area above RCC drain could be used as a part of road/footpath	17. Higher cost of construction
Alternative 2: Earthen drain	18. Less construction cost	19. Need more land for construction of open earthen drain 20. Prone to encroachment,

Alternative 3: Pipe drain	21. Require less time to construction	22. Maintenance is difficult

The selected design is alternative 3.

(iii) Analysis of alternative designs for street light:

For a street light subproject, alternative design may be include CFL energy bulb and LED bulb. The following table discusses the general advantage and disadvantage of the CFL bulb and LED bulb.

Design Alternatives	Advantage	Disadvantages
Alternative 1: CFL Bulb	23. It is four time more efficient than any other bulbs 24. CFL are less expensive for the long run	25. Sensitive to temperature 26. Most alarming thing for environmental due to mercury 27. CFL are not suitable for focused or spot light
Alternative 2: LED Bulb	28. It does not emitted any toxic metal 29. Long life time 30. Low maintenance cost	31. Expensive compared with other light sources 32. Very small size 33. The color may be change due to age and temperature. 34. Correct voltage and current at a constant flow

For environmental point of view, LED bulb is more feasible than CFL bulb. However, LED bulb is about three times expensive than CFL bulb. Hence, the designer is recommended CFL bulb considering the cost effectiveness.

35. Analysis of the Alternative Technologies/ Methods of the Construction

Method of the construction should be selected based on the available technologies in Bangladesh and with the assistance of the consultant, the Pourashava Officials. However, to minimize occupational health and safety risks and for effective use of the human labors, it is highly recommended to adapt mechanical system where possible for instance concrete mixer machine for casting, mechanical vibrator machine, and other electro-mechanical equipment as per requirement. From the field investigation, it is revealed that, the existing road width is enough for the use of the mechanical excavator. Hence, it is recommended to use mechanical excavator for the trenching work.

DETAILED ENVIRONMENTAL AND INFRASTRUCTURAL FEATURES

The major environmental and infrastructural features in the subproject area have been collected from the field investigation. The finding of the site inspection and investigation at: (a) Construction of Road and Drain from Kayetpra Baily Bridge to Jatrabari Mur. (b) Construction of drain from Abduls Subhan School to Bongshi River. (c) Construction of drain from Ayongong Mur to Bongshi River Branch (d) Construction of road from H/O Abdul to Shantipara at Ayngon (e) Construction of road and drain from Boro Bazar Mur to Bogarbil (f) Construction of road from Jatrabari-Dulivita Road to Cosmos is listed. Effort has been given for getting major environmental and infrastructural features within 100 m of both sides from the center of the road at 100 m longitudinal intervals. The major environmental and infrastructural features are given below Table 3.1.

Table** Error! No text of specified style in document.**-1 : Major Environmental and Infrastructural Features of Kayetpra Baily Bridge to Jatrabari Mur (Effective Length-1000 m)

Chainage (m)	Right	Left	Key Environmental and Infrastructural Features
0-100	√		Trees, Vegetation Coverage, Electric pole, Tin-shed , Semi-pucca and Pucca Houses, Connecting Road
		√	Rice Mill, Trees, Tin Fence, Electric Pole, Hotel Sweet Mit, Stationary Shops
100-200	√		Pucca and Semi Pucca Residents, Varieties Shops, Electric Pole, Trees
		√	Pucca and Semi Pucca Residents, Varieties Shops, Electric Pole, Trees
200-300	√		TMSS Office, Old Pucca and Semi Pucca Residents, Boundary Wall, Trees,
		√	Prionti Medical Corner, Varieties Shops, Trees Boundary Wall, Electric Pole
300-400	√		Shre Shre Bashudeb Mondir, Jewelry Shops, Boundary Wall, Old Pucca Building
		√	Old Pucca Residents, Boundary Wall, Jewelry Shops
400-500	√		Shukanto Boniker Dhamrai Metal Craft, Boundary Wall, Trees,

		√	Jewelry Shops, Old Hindu Bari, Rupa Shogkho Vandar, Nondito Pharma, Dhaka Homeo Hall
	√		Lucky Sweet Mit and Restaurant, Varieties Shops, Electric pole
500-600		√	Dhamrai Upazilla Complex, Boundary Wall, Bangladesh Commerce Bank Limited,
600-700	√		Semi-pucca Commercial Structure, Electric pole, Adorsho Library
		√	Doctors Chamber, Boundary Wall, Electric Pole, Trees
	√		Shondhani X- Ray and Pathology, Varieties Shops, Electric pole, Trees
700-800		√	Binodony Cosmetics and Bag House, Bata Show Room, Pucca and Semi-pucca Residents
	√		Mosque, Pucca and Semi-pucca Residents, Bonoful Fast Food and Confectionary, Mid Night Restaurant, Chowdhury Pharmacy, Partho Boshraloy
800-900		√	Ittadi Cosmetics, Marcel Showroom, Sonya Dental Care, Tara Mia Supper Market
	√		Trees, Varieties Shops, Electric pole, Pucca and Semi-Pucca Commercial Structure, Regal Furniture, Toma Sweet Mit,
900-1000		√	Electric Pole, Chaina Pavilion, Shikdar Dental Clinic, Pucca and Semi-pucca Commercial Structure

Table** Error! No text of specified style in document.**-2 Major Environmental and Infrastructural Features from Abduls Subhan School to Bongshi River (Effective Length-1200m)

Chainage (m)	Right	Left	Key Environmental and Infrastructural Features
0-100	√		Boundary wall, Pucca and Semi-pucca Residents, Workshops, Shur Sagor Shop
		√	Abduls Subhan School, Shop, Ditch, Trees, Pucca, Semi-pucca and Tin-shed Residents
100-200	√		Marcel Showroom, Varieties Shops, Pucca and Semi-pucca Commercial Structure, Trees,
		√	Walton Showroom, Shops, Pucca, Semi-pucca and Tin-shed Residents, Electric Pole
200-300	√		Pucca and Semi-pucca Residents, Workshops, Trees, Boundary Wall, Electric Pole,
		√	Trees, Pucca and Semi-pucca Residents, Stationary Shops
300-400	√		Stationary Shops, Electric pole, RCC Drain, Trees
		√	AC Land Office, Boundary Wall, Trees, Electric Pole, Pucca and Semi-pucca Residents,
400-500	√		Mashers H. S. Bricks, Trees, Pucca and Semi-pucca Residents, Boundary Wall
		√	Vegetation Coverage, RCC Drain, Electric Pole, Boundary Wall
500-600	√		Babu Enterprise, Pucca and Semi-pucca Residents, Boundary Wall, Trees

		√	Agent Office Bank Asia, RCC Drain, Low Land, Electric Pole, Vegetation Coverage, Pucca and Semi-pucca Residents
600-700	√		Boundary Wall, Semi-pucca and Tin shed Residents, Trees,
		√	Ditch, RCC Drain, Electric Pole, Semi-pucca and Tin shed Residents, Trees,
700-800	√		Ayesha Siddique Mohila Madrasah and Etimkhana, Trees, Ditch, RCC Drain, Vegetation Coverage
		√	Shojag NGO, Tangail Resident School and College Boundary Wall, Semi-pucca and Tin shed Residents, Trees,
800-900	√		Macover Tradeing, Srodha Tailors, Semi-pucca and Tin shed Residents, Trees,
		√	Joy Baba Loknath Store, Rice Mill, Boundary Wall, Semi-pucca and Tin shed Residents, Trees,
900-1000	√		Boundary Wall, Pucca, Semi-pucca and Tin Shed Residents, Trees, Vegetation Coverage
		√	Boundary Wall, Pucca, Semi-pucca and Tin Shed Residents, Trees,
1000-1100	√		Shima Auto Rice Mill, Tin Fence, Trees, Pucca, Semi-pucca and Tin Shed Residents,
		√	Boundary Wall, Pucca, Semi-pucca and Tin Shed Residents,
1100-1200	√		Auto Rice Mill, Pucca, Semi-pucca and Tin Shed Residents, Trees, RCC Drain, Trees
		√	Nibir Shop, Mashers Jahan Enterprise, Pucca, Semi-pucca and Tin Shed Residents, Trees, RCC Drain, Trees, Electric Pole

Table** Error! No text of specified style in document.**-3: Major Environmental and Infrastructural Features of Ayongong Mur to Bongshi River Branch (Effective Length-650m).

Chainage (m)	Right	Left	Key Environmental and Infrastructural Features
0-100	√		Salon, Tailors, Rubel Hair Cutting, Arman General Store, Ma Telecom, Shaba Electronics, Electric pole
		√	Tea Stole, Varieties Shops, Trees, Earthen Drain
100-200	√		Vai-Vai General Store, Trees, Godwon, Pucca , Semi Pucca and Tin Shed Residents, Road Side Vegetation Coverage
		√	Ditch, Vegetation Coverage, Pucca , Semi Pucca and Tin Shed Residents,
200-300	√		Tin Fence, Munno Choice Tailors, Workshop, Pucca , Semi Pucca and Tin Shed Residents,
		√	Ditch, Trees, Vegetation Coverage, Low Land, Agricultural Filed, Connecting Road, Stationary Shops
300-400	√		Tin Fence, Pucca , Semi Pucca and Tin Shed Residents,
		√	Ditch, Trees, Vegetation Coverage, Low Land, Agricultural Filed, Connecting Road, Stationary Shops
400-500	√		Trees, Electric Pole, Pucca , Semi Pucca and Tin Shed Residents,
		√	Ditch, Trees, Vegetation Coverage, Low Land, Agricultural Filed, Connecting Road, Stationary Shops

500-600	√		Agricultural Field, Rice Mill, Vegetation Coverage, Boundary Wall, Trees
		√	Trees, Vegetation Coverage, Semi-pucca and Tin Shed Houses, Electric Pole
600-650	√		Branch Of Bongshai River, Trees, Semipucca Houses
		√	Agricultural Field, Semipucca Residents

Table** Error! No text of specified style in document.**-4: Major Environmental and Infrastructural Features of H/O Abdul to Shantipara at Ayngon, (Effective Length-500m).

Chainage (m)	Right	Left	Key Environmental and Infrastructural Features
0-100	√		Agricultural Field, Rice Mill, Vegetation Coverage, Boundary Wall, Trees
		√	Trees, Vegetation Coverage, Semi-pucca and Tin Shed Houses, Electric Pole
100-200	√		Branch of Bongshai River, Trees, Semipucca Houses
		√	Agricultural Field, Semipucca Residents, Trees,
200-300	√		Vegetation Coverage, Pucca and Semipucca Residents, Agricultural Field, Bamboo Bushes
		√	Vegetation Coverage, Pucca and Semipucca Residents, Agricultural Field, Trees
300-400	√		Bongshai River, Banana Tal
		√	Agricultural filed, Tin shed Houses
400-500	√		Bongshai River, Vegetation Coverage, Trees
		√	Agricultural filed, Tin shed Houses, Vegetation Coverage, Shop

Table** Error! No text of specified style in document.**-5 Major Environmental and Infrastructural Features of Boro Bazar Mur to Bogarbil via T& T Office Mur (Effective Length-1500m).

Chainage (m)	Right	Left	Key Environmental and Infrastructural Features
0-100	√		Temple, Pucca, Semipucca and Tin Shed Residents, Trees, Electric Pole
		√	Boundary Wall, Pucca, Semipucca and Tin Shed Residents, Trees,
100-200	√		BTCL Office, Trees, Boundary Wall, Majar Shorip
		√	Pucca, Semipucca Residents, Trees
200-300	√		Papon Shonchoy and Rin Dan Somite, Boundary Wall, Pucca and semi pucca Residents
		√	Boundary Wall, Pucca and semi pucca Residents, Trees, vegetation Coverage
300-400	√		Habiba General Store, Boundary Wall, Pucca and semi pucca Residents, Brick drain
		√	Connecting Road, Trees, Tin fence, Pucca and Semi pucca Residents
400-500	√		Pond, Pucca Houses, Boundary Wall,
		√	Open Space, Tin shed Houses, Boundary Wall, Pond, Pucca Houses

500-600	√		Vegetation Coverage, Under Constructed Building, Open Space, Low Land
		√	Pucca Residents, Vegetation Coverage, Open Space
600-700	√		Pucca Residents, Vegetation Coverage, Open Space
		√	Pucca Residents, Vegetation Coverage, Open Space
700-800	√		Islam Naagor Bitun Nur Jame Mosque, Boundary Wall, Tin shed House, Open Space
		√	Open Space
800-900	√		Low land, Open Space, Abandoned Rice Mill
		√	Open Space
900-1000	√		Low land, Open Space, Rice Mill
		√	Open Space, Agricultural Field, Low land, Vegetation Coverage
1000-1100	√		Open Space, Agricultural Field, Low land, Vegetation Coverage
		√	Agricultural Field, Low land, Vegetation Coverage, Open Space,
1100-1200	√		Open Space, Agricultural Field, Low land, Vegetation Coverage
		√	Low land, Vegetation ,Open Space, Agricultural Field, Coverage
1200-1300	√		Vegetation Coverage ,Open Space, Agricultural Field, Low land,
		√	Open Space, Agricultural Field, Low land, Vegetation Coverage
1300-1400	√		Open Space, Agricultural Field, Low land, Vegetation Coverage
		√	Open Space, Agricultural Field, Low land, Vegetation Coverage
1400-1550	√		Open Space, Agricultural Field, Low land, Vegetation Coverage
		√	Open Space, Agricultural Field, Low land, Vegetation Coverage

Table** Error! No text of specified style in document.**-6: Major Environmental and Infrastructural Features of Jatrabari-Dulivita Road to Cosmos (Dhaka Aricha Highway) (Effective Length-1700m)

Chainage (m)	Right	Left	Key Environmental and Infrastructural Features
0-100	√		Pucca and Semi pucca Houses, Boundary Wall, Electric Pole
		√	Stationary Shops, Boundary Wall, Electric Pole, Pucca and Semipucca Residents
100-200	√		Open Space, Tin shed Houses, Electric pole
		√	Boundary Wall, Trees, Vegetation Coverage, Semipucca and Tin shed Houses
200-300	√		Madrasa, Agricultural Field, Open Space, Tin shed Houses, Electric pole
		√	Boundary Wall, Trees, Vegetation Coverage, Semipucca and Tin shed Houses
300-400	√		Rice Mill, Open Space, Tin shed Houses, Electric pole
		√	Shops, Boundary Wall, Trees, Vegetation Coverage, Semipucca and Tin shed Houses
400-500	√		Agricultural Field, Vegetation Coverage, Trees
		√	Agricultural Field, Vegetation Coverage
500-600	√		Agricultural Field,
		√	Agricultural Field, Low Land
600-700	√		Agricultural Field, Ditch
		√	Agricultural Field,

700-800	√		Agricultural Field, Ditch
		√	Agricultural Field,
800-900	√		Agricultural Field,
		√	Agricultural Field, Vegetation Coverage, Tin Shed House
900-1000	√		Agricultural Field, Boundary Wall
		√	Agricultural Field,
1000-1100	√		Agricultural Field,
		√	Agricultural Field,
1100-1200	√		Agricultural Field, Vegetation coverage, Pucca House
		√	Agricultural Field, Vegetation coverage,
1200-1300	√		Pond, Low Land, Vegetation Coverage Pucca , Semi Pucca and Tin she Residents, Electric Pole, Agricultural Field,
		√	Mosque, Vegetation Coverage Pucca , Semi Pucca and Tin she Residents, Agricultural Field
1300-1400	√		Stationary Shop, Vegetation Coverage, Pucca , Semi Pucca and Tin she Residents, Electric Pole, Agricultural Field, Trees, Boundary Wall
		√	Trees, Boundary Wall ,Vegetation Coverage, Pucca , Semi Pucca and Tin she Residents, Agricultural Field, Electric Pole,
1400-1500	√		Vegetation Coverage, Pucca , Semi Pucca and Tin she Residents, Electric Pole, Trees, Agricultural Field, Boundary Wall
		√	Vegetation Coverage, Pucca , Agricultural Field, Semi Pucca and Tin she Residents, Electric Pole, Trees, Boundary Wall
1500-1600	√		Vegetation Coverage, Pucca , Semi Pucca and Tin she Residents, Electric Pole, Trees, Boundary Wall
		√	Vegetation Coverage, Pucca , Semi Pucca and Tin she Residents, Electric Pole, Trees, Boundary Wall
1600-1700	√		Tin shed Shop, Trees, Teal Stole, Boundary Wall, Pucca and Semipucca Residents
		√	Tailor Shop, Varieties Shops, Clinic, Workshop

BASELINE ANALYSIS OF THE ENVIRONMENTAL CONDITION

General Consideration

This section includes the existing environmental baseline status of subproject study area, covering both the natural and social environments. The analysis was completed through the use of a combination of secondary data sources in addition to extensive on ground reconnaissance and baseline studies to establish an understanding of the environmental and socio-economic baseline of the subproject area. The likely impacts on the environment based on the actual and foreseeable events/project activities. Data for this chapter were collected from:

1. Secondary Sources: This included data from literature reviews, maps and monitoring reports;

2. Primary Sources: This included gathering information from field surveys, laboratory analysis and public consultations in the subproject area.

The baseline condition of environmental quality in the locality of subproject site serves as the basis for identification, prediction and evaluation of impacts. The baseline environmental quality is assessed through field studies within the influence zone for various components of the environment like air, noise, water and socio-economic etc. Data was collected from secondary sources for the macro-environmental setting like climate (temperature, rainfall and humidity), physiography, geology etc. Firsthand information have been collected to record the micro-environmental features within and adjacent to the subproject area. Collection of primary information includes extrapolating environmental features on proposed subproject design, location and measurement of socio-cultural features adjoining proposed subproject area. Ambient noise and water quality samples were collected in terms of environment quality to prepare a baseline database. Consultation was another source of information to explain local environmental conditions, impacts and suggestions etc. The following section describes the baseline environment into four broad categories:

Physical environment

Geology, topography and soils

Dhamrai is situated on low mound of Bhawal high land standing up the amidst the swamps that lies to the east of the Bongshai River. The subproject area is located entirely on the floodplains of the Brahmaputra River comprising mostly recently alluvium. In 1787 a remarkable changes in the course of Brahmaputra took place. In that year river shifted from a course around the eastern edge to the western side of the Dhamrai tract. This new portion of the Brahmaputra River is called Jamuna. The old river had already built up fairly high levees on either side which over the present river rarely spills. The old Brahmaputra floodplain stretching from the southwestern corner of the Garo Hill along the eastern rim of the Dhamrai tract down to the Meghan exhibits a gentle morphology composed of broad ridges and depressions. The letter are usually flooded to depth of more than one meter whereas ridges are subjected to shallow flooding only in the monsoon period.

In the subproject area, subsoil are being eroded naturally and varying soil from place to place and composed of clay to fine sand from 0-40ft depth, fine and to very fine sand 40-160ft, fine sand to medium sand 160-260ft. Medium sand to course sand available 260 to 380ft depth and rest of the depth is hard clay, fine sand and course sand formed entirely by the action of deltaic Ganges which brought mud and limestone from Himalayan.

To a great extent soil of Dhamrai is non-uniform character. Only variation is observer in grater or smaller admixture of sand, silts and clay id grayish and dark gray color. Along the river side it is found that the percentage of the sand is higher and in the area where deltaic action has ceased is lower. The load bearing capacity of the soil is very poor.

Climate and meteorology

Meteorological conditions of the area are more or less similar to the central part of the country with respect to temperature, rainfall and humidity. The subproject area is situated in humid sub-tropical climate with large variations between summer and winter temperatures and significantly influenced by monsoons during the months of May to September when most of the rainfall occurs. The average temperature in Dhamrai is 25.7 °C. Precipitation here averages 1979 mm. The least amount of rainfall

occurs in December. The average in this month is 6 mm. In June, the precipitation reaches its peak, with an average of 369 mm. (BMD, 2012).

Table Error! No text of specified style in document.**-7 Average Annual Dhamrai Climate Data**

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	18.7	21.3	25.5	28.6	28.9	28.6	28.6	28.7	28.6	27.3	23.6	19.9
Min. Temperature (°C)	12	14.3	18.8	22.9	24.5	25.6	26	26.1	25.7	23.6	18.3	13.6
Max. Temperature (°C)	25.4	28.3	32.3	34.4	33.3	31.7	31.2	31.4	31.6	31.1	28.9	26.2
Avg. Temperature (°F)	65.7	70.3	77.9	83.5	84.0	83.5	83.5	83.7	83.5	81.1	74.5	67.8
Min. Temperature (°F)	53.6	57.7	65.8	73.2	76.1	78.1	78.8	79.0	78.3	74.5	64.9	56.5
Max. Temperature (°F)	77.7	82.9	90.1	93.9	91.9	89.1	88.2	88.5	88.9	88.0	84.0	79.2
Precipitation / Rainfall (mm)	8	21	51	123	260	369	369	312	269	162	29	6

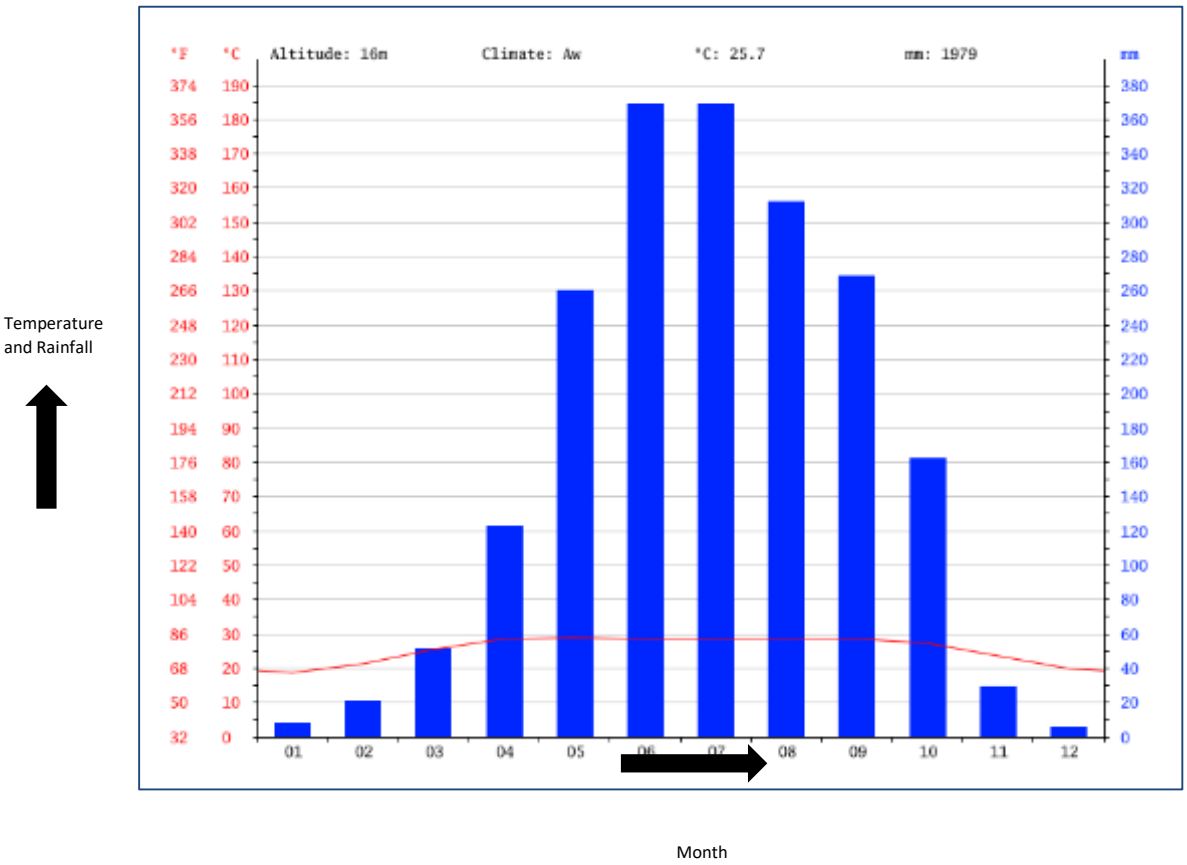

Figure Error! No text of specified style in document.**-14: Climate Data of Dhamrai Pourashava**

The least amount of rainfall occurs in December. The average in this month is 6 mm. In June, the precipitation reaches its peak, with an average of 369 mm. The temperatures are highest on average in May, at around 28.9 °C. At 18.7 °C on average, January is the coldest month of the year. The variation in the precipitation between the driest and wettest months is 363 mm. The variation in annual temperature is around 10.2 °C.

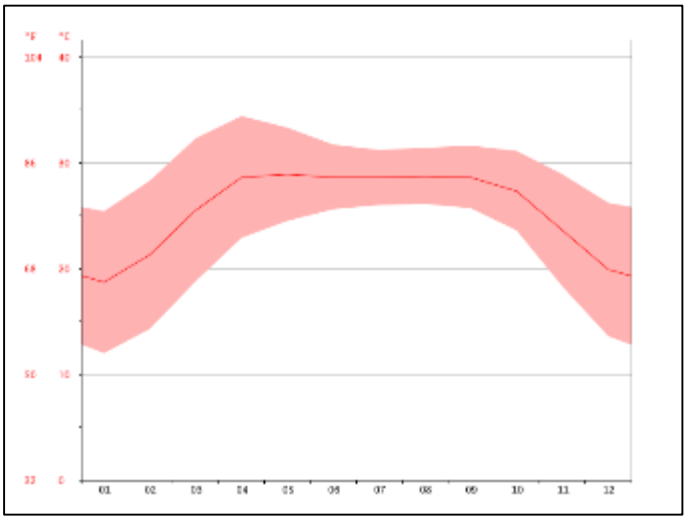

Figure Error! No text of specified style in document.**-15: Temperature Graph Dhamrai**

Hydrology (surface water, ground water, and rainwater)

Information on spot discussion and consultation with the villagers is revealed that ground water quality is better in the subproject area. There is no problem of Arsenic and salinity in the subproject area. The depth of ground water level varies from 4m to 7m. Potable ground water is available at an average depth of 110m to 220m.

The road sub project passes along a number of water bodies such as small and medium ponds, ditch, bell which are used for multiple purposes. The surface water in ponds is not saline but is not suitable for drinking purposes. All the ponds are man-made and used for fishing, water supply and domestic use. River Bangshi flows nearby the sub-project area. There is no remarkable source of water pollution such as heavy industries have been observed in the sub-project area. However, use of fertilizer and pesticides in the agricultural filed are slightly being contaminated surface water by wash out with storm water.

Flooding, water logging, and drainage pattern

Remarkable flood is not occurring over the recent year at Dhamrai Pourashava. However, this area is affected in historical flood events such as 1988, and 1998 and 2004. As per flood zoning map of Bangladesh (shown in Figure 4-3), this area is also considered as a flood free zone.

The subproject area is not generally subjected to water logging problems. The present drainage system is not adequate and functional due to blockage in the drain. Therefore, during heavy rain here happening some water logging in specific low laying area for short time. According to environmental survey 2009, Pourashava faces water logging problem in the monsoon period especially in the Lakuripara ward at ward no. 9.

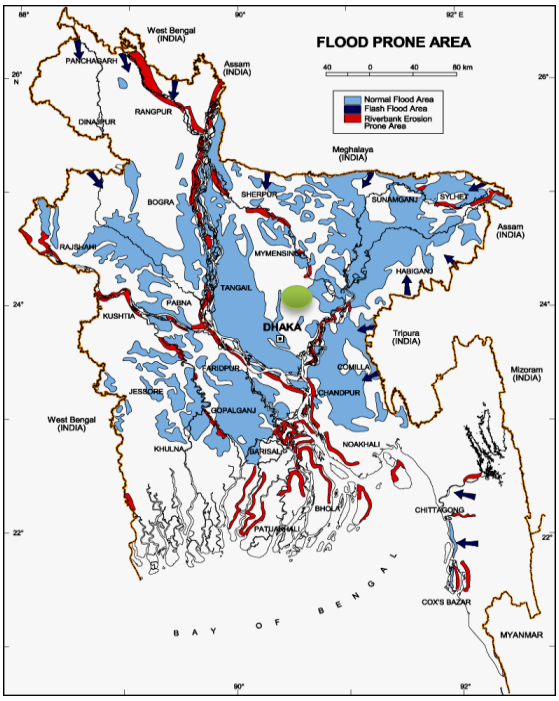

Figure Error! No text of specified style in document.**-16: Subproject Site Location (Green Circle) on Flood Zone Map of Bangladesh**

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Air quality and dust

Major source of air pollution in the Bangladesh are: industrial emissions and vehicular emissions. There are few medium to heavy industries in and around the subproject area and heavy vehicles use for the industrial purpose is the common. Therefore, air quality likely to be deteriorated. However, the main sources of air pollution are non-point sources such as open burning and block smoke emission from using of vehicles. In addition, during construction period use of subproject vehicles and construction equipment may degrade the air quality. However, proper implementation of mitigation measure which are addressed in the EMP is good enough to control the expected air pollution to be raised from construction activities. There are currently no air quality monitoring stations are in operation within the Pourashava limit. Ambient air quality measurements are essential to provide a description of the existing conditions or the baseline against which changes can be measured and to assist in the determination of potential impacts of the proposed subproject. Hence, baseline air quality will be measured by the subproject contractors prior to commencement of work. Following Table shows the Bangladesh National Ambient Air Quality Standard comparing the WHO Guideline standard.

Parameter	Environmental Conservation Rules,1997 microgram/m^3				WHO
	Industrial	Commercial and Mix use	Residential and Rural area	Sensitive area	
SPM	500	400	200	100	-
PM 2.5			65		10
PM10			150		20
SO_2	120	110	80	30	20
NO_2	100	100	80	30	40
Pb			0.5		

Noise level

Subproject components are mostly in the built-up part of Dhamrai Pourashava, which mainly buildup with residential and commercial activities. The volume of traffic that passes through these sections is not significant and traffic jams are not frequent. However, more noisy area may be the bus terminal area, industrial area and market area of the Pourashava. Hydraulic horn of buses and auto bike and rickshaw bell are the main noise source of the subproject area. Besides, welding workshops, saw mill, auto rice mills, and few medium to heavy industries particularly at Dhaka-Aricha Highway area are also common source of noise pollution in the subproject area. In addition, sophisticated machineries will be used at construction period which will produce little significant noise. But it would be temporary and site specific. Even, if proper measure are taken it would be within tolerable limit. Noise level has been monitored at the various locations of the subproject sites during day time of 30 July 2018. The results show that time weighted average value of the noise monitored at the subproject area exceeded the standard fixed for the respective areas except Bogar bill Islambag area (Residential area). Results of the noise level monitored along with details of the measurement locations have been showed in Table 4.3.

Table** Error! No text of specified style in document.**-8: Ambient Noise Quality Analysis

Noise level measurement locations	GPS Co-ordinate	Day-time			
		Measurement Time	Equivalent Noise Level, Leq (dB)	Max (dB)	Min (dB)
Near Abdus Sobhan Model School	23°54'48''N 90°12'42''E	11:15 AM	80.36267632	95.8	59.2
Near Janata Bank Dhamrai Bazar Road	23°55'04''N 90°12'41''E	11:30 AM	84.37065069	97.7	66.5
Near AC Land Office	23°54'58''N 90°12'40''E	11:45 AM	66.47798341	70.7	61.8
At Ayingon three road intersection	23°55'13''N 90°12'22''E	11:50 AM	72.61107443	79.7	60.5
Near Boro Bazar roundabout	23°55'07''N 90°12'52''E	12:25 PM	78.97222322	89.7	64.7
Near Bogar Bil Islambag	23°55'14''N 90°12'47''E	12:30 PM	70.36940784	78.3	52.6
Bangladesh (DoE) Standard					
Zone	Max		Min		
Industrial	75		70		
Commercial	70		60		
Mixed Area	60		50		
Residential Area	55		45		
World Bank Standard					
Industrial	70		70		
Commercial, Residential, Educational	55		45		

Biological Environment

Flora and fauna

Flora

The sub-project influence area (SPIA) is mixed with different vegetation, crops, vegetables, are cultivated and natural which mainly include rice, wheat, jute, banana, rabi crops and variety of homestead vegetables. A sizeable number of fruit and timber trees with economic value have been observed in the subproject road side area as well as homestead area. During consultation it is revealed that, two times rice is cultivating in the subproject area.

The fruit trees include Jackfruit, Mangoes, Jambura, Tetul, Litchi, Banana, Coconut, Blackberry etc. and timber trees include Simul, Sishu, Arjun, Minjiri, Acacea, Jarul, Koroi, and Chambal etc. Considerable number of trees and bushes in the SPIA site provide habitat for birds and other animals. The composition of plant species includes low growing grasses, trees, herbs and shrubs. From filed visit it is revealed that, predominant species are those of cultivated and natural grown vegetables and trees. A detailed list of terrestrial floral species found in the subproject area is shown in following table

Name of Trees	Scientific Name	Name of Trees	Scientific Name
Mango	*Mangiferaindica*	Guava	Psidium guajava
Lichi	*Lichi chinensis*	Papaya	*Carica Papaya*
Bel	*Aegle marmelos*	Jarul	*Lagerstroemia speciosa*
Sajina	*Moringa oleifera*	Tetul	*Tamarindus indica*
Shimul	Bombax ceiba	*Eucalyptus*	*Eucalyptus teritocornis*
Supari	Areca catechu	Jackfruit	*Artocarpus heterophyllus*
Bakul	Mimosas eleng	Mahogany	*Swietenia macrophylla*
Shishu	Dalbergia sisoo	Neem	*Azadirachta indica*
Banana	*Musa Sapientum*	Jaw	*Casuarina littorea*
Akashmoni	*Acacia auriculiformis*	Boroi	*Zizyphusm auritiana*
Rain Tree	Samanea saman	Jambura	*Citrus grandis*
Babla	*A. nilotica*	Kamranga	*Averrhoa carambola*
Atafal	*Annona reticulate*		
Sobeda	*Manilkara sapota*		
Date Palm	Phoenix		

Fauna

Though having a decreasing trend, along domestic animals, wild dogs, jungle cat, mongoose, and rodents like ants, guishap and snakes of various species are reported in the subproject area. Some birds were found in the subproject area include Chorui, Doel, Ghugu, Shalik, Pecha, Tia, Bok, Kak, Tuntuni, Bulbuli, Kokil etc.

Socio-economic environment

Land use

The subproject sites are located mostly in the urban and semi urban area of the Pourashava. However, only Jatrabari Dulivita road is the rural area of Pourashava. The subproject area consists of mixed land use pattern include agricultural field, commercials and residential hubs. According to BBS 2011, 44.41 % land is occupied by the agricultural filed [4]. However, due to rapid urbanization of the Pourashava, agricultural land is decreasing trend in vary fast and converted in the urban setting. In addition, as per information of Pourashava officials currently about 20 % land is using as agricultural land. The built up infrastructure includes office buildings, personal homes, industries, markets, rice mill, government offices, NGO Offices, hospitals, clinics, etc.

Area and population

Dhamrai Pourashava occupies an area of 6.98 km^2 with population of 145390 as per Bangladesh Bureau of Statistics (BBS) Census 2011. It is divided into 9 wards and density of population per sq.km is 20800.The rate of population increase is 1.92% [4].This subproject goes through the Ward number 1, 2, 3 and 9. As per information by the municipality, considering the ward population about 79,000 people will benefit directly and many others indirectly.

4 Master Plan of Dhamrai Pourashava, 2020-2-31 LGED, Dhaka.

Education

Dhamrai Pourashava has an average literacy rate of 78% (BBS, 2011) [5]. There are a few government and private schools and colleges present in the municipality. A notable amount of students of Dhamrai move to Dhaka for better education.

Tribal communities

This is no significant tribal population present in the Municipality. So, there is no expectation of affecting tribal communities through the sub-project.

Archeological/Historical places

In the Dhamrai Upazilla, there are few historical place such as Panch Peer Mazar at Pathentola, Majestic old building, 85-year old mosque at Shallan and Modhab Mondir etc. However, remarkable these archeological or historically important structure or sites are reported outside of the subproject influence area. So, no cultural impact is expected.

Land acquisition and resettlement

The subproject site is solely owned by the Pourashava. Therefore, acquisition of land is not an issue.

Local economies such as employment, livelihood

The subproject area is inhabited by the people of mixed occupations. Major income comes from business, enterprises, small trades, private sector jobs and government jobs in the town.
There are few industries in the Pourashava area like Monno Ceramic Factory, Acme Pharmaceutical, Bata Factory and K&Q factory which is providing substantial amount job opportunities for the local and migrated people.

Housing pattern and ownership

In the subproject area maximum people live on their own houses but a few in rented houses. According to socio economic sample survey 2009, about 77.7 % residents of the Pourashava are permanent and 19.4 % are migrated. The number of in-migrating population is rising very fast. As more urbanization more households will reside in the rented house in future.

Utilities Services

Gas Supply

As per information of the Pourashava officials, in the Pourashava area, out of about six thousand households four thousand household are connected with gas connection facilities. Titas gas are responsible agency to ensure the gas supply facilities in the Pourashava area.

Sanitation

5 BBS, 2011, Bangladesh Bureau of Statistics.

There is no network based sanitation system in the Dhamrai Pourashava. Sanitation facilities of the subproject area is categorized mainly as pucca and Katcha. Despite of this, Pourashava has modest development of pucca toilets in the government offices and quarters. Most of the households has own toilets and at the same time three is joint toilets is found in the slum areas. Only 8% Katcha toilets are found in the Pourashava and owner of those toilets are poor people [6].

Solid Waste Management

Condition of solid waste management system is not satisfactory. In fact there is no structured solid waste management system. People are found to be dispose their waste to nearby lowland, vacant place and drain. The Pourashava does not have the sufficient capability to handle the huge waste generated by the resident due to narrowness of roads, lack of local collection sites sands as impediments to waste management. Particularly in informal area due to existence of narrow roads garbage truck cannot enter for the removal and transshipment of the garbage. In most place there is no road side open space for locating the garbage bin. As a result rotten garbage spoils the local environment of the area posing health hazard of the local residents. No dust bin the Pourashava whereas daily waste produced about 2ton and most of those garbage thrown nearby lowland, vacant space and drain. However, currently Pourashava has 2 nos. dump trucks and 20 nos. of vans to collect the waste from house to house every day but it is mainly concentered in the core are of the Pourashava. This collected waste are presently finally disposed in to the vacant place at Dholivita at Ward no 3. Pourashava has taken initiative to develop 5.32 acre dumping site near Keyatapara at ward no. 1 of the Pourashava.

6 Master Plan of Dhamrai Pourashava, 2020-2030, LGED, Dhaka.

ENVIRONMENTAL SCREENING

Environmental Screening (ES) for the subproject have 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 the impacts. Environmental Screening Checklist, as adopted in Appendix C of the Environmental Management Framework of the MGSP, was administered for identifying the impacts and their extents. The screening data and information for the **BC Road, RCC Road, RCC Pipe Drain, and Street Light** work have been formulated and are shown in below.

1. Potential Environmental Impact during Construction Phase:

1. Ecological Impacts:

1.	Felling of trees	Significant □	Moderate □√	Minor □	Number of trees 37
2.	Clearing of vegetation	Significant □	Moderate □√	Minor □	
3.	Potential impact on species of Aquatic (i.e., water) environment	Significant □	Moderate □	Minor □ √	

Except Kayetpra Baily Bridge to Jatrabari Mur Road, most of the roads portion belong residential and agricultural rural setting. Hence, there are considerable amount of road side planted and natural grown trees is found. For proving uniform road width, during site clearing work, road side total 37 numbers of trees (6 nos. at Abdus Subhan School, 17nos. at Ayongon Mur Road and 14 nos. at Cosmos Road) to be cut down at different sites. Major trees to be cut down area: Koroi, Rain Tree, Mango, Neem, Jam, Ata, Akashi, Coconut etc. Most of the trees to be cut down at Ayongon Mur Road and Abdus Subhan School Road is big to medium size in term of length and diameter while at cosmos road trees to be cut down area small to medium size. Therefore, due to felling of trees, anticipated impact is considered as moderate. In the subproject area, road side vegetation clearing work is also be needed. But intensity of the vegetation clearing is not uniform. However, considering the length of the road it is anticipated that impact on the vegetation clearing work is moderate. There are lots of water bodies like low land, pond, ditch, bell and river along the proposed road. Hence, these surface water bodies may be polluted due to accidental leakage and spillage of oil, grace etc. or throwing of waste material into the road side water bodies.

1. Physicochemical Impacts:

1.	Noise pollution	Significant □	Moderate □√	Minor □
2.	Air pollution	Significant □	Moderate □√	Minor □
3.	Drainage congestion	Very likely □	Likely □	Unlikely □√
4.	Water pollution	Significant □	Moderate □	Insignificant □√
5.	Pollution from solid/ construction wastes	Significant □	Moderate □√	Insignificant □
6.	Water logging	Significant □	Moderate □	Insignificant □√

Due to use of hydraulic excavator, mechanical compaction machine, concrete mixer machine, vibrator machine, and mobilization of the equipment, vehicles movement for the transportation of the materials will have negative impact on the physicochemical parameter (noise and air). In addition, due to earth filling for the road and it compaction work will generates dust and noise nuisance which will have negative impact on noise and air. However, probable impact on air and noise is short term and site specific. So, context of impact will be limited in the subproject boundary. Moreover, the construction work will be performed section wise to minimize the impact. So, anticipated impact on noise and air is considered as moderate. If proper measure are not taken, generated construction waste like loose soil, dismantling debris will have adverse impact on the nearby community people. Additionally these generated debris may also get worse condition for the road side water bodies if not properly collected and disposed. In addition, aesthetic landscape value and surrounding environment may be degraded from the improper collection and disposal of the generated wastes materials. Generally there will be no drainage congestion or water logging because most of earth work will be performed at dry season. In addition there are lots of open space. Furthermore there will provision for submergible pump to drain out the water if required.

7. Socio-economic Impacts:

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

Among six sites of subproject-1, Dhamrai Bazar Road is only busy for the motorized vehicles movement. However, width of the bazar road is sufficient to movement of motorized vehicles and pedestrian during construction work. Remaining sites are mostly in the rural area and condition of the few roads are currently not suitable for the motorized vehicles movement. Therefore, motorized vehicles movement on that road are not huge. There is also adequate link road and alternative roads to continue the traffic during formation of road and drain. The proposed construction activities does not require use of heavy equipment and construction work will follow simple procedure with commonly used equipment. Hence, anticipated impact on health and safety is moderate. There is no archaeological and historical site within the influence area. The subproject has positive impact by generating work opportunities for the local people.

2) Potential Environmental Impact during Operational Phase:

3. Ecological Impacts:

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

At operation phases, there will be no likely impact on the ecology due to road construction work. On the other hand, as the drains are designed only for the storm water, there will not be any impact on the aquatic environment if the drains are used properly. However, dumping of solid wastes and household wastewater directly into the drains from the households beside the drains may create pollution in the aquatic environment of the outfall by the discharge water through these drains.

2. Physicochemical Impacts:

3.	Potential air quality	Improvement □	No-improvement □	Deterioration □√	
4.	Noise Level	Improvement □	No-improvement □	Deterioration □√	
5.	Drainage congestion	Improvement □ √	Minor Improvement □	No Impact □	
6.	Risk of water pollution	Significant □	Moderate □ √	Minor □	
7.	Pollution from solid waste	Improvement □	Minor improvement □√	Minor □	

Operation of improved and widened road may increase traffic volume. This may degrade the air quality and noise level due to black smoke emission and un-due use of hydraulic horn from the vehicles. The new drain will minimize drainage congestion and water logging problem. The storm water to be discharged through the drain may degrade the water quality of the outfall if it carries pollutants from any sources. Pollution from solid waste will be improved by restricting the throwing of the household waste material in to the drain.

(f) Socio-economic Impacts:

8.	Traffic	Improvement □ √	No-improvement □	Adverse □	
9.	Safety	Improvement □ √	No-improvement □	Adverse □	
10.	Employment generation	Significant □	Moderate □	Minor □ √	

After completion, these roads will improve the transportation facilities. By providing uniform pavement, it will also enhance traffic safety. In addition, new road will provide opportunities for the local people for using of CNG, battery operated rickshaw van and pickup and non-motorized vehicles for communicating and transportation of goods. New drain will improve drainage facilities and prevent the accumulation of the stagnant water on the road surface. This will prevent formation of muddy and slippery surface on the road. Consequently, it will enhance traffic safety.

3) Summary of the Possible Environmental Impacts of the Subproject:

During implementation of the proposed subproject there will have ecological impact due to felling of trees. However, ecological imbalanced to be caused by the feeling of trees will be compensated by the 185 nos. of trees.

Though, it is limited; however, the possible disturbances of the aquatic environment due to the discharge of the waste water may have ecological impact. There will be temporary negative impacts on air and noise quality during construction. Solid wastes generated from the construction activities should be disposed in a designated dump site. 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.

During operational phase, the waste water to be discharged may disturb the aquatic environment of the outfalls as the drains may carry pollutants and solid wastes especially plastics and polythene which can block the outfalls

The socio-economic component mainly includes health and safety and employment generation. Safety concern is an important issue during both the construction and operation phases. This subproject will have positive impacts in terms of the generation of the employment and business activities by supplying construction materials and equipment.

The anticipated environmental impact for the installation of the street light is insignificant. However, it has significant positive social impacts. Short circuit and improper electrical connection of the street light may cause potential health and safety risk.

SPECIFIC IMPACT, MITIGATION AND ENHENCEMENT MEASURES

The impacts, which are likely to be arisen in the different phases of the subproject are identified in this section. In addition, evaluation of these impacts was done mentioning their origin and characteristics along with their probable mitigation/enhancing measures.

Impact Due to Subproject Location/ Preconstruction Phase

Disorder of Earth Surface

Cause of Impact

It is an improvement subproject without widening of the road. However, to provide uniform road width and partial part of low elevated road such as Boro Bazar Mur Road and Shantipara Road need to be elevated up to the standard design level. In this cases, land filling work will be performed. This land filling will be from its original level which will not disrupt the natural surface of earth and obstruct the natural drainage system of the area.

Mitigation Measure

The subproject intervention will not create any water logging and drainage problem as the Pourashava authority collects the soil to develop the area by carried sand from different places. Cross drainage works should be constructed to bypass the surface water and other discharges if required.

Construction of Labor Shed

Cause of Impact

Before starting construction, contractor should be made a camp site with essential facilities like water and power supply and sanitation. Another essential thing in any construction site is stockyard. To keep safe various building materials from un-wanted damage or stolen, will make a stockyard before starting construction. The precise locations of construction camps for the proposed subproject will be decided by the contractor with the assistance of the Engineer of the Pourashava. During site visit, there is tentative one site office, one labor shed and one stack yard is recommended by Pourashava at vacant place near Othoi Tower at Bijoy Nagor which is located at word no 3. However, the siting of the camps may cause a number of issues such generation of sewage, sold waste. The people and the changes they bring can have impacts on the local communities and social structures. Most important aspects are: pollution risk of soil and surface water due to sanitation of the labor camps and wastes from the camps

Mitigation Measures

To meet the workers basic needs labor shed will be constructed which will contains adequate ventilation facilities and standard living condition and it never be overcrowded. In addition, safe potable drinking water will be provided. Furthermore, contractor will construct two sanitary latrine considering 15 persons for one toilet at the labor shed (one for male and other for female).Proper health and safety of workers will be ensured through providing health and hygiene training to the workers by the Municipality and the contractor. Waste bins will be present at the labor shed, and the

workers will be encouraged to dispose of all their garbage at the waste bins. All the waste will be collected daily and taken to the Municipality dump site at Dholivita (Lakuriapara) at Ward no.03

Ecological Impact Due to Felling of Trees and Clearing of Vegetation

Cause of Impact

During site visit it was counted that at different subproject sites total 37 numbers of planted and natural grown trees will be cut down for site clearing work. Medium quantity vegetation clearing is also needed.

Mitigation Measures

185 nos. of trees will be planted to compensate the cut down down trees (preferably local fruits, flowers, medicinal and ornamental trees- Mango, Jackfruit, Jam, Neem, Amloki, Bohera, Shonalu, Palash, Debdaru, Jarul, Kathbadam, Krishnachura, Mahogany, Rain Tree, Arjun, Koroi, at the both side of the Cosmos Road and anywhere suitable Pourashava owned places within the influence area of the subproject. Planting trees will enhance the ecological balance of the subproject area after their successful growth.

Impact at Construction Phase

Earth Work and Site Clearing Work for the Site Clearing

Cause of Impact

Each development project more or less requires site preparation. The preparation works for road and drain generally includes-cut and filling work, soil export or import work and demolition of the existing brick drain, damaged BC and HBB road. The mentioned activities will arise the following impact- noise, generation of dust, soil erosion, drainage congestion and safety concern.

Mitigation Measures

Cutting and filling operation should be kept minimum. During earth work, loss of top soil will be avoided. In addition, for backfilling work use of sand will be ensured. The subproject contractor should ensure construction of proper drainage facility. Regular water sprinkle should be ensured by the contractor to minimize elusive dust emission. Cover the exposed earth works with much fabric to minimize the dust. Moreover, proper care will be taken by the contractor during earth work and disposal work to avoid any undue disturbances to the nearby people. As a part of safe working procedures contractor should be ensured used of PPEs as per requirement. Undertaking construction work during dry seasons to minimize the water congestion. The heavy equipment should be operated at day time. The generated waste from the dismantling work will be deposed regularly and quickly in to the designated dump site of Pourashava at Dholivita (Lakuriapara) at Ward no.03.

Pollution from the Construction Materials' Transportation and Storage

Cause of Impact

Lack of proper guideline for the construction material transportations, handling and storage may lead the occupational health and safety risk. On the contrary, dumping of the construction spoils, including

accidental leakage of the oil, grease, and fuel in equipment yards is a significant hazard. These substances can be washed-out by the storm water and can be discharged in the surface water. Even the people to be engaged for the construction activities and local communities might endanger the physical and human habitats of the area.

Mitigation Measures

Safe transport, storage, and disposal of the construction materials, and the equipment have to be carried out in order to avoid the accidental spillage and loss and to minimize any health risk. Fuels, lubricants, and other hazardous materials should store over raised platforms and not directly on the ground. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Maintain adequate moisture content of sand during transportation, compaction and handling. Carry the materials especially loose soil and sand with adequate cover. Contractor will responsible to avoid head loads for carrying soil, construction materials and construction equipment and disposal of the wastes at the Dholivita (Lakuriapara) dump site at Ward no.03.

Air Quality and Dust

Cause of Impact

The air quality in the subproject area may slightly deteriorate for the time being during construction activities. The major construction activities from which air emission mostly dust emission may occur are; unpaved road width, transportation of construction materials (especially fine aggregate), opening-up of cement bags and empting the cement in order to mix with other construction material; black smoke emission from the subproject vehicles and equipment's, handling of sand, stone/brick chips may contain loose dust particles. These activities will temporally disturb the nearby resident and associates construction worker by creating eye irritation, skin irritation, respiratory difficulties and difficulties of breathing. However, emissions are temporary and not expected to contribute significantly to the ambient air quality and will be within prescribed limits.

Mitigation Measures

Regular sprinkling of water to be done on open surface, sand filling and dust grounds until paving is done. Maintain adequate moisture content of soil and sand for transportation, compaction, bed preparation, backfilling and handling. Avoid use of dust generating equipment which produce significant amount of particulate matter and should be located far from the local residents. Contractor will responsible to ensure that all subproject vehicles and equipment are in good operating condition. Even periodically air quality test near subproject vehicles will be performed. The subproject management and contractor to enforce strictly use of personal protective as per requirement especially mask and proper clothing to minimize the skin irritation, respiratory difficulties and difficulties of breathing.

Noise and Vibration

Cause of Impact

Noise and vibration caused by the equipment (concrete mixture machine, vibrator, asphalt plant, road cutter and excavator etc.) and movement of the construction vehicles may temporarily disturb nearby residents and the sensitive areas. In the subproject, sensitive areas like roadsides houses, shops,

health care center and educational institutes are likely to be affected from the roadside noise, though the impacts are limited to the premises and very short-term.

Mitigation Measures

Transportation of the construction materials and noisy construction work have to be carried during the scheduled times, and mainly during the day. Even transportation of construction materials have to be carried with scheduled time. Where applicable and possible exceptionally noisy machines to be fitted with noise abating gear such as mufflers for effective sound reduction. Providing suitable hearing protection to all workers exposed to noise levels where it is more than regulatory limit.

Water Quality

Cause of Impact

The water quality may deteriorate if the construction materials, sand, construction wastes, effluent from the work camps, and food wastes are dumped in the roadside water bodies (river, ponds, khals and ditches).

Mitigation Measure

Proper construction management including waste management as well as training of the operators and other workers should provide to avoid pollution of the water bodies. In addition, construction waste will carefully remove and taken to the dump site at Dholivita (Lakuriapara) (not in the water bodies or lowland), for which contractor will be responsible.

Drainage and Impact on Surface Water

Cause of Impact

The potential impacts on local hydrology are mainly those of altered patterns as a result of onside construction and earthwork activities. The proposed subproject will affect natural drainage, surface and ground water quality if not managed the construction works properly. There could be siltation of water system or drainage from uncovered piles of construction materials and delay of dispose the road side excavated soil.

Mitigation Measure

To avoid the drainage problem, earthwork of the subproject will mostly cover in the dry season. Additionally surface drainage shall be controlled to divert surface runoff away from the construction area. Even at construction sites pumping provision will be ensured by the contractor. Stock piling of spoil soil shall be selected at a safe distance from the drainage system. Containment of sanitary waste from camp site should be adequately disposed off to avoid surface and ground water contamination.

Community Health and Safety

Cause of Impact

In the subproject sites at different locations adjacent to the drain alignment different types of establishment like Schools (Tangail Residential School, Abdus Subhan School and Kinder garden etc), residents and business center is observed. During construction period, access into these establishment

will impede. However it will be short term. Poor safety signage and lack of barriers at work site may create hazard to nearby existing establishment as well as community people.

Mitigation measures

Cautionary sign at all sites should be visible to public and construction work near sensitive area like educational institute, business center has to be done within short time with proper fencing and safety measure. Bamboo made temporary access towards the establishment shall be provide if required. Moreover, to avoid any health hazard from the construction equipment on the local community people especially for the school going kids location of concrete mixture machine, rod cutter and brick breaking machine, shall be located at least 100m away from the nearest community and educational institutes.

Impact on Host Comminutes from out sides Worker

Cause of Impact

The differences in the cultures of workers (in case hiring is required) and local community may create some problems. Therefore, the unknown identity of the hired labor to the host communities has possibilities to create social crisis by involving with local politics, eve teasing or sexual abuse the campsite female worker or campsite nearby neighboring people may be affected.

Mitigation measures

The subproject proponent and his organization have practice of working with the workers of different cultures. It is recommended to aware of the out sides workers about the social & religious actability in the area so that they could maintain those when they will have touch with local community. Moreover, contractor will responsible to closely monitor the worker movement as they do not involve with social crisis in the subproject area.

Occupational Health, Aesthetics and Safety

Cause of Impact

Construction workers are more likely to face occupational health hazards such as minor or major injuries due to lack of general safety requirements and precautions applicable while working at construction sites, and handling with machines and equipment, use of equipment and driving vehicles and so on. Poorly designed temporary labor camp and sanitation facilities may pose a health threat and nuisance to the workers. Though limited, but uncontrolled vending of food and drinking water at the work site may also pose a risk with respect to the transmission of contagious diseases like Typhoid, Diarrhea, Malaria, and Dengue in particular. Moreover, construction workers will be required to handle hazardous materials such as cement, bitumen, chemicals, fuels, and so on which will increase health risks of the workers if personal protective equipment are not used.

Mitigation Measures

1. Provision of proper training to all workers for handling the construction equipment;
2. Provision of cautionary and guiding signage in local and English language indicating the hazard associated with the site;
3. Provision of the adequate latrines and separate toilets for the women;

4. Wastewater from the toilet should be disposed in septic tanks and soak pits and; should not be allowed to accumulate at labor camp site or construction site ;

5. Dustbins should be provided at labor camps for collection of waste and waste should be regularly disposed through the concerned agency;

6. Temporary storm water drainage system should also be provided at camp site so as to drain the storm water and prevent accumulation of storm water at site and thus breeding of mosquitoes/flies;

7. Provision of personal protective equipment like safety jackets, helmets, gumboots, gloves, face mask, ear buds, goggles, safety shoes etc as per requirement and nature of job in which they are involved;

8. Job rotation should be carried out for workers exposed to high noise and dust areas;

9. Provision of First aid facility at the site and the labor camp;

10. Labor camps should be located at neat and clean location with no water logging issues;

11. Proper sanitation facility including toilets, bathing facility and washing facility should be provided at site and at labor camps for workers;

12. Clean drinking water supply should be provided to labor;

13. Brest feeding facility should be provided for kids if female workers are employed;

14. Regular inspection for hygiene and safety in labor camps should be done;

15. Construction debris should not be allowed to enter into aquaculture ponds, river and khal located along the road;

16. Entrance to any road/structure should not be blocked for construction material;

17. Contractors will bear medical treatment costs. If any sever accidents such as loss of hands, legs or loss of working ability or any case of death needs compensation-(the amount of the compensation should be fixed considering the type of accidents)

Traffic Management

Except Dhamrai Bazar road, most of the road under this subproject is located in the rural area of the Pourashava and condition of that roads does not permit the motorized vehicles movement. However, Dhamrai Bazar Road is the busy road and developed urban area. Therefore, the subproject activities have likely impact on the traffic congestion due to restriction of the free movement of the motorized vehicles during construction phase. Hence, the construction work should be performed section wise with keeping provision for normal traffic operation. Additionally, the road width is adequate for motorized vehicles movement. The local people can use the connecting roads. Hence, using of the connecting road will diversify the traffic volume. The pedestrians, cycle rider, biker can easily use the road at construction period. In addition, the Pourashava authority will inform local people to use connecting and other adjacent road during construction period to avoid any traffic congestion.

During construction phase, interruption of the traffic movement and impact on the local traffic system due to the subproject activities will be monitored closely. Then separate traffic management plan will be provided if required. However, the following safeguard measures are recommended to minimize the impacts associated to the traffic movement:

1. Inform local people about the subproject activities;
2. Inspire local people to use connecting and diversion roads;
3. Ensure schedule deliveries of material/ equipment during off-peak hours;
4. Place traffic sign/cautionary sign to avoid undue traffic congestion and associated traffic control measures to limit possible disruption;
5. The place of construction works should be fenced off with fences if required and should be isolated from general public access and marked with signs to ensure safe movement.
6. At the points where traffic is to deviate from its normal path (whether on temporary diversion or part of the width of the carriageway), the channel for traffic shall be clearly marked with the aid of pavement markings, painted drums, or a similar device to the directions of the vehicles.
7. At night, the passage shall be delineated with lanterns or other suitable light source.
8. For regulation of traffic, the flagmen shall be equipped with red and green flags especially near at intersection.
9. For notification of construction activities, at least two signs shall be put up for each road, one close to the point of carriageway begins, and another will put on the end of the carriageway.

Impact on Operation and Maintenance

Cause of Impact

Once in operation the improved roadways may be responsible for an increase in noise and air emissions from increased vehicular traffic. There will be a tendency for increasing speed because of an improved driving surface, resulting possibilities of accidents. During operation phase, the throwing of waste material into the drain and silted up of outfall by various wastes may crates water stagnant in the drain and backflow of the drain.

Mitigation Measures

To control the probable accident beater traffic management need to be ensured. As a part of traffic management improved signage and speed barker near sensitive area need to be constructed. Establish a program of regular visual inspection of drain to identify problems early, before they become critical (breakage, plugging, etc.). Perform repairs on street drains promptly, and clear sediment and other material that could cause blockage. Limit entry of waste oil and grease to drains.

Environmental Management Plan (EMP)

The Environmental Management Plan (hereinafter, the Plan or EMP) aims to ensure the compliance of all activities undertaken during the preconstruction, construction and the operation of this subproject with the environmental safeguard requirements of WB and the Government of Bangladesh. Furthermore, it aims at integrating the environmental components of the subproject with existing initiatives and programs in these fields. The plan consists of mitigation, monitoring and institutional measures to be taken during preconstruction, construction and operation to minimize adverse environmental impacts, offset them, or reduce them to acceptable levels.

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 personnel responsible for subproject implementation. It will also be made available to the public. The final assessment report will also be uploaded in the, Dhamrai Pourashava website, BMDF website and the World Bank website after approval.

Grievance Redress Mechanism

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

The grievance mechanism is related to resolve the risks and adverse impacts of the subproject. It addresses APs' concerns and complaints promptly, using an understandable and transparent process that is also gender responsive, and culturally appropriate. It is 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.

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

Grievance Redress Committee (GRC)

The discussions and negotiations has been conducted by the PIU of Dhamrai Pourashava and will be involved the APs and Grievance Redress Committee (GRC) headed by the Mayor/Panel Mayor of

Dhamrai Pourashava. With the facilitation of Consultant, the Mayor/Panel Mayor nominated the GRC members and included representative from the Government Agencies, local NGO, and Civil Society. The GRC has been formed and established at Dhamrai Pourashava. Dhamrai Pourashava will ensure grievance box to receive complaints. The grievance response focal point will be available at Pourashava for instant response to an aggrieved person. The Focal Point of GRC committees will collect the written complaints or suggestions from the box, and produce them to the GRC for hearing and resolution. The members of the committee are:

1. Md. Sohidullah, Panel Mayor, Dhamrai Municipality, Chairman of GRC
2. Abu Sayed, Councilor, Ward no-9, Dhamrai Municipality, Member of GRC
3. Councilor, Respective Ward, Member of GRC
4. Reserved Councilor, Respective Ward, Member of GRC
5. Md. Mortoza Ali, NGO Worker, Shojag, Member of GRC
6. Engr. Kazi Md. Fazlul Haque, Assistant Engineer, Dhamrai, Pourashava, Member Secretary of GRC

Grievance Resolution Process

In case of grievances that are immediate and urgent in the opinion of the complainant, the contractor and PIU on-site personnel will provide the most easily accessible or first level of contact for quick resolution of grievances.

The phone number of the PIU official should be made available at the construction site signboards. The contractors and PIU safeguard focal person can immediately resolve on-site in consultation with each other, and will be required to do so within 7 days of receipt of a complaint/grievance.

All grievances that cannot be redressed within 7 days at site will be reviewed by the grievance redress cell (GRC) headed by Mayor of the Pourashava with support from PIU designated safeguard focal person. The PIU designated safeguard focal person will be responsible to see through the process of redressed of each grievance.

The PIU designated safeguard focal person will refer any unresolved or major issues to the PMU, BMDF. The PMU of BMDF in consultation with the MD of BMDF will resolve them within 30 days.

If the appellant is still not satisfied, he or she has the right to take the case to the public courts. Dhamrai Pourashava should also publish the outcome of cases on public notice boards. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by Dhamrai Pourashava.

The number of grievances recorded and resolved and the outcomes will be disclosed in the PMU office, Pourashava office, and on the web, as well as reported in monitoring reports submitted to WB on a quarterly year basis.

Institutional Concern Person for Environmental Safeguard Compliance

The Pourashava Officials, especially engineer in charge will be responsible for supporting the construction supervision with the facilitation of BMDF. The civil works contractors will implement the environmental mitigation measures. The BMDF, with the help of Environmental Specialist will submit the monthly monitoring reports on Environmental Compliances to the World Bank

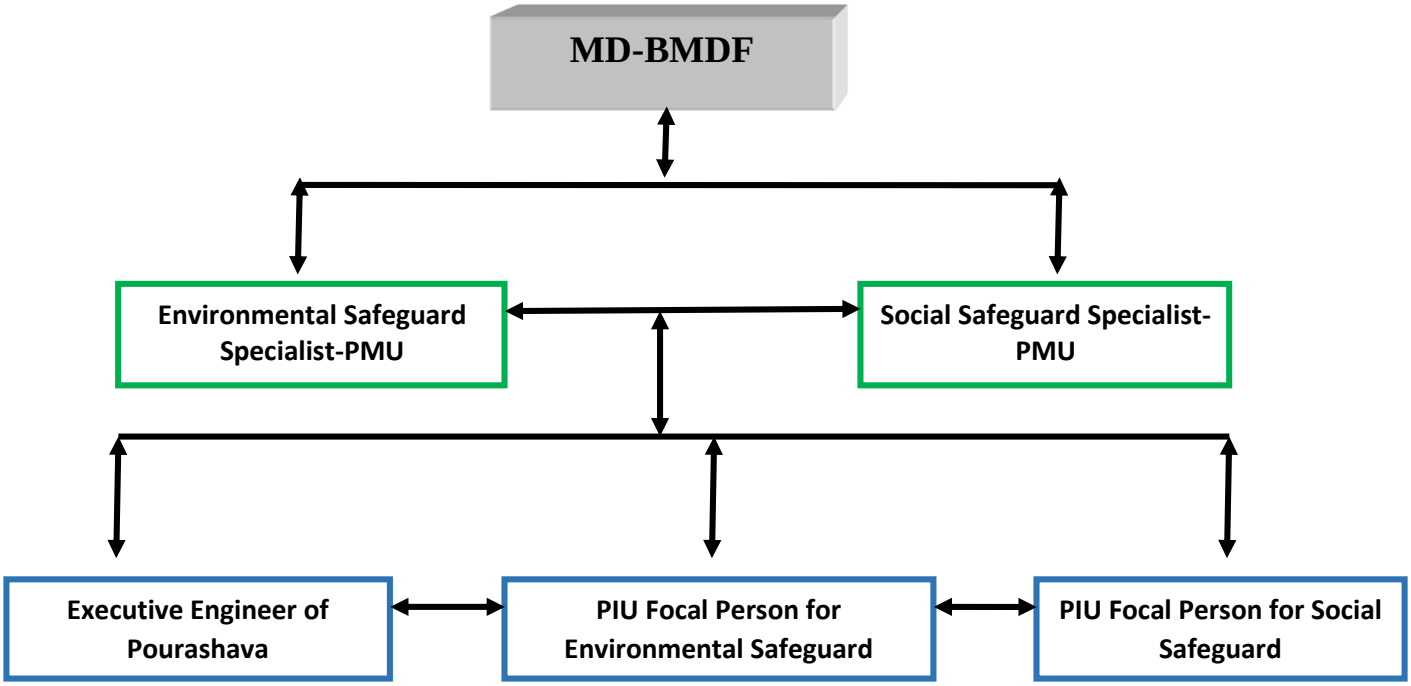

Figure** Error! No text of specified style in document.**-17: Environmental and Social Management Team (Tentative)

Capacity Building

A training program has been developed by the PMU of BMDF to build the capability of PIU of Dhamrai Pourashava. In addition, the hired consultants of Dhamrai Pourashava was also there. Under this training program PMU was organize an introductory course for the training of the Dhamrai Pourashava 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 should be also included in the training program to enhance the Environmental awareness and orientation among the workers

Environmental Management Action Plan

The environmental management action plan has been outlined in ***Table 7.1.*** The mitigation measures as well as responsible parties to implement of the EMP are also incorporated in action plan.

Table** Error! No text of specified style in document.**-9: Anticipated Impacts during Construction and Corresponding Mitigation Measures with Monitoring guide line)

Activity/ Issues	Potential Impact	Proposed Mitigation &Enhancement Measure	Monitoring Method	Frequency of Monitoring	Responsible for Monitoring	
					Implement	Supervision
At Pre-construction stage						
Construction and operation of labor shed for the workers (Workforce and labor shed management)	Generation of sewage and solid waste may cause water/ environmental pollution/	. Ensure construction of the labor shed and stockyard at the designated place (Near Othoi Tower at Bijoy Nagor at ward no. 03.); . Construction of sanitary latrine considering 15 persons for one toilet at the labor shed and separate toilet for male and female; . Erection of "no litter" sign, provision of waste bins (introduce separate waste bins for organic and inorganic wastes); . Ensure wastes (solid wastes and other forms of the wastes) disposal at the dumping yard is located at the Dholivita (Lakuriapara) which is located at ward no-03. . Ensure emptying and cleaning of the waste bins regularly; . Drum trucks are available in the Pourashava. Hence, drum truck should be used for transportation of the wastes; . Cleanliness of premises and workers living places at the Labor Shed;	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF

	. Arrangement of the proper ventilation and temperature at the Labor Shed; . Protection against dust by using masks and covering of the head and body; 0. Proper disposal of the wastes and effluents;				
Health Hazard of Labor	1. Conduct formal and unofficial discussion to increase awareness about hygiene practices among the workers; 2. Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances 3. Ensure that all site personnel have a basic level of environmental awareness training. If necessary, the environmental management specialist and/or a translator shall be called to the sites to further explain aspects of environmental or social behavior that are unclear. 4. Comply with requirements of Government of Bangladesh Labor law of 2006 and all applicable laws and standards on worker's Health and Safety; 5. Provide construction workers and local people with basic information on infectious diseases including HIV/AIDS 6. Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal	Visual Observation	Regularly and As per requirement	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Possible development of labor camp into permanent settlement	7. Contractor to remove labor camp at the completion of contract.	Visual Observation	End of the Construction work	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF

	Outside labor force causing negative impact on health and social well-being of local people	8. Ensure that contractor employ local work force to provide work opportunity to the local people and conduct formal and unofficial awareness program for the health and social well-being of the local people.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
At Construction Stage						
General construction works (Site Clearing, Earth work, Backfilling, fueling of subproject vehicles etc)	Drainage congestion and flooding	19. Ensure provision for adequate drainage of storm water, if needed; 20. Ensure provision for pumping of congested water, if needed; 21. Ensure adequate monitoring of drainage effects, especially if construction works are carried out during the wet season.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
	Air pollution	22. Check regularly and ensure that all the subproject vehicles are in good operating condition; 23. Ensure contractor spray water on dry surfaces regularly to reduce dust generation; 24. Maintain adequate moisture content of soil and sand for transportation, compaction, bed preparation, backfilling and handling; 25. Ensure contractor sprinkle and cover stockpiles of loose materials (e.g., fine aggregates);	Visual Observation/Analytical	Regularly and Periodically	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
	Traffic congestion, effect on traffic and pedestrian safety	26. Ensure schedule deliveries of material/ equipment during off-peak hours; 27. Avoid road side storage of the construction materials; 28. Place cautionary sign for the pedestrian and safety traffic movement. 29. Inform the local people about subproject activities and inspire them use to alternative road to avoid traffic jam.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF

Noise pollution	30. Increase workforce in front of critical areas such as institutions, establishment, hospitals, and schools. 31. Check and maintenance the equipment properly; 32. Avoid using of construction equipment producing excessive noise at night; 33. Avoid prolonged exposure to noise (produced by equipment) by the workers; 34. Regulate use of horns and avoid use of hydraulic horns in subproject vehicles. 35. Any noise generating equipment should be performed after office or school hour. 36. Arrange ear plugging or ear muff if noise level at the construction site is severe.	Visual Observation/Analytical	Regularly and Periodically	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Water and soil pollution	37. Prevent discharge of fuel, lubricants, chemicals, and wastes into adjacent water bodies and soil; 38. Vehicle maintenance and refueling should be confined to the designated areas with sealing to prevent the spillage of lubricants and fuels on the water bodies and soil; 39. Restrict disposal of any construction waste into the nearby water bodies. 40. Location of stockyards for construction materials shall be identified at a safe distance from watercourses.	Visual Observation/ Analytical	Regularly/ Periodically	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Accidents	41. Conduct formal and informal discussion for creating awareness about the accident; 42. Provides PPEs and ensure using of the personal protective equipment by the workers. 43. Maintain the register to record accidental events if occur;	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF

	Spills and leaks of oil, toxic chemicals	44. Proper handling of lubricating oil and fuel so that it does not fall on the soil and adjacent water bodies; 45. Collection and disposal of spills; 46. Waste petro-chemicals must be properly collected, stored and not directly disposed on the ground.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Potential Impact of BC road Construction						
Dismantle work/ Excavation/Earth work/	Generation of solid and construction waste due to the dismantle works; Generation of loose soil due to the earth excavation work and earth work.	47. Cover expose construction wastes and loose dry soil with fabric; 48. Disposal of soil and construction wastes at dumping site at Dholivita (Lakuriapara) which is located at ward no-03.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
IGS (improve sub grade) /sand filling	Air and dust pollution affecting nearby settlement	49. Maintain adequate moisture content of the soil during construction transportation, compaction and handling; 50. Carry the materials especially loose soil and sand with adequate cover.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Setting up and operation of asphalt plant	Possible degradation of the air quality by the suspended particles and increase of the noise level from asphalt plant affecting nearby settlements.	51. Locate plant away from residential settlements; 52. Consider use of emulsified bitumen.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
	Possible water pollution (surface and ground water) by bitumen and solvents.	53. Avoid spills and proper collection and disposal of the generated spills.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF

	Possible preparation of the bitumen in open air and using of charcoal and wood as fuel.	54. Strictly prohibit bitumen preparation in the open air and use of charcoal and wood as fuel.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Potential impact of RCC Road & RCC Pipe Drain						
	Generation of loose and clay soil due to the earth excavation work.	55. Cover exposed loose dry soil and wastes materials before disposal; 56. Disposal of soil and construction wastes at existing dumping site Dholivita (Lakuriapara) which is located at ward no-03.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Dismantling work for site clearing and excavation work	Accidents from careless use of hydraulic excavator and hammer for the demolition of the damaged BC road and HBB road and brick drain	57. Carefully handle of the hydraulic excavator and hammer if needed.				
	Possible damage of road side infrastructure due to earth excavation for drain construction.	58. Ensure drum sheet palisading work fo shallow depth to stabilize the structure; 59. Ensure plunk palisading work for shallo depth to stabilize the structure; 60. Bolly drive for deep depth constructio works.				
	Air pollution due to black smoke emission from excavator.	61. Regular maintenance of the equipment.				
	Access in the drain side establishment to be impeded	62. Labor enforce should be increased that particular place to compete the work in the short time. 63. Ensure bamboo made temporary access provision over the excavated pit of drain.				
Sand filling work to rise the road level and road bed preparation and	Air and dust pollution affecting nearby settlement and construction worker	64. Maintain adequate moisture content of soil and sand during transportation, compaction and handling;	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava

Back filling of drain by sand		65. Carry the materials especially loose soil and sand with adequate cover. 66. Ensure use of mask to the associate workers				Secondarily by PMU of BMDF
Cutting & welding of the reinforcement for RCC work	Noise pollution due to using of rod cutter and welding machine	67. Avoid using of rod cutter and weldin machine at night; 68. Avoid prolonged exposure to nois (produced by equipment) by workers.	Visual Observation/ Analytical	Regularly/Periodically	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
	Potential health and safety risks from rod cutter and welding machine if any	69. Ensure use of the personal protective equipment (helmet, goggles, gloves, safety boot); 70. Availability and access to first-aid equipment and medical supplies in case of any accidents.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
	Air pollution due to blac smoke emission from concrete mixer machine and vibrator machine	71. Regular maintenance of the concrete mixer and vibrator machine to avoid any black smoke emission.	Visual Observation/ Analytical	Regularly/Periodically	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
RCC (reinforcement cement concrete) work	Noise nuisance from concrete mixer machine and vibrator machine	72. Avoid operation of the concrete mixer and vibrator machine at night; 73. RCC work should be avoided at schooling time; 74. Inform local people about casting work and potential impacts.	Visual Observation/ Analytical	Regularly/Periodically	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
	Health hazards from the dust spreading during exposed of cement bag and dispose of aggregate (i. e. fine aggregate) in to the concrete mixer machine	75. Ensure saturated condition of the aggregate before dispose into the concrete mixture machine if possible. 76. Ensure mask to the associated workers.	Visual Observation	Regularly	Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
RCC pipe laying	Accident	77. Carefully laying the heavy weight precast RCC pipe; 78. Ensure safety compliance for the labor.	Visual Observation	Regularly during pipe laying work	Contractor	Primarily by PIU of Pourashava

					Secondarily by PMU of BMDF

Potential impact of the Street light

Setting up the pole and electrical connection	Potential health and safety risk	79. Inform the local authority to switch off power during connection; 80. Ensure use of the PPEs.	Visual Observation	During setting of electric pole Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF
Source of electricity and equipment	Reduce of resource i.e., use of electricity	81. Provision of renewable energy (solar panel electrification)and use of environmental friendly bulb (LED bulb rather than CFL bulb)	Visual Observation	During Installation of bulb Contractor	Primarily by PIU of Pourashava Secondarily by PMU of BMDF

Table Error! No text of specified style in document.**-10 Anticipated Environmental Impacts during Operation Phase and Corresponding Mitigation and Enhancement Measures**

Activity / Issues	Potentials Impacts	Proposed Mitigation and Enhancement Measures	Responsible Parties
Operation of the road	Increase in traffic speed and accidents; Increased traffic congestion due to movement of increased number of vehicles; Increased air and noise pollution affecting surrounding areas	82. Better traffic management; 83. Control heavy traffic movement. 84. Traffic management, increased vehicle inspection	Primarily by Pourashava
Operation of the drain	Pollution of downstream water body due to disposal of polluted water from the drain Blockage in the drain due to disposal of solid waste/debris Possible backflow of water due to blockage in the drain and at outfall	85. Ensure installation of septic tank by the household people in all establishment; 86. Stop connecting sanitation facilities to storm drain directly. 87. Creation of awareness, introduce SWM system and install and maintenance cover in open manholes; 88. Regular maintenance / cleaning of the drain; 89. Stop throwing of the wastes materials in to the drain by the community people. 90. Proper maintenance and cleaning of the drain and outfall on regular basis.	Primarily by Pourashava
	Accident due to collapse of the arms, electric bulbs and poles	91. Monthly checking and maintenance of the arms, switch box, electric bulbs;	Primarily by Pourashava

Operation and maintenance for street light	Traffic congestion, traffic problems for maintenance works Beneficial impact on employment generation fo maintenance works	92. Provision of automatic shut-down the switch, lamps during thunder storm and other natural disasters. 93. Schedule deliveries of materials/ equipment during off-peak hours; 94. Engage local people for the maintenance activities.

Most of the monitoring parameter evaluation will be done by visual observation except noise, air, and water quality parameter. These parameter will be monitored by analytically. Hence, analytical monitoring guideline are shown below in tabular form

Matrix Table of Monitoring Plan (Analytical Monitoring during construction and operation phase)

Monitored Parameter/ Issues	Monitoring Method/Key Aspects	Location of Monitoring	Period & Monitoring Frequency
Noise level measurement	95. Through digital instruments	6. Sub-project site	7. Three times at construction phase and one time at operation phase; 8. Reporting: Once in a month and immediately after measurement
Ambient air quality/ Stack Emission	99. Visually-black smoke; 100. Sampling; 101. Analysis at laboratory; 102. Data analysis of merits determination by using quality standards; 103. Through digital instruments.	04. Sub-project site	05. Three times at construction phase and one time at operation phase; 06. Reporting: Once in a month and immediately after measurement
Waste Water quality	107. Sampling; 108. Analysis at laboratory; 109. Data analysis of merits determination by using quality standards.	10. At intake and outfal	11. Two times at construction phase and one time at operatio phase; 12. Reporting: Once in a month and immediately after measurement

Environmental Safeguard Cost during Construction Phase

Considering the environmental impacts and their mitigation measures for these subprojects, several items are included in the BOQ to address these issues. The estimated cost to implement the EMP is elaborated in ***Table*.7-3**

Table** Error! No text of specified style in document.**-11: Environmental Management Budget

Item No.	Description of the Items	Costs (Tk)
1	Establishment of labor camp (male shed - 15 ft x 30 ft and female shed 12 ft x 15 ft1) with living arrangement, drinking water facilities, cooking arrangement, mosquito net,, waste bin etc.	200,000.00
2	Masonry pucca platform (at least 100 sft size), providing brick soling and net cement finishing for keeping fuel and lubricants for machineries.	15,000.00
3	Dust suppression measures by water spraying throughout the construction period in and around the subproject site, uncovered aggregates and loose materials such as stockpiles of the sands, excavated earth etc.(2 times/day) (Depending on the site condition and length 2 unit is considered as per BMDF rate schedule)	20,000.00
4	Noise level measurement. It can be measured from the pre-approved public institute/ university two times during construction phase @Tk. 800.00 per measurement (4*8,000.00 Tk) and **one time after construction**	32,000.00
5	Air quality (SPM, PM10, and PM 2.5) measurement- it can be measured from the recognized environmental survey company, public institute/ university three times during construction phase and **one time after construction**	120,000.00
6	Water quality(pH, NH_3, BOD_5, COD, TDS,)- it can be measured two from the recognized environmental survey company, public institute/ university two times during construction phase and **one time after construction (**3*5*3400**)**	51000.00
7	Wastes disposal facility during the construction period; collection, transportation, and dumping of the wastes at Dholvita dumpsite and providing 8 bins (400 litre size) to be provided.	60,000.00
8	Water supply (at the labor sheds):1nos. of tube well	20,000.00
9	Sanitation facilities (at the labor sheds): 2nos. of the toilets preferably portable toilets (1 no. for women and 2nos. for men) @ 25,000.00 (2* 25,000.00 Tk)	50,000.00
10	Providing PPE like hand gloves, spectacles for eye protection, helmets, masks, visible jacket, ear plug, safety boots for at least 30 person (25 for workers and 5 for visitor) and one first aid box with necessary medicine	102,500.00
11	Tree plantation for ecological enhancement work- preferably local fruits, flowers, medicinal and ornamental trees- (including protection and conservation during project defect liability period)185 nos. of the trees @Tk 500.00 per tree (185* 500.00)	92,500.00
12	Cautionary Sign 6 nos.	24,000.00
	Total	**787000.00**

Environmental Codes of Practice

All the above mentioned development activities will involve setting up of some facilities and carrying out some activities which would have impact during implementation of such facilities. Those activities will involve setting up labor camps and disposal of construction debris etc. Following management plans are prepared for sustainable management of all environmental issues. The Contractor shall carry out the subproject related activities as specified in contract agreement. Dhamrai Pourashava shall ensure that contractor take due responsibility to mitigate those negative impacts. Environmental awareness creation, particularly about the direct construction impacts and for the health, pollution and safety issues will be Contractor's responsibility. Clauses that may be incorporated in the tender documents are:

1. Overall Environmental Protection: Contractor shall take all steps to protect environment and avoid causing all types of public nuisances during implementation;
2. Labor shed Management: Contractor shall maintain the work camp and construction sites in clean and tidy conditions and shall ensure standard facilities;
3. Workforce Environment: Contractor shall engage local people as much as possible where applicable and ensure prohibition of the child labor (less than 18 years) and aged labor (more than 65 years) in heavy works;
4. Waste Management: Contractor shall be responsible for the safe transportation and disposal of the wastes generated due to the subproject activities;
5. Workers Health and Safety: Contractor shall be responsible for providing personal protective equipment and first aid facilities as per requirements;
6. Compensation for Accidents: Contractor shall bear medical treatment costs for any accidents. If any severe accidents such as loss of hands, legs or loss of working ability or any case of death needs compensation- (the amount of the compensation should be fixed considering the type of accidents);
7. Implementation of the Mitigation Measures: Contractor shall responsible for the implementation of the mitigation measures mentioned in the EMP;
8. Spill Prevention, Fuels and Hazardous Substances Management: Contractor shall take preventive measures for spill prevention and fuels and hazardous substances management;
9. Restoration of the Facilities: The contractor on completion of the contract shall remove the equipment, surplus materials, and rubbish and temporary structures of all types and shall leave sites in clean condition to the satisfaction of Pourashava and local people.

PUBLIC CONSULTATION AND PARTICIPATION

Methodology

In the subproject area, public Consultation was made with different level of people. The people are not fully aware of the activities of proposed subproject. Expected benefit that will be derived from subproject in term of environment and social view was elaborated in the local people during public consultation. The consultations were made with different level of people like, local councilor, community leaders, mosque Imam, businessmen, and Pourashava officials, in and around the subproject areas.

The aim of such consultation was to confirm the environmental and social safeguard compliance issues to be considered during pre-construction phase, construction phase and operation phase of the subproject. The probability of impacts on local peoples' business and employment was also judged through such consultation. Meeting with stakeholder and community people is an integral part of EA preparation and is a regulatory requirement of the EA report preparation as per WB guide line as well GOB.

The Public Consultation were conducted on 28 July 2018, through a mix of conventional approach which involved as participatory, focus group discussions (FGD) and one-to one interviews, during the environmental study of the proposed subproject in conformity with the WB's and DOE's environmental guidelines. However, for better understanding the socio-economic and environmental condition two focus group discussion has been conducted in the subproject study area (**Figure-8-1).**

Objective

The objective of stakeholder consultation is to finalize the environmental and social safeguard compliance issues to be incorporated in the EA. The consultation was done for the following specific objectives:

1. To introduce awareness of the stakeholders about the subproject and to collect their opinion, suggestions for planning and designing of the subproject ;

2. To identify the need and concern of the public;

3. To assess cultural patterns and behavior of local communities. Stakeholder consultation, was targeted at people/communities who may – directly or indirectly, positively or negatively- be affected by the outcomes of a subproject. The consultations were conducted at two different tiers of stakeholders: local people and Pourashava Officials;

4. To identify the conflict issues in advance & to find acceptable solutions;

5. To gather local knowledge before decision making of the proposed subproject;

document.**-18: Public consultation with local people, Pourashava officials and other stakeholders.**

Issues discussed in FGDs and Meetings

For the better traffic operation in the subproject area and to respite from water logging problem, subproject area peoples are highly interested about this subproject. They also said, they would help the Pourashava to implementing the subproject activities.

The participants raised the issues related to the infrastructure development of Dhamrai Pourashava. They emphasized on the subproject selection for the future development and also discussed about the procedure for the quality construction work. In the FGD, the participants discussed the requirements for the Pourashava future development through a list of the subprojects. The Key participants list of Focus Group discussion in the subproject study area is attached in the Appendis-2.

Feedback, Suggestions, and Recommendations of the Participants

In each of the consultation, participants were encouraged to share their observations, suggestions, and experiences on various environmental and safety issues and suitable mitigation and enhancement measures. The participants' feedback, suggestions, and recommendations from FGD can be cited:

1. For the better traffic operation in the subproject area and to respite from water logging problem, subproject area peoples are highly interested about this subproject. They also said, they would help the Pourashava to implementing the subproject activities.

2. All the proposed infrastructure implementation is badly needed for Dhamrai Pourashava, all will provide benefit, no major environmental concern

3. All the participants felt that the proposed road construction subproject will facilitate a better traffic system. However, it was felt that accidents might increase in number if a high standard of engineering design is not followed.

4. Participants mentioned that safety measures are especially important for social institutions like schools, hospitals

5. They are thinking that, due to implementation of this subproject few part of land may need to be acquired. According to the participants, if required this can be mitigated through proper compensation and amicable assistance to the affected persons.

6. People expect employment generation for them from upcoming subproject

7. Awareness and extent of the project and development components;

8. All development works are essential but sound design and construction is necessary so that they are not affected by environmental pollution.

9. Most of the participants expressed that the number of subprojects that have been selected for each financial year is not adequate.

10. The participants also addressed the solid waste management issue to reduce environmental and public health hazards.

11. Major problem is drainage congestion, less cleaning, drains are filled with solid waste

12. The causes of water logging problem is mainly the inadequate drainage network, seasonal submergence, clogging due to garbage dumping

13. Special safety measures should be taken to avoid land subsidence due to heavy construction activities

14. Traffic management is important

15. During construction period public safety and workers' safety is important

16. Participants suggested signage (speed limits, warnings etc.), pedestrian crossings in front of social institutions and to ensure that there are footpaths along the road

17. The proposed road and drain construction subproject do not pass any protected or ecological critical area.

18. They have suggested that, dust suppression, noise mitigation and road safety should be considered.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From over headed analysis it is seems that, the subproject can cause impacts only during the construction phase due to various activities involved during the construction. However, strict adherence to various mitigation measures as identified under the EMP, strengthened by adequate environmental monitoring and auditing, and good construction practices will go a long way in effectively reducing the impacts to a negligible level.

It is clear from the objectives of the subproject that it will have significant positive impacts since it will:

1. Provide new smooth and potholes free road, thus developed communication system will directly influence the growth of economy of the subproject area as well as reduce the traffic congestion.
2. Ensure complete drainage network, so water logging problem in the subproject area will be minimized.

Thus it can be concluded that, the proposed subproject is environmentally acceptable and will bring economic, social and environmental benefits to the road users and local community in the area.

Recommendations

Recommendations made for the subproject development on the basis of EA study are given below:

1. Severe weather conditions would have an impact on the road and drain construction activities. The construction activities may even have to be stopped during these storms. So it is recommended that commencing construction in early winter season may help to take the benefit of full dry spell of the season

2. Proposed environment management plan should be implemented strictly both during operation and construction phase of the subproject

3. In order to enhance the occupational health and worker safety during the construction period, construction equipment would have to be kept in good order.

4. Adequate safety measures should be taken and safety related equipment including personal protective and safety equipment (PPE), etc. must be provided in order to reduce the potential for accidents.

5. Compensatory plantation should be carried out for trees to be fell for off-site development minimum in ratio of 1:5

6. Suggestions & requests made by public for water supply and employment shall be taken into consideration.

7. Proper training of maintaining environment, health and safety should be given to subproject management unit in both construction an operation phase.

8. Environmental monitoring should be conducted as proposed in environment management plan.

APPENDIX

Appendix 1: List of the Participants

Attendance of Local Participants in the Screening Exercise
Local Stakeholders, Community Members and WLCC/CBO.

Name of Subproject's: Road (RCC & BC) & Pipe drain.

Package: /2017-2018

Name of ULB : Dhamrai   Upazila: Dhamrai

District : Dhaka :   Date : 27/07/2018

SL#	Name	Gender	Social Status	Contact Number	Signature
01	MD. Nurul islam	Male.	Businessman	01871104914	[illegible]
02	Rupa Rani	Female	H/W	01677569930	[illegible]
03.	Shompa Rani	"	H/w	01884374495	[illegible]
04	Montu Roybarshi	male	Butchers	01943349657	[illegible]
05	Montu	male	"	01711023273	[illegible]
06	Radheshamp Pal.	"	"	01915366048	[illegible]
07	Abul Hossain	"	"	01915746835	[illegible]
08	Nikhal bank	"	"	[illegible]	[illegible]
09.	Abul Hossain	"	"	01724286132	[illegible]
10.	Rejaul karim	"	"	01921645221	[illegible]
11.	Shaomin Akter	Female	Student H/W	01932900039	[illegible]
12.	kabir	Male.	Business.	01731800358	Kabir
13.	Md. Abul Basar	Male	"	01714243475	[illegible]
14.	Rozi	female	H/W	01918227443	[illegible]
15.	Alek Mia.	Male	Business	01724209876	[illegible]

Ruhul Amin Akanda
Sub-Asst. Engineer
Dhamrai Pourashava
Dhaka

আলহাজ্ব গোলাম কবির,
মেয়র
ধামরাই পৌরসভা
ধামরাই, ঢাকা।

Attendance of Local Participants in the Screening Exercise
Local Stakeholders, Community Members and WLCC/CBO.

Name of Subproject's: RCC Road, BC road & RCC Pavement.

Package: /2017-2018

Name of ULB : Dhamrai Upazila: Dhamrai

District : Dhaka. Date : 27/07/2018.

SL#	Name	Gender	Social Status	Contact Number	Signature
16.	Noormahar	Female	H/W	01923694468	নুরমাহার
17.	Taleb	Male.	Business.	01956120447	তালেব
18.	Sharmin	Female	H/W	01985822119	শারমিন
19.	Shathi	"	H/W	01943558648	শাথী
20	Soukana	"	H/W	01943963436	সুফানা
21	Abu Bakkar	Male	Service	01933858229	আবুবক্কর
22	Md. Sultan	Male	Farmer	01932796716	সুলতান
23.	Sonia	Female	H/O	01755977590	সোনিয়া
24	Fatema	Female	H/O	01855490303	ফাতেমা
25	Temiya	F	"	01959103893	তানিয়া
26.	Abdur Razak	M	Business	01926835772	আব্দুর রাজ্জাক
27.	Kamal	F	Farmer	01781233528	কামাল
28	তালিমা	F	H/O	01876020608	তানিয়া
29.	আরিফ	M	Bus:	01913697302	আরিফ
30.	মো: বাবলু	F	Bus:	01839123098	বাবলু

শিরিন আক্তার
সহকারী মেয়র
ও কাউন্সিলর ৪,৫ ও ১১ নং ওয়ার্ড
ধামরাই, পৌরসভা ঢাকা
27/7

শিরিন আক্তার
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ধামরাই, ঢাকা।

27.07.18

উপ-সহকারী প্রকৌশলী
ধামরাই পৌরসভা
ধামরাই, ঢাকা।

Abdul Amin Akanda
Sub-Asst. Engineer
Dhamrai Pourashava
Dhaka

২৭/৭/১৮

আলহাজ্ব গোলাম কবির
মেয়র
ধামরাই পৌরসভা
ধামরাই, ঢাকা।

Attendance of Local Participants in the Screening Exercise
Local Stakeholders, Community Members and WLCC/CBO.

Name of Subproject's: BC/RCC Road & RCC repair

Package: /2017-2018 W-

Name of ULB : Dhamrai Upazila: Dhamrai

District : Dhaka. Date : 27/07/2018.

SL#	Name	Gender	Social Status	Contact Number	Signature
31	Hasan Mahmud	Male	Business	01681142508	
32	~~Md. Anuja~~ Rohima	Femal	~~Fem~~ H/w	~~01868254811~~ 01977567728	
33	Nosunnahar	"	H/w	01868254811	
34	Asma begum	Femal	H/o	01720291809	
35	Saleha begum	Femal	H/o	01857387527	
36	Lota	Femal	H/o	01932789790	
37	Mashuda	Femal	H/o	01771297060	
38	Shurica begum	Femal	H/o	01967918031	
39	Rashida	Femal	H/o	0	
40	Salina begum	Femal	H/o		
41	Meggun begum	Femal	H/o		
42	Rohsonara	Femal	H/o		
43	Shokina begum	Femal	H/o		
44	Shirily begum	Femal	H/o	01922995480	
45	Shimul	Femal	H/o		

সহকারী প্রকৌশলী
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