Initial Environmental Examination

Document Stage: Draft
Project Number: 39295-038
October 2017

BAN: Third Urban Governance and Infrastructure Improvement (Sector) Project – Additional Financing – Mymensingh Pourashava Roads and Drains Improvement Sub-project

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Prepared by the Local Government Engineering Department, Government of Bangladesh for the Asian Development Bank.

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Prepared for the Local Government Engineering Department (LGED)
Government of Bangladesh and for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of October 2017)

Currency Unit=BDT

BDT1.00=$0.0125

$1.00=BDT79.50

ABRREVIATIONS

ADB	–	Asian Development Bank
AM	–	Accountability Mechanism
AP	–	Affected Person
BBS	_	Bangladesh Bureau of Statistics
BDT	_	Bangladesh Taka
BIWTA	–	Bangladesh Inland Water Transport Agency
BMD	–	Bangladesh Meteorological Department
BNBC	–	Bangladesh National Building Code
BOD	–	Biochemical Oxygen Demand
BOD_5	–	5-day Biochemical Oxygen Demand
BSCIC	–	Bangladesh Small and Cottage Industries Corporation
BWDB	–	Bangladesh Water Development Board
CC	–	Cement Concrete
CCA	–	Climate Change Adaptation
COD	–	Chemical Oxygen Demand
CRO	–	Complaint Receiving Officer
dB	–	Decibel
DFR	–	Draft Final Report
DO	–	Dissolved Oxygen
DoE	–	Department of Environment
DPHE	–	Department of Public Health Engineering
EA	–	Environmental Assessment
EARF	–	Environmental Assessment and Review Framework
ECA	–	Environmental Conservation Act
ECC	–	Environmental Clearance Certificate
ECR	–	Environmental Conservation Rules
EIA	–	Environmental Impact Assessment
EM&MP	–	Environmental Management & Monitoring Plan
EMP	–	Environmental Management Plan
ETP	–	Effluent Treatment Plant
FGD	–	Focus Group Discussion
GHG	–	Green House Gas
GoB	–	Government of Bangladesh
GRC	–	Grievance Redressal Cell
GRM	–	Grievance Redress Mechanism
H&S	–	Health and Safety
IEE	–	Initial Environmental Examination
IUCN	–	International Union for Conservation of Nature
LCC	–	Location Clearance Certificate
LGD	–	Local Government Division
LGED	–	Local Government Engineering Department
MDSC	–	Management Design and Supervision Consultant
MLGRDC	–	Ministry of Local Government, Rural Development, and Cooperatives
NEMAP	–	National Environmental Management Action Plan
NGO	–	Non-Government Organisation

O&M	–	Operations and Maintenance
OHS	–	Occupational Health and Safety
OHT	–	Over Head Tank
PAP	–	Project Affected Persons
PIU	–	Project Implementation Unit
PM	–	Particulate Matter
PMU	–	Project Management Unit
PPTA	–	Project Preparatory Technical Assistance
RAP	–	Resettlement Action Plan
RCC	–	Reinforced Cement Concrete
REA	–	Rapid Environmental Assessment
ROW	–	Right of Way
RP	–	Resettlement Plan
RUCCA	–	Rapid Urban and Climate Change Assessment Reports
SC	–	Supervision Consultants
SPM	–	Suspended Particulate Matter
SPS	–	Safeguard Policy Statement
SWM	–	Solid Waste Management
SWTP	–	Surface Water Treatment Plant
TC	–	Total Coliform
TDS	–	Total Dissolved Solids
ToR	–	Terms of Reference
TSS	–	Total Suspended Solids
UNESCO	–	United Nations Educational, Scientific and Cultural Organization
USEPA	–	United States Environmental Protection Agency
WHO	–	World Health Organization
WLCC	–	Ward Level Coordination Committee
WTP	–	Water Treatment Plant

GLOSSARY OF BANGLADESHI TERMS

Beel	–	Permanent water body
Bosti	–	Slum
Charra	–	Natural drainage channel
Crore	–	10 million (= 100 lakh)
Ghat	–	Boat landing station
Hartal	–	nationwide strike/demonstration called by opposition parties
Khal	–	drainage ditch/canal
Khas,khash	–	belongs to government (e.g. land)
katcha	–	poor quality, poorly built
Lakepar	–	Side of Lake
lakh, lac	–	00,000
Mahalla	–	Community area
madrasha	–	Islamic college
mouza	–	government-recognized land area
parishad	–	authority (Pourashava)
Pourashava	–	municipality
Pucca	–	good quality, well built, solid
thana	–	police station
upazila	–	sub district

WEIGHTS AND MEASURES

ha	–	hectare
km	–	kilometer
m	–	meter
mm	–	millimeter
km/h	–	kilometer per hour

NOTES

(i) In this report, "$" refers to US dollars.
(ii) —BDT refers to Bangladeshi Taka
(iii) The fiscal year of the Government of Bangladesh and its agencies ends on 30 June. “FY” before a calendar year denotes the year in which the fiscal year ends e.g., FY2017 ends on 30 June 2017.

This initial environmental examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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PREFACE

The premises of this Initial Environmental Examination Report (IEE) are the MDS Consultant services presentation of an analysis of data and conclusions, together with its appendices.

While MDS Consultants have been deputed to assist the Pourashava / Executing Agency (EA) for the preparation of the IEE, the responsibility and ownership of the IEE rest with the EA.

The key elements of the IEE Report focus on: Assessment of Compliance Guidelines of Environment Safeguards according to ADB and GoB policy.

DISCLAIMER

This Initial Environmental Examination (IEE) Report of Additional Financing *Mymensingh Pourashava under Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III) has been prepared under the guidance of Team Leader and Deputy Team Leader of MDS consultant. All the data used to prepare this Initial Environmental Examination (IEE) Report have been collected from the Pourashava. Some of the information’s have also been collected from the Pourashava personnel over telephone. Moreover some information’s have been collected by the respective experts of MDS consultant through intensive field visit which have been used in writing this report. If any information or data or any other things coincide with other project documents that are beyond our knowledge and fully coincidental event and we express apology for that.*

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EXECUTIVE SUMMARY

1. After the successful implementation of the first and second Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-1 and UGIIP-2)[1] in 78 Pourashavas (municipalities), Local Government Engineering Department (LGED) with the financial assistance of Asian Development Bank (ADB) have been implementing UGIIP-3 in selected 30 Pourashavas over a period of six years (2014 to 2020). The on-going UGIIP-3 (current project) supports strengthening of urban governance and improvement of urban infrastructure and service delivery in Pourashavas by providing investment support to Pourashavas based on their governance performance.[2] The additional financing will expand the current project and invest in (i) additional priority infrastructure and governance improvement in Pourashavas under the current project, and (ii) infrastructure and governance improvement in five new Pourashavas.[3] With additional financing the project implementation period is proposed to be extended for one year to 2021.

2. **Sub-project Scope**: The Mymensingh Pourashava Road and Drain sub-projects is seven of the sub-projects proposed under the additional financing (AF) of UGIIP-3. The sub-project includes construction and improvement of 21 roads comprising of 25.308 km length and 10 drains involving of 27.287 km length.

3. Considering all the above following steps were adopted by the MDS Consultant's team for Environmental Safeguard compliance –

i. Review of the available Environmental safeguard documents and categorization of the project as per ADB and GOB guidelines.
ii. Separate Consultation with MDS team members, PMU staffs and PIU staffs to explain the importance of the safeguards.
iii. Separate Workshop on safeguard policies for all Municipal Engineers, EE and AE of all the Pourashavas under UGIIP-III.
iv. Screening and re-categorization of each and every scheme with the help of REA checklist transect walk and public consultation for individual schemes during visit to individual project scheme sites.
v. Preparation of sector Sub-project IEE and EIA for each sector Sub-project for each Pourashava.
vi. Preparation of TOR for conduction of EIA to get environmental clearance from DOE, GOB for Red category projects.

4. **Screening and Categorization:** An environmental assessment of the sub-project is required as per ADB's Safeguard Policy Statement (SPS, 2009). An environmental assessment using ADB's Rapid Environmental Assessment (REA) checklist for roads and drains (**Appendix 1**) was conducted and results of the assessment show that the sub-project is unlikely to cause significant adverse impacts. The Mymensingh Pourashava roads and drains sub-project is classified as Environmental Category B as per ADB SPS as no significant impacts are envisioned. This Initial Environmental Examination (IEE) has been prepared in accordance with ADB SPS requirements for environment category B projects and provides mitigation and monitoring measures to ensure no significant impacts as a result of the sub-project.

[1]With limited but effective incentives for Pourashavas to improve their governance, the first UGIIP introduced a performance-based fund allocation strategy through the urban governance improvement action plan (UGIAP) ensuring governance reforms while creating tangible development impacts in an integrated manner.
[2]Under UGIIP-3 the UGIAP covers the areas (i) citizen awareness and participation, (ii) urban planning, (iii) gender equality and social inclusion, (iv)local resource mobilization, (v) financial management and accountability, (vi) administrative transparency, and (vii) keeping essential Pourashava services functional.
[3]Pourashavas to be included under additional financing are Cox's Bazar, Faridpur, Gopalganj, Kushtia, and Mymensingh.

5. This is the draft Initial Environmental Examination (IEE) based on the feasibility study, detail engineering designs prepared during project preparation, detailed field investigation by the existing safeguard team of MDS Consultant and information collecting from the Mymensingh Pourashava. This IEE may be updated during implementation stage to reflect any necessary changes in the designs.

6. As per Government of Bangladesh Environment Conservation Act, 1995 (ECA, 1995) and Environment Conservation Rules (ECR, 1997), Mymensingh Pourashava road and drain sub-project is categorized as “orange B” and location clearance certificate (LCC) and environmental clearance certificate (ECC) must be obtained from the DoE..

7. DoE has issued an Environmental Clearance Certificate (ECC) for Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III) vide letter DoE/Clearance/5444/2015/187 dated 02.05.2016. Renewal letter of the above ECC is obtained from DoE vide their memo no. DoE/Clearance/5444/2015/372 dated 03.08.2017. Necessary steps are being taken for ECC to include the 5 Pourashvas.

8. **Implementation Arrangements:** LGED and Department of Public Health Engineering (DPHE), both under the Local Government Division (LGD) of the Ministry of Local Government, Rural Development and Cooperatives (MLGRDC), are the executing agencies (EA). LGED is responsible for providing support and guidance to Pourashavas concerning performance criteria and Pourashavas development planning. DPHE will provide support in water supply and schemes. Implementation activities will be overseen by a project management unit (PMU). Participating Pourashavas are the implementing agencies (IA), with a project implementation unit (PIU) within the Pourashava structure. Consultant teams, composed of Management Design and Supervision Consultants, and Governance Improvement and Capacity Development Consultants, are responsible for (i) detailed engineering design, contract documents preparation and safeguards facilitation; (ii) project management and administration support; (iii) assistance in supervising construction; (iii) strengthening of local governance, conducting required studies/surveys and (iv) awareness raising on behavioral change in water, sanitation and solid waste management activities.

9. **Description of the Environment:** Sub-project components are located in Mymensingh urban area or in its immediate surroundings which were developed into urban land uses. The sub-project sites are located in existing right of ways (RoWs) and government-owned land. There are no protected areas, wetlands, mangroves, or estuaries in or near the sub-project location. There are no forest areas within or near Mymensingh town.

10. **Environmental Management:** An environmental management plan (EMP) is included as part of this IEE, which includes (i) mitigation measures for environmental impacts during implementation; (ii) an environmental monitoring program and the responsible entities for mitigating, monitoring, and reporting; (iii) public consultation and information disclosure; and (iv) grievance redress mechanism. A number of impacts and their significance were reduced through mitigation measures in the preliminary design stage. The EMP will form part of the civil work bidding and contract documents.

11. Locations and siting of the proposed infrastructures were considered to further reduce impacts. The concepts considered in detailed design of the Mymensingh Pourashava roads and drains sub-project are: (i) locating facilities on government-owned land to avoid the need for land acquisition and relocation of people; (ii) prioritizing rehabilitation over new construction using public right of ways (RoWs) and taking all possible measures in design and selection of site or alignment to avoid resettlement impacts; (iii) avoiding where possible locations that will result in destruction/disturbance to historical and cultural places/values; (iv) avoiding tree-cutting where possible; (v) ensuring all planning and design interventions and decisions are made in consultation with local communities and reflecting inputs from public consultation and disclosure for site selection.

12. MDS Consultant design team integrate a number of measures, both structural and non-structural, to mainstream climate resilience into the Mymensingh Pourashava roads and drains sub-project, including: (i) structural protection of facilities of future floods; (ii) location of components where there is no risk of flooding or other hazards; and promote more efficient use of water by reducing losses and wastage to counter increased demands due to higher temperatures. As a result, some measures have already been included in the sub-project designs. This means that the impacts and their significance have already been reduced.

13. During the construction phase, impacts mainly arise from (i) disturbance of residents, businesses, and traffic; (ii) need to manage excess construction materials and spoils; and (iii) community and workers H & S. These are common impacts of construction in urban areas, and there are well developed methods for their mitigation. Measures such as conducting work in lean season and minimizing inconvenience by best construction methods will be employed. Traffic management will be necessary during excavation works on busy roads. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

14. Mitigation measures have been developed to reduce all negative impacts to acceptable levels and will be assured through a program of environmental monitoring. The monitoring program will include observations on and off-site, document checks and interviews with workers and beneficiaries. The PMU will submit semi-annual monitoring reports to ADB which will include a detailed review of EMP implementation, including corrective actions taken.

15. Possible impacts of climate change in Mymensingh towns are mainly associated with rainfall-driven drainage congestion and river erosion. The water logging occur during rainy season. The IEE includes detail design considerations for mitigation, especially design material, method of construction should be taken appropriate to make the sub-project climate-proof and disaster resilient.

16. Key construction phase impacts identified and addressed in the IEE include (i) air, noise and vibration impacts due to construction vehicles, equipment and machinery in the vicinity of construction site and inhabited sections; (ii) management of spoils due to excavation for distribution network and civil works; (iii) safety measures during construction; (iv) traffic diversions; (v) management of sites temporarily used for construction activities, including borrow areas, construction camps, etc. and rehabilitation of the sites after completion of temporary use; (vi) impacts on community health and safety hazards posed to the public, specifically in inhabited areas.

17. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

18. **Consultation, Disclosure and Grievance Redress:** The stakeholders were involved in developing the IEE through discussions on-site and public consultation, after which views expressed were incorporated into the IEE and in the planning and development of the sub-project. The IEE will be made available at public locations in the Mymensingh Pourashava and will be disclosed to a wider audience via the ADB and LGED project websites. The consultation process will be continued and expanded during project implementation to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation. A grievance redress mechanism is described within the IEE to ensure any public grievances are addressed quickly.

19. **Monitoring and Reporting:** The PMU, PIU (Mymensingh Pourashava) and Management Design and Supervision Consultants (MDSC) will be responsible for safeguard monitoring. The MDS Consultant will submit monthly monitoring reports to PMU and the PMU

will send semi-annual monitoring reports to ADB. ADB will post the semi-annual environmental monitoring reports on its website as part of its disclosure requirements.

20. **Conclusion and Recommendation:** The citizens of Mymensingh Pourashava will be the major beneficiaries of this sub-project. The proposed sub-project is unlikely to cause significant adverse impacts and net environmental benefits to citizens of Mymensingh will be positive. The potential impacts that are associated with design, construction and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures.

21. Based on the findings of the IEE, there are no significant impacts and the sub-project has been classification as Category “B” is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS, (2009).

I. INTRODUCTION

1. After the successful implementation of the first and second Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-1 and UGIIP-2)[4] in 78 Pourashavas (municipalities), Local Government Engineering Department (LGED) with the financial assistance of Asian Development Bank (ADB) have been implementing UGIIP-3 in selected 30 Pourashavas over a period of six years (2014 to 2020). The on-going UGIIP-3 (current project) supports strengthening of urban governance and improvement of urban infrastructure and service delivery in Pourashavas by providing investment support to Pourashavas based on their governance performance.[5] The additional financing will expand the current project and invest in (i) additional priority infrastructure and governance improvement in Pourashavas under the current project, and (ii) infrastructure and governance improvement in five new Pourashavas.[6] With additional financing the project implementation period is proposed to be extended for one year to 2021.

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A. Purpose of the Report

3. Bangladesh has a population of approximately 162 million and has experienced increased rapid urbanization with the growth of many secondary towns over the last three decades. About 28 per cent of the total population now lives in urban areas where the population growth rate is much higher than the overall national growth rate. With the present high increase-trend in urban population, it is justifiably anticipated that by year-2020, such populace will constitute nearly 40 percent of the national aggregate. One principal cause of such rapid growth is the presence of better opportunities spanning economic, communication, education, health and other social aspects in the urban areas. It is worth noting that by one account, in countries of Bangladesh's standing, around 55-60% of a country's aggregate economic activities takes place within the urban confines. Two sets of Pourashavas are included in the project. The first set is 31 pre-selected target Pourashavas are marked as Window-A, in which full set of support will be provided under the project. The window-A Pourashavas are:

- Three (3) sample PSs: 1) Naogaon 2) Magura and 3) Lalmonirhat
- Seven (7) non-sample priority PSs: 4) Kishoreganj, 5) Muktagacha, 6) Netrokona, 7) Sherpur, 8) Bera, 9) Charghat and 10) Rajbari.

[4]With limited but effective incentives for Pourashavas to improve their governance, the first UGIIP introduced a performance-based fund allocation strategy through the urban governance improvement action plan (UGIAP) ensuring governance reforms while creating tangible development impacts in an integrated manner.

[5]Under UGIIP-3 the UGIAP covers the areas (i) citizen awareness and participation, (ii) urban planning, (iii) gender equality and social inclusion, (iv) local resource mobilization, (v) financial management and accountability, (vi) administrative transparency, and (vii) keeping essential Pourashava services functional.

[6]Pourashavas to be included under additional financing are Cox's Bazar, Faridpur, Gopalganj, Kushtia, and Mymensingh.

- The remaining twenty one PSs (target PSs): 11) Chapai Nawabganj, 12) Habiganj, 13) Moulvibazar, 14) Laxmipur, 15) Chhatak, 16) Joypurhat, 17) Laksam, 18) Shahjadpur 19) Rangamati, 20) Ishwardi, 21) Meherpur, 22) Nabinagar, 23) Panchagarh, 24) Jessore, 25) Bandarban, 26) Khagrachari, 27) Kotalipara, 28) Nilphamari, 29) Chuadanga 30) Benapole and 31) Tungipara.

4. On the other hand 20 Pourashavas selected based on the evaluation of their UGIAP performance are termed as Window-B. The project would allow prescribed allocation for infrastructure development from the project fund for 2016-2017.

- This Window-B additional municipalities are: 1) Singra, 2) Munshiganj, 3) Jamalpur, 4) Shibchar, 5) Tarabo, 6) Chowmohoni, 7) Savar, 8) Chandpur, 9) Shahrasti,10) Basurhat, 11) Patuakhali, 12) Borhanuddin, 13) Jhenaidaha, 14) Belkuchi, 15) Keshabpur, 16) Narail, 17) Belkuchi, 18) Taherpur, 19) Bonpara, 20) Kakonhat.

5. The Pourashavas to be included under (AF) additional financing are Cox's Bazar, Faridpur, Gopalganj, Kushtia, and **Mymensingh**.

6. **Sub-project Scope**: The Mymensingh Pourashava roads and drains sub-project is seven of the sub-projects proposed under the (AF) additional financing of UGIIP-3. The sub-project includes construction and improvement of 21 roads comprising of 25.308 km length and 10 drains involving of 27.287 km length.

7. **Screening and Categorization:** An environmental assessment of the sub-project is required per ADB's Safeguard Policy Statement (SPS, 2009). An environmental assessment using ADB's Rapid Environmental Assessment (REA) checklist for roads and drains (**Appendix 1**) was conducted and results of the assessment show that the sub-project is unlikely to cause significant adverse impacts. The Mymensingh Pourashava roads and drains sub-project is classified as Environmental Category B as per ADB SPS as no significant impacts are envisioned. This Initial Environmental Examination (IEE) has been prepared in accordance with ADB SPS requirements for environment category B projects and provides mitigation and monitoring measures to ensure no significant impacts as a result of the sub-project.

8. This is the draft Initial Environmental Examination (IEE) based on the feasibility study, detail engineering designs prepared during project preparation, detailed field investigation by the existing safeguard team of MDSC and information collecting from the Mymensingh Pourashava. This IEE may be updated during implementation stage to reflect any necessary changes in the designs.

9. **The Project Log Frame gives the project goal as:** Sustained improvements in the urban environment and quality of life in participating Pourashavas by 2021. The project purpose is: expanded access to and usage of urban infrastructure and services, and improvement in urban governance in all participating municipalities by 2021. The objectively verifiable indicators are:

- Improved citizen perception of the urban environment, municipal services and quality of life.
- Improved quality and standard of urban infrastructure and municipal services.

10. UGIIP-III represents the continued development of the ADB approach to urban development in Bangladesh. It is a valuable model for comparison with other approaches and for replication by other agencies and in other countries. UGIIP-III has broad goals such as developing infrastructure facilities and improving services, urban governance, accountability, the urban environment and quality of life. UGIIP-III will improve infrastructure through roads, drainage, water supply, sanitation, public toilet, slaughter house, solid waste management and municipal facilities sub-projects.

B. Project Types Identified for Implementation

11. Infrastructure sub-projects proposed under UGIIP-III encompass a variety of types of urban infrastructure and services including those shown in Table 1.

Table 1: Sub-projects and Components Proposed in UGIIP-III

Water Supply	Source Augmentation	Deep Tube Wells (Hand Pump)
		Deep Tube Wells (Production Pump
	Distribution	Piping, Valves and Fittings
	Treatment	Water Treatment (Iron and Arsenic Removal)
	Storage	Elevated Tank
	System improvement	Repair/Replacement of Lines
		Bulk Water Meters
		Domestic water meter
Sanitation	Community Facility	Community Toilets
	Public Facility	Public Toilets
	Septic Tank	Vacuum Units
Solid Waste Management	Disposal / Waste Collection	Disposal Alternatives
		Neighbourhood Collection
	Waste Transfer	Community Storage Bins
		Dump Trucks/Rickshaw
	Waste Disposal	Transfer Station
		Access Road to Landfill
		Landfill Facility
		Treatment/Composting
Urban Drainage	Roadway Drainage	Roadside Drains
	Area Drainage	Outfall
		Main Drain
		Secondary and Tertiary Drains
		Retention Pond
Urban Transport & communication	Roadway Provision	Bridge Replacement Drainage/Culverts
		Roadway Widening/Resurfacing
Slum	System Improvement	Repair/Replacement of Lines
	Community Facility	Community Toilets
	Septic Tank	Vacuum Units
Public use facilities	Municipal Facilities	Market/Community Centres
		Municipal and Kitchen Markets
		Improvement of Slaughterhouses
		Bus and Truck Terminals

C. Potential Impacts from Activities

12. A Sector Initial Environmental Examination (SIEE) has been conducted for the overall UGIIP-III project during the present implementation of the project and sub-project IEEs is being prepared for each of the Pourashava sub-projects identified during the implementation of the project. The SIEE sought to identify any regional and cumulative impacts that may result from the sector intervention. Cumulative impacts were all in the social or human development sphere of the environment and all were found to be positive. No direct cumulative or regional potential negative impact of the project activities on environmental resources and values was detected.

13. From the variety of sub-projects undertaken under UGIIP-III, potential environmental impacts of a local nature can be expected and cover a wide spectrum. In general these were determined not to be significant or irreversible, and precautionary measures have been taken (and incorporated into guidance, management plans and implementation frameworks) to avoid or reduce them. Even the criteria for selection or exclusion of sub-projects address potential significant or irreversible negative environmental impacts.

D. Extent of the IEE Study

14. Government of Bangladesh (GoB) law and ADB policy require that the environmental impacts of development projects are identified and assessed as part of the planning and design process, and that action is taken to reduce those impacts to acceptable levels. This is done through the environmental assessment (EnA) process, which has become an integral part of lending operations and project development and implementation.

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMWORK

A. ADB Policy

15. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires environmental assessment of all ADB investments.

16. **Screening and categorization:** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts and are assigned to one of the following four categories:

i. **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.
ii. **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
iii. **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
iv. **Category FI.** Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all projects will result in insignificant impacts.

17. **Environmental Management Plan:** An EMP, which addresses the potential impacts and risks identified by the environmental assessment, shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the project's impact and risks.

18. **Public disclosure:** ADB will post the following safeguard documents on its website. Relevant information from these documents will also be disclosed in local communities in a form and language understandable and accessible to the public.

(i) final or updated IEE upon receipt; and
(ii) environmental monitoring reports submitted by the PMU during project implementation upon receipt.

19. **Pollution Prevention and Control Technologies:** During the design, construction, and operation of the project the PMU and PIUs will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When Government of Bangladesh regulations differ from these levels and measures, the PMU and PIUs will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the PMU and PIUs will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Table 2: Applicable WHO Ambient Air Quality Guidelines

Table 1.1.1: WHO Ambient Air Quality Guidelines[7,8]		
	Averaging Period	Guideline value in µg/m³
Sulfur dioxide (SO_2)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)
	10 minute	500 (guideline)
Nitrogen dioxide (NO_2)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter PM_{10}	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter $PM_{2.5}$	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)

Table 3: World Bank Group's Noise Level Guidelines

Table 1.7.1- Noise Level Guidelines[54]		
	One Hour L_{Aeq} (dBA)	
Receptor	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational[55]	55	45
Industrial; commercial	70	70

B. GoB National Policy

20. Implementation of all sub-projects will be governed by the environmental acts, rules, policies, and regulations of the Government of Bangladesh. These regulations impose restrictions on the activities to minimize/mitigate likely impacts on the environment. Many of these are cross-sectorial and several of them are directly related to environmental issues. The most important of these are the Environment Conservation Act, 1995 (ECA, 1995) and the Environment Conservation Rules (ECR, 1997).

21. Table 4 presents specific requirements for the Mymensingh Pourashava roads and drains sub-project. Provides the environmental standards for air, surface water, groundwater, drinking water, emissions, noise and vehicular exhaust.

Table 4: Applicable Government of Bangladesh Environmental Legislations

Legislation	Requirements for the Project	Relevance
Environmental Conservation Act of 1995 and amendments in 2000, 2002 and 2010	• Restriction on operation and process, which can be continued or cannot be initiated in the ecologically critical areas • Regulation on vehicles emitting smoke harmful to the environment • Remedial measures for injuries to ecosystems • Standards for quality of air, water, noise and soil for different areas for various purposes and limits for discharging and emitting waste • Environmental guidelines	The provisions of the act apply to the entire sub-project in the construction and operation and maintenance (O & M) phases.
Environmental Conservation Rules of 1997 and amendments in 2002 and 2003	• Environmental clearances • Compliance to environmental quality standards	The sub-project is categorized as Orange-B and requires location clearance certificate (LCC) and environmental clearance certificate (ECC). All requisite clearances from DoE shall be obtained prior to commencement of civil works.
Forest Act of 1927 and amendments (2000)	• Clearance for any felling, extraction, and transport of forest produce	Considered in sub-project preparation and implementation.
Bangladesh Climate Change Strategy and Action Plan of 2009	• Ensure existing assets is put in place to deal with the likely impacts of climate change. • Enhance the capacity government ministries, civil society and private sector to meet the challenge of climate change	Considered in sub-project preparation and implementation.
Bangladesh Labor Law of 2006	• Compliance to the provisions on employment standards, occupational safety and health, welfare and social protection, labor relations and social dialogue, and enforcement • Prohibition of employment of children and adolescent	Considered in the EMP.

C. Government of Bangladesh Environmental Assessment Procedures

22. Under ECA, 1995 and ECR, 1997 industrial units and projects are classified into four categories according to “their site and impact on the environment” and size of investment, and each category (Green, Orange-A, Orange-B and Red) requires a different level of environmental assessment as a prerequisite for the Department of Environment (DoE) in granting the LCC and ECC that allow the project to proceed.

23. As per Schedule 1 of ECA, 1995 Mymensingh Pourashava roads and drains sub-project is likely to be classified as Orange-B category (Table 5). DoE has issued an Environmental Clearance Certificate (ECC) for Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III) up to Orange B vide letter DoE/Clearance/5444/2015/187 dated 02.05.2016. Renewal letter of the above ECC is obtained from DoE vide their memo no. DoE/Clearance/5444/2015/372 dated 03.08.2017. As discussed with DoE, LCC is not required for ongoing UGIIP-III project. For an ECC amendment, submission of a Sector IEE is a pre-requisite. An IEE is under preparation for this additional Pourashavas. An application will then be submitted to DoE for amendment of ECC.

Table 5: Likely Government of Bangladesh Classification of Mymensingh Pourashava Roads & Drains sub-project

Subproject	Component	Equivalent in Schedule I of ECR 1997	DoE Classification
Improvement of Roads and Drains	Road provisions (include road rehabilitation/ construction, road, footpath, roadside drains, resurfacing, road signs, roar/pavement marking intersection, T-Junction, Sharp bend improvement & RCC drain construction)	Construction, re-construction and extension of drain, road (feeder road, local road and culvert)	Orange–B
	Cross drains	Construction of culvert (cross- drain/ box culvert)	Orange–B (because impacts likely to be similar to roads and bridges less than 100 m)

24. Rule 7 of the ECR, 1997 indicates that the application for ECC must be made to the relevant DoE Divisional Officer, and the application for Orange-B category projects will include the following:

i. Completed Application for ECC, and the appropriate fee;
ii. Report on the feasibility of the project;
iii. Report on the IEE for the project;
iv. Report on the environmental management plan (EMP);
v. No objection certificate from the local authority;
vi. Emergency plan relating to adverse environmental impact and plan for mitigation of the effect of pollution; and
vii. Outline of the relocation and rehabilitation plan (where applicable).

25. DoE has 30 days to respond to receipt of the ECC application for an Orange-B category project.

26. This IEE will serve the basis for the ECC application and will be supplemented to fulfill any additional government requirements.

D. Relevant Occupational Health and Safety Laws and Rules

27. The implementation of the sub-project shall comply with the relevant occupational health and safety Laws and Rules as shown in Table 6.

Table 6: Relevant Occupational Health and Safety Laws and Rules

Title of Laws and Rules	Descriptions
Social Security under the Act, 1923 and an amendment in 1980	According to the Act social impact assessment includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions.
Bangladesh Labor Law of 2006	-Compliance to the provisions on employment standards, occupational safety and health, welfare and social protection, labor relations and social dialogue, and enforcement - Prohibition of employment of children and adolescent
The Employer's Liability Act, 1938	The Act declares that the doctrine of common employment and of assumed risk shall not be raised as a defense in suits for damages in respect of employment injuries. Under the Maternity Benefit Act, 1939, the Maternity Benefit Act, 1950, the Mines Maternity Benefit Act, 1941, and finally the rules framed there under, female employees are entitled to various benefits for maternity, but in practice they enjoy leave of 6 weeks before and 6 weeks after delivery.

Public Health (Emergency Provisions) Ordinance, 1994	The ordinance calls for special provisions with regard to public health. Whereas an emergency has arisen, it is necessary to make special provision for preventing the spread of human disease, safeguarding public health and providing them adequate medical service and other services essential to the health of respective community and workers in particular during the construction related work.
The Employees State Insurance Act, 1948	It has to be noted that health, injury and sickness benefit should be paid to people, particularly respective workers at work place under the Act.
Bangladesh Factory Act, 1979	The Act requires every workplace including small or large scale construction where women are employed to have an arrangement of childcare services. Based on this Act and Labor Laws - medical facilities, first aid and accident and emergency arrangements are to be provided by the authority to the workers at workplaces.
Water Supply and Sewerage Authority Act, 1996	The Act specify WASA's responsibility to develop and manage water supply and sewerage systems for the public health and environmental conservation.

E. Conventions, Treaties and Protocols

28. Bangladesh has consented to be bound by the terms of some 21 of the 44 principal international conventions, treaties and protocols relating to the environment (Islam, 1996). Those with partial and indirect relevance to industrial projects are the Paris convention of 1972 concerning the protection of the World cultural and natural Heritage, Convention concerning safety in the use of chemicals at work, Geneva 1990, Biodiversity convention, Rio-de-Janeiro, 1992, Convention concerning occupational health services, Geneva 1985 etc.

III. DESCRIPTION OF THE SUB-PROJECTS

A. The Study Area

29. Mymensingh Pourashava is located in between 24°15' and 25°12' north latitudes and in between 90°04' and 90°49' east longitudes. It is bounded by Garo Hills and Meghalaya state of India on the north, Tangail and Gazipur district on the south, Netrokona and Kishoreganj districts on the east, Jamalpur and Sherpur in the west, which is connected to the old Brahmaputra River, and has a rich history of cultural heritage. Mymensingh Pourashava is located 120 km due north of Dhaka. It is well connected with a four-lane highway and railway with Dhaka and takes only 3 hours journey from Dhaka. The Pourashava covers an area of 21.73 sq.km. It consists of 21 wards. In 2011 the population of the Pourashava was 258,040 (BBS, 2011); the population density is 11,875 persons per km^2. In these areas, the major land uses comprise agriculture and residence. There is demand for expansion of all current land use, while the need for new exploitation is also emerging with a huge number of populations. The Pourashava under UGIIP-III map of the town is shown as Figure 1.

30. Mymensingh Pourashava is located on the south bank of the old Brahmaputra River. The land elevation along the river bank is high and not flooded by the river even at extreme flood periods. The land is slopes away from the river bank by about 4.5 m. The southern periphery is prone to flooding during normal floods. Of the municipality's land area, 87% is built-up and 13% still considered as undeveloped or agricultural land.

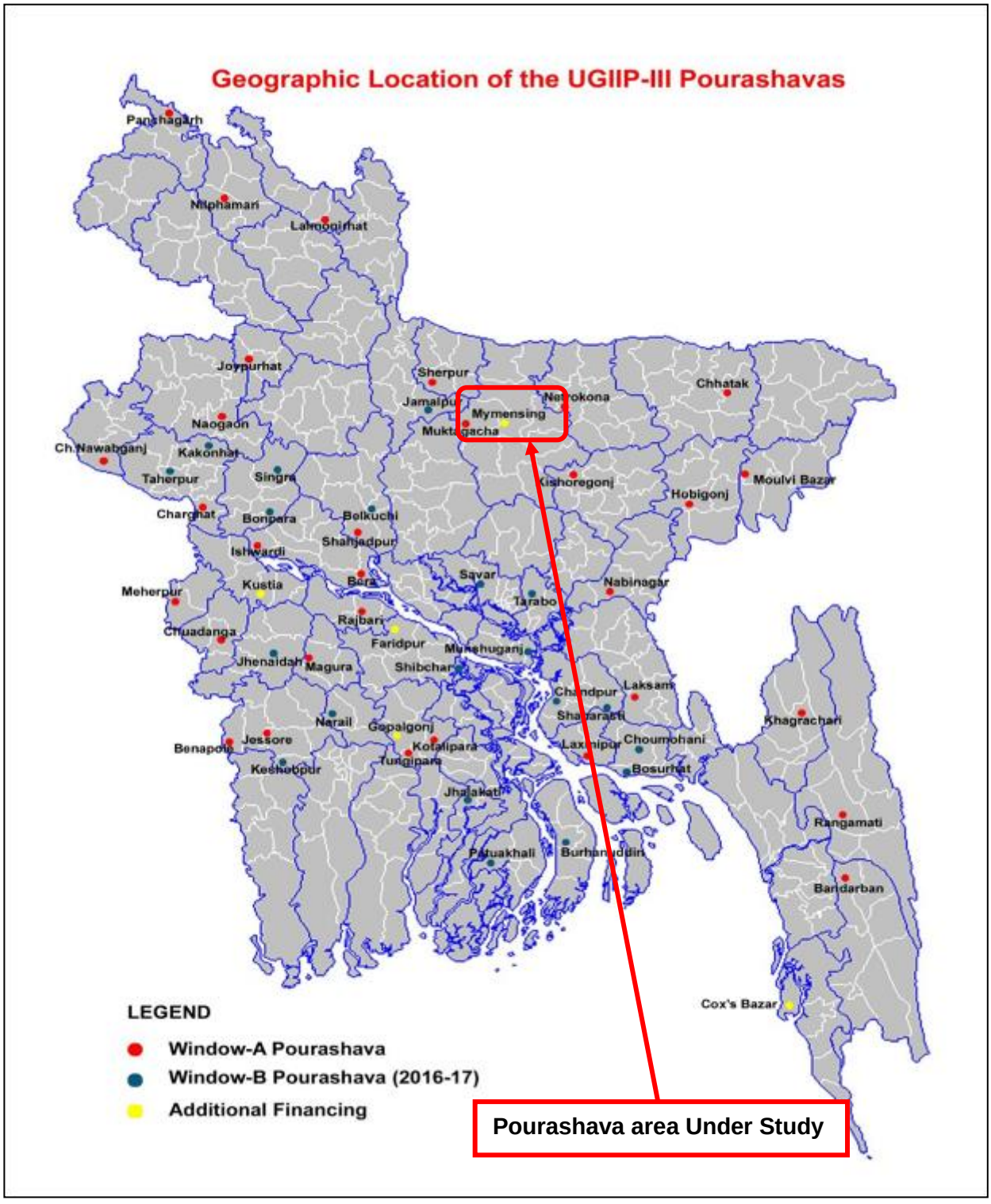


Figure 1: Pourashava under UGIIP–III

B. Existing Condition

31. There are 226.00 km of road, 139.95 km of drain and 3 bus stands and no truck terminals in Mymensingh Pourashava. This Pourashava experiences a high volume of traffic movement at most of the times. However, it was seen that the roads at most of the times do not experience prolonged traffic congestion. Normal vehicular traffic includes low number of

private cars, jeeps and micro-buses. Apart from these, other vehicles include bikes, motor bikes and a substantial number of battery-based auto-rickshaws. Also, trucks in large numbers move within the town for the transportation of construction materials and other goods. Categories/types of existing road and drain with details information with conditions are given in the Table 7.

Table 7: Existing Roads and Drains with details of Mymensingh Pourashava

Sl. No.	Road/Drain type	Length in km	Existing Condition
Road			
1.	BC Road	170.80	40% in bad condition
2.	HBB/BFS Road	14.30	70% in bad condition
4.	RCC/CC Road	10.385	30% in bad condition
7.	Earthen Road	31.80	80% in bad condition
	Total road=	**226.00**	Overall condition of the roads is not good
Drain			
1.	RCC/Brick Drain	78.90	40% in bad condition
3.	Earthen Drain	61.05	90% in bad condition
	Total drain=	**139.95**	Overall condition of the roads is not good

32. Existing roads are mainly black-topped (BT) asphalt roads with some concrete (bituminous carpeting [BC] and reinforced cement concreting [RCC]) roads in a few places for main roads, while minor roads may also be brick-on-edge soling, known locally as herring bone bond (HBB).

33. For routine maintenance of road, drain and other infrastructures (except for water supply system), the Pourashava does not have separate annual budget allocation. Mymensingh Pourashava recently conducted repair and maintenance of many roads. As a result, only a small numbers of roads and drains need to be repaired, and the construction of roadside drains in some cases. Existing damaged roads and drains are shown in the following Figure 2.

Figure 2: Existing damaged road and drain

C. Proposed Roads and Drains Components

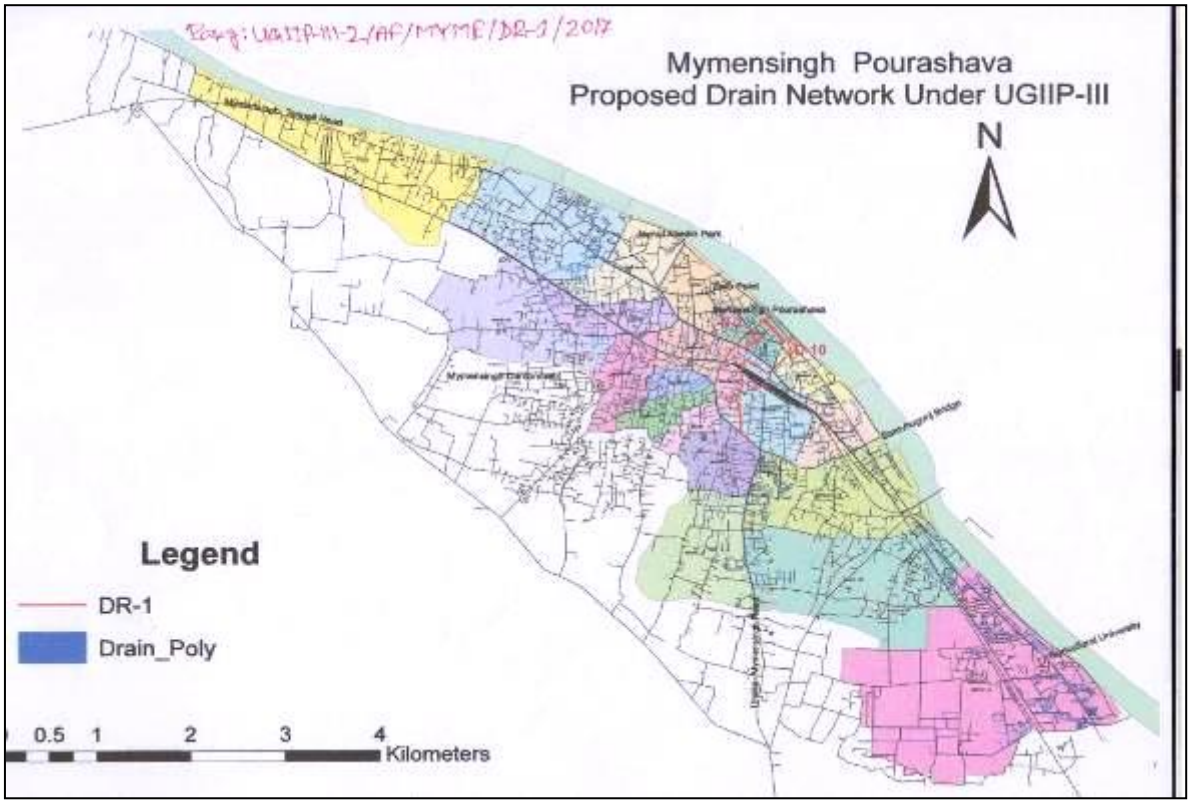
34. The Mymensingh Pourashava provided a long list of roads and drains schemes as a proposal for improvement under UGIIP-3 (AF). A reconnaissance survey with the assistance of Pourashava engineers was performed and an inventory with necessary works prepared for each road and drain, considering all issues and findings such as damage condition, type, formation level (rise), widening, shoulder/footpath, side protection works, side-drain, cross-drain/culvert, tree plantation, etc., with a view to perform detailed design and cost estimations.

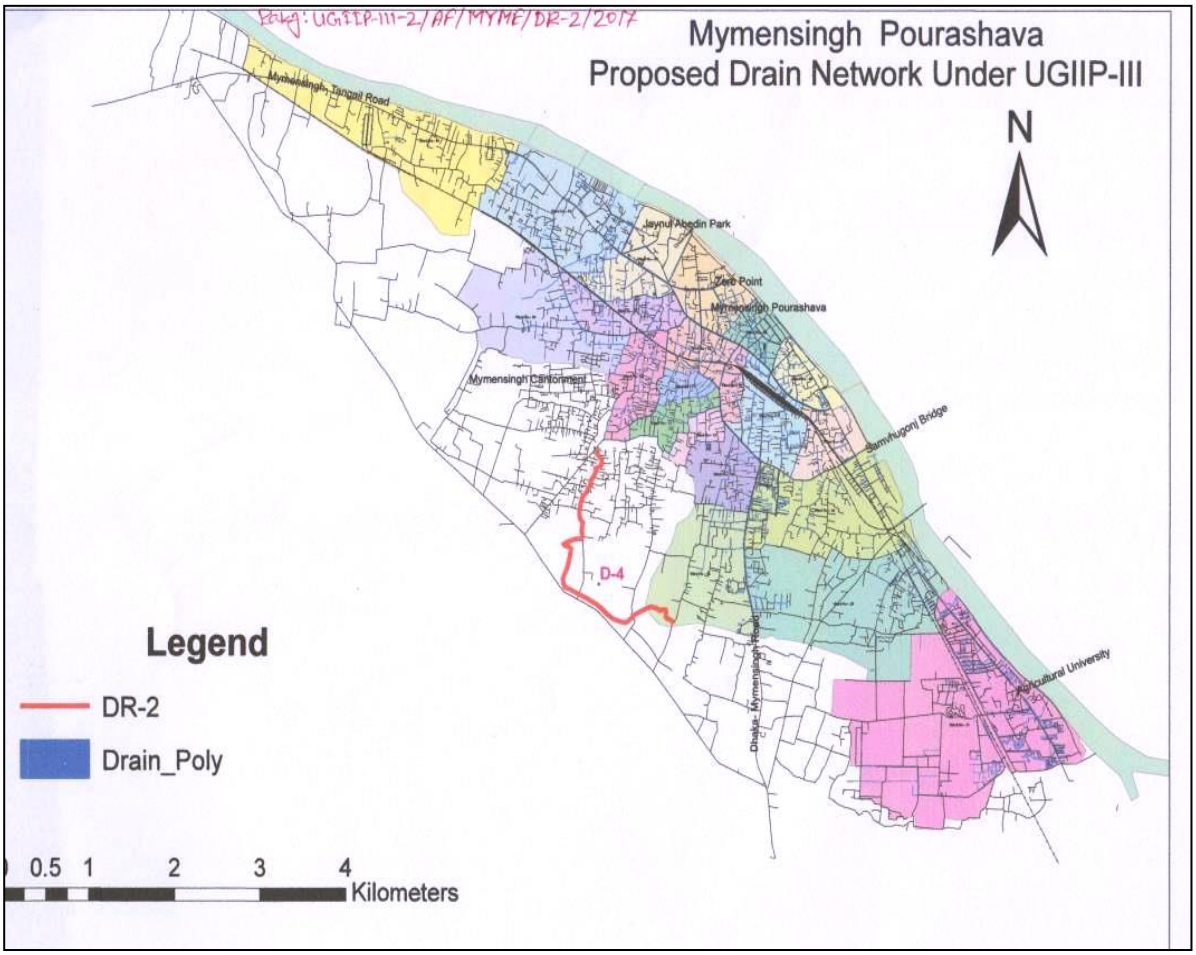
35. The entire process of sub-project selection was conducted through demand-driven and participatory approaches. The identified roads and drains were finalized through the workshop organized in the Pourashava in the presence of the mayor, councilors, Engineers, invited officials from relevant organizations and responsible persons of the Pourashava (TLCC).

36. The major considerations adopted for design were as follows: (i) LGED's road design manual and standards followed. The road design type 6 for BC pavement was considered, with some modifications; (ii) guidelines on climate change resilience and adaptation measures (**Appendix 2**) were studied and accommodated as necessary; and (iii) existing bitumen finished surface (BFS) and HBB roads were considered for improvement with CC or reinforced cement concrete (RCC) pavement where necessary, with modified design standard. In general, the following are the major features of the roads and design guidelines:

i. The roads lying on low level of lands are vulnerable to flood water and/or rainwater and hence require CC/RCC surface instead of asphalt surface. Roads lying on low-lands with heavy traffic loads will be improved with RCC surface works.
ii. The roads with poor quality of side drains will be improved along with side drain improvement by replacing the existing brick-drains with RCC drains to withstand heavy traffic loads.

37. Proposed roads and drains improvements locations are marked in Pourashava map separately are shown in the Figure 3.

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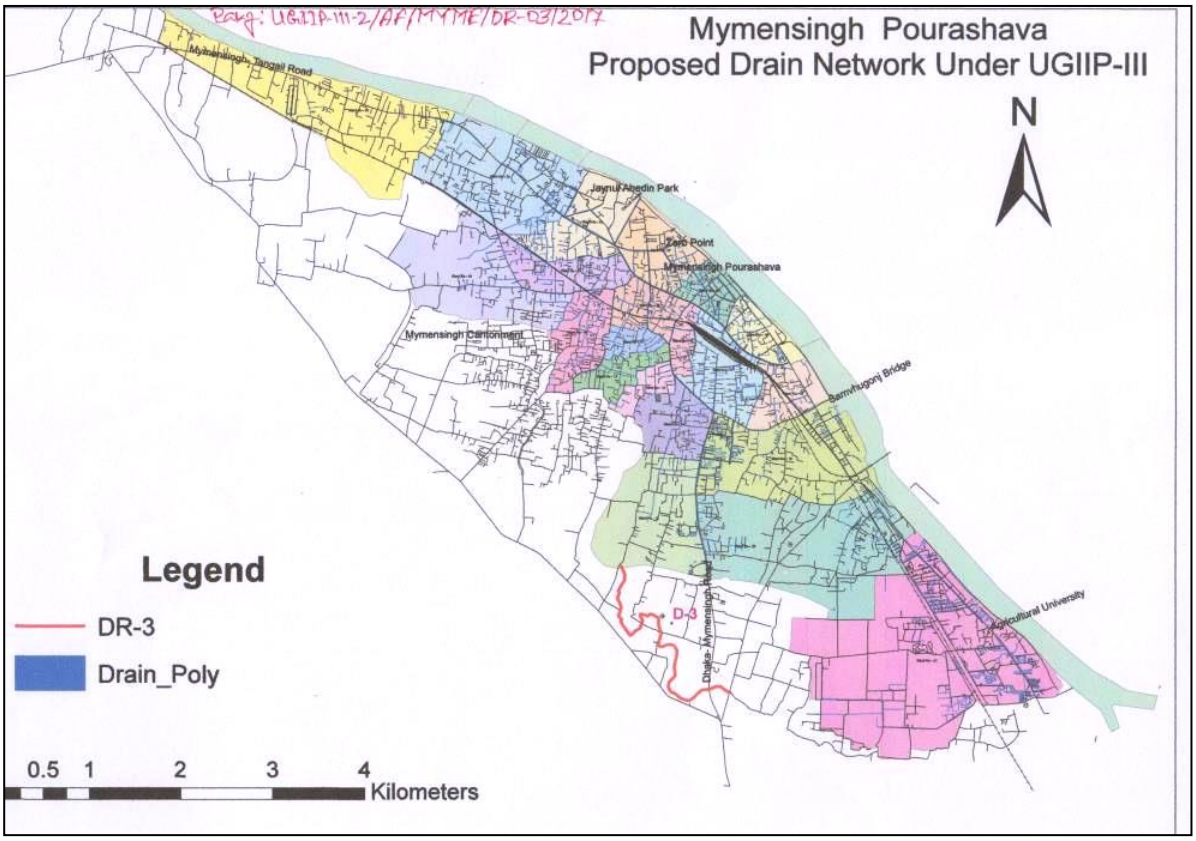
Mymensingh Pourashava
Proposed Drain Network Under UGIIP-III
N
Jaynul Abedin Park
Zero Point
Mymensingh Pourashava
Mymensingh Cantonment
Bangabandhu Bridge
D-4
Dhaka - Mymensingh Road
Agricultural University
Legend
DR-2
Drain_Poly
0.5 1 2 3 4
Kilometers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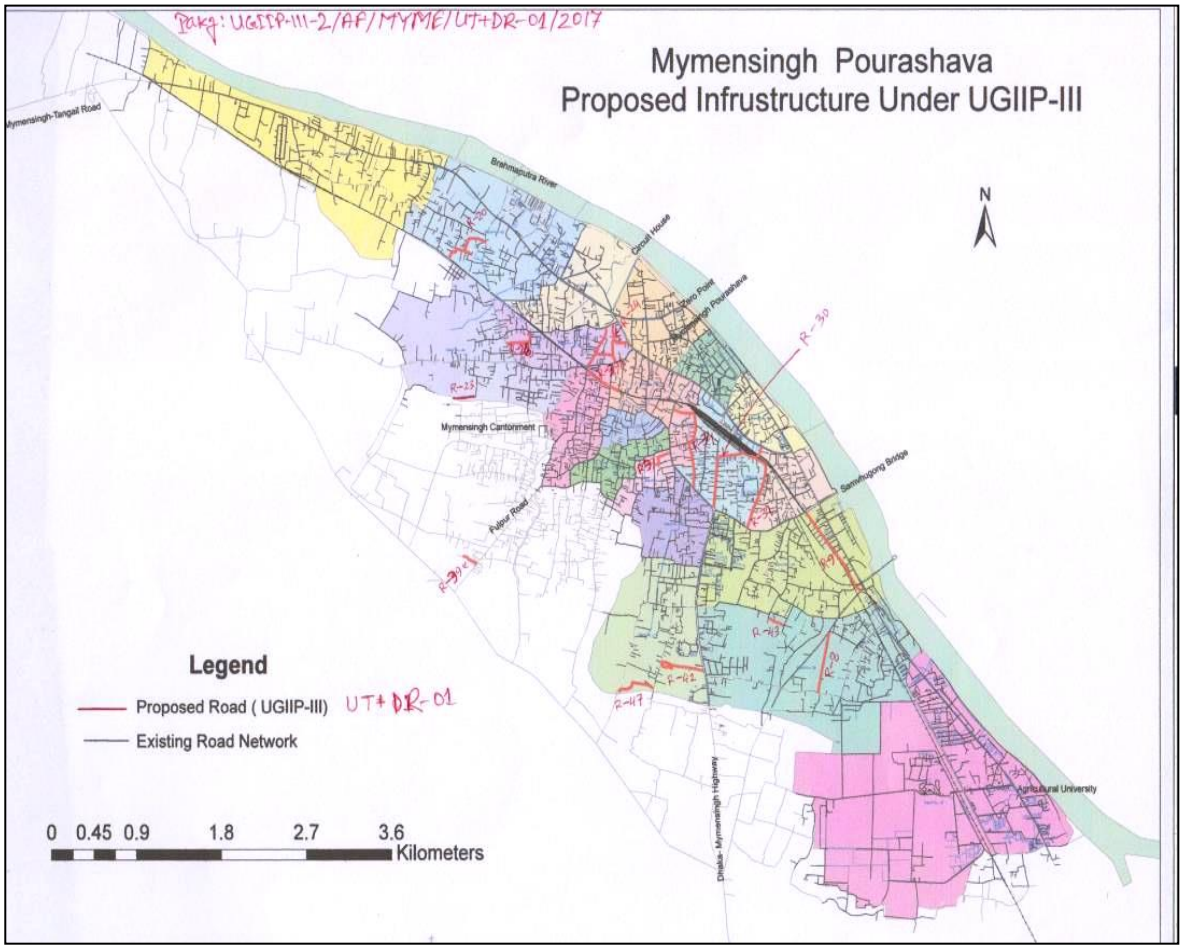
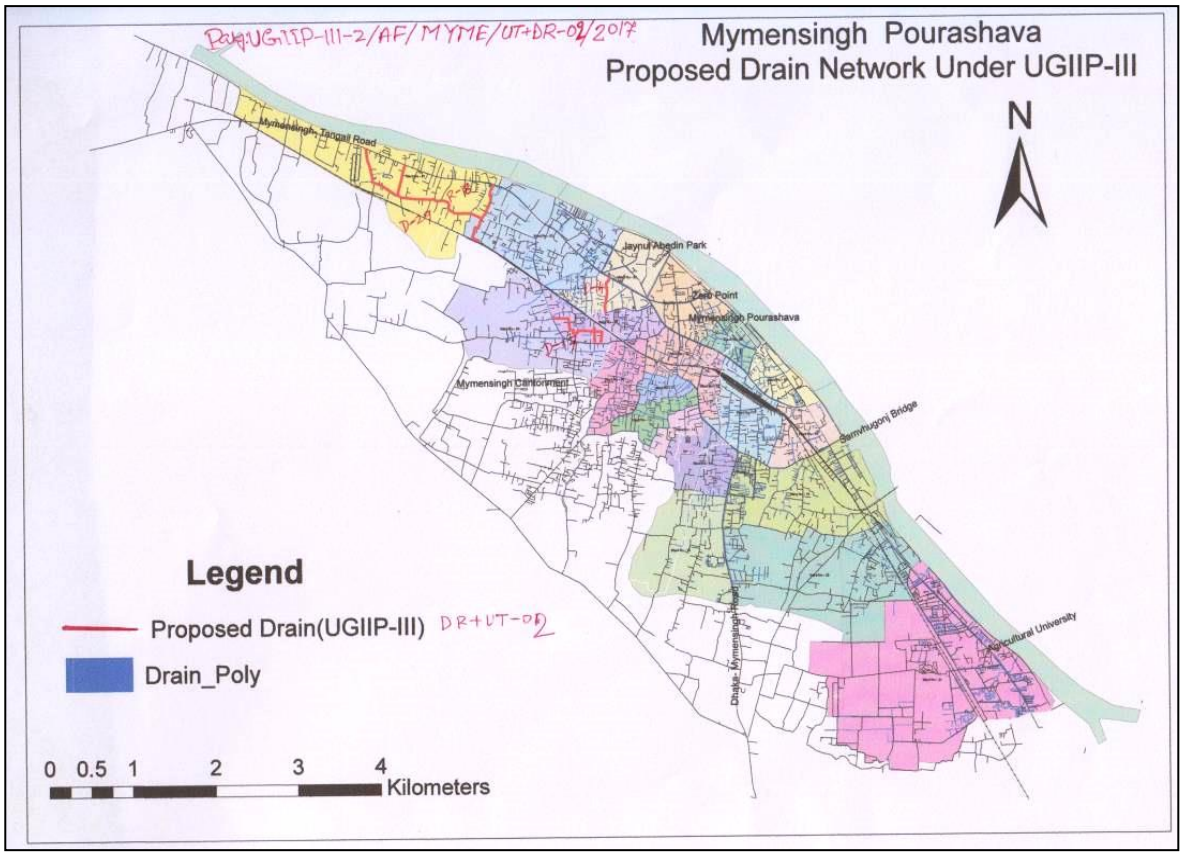
Mymensingh Pourashava
Proposed Drain Network Under UGIIP-III
N
Jaynul Abedin Park
Zero Point
Mymensingh Pourashava
Mymensingh Cantonment
Bangabandhu Bridge
D-3
Dhaka - Mymensingh Road
Agricultural University
Legend
DR-3
Drain_Poly
0.5 1 2 3 4
Kilometers


Pakg: UGIIP-III-2/AF/MYME/UT+DR-01/2017
Mymensingh Pourashava
Proposed Infrustructure Under UGIIP-III
N
Brahmaputra River
Circuit House
Town Point
Mymensingh Pourashava
Mymensingh Cantonment
Sammuggong Bridge
Pulpur Road
Agricultural University
Dhaka- Mymensingh Highway
Legend
Proposed Road (UGIIP-III) UT+DR-01
Existing Road Network
0 0.45 0.9 1.8 2.7 3.6
Kilometers


Pakg:UGIIP-III-2/AF/MYME/UT+DR-02/2017
Mymensingh Pourashava
Proposed Drain Network Under UGIIP-III
N
Mymensingh- Tangail Road
Jaynul Abedin Park
Town Point
Mymensingh Pourashava
Mymensingh Cantonment
Sammuggong Bridge
Agricultural University
Dhaka- Mymensingh Highway
Legend
Proposed Drain(UGIIP-III) DR+UT-02
Drain_Poly
0 0.5 1 2 3 4
Kilometers

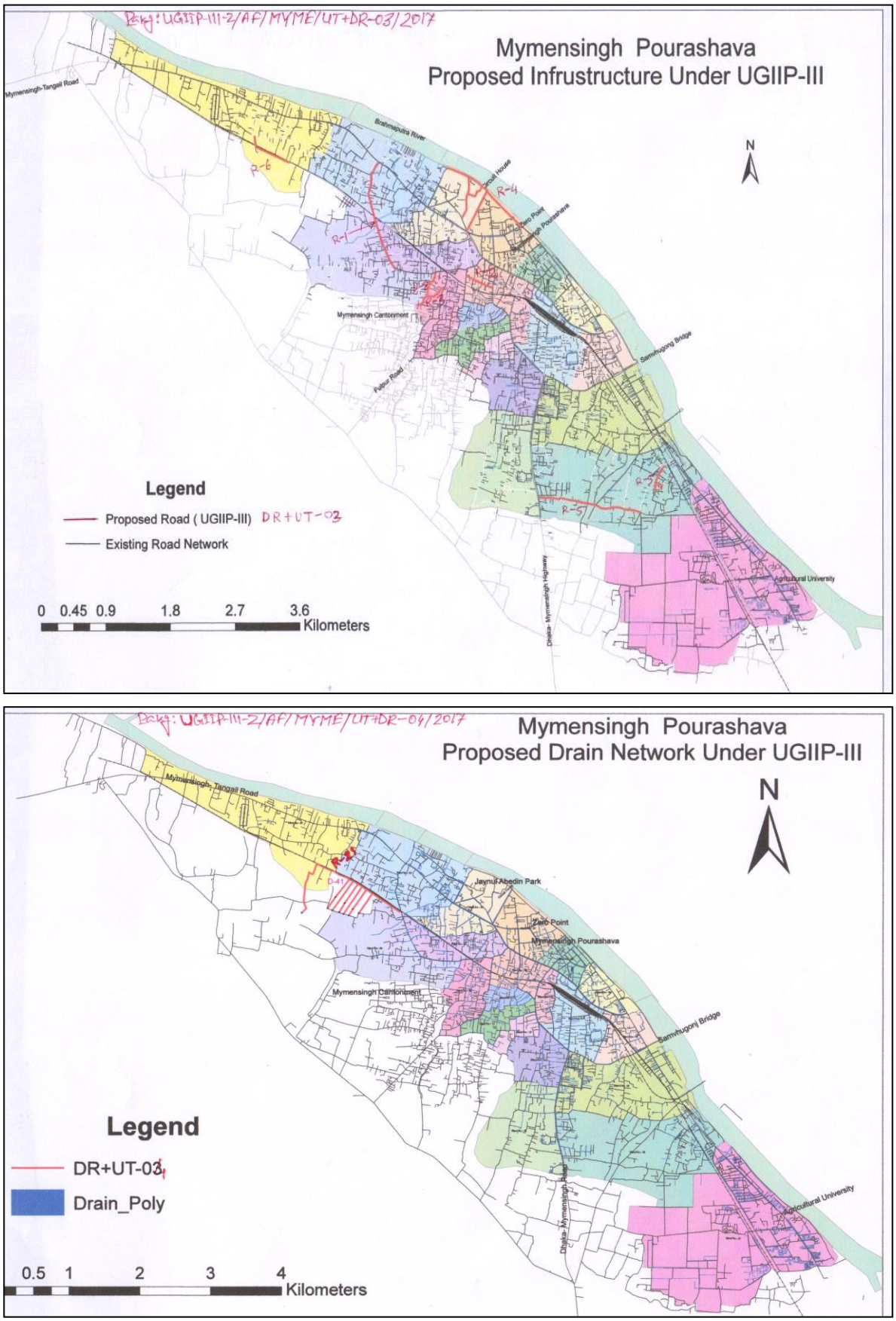


Figure 3: Proposed Roads and drains sub-projects in Mymensingh Pourashava

Figure 4: Mymensingh Pourashava showing in Google Map

38. Details of proposed roads and drains sub-projects are shown in Table 8.

Table 8: Proposed Roads and Drains for Rehabilitation/Construction in Mymensingh Pourashava

ID	Name of Roads and Drains	Existing Feature	Proposed works	Road length proposed (m)	Drain length proposed (m)	Remarks
	Package no: UGIIP-III-2/AF/MYME/DR-01/2017					
D-1	Development of drainage system with rehabilitation of canal with Footpath starting from station Traffic mour to Chorpara culvert via Malgudam with repair of the road (ch.0+00 ~1+475km).	Existing brick drain both side L=(1475m), D= Nil	RCC pipe drain, L= (1475m) D=1.6m.		1475.00	• Water logging occur during rainy season • Outfall of existing drain is Sehora khal, which leads to the River Brahmaputra. • No impact on water body • Drain alignment will be in the existing road centre.
D-7	Development of drainage system from Minto College Rail Crossing to Brampputtro River via Durgabari Road with repair of the road(ch.0m-761M) including Link-1 Development of drainage system with Footpath from Durgabari road to Trunk potti road at Boro Bazar (both side)ch.0m-ch330m ;Link-2:Development of drainage system with Footpath from Ganginepara road to Choto Bazar (ch, 0m-ch.155m) & ch. 0+155m-ch.0+245m Right side &Link-3 ;Development of drainage system with Footpath from old pollice club road Durgabari road(ch. 0m-ch.125m) Both side.	Existing brick drain both side L=(2071m), D=Nil	RCC pipe drain, L= (2071m) D=0.6m, 0.9m, 0.3m.		2071.00	• Outfall of the existing drain is to the river Brahmaputra • Water logging occur during raining season • No impact on water body • Drain alignment will be in the existing road centre.
D-10	Development of drainage system and Footpath (partially) from station mour to Thana ghat via Moharaja road with repair of the road L=0.545km.	Existing brick drain both side L=(545m), D=Nil	RCC pipe drain, L= (545m) D=1.4m		545.00	• Outfall of existing drain is Sehora khal, which leads to the River Brahmaputra. • No impact on water body • Drain alignment will be in the existing road centre.
	Package no: UGIIP-III-2/AF/MYME/DR-02/2017					
D-4	Development of Akua Khal & Construction for drainage system improvement of Walkway with Concrete from Akua Poura Graveyard to Sehora Junction.(Ch 0+00-3+320m)	Existing earthen drain, L=(3320m), W= Natural	RCC trapezoidal drain, L= (3320m) T. W=8~18m B. W=6.5~10m		3320.00	• Outfall of the existing drain is the river Brahmaputra • No impact on water body • No impact on trees
	Package no: UGIIP-III-2/AF/MYME/DR-03/2017					
D-3	Development of Khal & Construction of walkway for drainage	Existing	RCC		3350.00	• Outfall of the existing drain is

ID	Name of Roads and Drains	Existing Feature	Proposed works	Road length proposed (m)	Drain length proposed (m)	Remarks
	system improvement with Concrete from Akua Sehora khal Junction to Digharkhanda Near Bypass more(Ch 3+320-6+670).	earthen drain, L=(3350m), W= Natural	Trapezoidal drain, L= (3350m) T. W=21m B. W=12m			the river Brahmaputra • No impact on water body • No impact on trees • No impact on temporary/ permanent structures
	Package no: UGIIP-III-2/AF/MYME/UT+DR-01/2017					
R-8	Construction of Connecting RCC Road starting from Salimer Moar to Moiner Moar(Ch 0+00-0+620m).	Existing BC road damage L=(620m), W= 2.0m	RCC road, L= (620m) W=3.0m.	620.00		• Water logging for heavy rainfall • No impact on trees • 2 ponds near by the road • No land acquisition
R-9	Construction of RCC road from Patgudam rail gate to Kewatkhali Bypass road(ch.0+00-0+935m)	BFS road damage condition, L=(935m), W=2.0m.	RCC road L= (935m), W=3.0m.	935.00		• No impact on trees • No impact on temporary/ permanent structures
R-20	(1) Construction of RCC Road: Part-a Starting from Kashor main road to Nazrul Saheb house(Ch 0+00-0+278m),Part-b from Abu Syed House to Zos Mia House (Ch 0+00-0+275m. (2) Construction of RCC Drain: Part-a Starting from Kashor main road to Nazrul Saheb house(Ch 0+00-0+278m),Part-b from Abu Syed House to Zos Mia House (Ch 0+00-0+275m.	Existing RCC road damage, L=(553m), W=2.5m Existing brick drain damage, L=(553m), W=Natural	RCC road, L= (553m), W=3.0m RCC drain, L= (553m), W=0.8m	553.00	553.00	• Water logging for heavy rainfall • No impact on trees • No impact on temporary/ permanent structures
R-23	Rehabilitation of RCC Road starting from Mirbari Eidgah field to Juel Saheb House beside khal (Ch 0+00-0+345m).	Existing road damage condition, L=(345m), W=2.0m.	RCC road L= (345m), W=2.5m.	345.00		• No impact
R-24	Improvement of RCC road at Gulkibari road starting from. Part-A. Sankipara road to college road. Ch.0+00-0+420m, Part-B. starting from Gulkibari road to Mohammad Ali road. Ch.0+00-0+150m, Improvement of RCC road at Mohammad Ali road starting from College road to Zila school. Ch.0+00-0+368m & Part-B. Mohammad Ali road to RHD road. Ch.0+00-0+180m	Existing road damage condition, L=(1118m), W=3.0m, 4.5m	RCC road L= (1118m), W=3.0m, 4.5m	1118.00		• No impact

ID	Name of Roads and Drains	Existing Feature	Proposed works	Road length proposed (m)	Drain length proposed (m)	Remarks
R-26	Construction of RCC road starting from Academy road to Coronation road beside PWD Quarter(ch.0+00-0+398mm)	Existing road damage condition, L=(398m), W=2.0m,	RCC road L= (398m), W=3.0m.	398		• No impact on trees • No impact on temporary/ permanent structures
R-30	Improvement of B.C & RCC Road: Part-a Charpara Moar to G.C Guho Road, (Ch 0+00-0+950m), Part-b, Baghmara Moar to Robir Moar,(Ch 0+00-0+666m),Part-c,Dr.Nazrul Islam House to Purohitpara Moar,(Ch 0+00-0+140m),	Existing road damage condition, L=(1756m), W=4.0-8.0m.	BC and RCC road L= (1756m), W=4.0-8.0m.	1756.00		• Water logging for heavy rainfall • No impact on trees
R-31	Improvement of BC Road from Baghmara Rail Crossing to Vatikashore Grave Yard(Kristopur Road) (Ch 0+00-0+620)	Existing road damage condition, L=(620m), W=4.5m.	BC road L= (620m), W=4.5m.	620.00		• No impact
R-34	Improvement of BC road starting from Purabi cenema Hall to Natokgore lane via DB road (ch.0+00-0+1180m)	Existing road damage condition, L=(1180m), W=4.0-7.0m.	BC road L= (1180m), W=4.0-7.0m.	1180.00		• No impact
R-39	(a):Construction of Omed Ali Road by RCC Starting from RHD Road to Basbari Coloni Road (Ch 0+00-0+250m), b) Improvement road starting from Akua Madrasha quarter rail gate to Bachu mia house road,(Ch 0+00-0+214m), c) Construction of RCC Road from Mymensingh Fulbaria Road to Eco Park. (Ch 0+00-0+235).	Existing road damage condition, L=(699m), W=3.0m,3.0m, 4.0m	RCC road L= (699m), W=3.0m,3.0m, 4.0m	699.00		• Water logging for heavy rainfall • No impact on trees
R-42	Development of Maskanda Passport Office road by RCC Pavement starting from Passport office to Jila Porishod school part-A.ch.0+00-0+465m & part-B starting from Oxford school to Jila Porishod school via Mistri bari .ch.0+00-0+310m)	Existing road damage condition, L=(775m), W=3.0m.	RCC road L= (775m), W=3.0m.	775.00		• No impact
R-43	Construction of RCC road starting from (Part-A). Liakot Commissioner house to Bolashpur Shimultala. Ch.0+00-0+180m & (Part-B) Liakot Commissioner house to (ch.0+00-0+181m)	Existing road damage condition, L=(361m),	RCC road L= (361m), W=3.0m.	361.00		• No impact

ID	Name of Roads and Drains	Existing Feature	Proposed works	Road length proposed (m)	Drain length proposed (m)	Remarks
		W=2.5m.				
R-47	Construction of RCC road starting from Barera culvert to Maskanda Jila porishod school road(ch.0+00-0+420m)	Existing road damage condition, L=(420m), W=3.0m.	RCC road L= (420m), W=3.0m.	420.00		• Water logging for heavy rainfall • No impact on trees
	Package no: UGIIP-III-2/AF/MYME/UT+DR-02/2017					
D-14	Development of drainage system along the centreline starting from Sankipara Rail Gate to Kacijully mour via College & Hamid Uddin road with repair of the road (ch.0+00-0+1134).	Existing earthen drain L=(1134m), W= Natural	RCC u-drain, L= (1134m) W=0.6-0.9m.		1134.00	• Water logging occur during raining season • Outfall of existing drain is cantonment khal, which ultimately falls to the river Brahmaputra. • No impact on water body
D-17	Construction of RCC Covered Drain starting from Madarganj Coloni to Sankipara road with Repair of the Road (Part-a, Ch 0+00-0+580m, Part-b, Ch 0+00-0+280m, Part-c, Ch 0+00-0+192m).	Existing earthen drain L=(1052m), W= Natural	RCC u-drain, L= (1052m) W=0.5-0.6m.		1052.00	• Outfall of existing drain is cantonment khal, which ultimately falls to the river Brahmaputra. •
D-29	Construction of RCC drain starting from (A) Kagdahor Bazar to Katgola Bazar(ch.0+00-0+2150m), (B) Makjanul Ulum madrasha to Duladia road (ch.0+00-0+230m) & (C) Gologonda mour to Amin bazar (ch.0+00-0+418m)	Existing earthen drain L=(2798m), W=Natural	RCC u-drain, L= (2798m) W=0.6-0.8m.		2798.00	• Water logging occur during raining season • Outfall of existing drain is cantonment khal, which ultimately falls to the river Brahmaputra. • No impact on water body
R-18	Improvement & widening of BC road starting from Part-A. Katgola Bazar to Kagdahor Bazar road. Ch. 0+00-0+2450m, Part-B. Tangail road to Makjanul Ulum Madrasha. Ch.0+00-0+350m, Part-C. Gologonda mour to Amin bazar. Ch.0+00-0+318m & Part-D. Gologonda road to Rekatullah house. Ch.0+00-0+120m.	Existing road damage L=(3238m), W= 3.0m	BC road, L= (3238m) W=3.0m.	3238.00		• Water logging occur during raining season • Land available • No impact on water body • No impact on temporary/ permanent structures
	Package no: UGIIP-III-2/AF/MYME/UT+DR-03/2017					
R-1	Improvement & Widening of BC road starting from Kashore Police line to Shankipara shes mour(Coronation road)(Ch 0+00-	Existing BC damage road,	BC road, L= (1490m)	1490.00		• Water logging occur during raining season

ID	Name of Roads and Drains	Existing Feature	Proposed works	Road length proposed (m)	Drain length proposed (m)	Remarks
	1+490m)	L=(1490m), W= 4.0m (one side widening for land available)	W=4.0-6.0m			• Land available • No impact on water body
R-2	Part-A. Reconstruction of Boundary road by RCC starting from Saheb Ali road to Fulbaria roadch.0+00-0+390m & Part-B. Construction of RCC road starting from Boundary road to Zila school road. Ch.0+00-0+168m	Existing RCC road damage L=(558m), W= 4.0m	RCC road, L= (558m) W=8.0-10.0m	558.00		• Water logging for heavy rainfall
R-3	Construction of RCC Road: Part-a:from Senbari Road to Cantonment Boundary Wall (Ch 0+00-0+495m),Part-b:from Noyonmoni Maket to Kawser Saheb house(Ch 0+00-0+345m),Link-1:from Asa Kutir to Tofael Saheb House(Ch 0+00-0+123m),Link-2:from Forazi Saheb house to Robidash Polli(Ch 0+00-0+58m)Link-3:from Monir Saheb house to Mydul Saheb house(Ch 0+00-0+40m),Link-4:from Solaiman Fokir House to Nasim Saheb house (Ch 0+00-0+48m),Link-5:from Front of Fuzlu MP House to Robidash Polli (Ch 0+00-0+110m).Total Length=1.219km	Existing road damage L=(1219m), W=3.0m	RCC road L= (1219m) W=6.0m	1219.00		• Water logging occur during raining season • No impact on water body
D-8	Development of drainage system:Part-a: from Senbari Road to Cantonment Boundary Wall (Ch 0+00-0+505m),Part-b:from Noyonmoni Maket to Kawser Saheb house(Ch 0+00-0+345m),Part-c from Jalil House to to Robidash Polli(Ch 0+00-0+210m), Link-1:from Asa Kutir to Tofael Saheb House(Ch 0+00-0+123m),Link-2:from Forazi Saheb house to Robidash Polli(Ch 0+00-0+58m),Link-3:from Front of Fuzlu MP House to Robidash Polli (Ch 0+00-0+110m),Total Length=1.351km	Existing brick drain damage, L=(1351m), W= Natural	RCC drain, L= (1351m) W=0.6-0.9m		1351.00	• Water logging for heavy rainfall • Outfall of existing drain is cantonment khal, which altimately falls to the river Brahmaputra.
R-4	05.a.R-4:I) Improvement & Widening of BC road:Part-a starting from Kachari Moar Zero Point to Joinal Abedin Songrohosala(Ch 0+00-1+292m),Part-b from Town hall More to Poura Pump House(Ch 0+00-0+568m),Part-c from Front of Eid-Gah to Sarindah Restaurant (Ch 0+00-0+540m),Part-d from DC house to Circuit House Road(Ch 0+00-0+294m). 05.b.II) Part-a: Construction of RCC U- Drain from Kachari to Poura Pump House(Ch 0+26-0+600m)	Existing road damage L=(2204m), W=3.0m Existing brick	BC road L= (2204m) W=4.0m RCC drain	2204.00	574.00	• No impact

ID	Name of Roads and Drains	Existing Feature	Proposed works	Road length proposed (m)	Drain length proposed (m)	Remarks
		drain damage, L=(574m), W= Natural	L= (574m) W=0.75m			
R-5	(1)R-5:Improvement of BC & RCC Road: Part-a from Dhaka-Mymensingh Highway to Kewatkhali Bazar Road Via Moinermour(Ch 0+00-2+383m),Part-b from Salim Saheb house to Kumrul Saheb house (PDB Road) (Ch 0+00-0+499m),Link-1 from PDB road to Omar Faruq Saheb house(Ch 0+00-0+117m),Link-2 from Anil Saheb house to Shofic Saheb house (Ch 0+00-0+82m) 06.b.(2)Construction of RCC U-Drain: Part-a from Dhaka-Mymensingh Highway to Milon Saheb House (Ch 0+00-0+250m),Link-1 from PDB road to Omar Faruq Saheb house(Ch 0+00-0+117m),Link-2 from Anil Saheb house to Shofic Saheb house (Ch 0+00-0+82m)	Existing road damage L=(3081m), W=3.0m Existing drain damage L=(449m), W=Natural	RCC road L= (3081m) W=3.0m RCC drain L= (449m) W=0.75-0.85m	3081.00	449.00	• Water logging occur during raining season • No impact on water body • Water logging for heavy rainfall
R-6	07.R-6:Construction of RCC road starting from Gologonda Amin Bazar to Abrar Madrasha by the side of Rail line(ch.0+00-0+990m)	Existing road damage, L=(990m), W= 2.0m	RCC road, L= (990m) W=3.0m	990.00		• Water logging for heavy rainfall
	Package no: UGIIP-III-2/AF/MYME/UT+DR-04/2017					
R-21	Improvement of BC & RCC road: Part-a Starting from Tinkona Pokorpar to Nizkolpa Primary School via Amin Bazar(Ch 0+00-0+2+045m)Part-b From Amin Bazar to Anana Housing Last Border,(Ch 0+00-0+463m)	Existing BC & RCC road damage, L=(2508m), W= 2.0m	RCC road, L= (2508m) W=3.0m	2508.00		• Water logging for heavy rainfall
D-41	Development of Drainage Network of Ananna Housing Society up to Neezkolpa Khal Part-a, (Ch 0+00-2+485m), Part-b, (Ch 0+00-0+530m), Links=2*14*200=5600m	Existing road damage, L=(8615m), W= 3.0m	RCC drain, L= (8615m) W=3.0m		8615.00	• Water logging for heavy rainfall • Outfall of existing drain is the river Sukta • 1 house partially affected • 1 small stall partially affected
	Gross Total =			**25308.00**	**27287.00**	

BC=bituminous carpeting, BFS=brick flat soling, C=culvert, CC=cement concrete, E=earthen, EF=earth filling, FP=footpath, L=length, RCD=road-cross drain, SP=side protection work, T=thickness, W= width, BPDB= Bangladesh Power Development Board.

Note : The height of the proposed road to be constructed at a higher elevation to the height of the road side ground level.

39. The proposed sub-project consists of bituminous carpeting (BC) of road and RCC road, where major part of work is overlaying and carpeting. Some part of road is proposed as RCC road as there is inundation and water logging problem. In order to make the road climate proof, RCC is proposed. Components of sub-project with possible environmental impact are also shown in Table 8. Sample designed cross sections of roads and drains (BC and RCC) are shown in Figure 5.

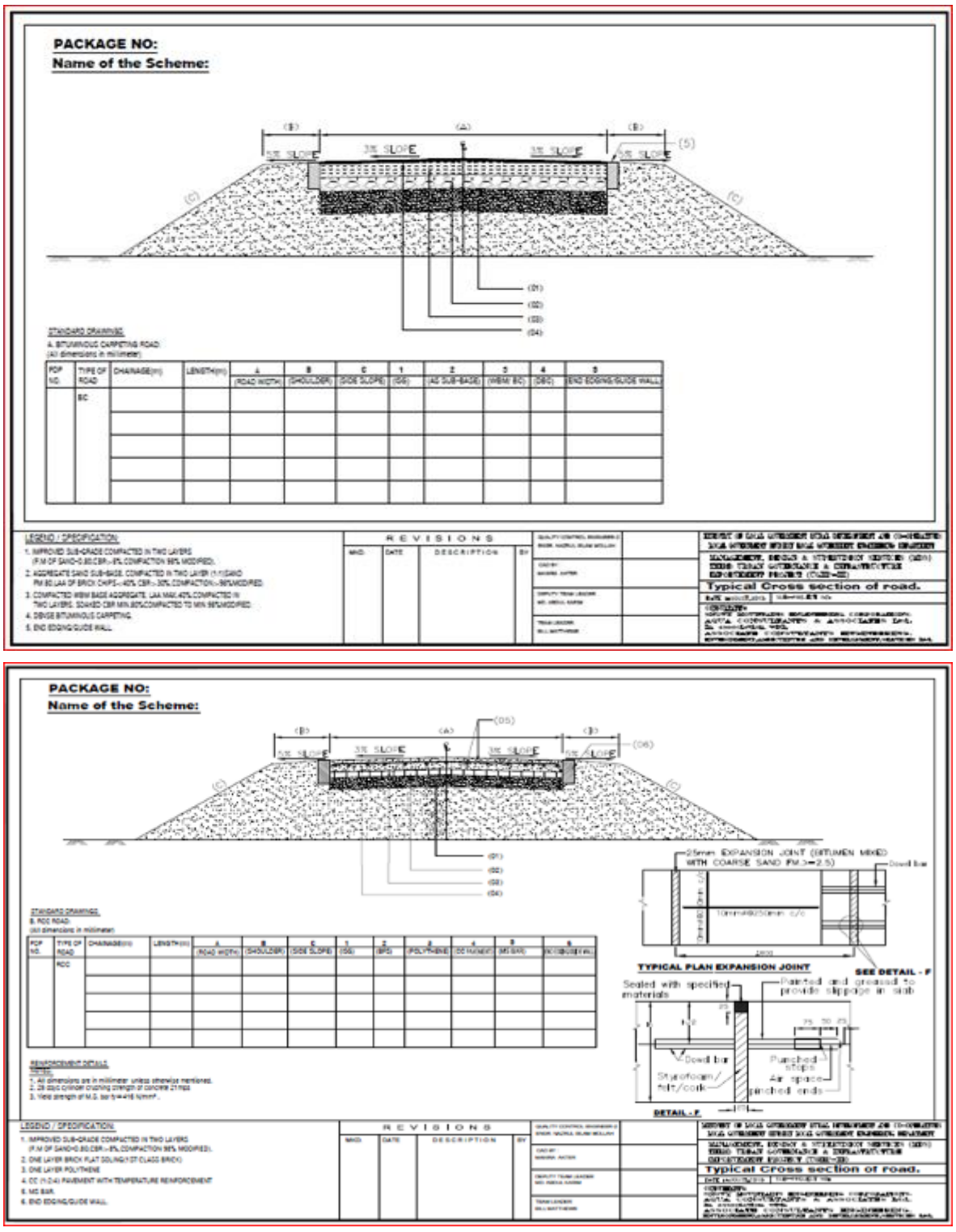
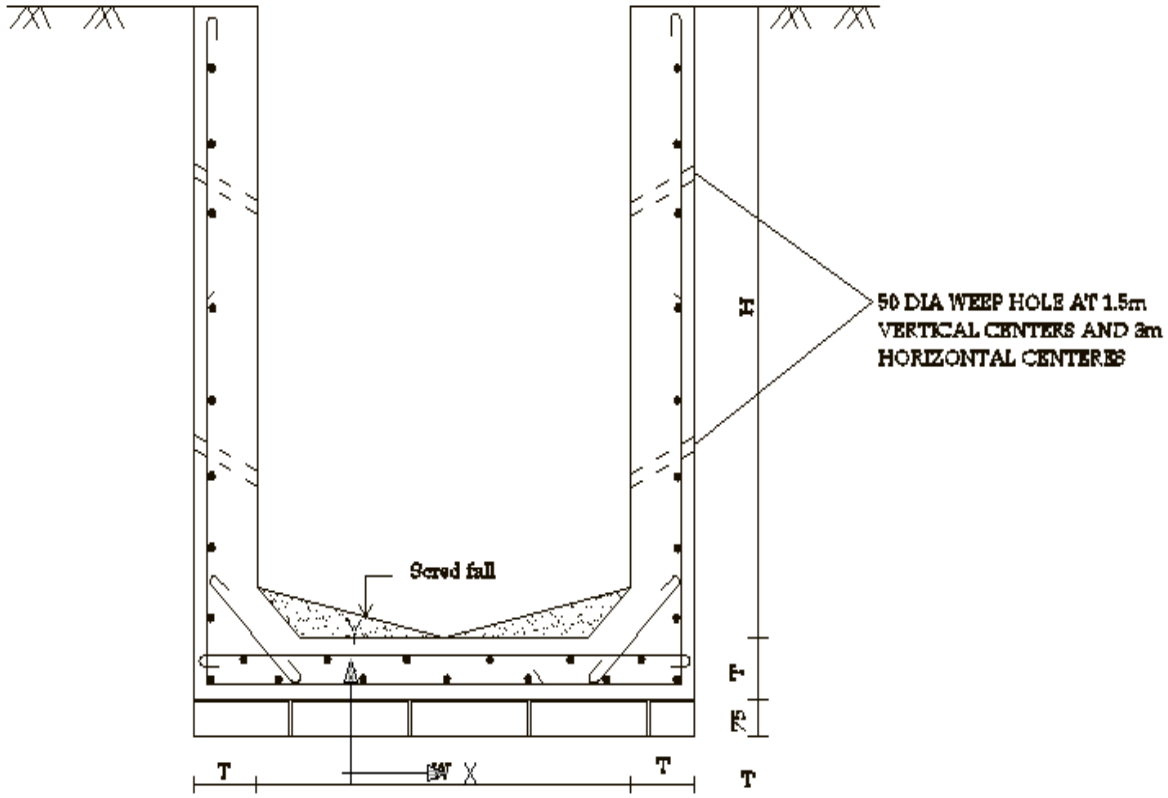


Figure 5: Typical cross section of BC road and RCC road at Mymensingh Pourashava


50 DIA WEEP HOLE AT 1.5m
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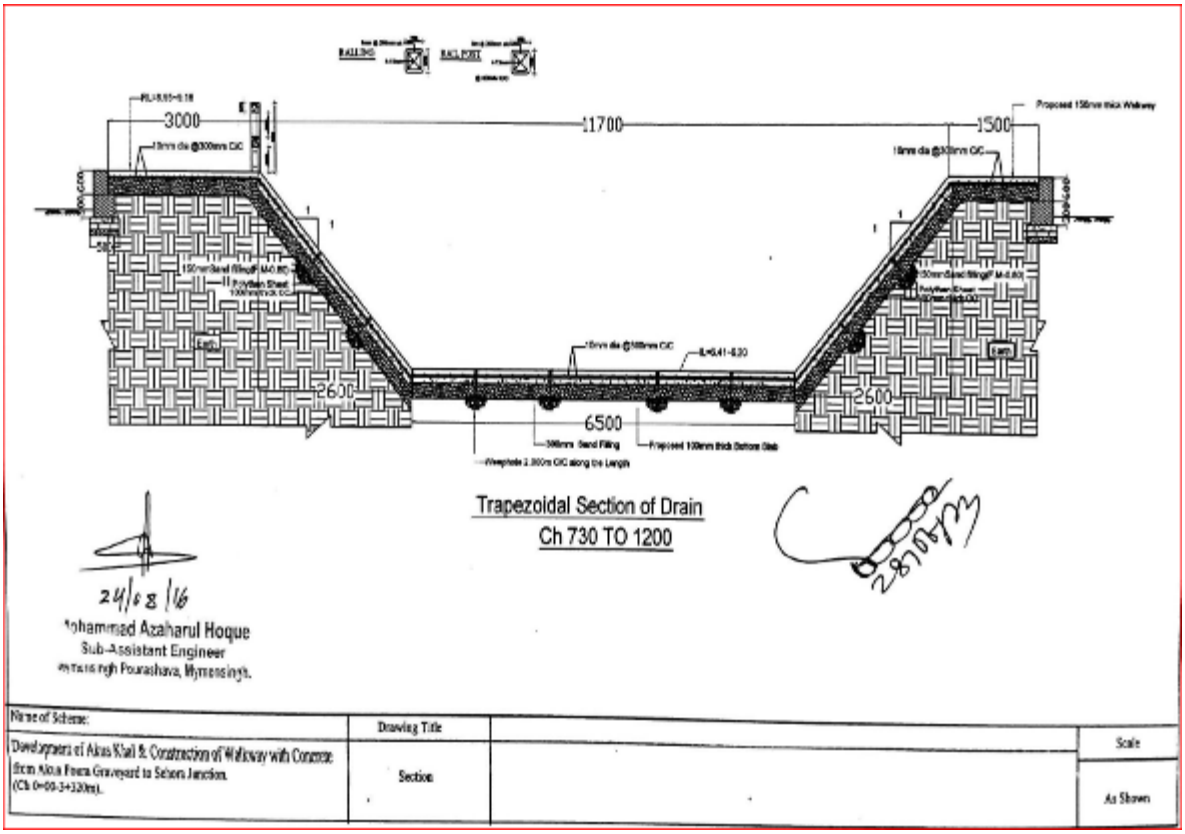
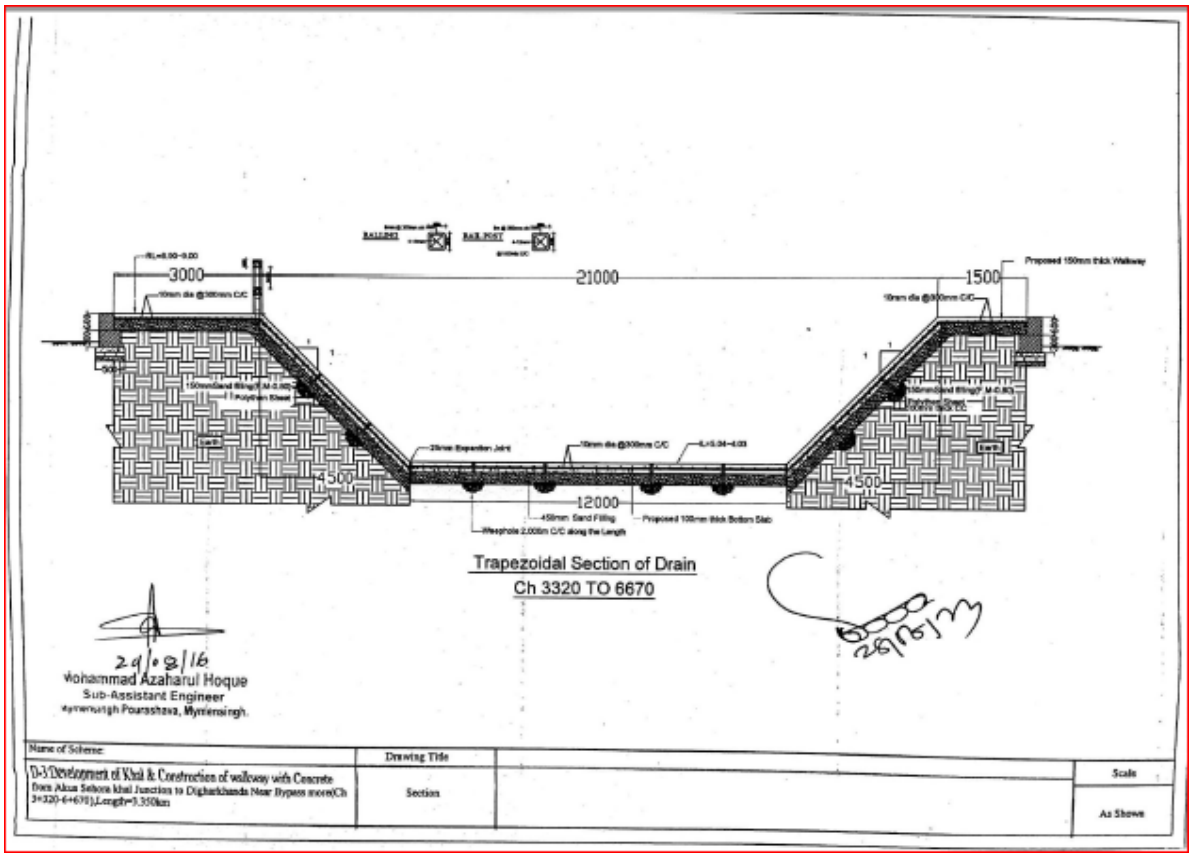

3000
1700
1500
2600
6500
2600
Trapezoidal Section of Drain
Ch 730 TO 1200
24/08/16
Mohammad Azaharul Hoque
Sub-Assistant Engineer
Mymensingh Pourashava, Mymensingh.
Name of Scheme:
Development of Akua Khal & Construction of Walkway with Concrete from Akua Poura Graveyard to Sohora Junction. (Ch 0+00-3+120m).
Drawing Title
Section
Scale
As Shown



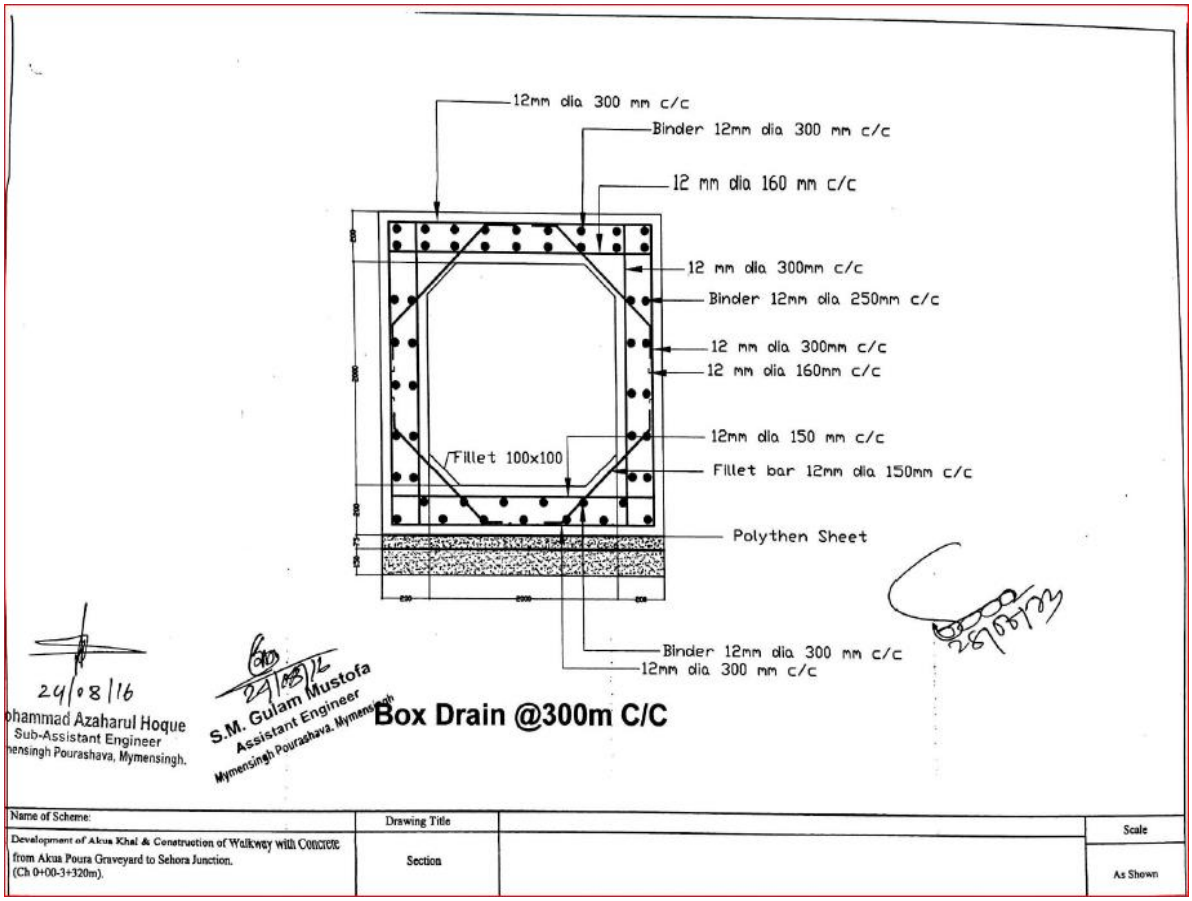


Figure 6: Typical section of RCC U-drain, Trapezoidal drain and Pipe drain

D. Implementation Schedule

40. Implementation of UGIIP-3 is in three phases based on achievement of governance criteria of the Pourashavas. The additional financing will provide support for the project's (i) 2nd phase = 24 months of that 18 months is assumed for construction, and (ii) 3rd phase of UGIIP-3 = 26 months.

41. All the proposed 21 roads and 10 drains will be implemented under 2nd phase of UGIIP-3. Detailed design of roads and drains has been done by the MDS consultant team and may be updated during implementation stage. It is estimated that construction period for implementation will cover 18 months. The final detailed implementation schedule will be provided in the updated IEE If required.

42. Substantial time is required spanning the continuum of sub-project preparation, approval, survey, design & estimate, contract award and contract execution. Efforts needs to be made to meticulously follow the schedule should a timely implementation of work is aimed at.

43. Usually, the construction work season in Bangladesh runs from October through May (eight months). Construction works are sometimes impeded for the following reasons.

- Early floods in April/May,
- Late floods in September/October,
- Natural calamities (cyclone/tornado, excessive floods) occur in April/May and October/November.

44. Normally, the best construction period is only for 6 months a year (October to March). But construction of Road and Drain may take more time due to adverse weather situations. In these reason, total construction time is proposed for 01 year.

45. However, sometimes, based on time constraint or exigency, construction work may even need to be carried out in the monsoon. Besides, whenever possible, simultaneousness of activities can be ascertained and cashed in on and consequently, quantum of work can be maximized through efficient planning and adoption of best available practice. Summing up, over a 12-month period, execution of major works is advisable to take place between June, 2017 to December, 2018. A tentative time-schedule for implementation (only as an indication) is shown overleaf.

Period : June, 2017 – December, 2018																			
	YEAR																		
	2017							**2018**											
	Month							**Month**											
Item of works	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Compliance of Sub-project and approval																			
Preparation of the bid documents																			
Tendering of the sub-project and the work order																			
Execution of physical works																			
Final inspection and completion certification																			

IV. DESCRIPTION OF THE ENVIRONMENT

A. Physical Environmental

46. **Land forms, Geology:** Bangladesh is located within one of the greatest fluvial deltas system in the world. The three major river system Ganges-Brahmaputra-Meghna (GBM) transport sediments, supplied by the Himalayan fold belt, over a wide flood plain in to the delta. The present Bengal Basin is consist of major part of Bangladesh, part of the Indian State of West Bengal in the west and Tripura in the east. The Bengal Basin is bordered to the west by the Precambrian Indian shield, to the north by the Shillong massive and to the east by the frontal belt of the Indoburman Range. In the south it is open to the Bay of Bengal.

47. The evaluation of Bengal Basin is resulted from the collision of Indian plate and the Eurasian plate. The major tectonic elements of Bangladesh include (i) Indian / Stable platform in the northwest (ii) Arakan Yoma in the east and (iii) Deep basin to the southeast. In between stable platform and Basinal part of Bangladesh there is another important flexure narrow northeast- south west trending zone called ”Slope/ Hinge zone” which extends from Kolkata to Mymensingh through Pabna and separate the platform and Basinal part. Here in short the Geology of Platform and so called Hinge zone are mentioned. The Gravity, Magnetic and Seismic data indicate the presence of a structural zone, extending from Kolkata to Mymensingh. This zone has been referred to as the Kolkata -Mymensingh Hinge zone/ slope and is thought to represent the margin of the Indian platform continental crust. Analysis of the Seismic data from India and northern Bangladesh indicates that during early Tertiary time this Hinge / slope actually represented a contemporary edge to the continental shelf and was the location of Major shelf edge Carbonate buildups during Eocene time. This zone is about 25km wide and is bounded by South slope of Rangpur Saddle and Pabna – Mymenshingh Hinge line.

48. The district is a flood plain between the two mighty rivers: the Jamuna and the Meghna. The main river of the district is the Old Brahmaputra River which is a tributary of the Jamuna River and also flowing along the northern periphery of the Pourashava.

49. **Soil:** Madhupur Tract or Red Soil Tract comprises the former greater districts of Dhaka and Mymensingh. The area covered under this tract is around 10,000 sq km. This tract represents the red lateritic soils of Madhupur area, a highland tract above flood level intersected by numerous large and small depressions, locally known as 'baid'. The soils of this tract have clayey texture and contain large quantity of iron and aluminum, which are highly aggregated. The pH value ranges from 5.5 to 6.0 in the topsoil. The cation exchange capacity is low and the soils have the high phosphate fixing capacity. The soils are deficient in organic matter, nitrogen, phosphorus and lime.

50. Soil of Mymensingh is formed with “Poludal” and “Alluvial” deposits. Poludal deposits are marsh clay and peats, while alluvial deposit includes alluvial silt and clay, alluvial silt and Chandina alluvium.

51. Mymensingh Pourashava is located on the south bank of the old Brahmaputra River. The land elevation along the river bank is high and not flooded by the river even at extreme flood periods. The land is slopes away from the river bank by about 4.5 m. The southern periphery is prone to flooding during normal floods. Of the municipality’s land area, 87% is built-up and 13% still considered as undeveloped or agricultural land.

52. **Earthquake:** Most part of the Mymensingh district is located in a seismic zone I, referred to as the high risk zone, while a small area in the south and southwestern part is located in seismic zone II referred to as the medium risk zone for earthquake in the country. Seismic events in Bangladesh are relatively infrequent, but historically, have been severe, such as the earthquakes of 1930, 1950 and 2004. The city of Mymensingh stands on the bank of old Brahmaputra River, as in1897 the great Assam Bengal earthquake changed the main flow from Brahmaputra to the Jamuna River which co-sided west of the greater

Mymensingh region. As shown in the Figure-7 below.

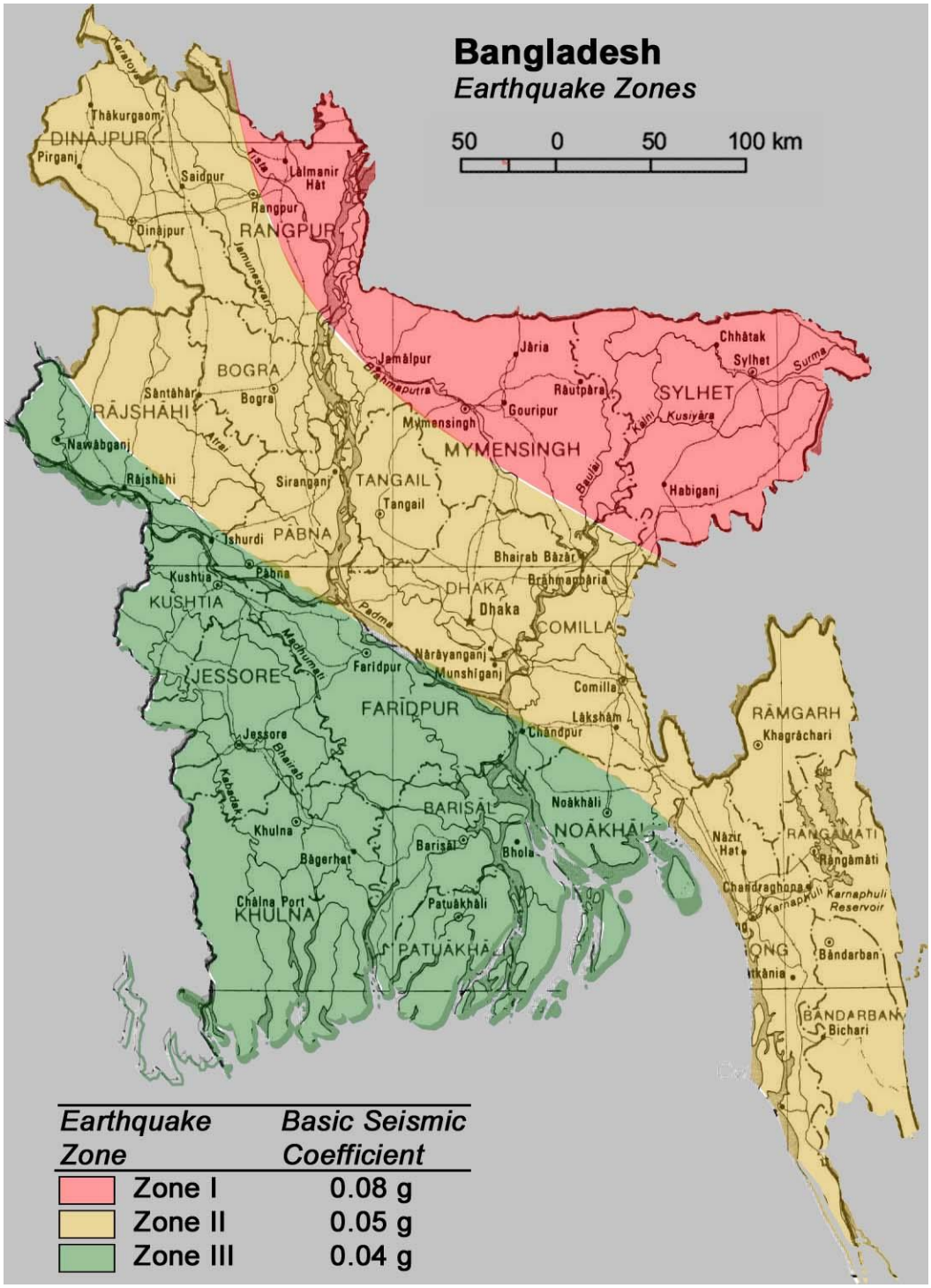


Figure 7: Earthquake Zone in Bangladesh

53. **Ambient Air Temperature, Humidity and Rainfall:** The temperature of the country has the relationship with the period of rainfall. In general, cool seasons coincide with the period of lowest rainfall. Table 9 shows the monthly average temperature along with average monthly humidity of the project area. Maximum mean temperature of 28.79°C was observed in August and minimum average temperature was 17.94°C in January.

Table 9: Temperature and humidity for project area 1975-2015

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg.
Mean Temp (°C)	17.94	20.93	24.96	27.21	27.74	28.49	28.50	28.79	28.35	27.14	23.61	19.41	25.26
Average Humidity (%)	75.63	69.73	68.7	74.61	80.10	85.00	85.88	85	85.3	82.4	78.1	78.02	78.66

Source: Bangladesh Meteorological Department (BMD).

54. According to the data collected from Bangladesh Meteorological Department (BMD), April to June appears to be the hottest period of the year while November to February is the coolest. Average annual rainfall in Mymensingh is 2254.15 mm, with maximum in July = 437.3mm. During heavy rainfall, water logging causes 30-40 cm inundation, which lasts for 12-24 hours.

55. June-October is observed to be the most humid period of the year which matches the rainfall pattern of this region as more than 76% of the yearly precipitation is encountered during this four months.

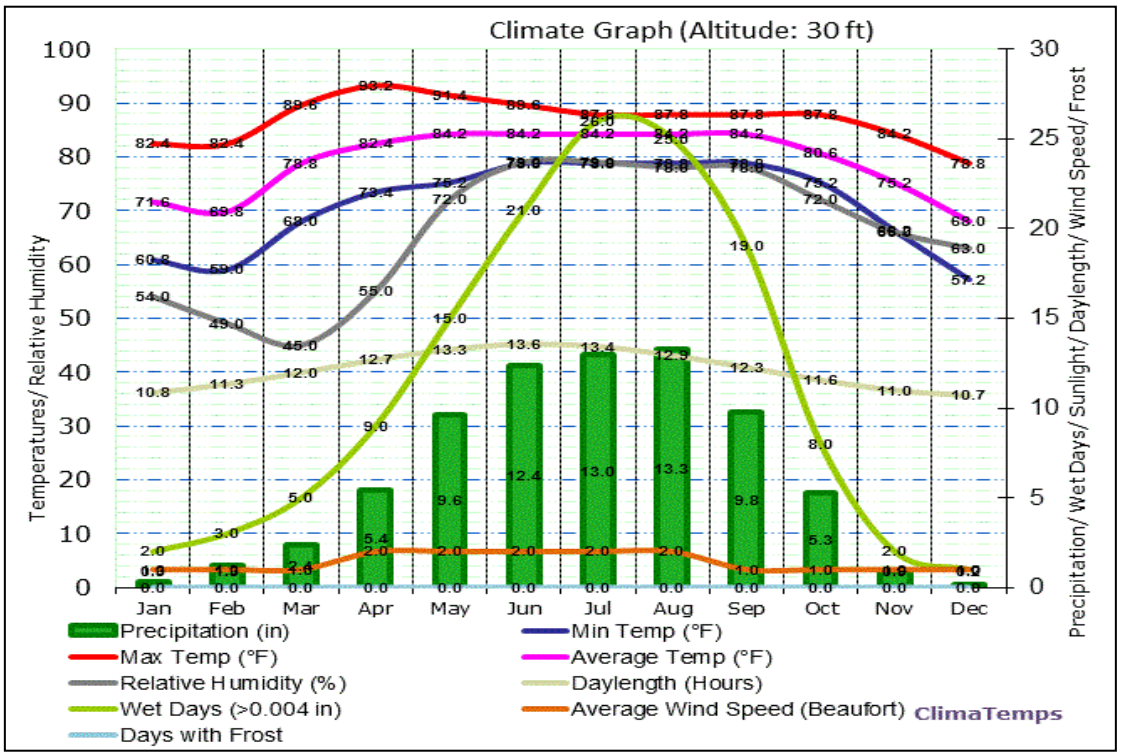


Figure 8: Average Temperature and Humidity in Mymensingh

56. June-October is observed to be the most humid period of the year which matches the rainfall pattern of this region as more than 70% of the yearly precipitation is encountered during this four months.

57. **Surface Water:** Main River beside Mymensingh town is Old Brahmaputra. Main Rivers in the district are Old Brahmaputra, Sutia and Nageshwari. Mymensingh consists of many ponds that were once used for drinking water.

58. It is better to monitor the water quality of nearby water bodies and Brahmaputra River as well. Water samples were collected from nearby ditch/pond of the existing landfill along with leachate. Water sample was also collected from drain near outlet and Brahmaputra River. Samples were tested by Center for Climate Change Sustainability Research, Dhaka University of Engineering and Technology, Gazipur. Results are shown in Table 10. Result shows that concentration of Chloride is within the limit of Bangladesh Inland Surface Water

Quality Standard for drinking, while Turbidity was found to be way above the standard (ECR, 1997). River water quality can be monitored during construction and operation period.

Table 10: Water Quality Analyses

SL	Water quality parameters	Unit	Bangladesh nland Surface Water Quality Standard for Recreation Purpose (ECR, 1997)	River Water at Old Brahmaputra	Concentration present			Effluent discharge standard into inland surface water (ECR 1997)
					Leachate from existing landfill	Ditch water near existing landfill	Drain water near outlet	
1	Chloride	mg/l	-	110	450	170	240	600
2	Colour	PtCo	-	58	440	930	166	-
3	Hardness	mg/l	-	1.5	160	260	130	-
4	Conductivity	µS/cm	-	325	740	425	630	1200
5	Iron (Fe)	mg/l	-	0.8	3.57	1.436	1.136	1
6	pH		6.5-8.5	7.52	7.56	7.21	6.87	6-9
7	Total Dissolved Solid(TDS)	Mg/L	-	158	170	690	126	2100
8	Total Suspended Solid(TSS)	Mg/L	-	29	66	248	78	150
9	Turbidity	NTU	-	32	32	64.4	14.3	-
10	Dissolved Oxygen	mg/l	5 and above	5.7	0.46	0.98	0.88	4.5-8
11	BOD_5 (20° C)	mg/l	3 or less	6	220	140	120	50
12	COD	Mg/l	-	11	644	405	143	200
13	NH_3-N	Mg/L	-	Nil	13	15	12	50
14	Total Phosphate	Mg/L	-	0.2	1.8	23.2	12.2	-
15	Sulfate	Mg/L	-	1.6	Nil	Nil	Nil	-
16	Alkalinity	Mg/L	-	98	450	1290	250	-
17	As	Mg/L	-	Nil	0.015	Nil	Nil	0.2

Source: Mymensingh Pourashava and DUET, Gazipur.

59. From the above result, it is observed that the water quality for Old Brahmaputra is still within the Bangladesh Surface Water Quality Standard for recreational purpose. The water was collected during monsoon. Therefore, during winter water quality may further deteriorate. Incoming water from drain and other pollution source may impact a lot in the dry period. Water quality monitoring is important. It is recommended to establish a baseline value for Brahmaputra river by taking sample from nearby the landfill site (may be underneath the Shambuganj bridge) before construction.

60. **Groundwater:** Water aquifers are present beneath the vast majority of Bangladesh, which are being recharged by the major river systems and by infiltration of rainwater. Most ground water is available within 7.0m of the surface. This level fluctuates seasonally, approaching the ground surface over most of the country during the months July to September. (During wet season water table varies from 5-7m and during dry season it varies from 10-12 m: Source DPHE). This fall in groundwater levels is an entirely natural process that arises because of the hydrological link with the river. Groundwater quality was obtained from DPHE in 2016 as shown in Table 11.

Table 11: Groundwater quality of Mymensingh (DPHE, 2016)

Sl. No.	Water Quality Parameters	Unit	Concentration Present at Different Production Wells				Bangladesh Drinking Water Quality Standard
			Golgonda PTW	RR water works PTW	Kalibari PTW	Goziabari Math PTW	
1.	Arsenic	mg/L	0.001	0.001	0.002	<LOQ	0.05
2.	Iron	mg/L	<LOQ	1.21	1.78	<LOQ	0.3 - 1.0
3.	Manganese	mg/L	0.14	0.14	0.25	0.14	0.10

Source: DPHE zonal laboratory, Mymensingh (LOQ- Level of Quantization)

61. It is observed in Table 11 iron and arsenic is within acceptable limit of Bangladesh Standard in two PTWs at RR water works and Kalibari.

62. **Air Quality:** Mymensingh is a sub-urban area of Bangladesh. In the sub-urban areas ambient air quality is dependent on many factors like air movement, traffic volume, congestion, emissions from motor vehicles, and suspended dust particles. The proposed sites are visually not found as polluted therefore, no primary data was collected. However, a continuous monitoring scheme is essential to evaluate air quality and for the development of any plan for mitigation of health risks caused by polluted air. The six “criteria pollutants”, particulate matter (PM10, PM2.5), CO, SOx and NOx have to be monitored more or less. Hence, to establish the baseline air quality, a primary analysis of air quality is proposed before start of construction. Table 12 shows the Bangladesh National Ambient Air Quality Standard comparing the WHO Guideline and US EPA Standard.

Table 12: Bangladesh National Ambient Air Quality Standard comparing the WHO Guideline and US EPA

Pollutant	Averaging Period	Bangladesh Standards[a]	WHO[b] Guideline Values (µg/m³)	US EPA Standards (µg/m³)[d]
CO	8-hour	10,000 µg/m³ (9 ppm)	10,000 [c]	10,000
	1-hour	40,000 µg/m³ (35 ppm)	30,000 [c]	40,000
Pb	Annual	0.5 µg/m³	0.5	–
NO_x	Annual	100 µg/m³ (0.053 ppm)	–	–
TSP	8-hour	200 µg/m³	–	–
PM_{10}	Annual	50 µg/m³	20	revoked
	24-hour	150 µg/m³	50	150
$PM_{2.5}$	Annual	15 µg/m³	10	15
	24-hour	65 µg/m³	25	35
O_3	1-hour	235 µg/m³ (0.12 ppm)	–	235
	8-hour	157 µg/m³ (0.08 ppm)	100	157
SO_2	Annual	80 µg/m³ (0.03 ppm)	–	78
	24-hour	365 µg/m³ (0.14 ppm)	20	365

CO = Carbon monoxide; NO_x = Nitrogen oxide; O_3 = ozone; Pb = lead; PM_{10} = particulate matter with a diameter of not more than 10 microns; $PM_{2.5}$ = particulate matter with a diameter of not more than 2.5 microns; SO_2 = Sulfur dioxide; S.R.O. = US EPA = United States Environmental Protection Agency; TSP = total suspended particulates; WHO = World Health Organization; µg/m³ = micrograms per cubic meter; ppm = parts per million; – = no value
Source: [a]S.R.O. No: 220-Law, 2005; [b]WHO, 2005; [c]WHO, 2000; and [d]US EPA, 2006.

63. **Acoustic Environment:** Sound is transmitted through air when an object moves, like water flowing over rocks, or air passing through vocal cords. This movement causes air waves, similar to ripples in water. When these waves reach human ears, they are transformed into sound. Sound is usually measured in decibels (dB). A decibel is a relative measure that is accompanied by a reference scale. Technically, sound pressure is 20 times the logarithm (base 10) of the ratio of the pressure level of any sound to the reference sound pressure in decibels. Sound (noise) levels can be measured and quantified in several ways. All of them use the logarithmic decibel (dB) scale. The dB scale is logarithmic to accommodate the wide range of sound intensities found in the environment. Table 13 shows typical sound levels generated by common indoor and outdoor activities, along with its effect on human.

Table 13: Sound levels and human response

Common Sounds	Noise Level (dB)	Effect
Carrier deck jet operation; Air raid siren	140	Painfully loud
Thunderclap	130	Painfully loud
Jet takeoff (200 feet); Auto horn (3 feet)	120	Maximum vocal effort
Pile driver; Rock concert	110	Extremely loud
Garbage truck; Firecrackers	100	Very loud
Heavy truck (50 feet); City traffic	90	Very annoying Hearing damage (8 hours)
Noisy restaurant; Freeway traffic; Business office	70	Telephone use difficult
Air conditioning unit; Conversational speech	60	Intrusive
Light auto traffic (100 feet)	50	Quiet
Library/soft whisper (15 feet)	30	Very Quiet
Broadcasting studio	20	Very Quiet
Threshold of hearing	0	Hearing begins
Source: Davis and Cornwell (1998)		
Common Sounds	Noise Level (dB)	Effect
Source: Davis and Cornwell (1998)		

64. Existing ambient noise levels can serve as a baseline from which to measure potential disturbance caused by project activities. Hence, to establish the baseline noise quality, a primary analysis of noise quality is proposed before start of construction at the proposed site of the subproject. The standard for noise is shown in the Table 14.

Table 14: Noise Quality Standards, by Zone and Time of Day

Zone Class	Limits in dB(A)	
	Daytime (6 am – 9 pm)	Nighttime (9 pm – 6 am)
Silent zone	45	35
Residential zone	50	40
Mixed (residential/commercial/industrial) zone	60	50
Commercial zone	70	60
Industrial zone	75	70
Source: Department of Environment (DoE), Bangladesh		

B. Biological Environment

65. There are no endangered species or critical habitats in the subproject areas. The ecological environment is characterized by a human managed sub-urban landscape. In the study area, terrestrial floras are present mainly in the homestead regions, roadsides, village groves, and cultivated lands. Homesteads and orchards have: betel nut, kadam, coconut, date palm, sofeda, mango, jackfruit, pomegranate, guava, grapefruit, lemon, blackberries, plum, toddy palm, koroi, shisoo, shirish, rain tree, evcaiytta, bamboo, babla, jeol, neem, tamarind, banana, ipil-ipil, papaya, mehgani, debdaru, shimul, akashmoni, khai babla, jamrul, chalta, bel, amra, amloki, segun, etc. Roadside plantations includes: datepalm, sal, road chambol, koroi, krishnachura, rain tree, banyan, shisoo, babla, akashmoni, eucalyptus, mango, blackberries, raj koroi, etc. Main crops Paddy, potato, wheat, vegetables. None of these species are listed as Threatened, Nearly Threatened or Rare list in IUCN Red List.

66. Fish species include ruhi, katla, mrigel, boal, gazar, kaliboush, shoil, puti, pabda, mola, koi, khorsala, kholisha, kakila, guchi baem, airh, bacha, bain, batasi, bele, chanda, chang, chapila, chela, chitol, datina, taki, tatkini, veda, magur, shing, shorputi, phali, and tengra. Exotic fishes like grass carp, silver carp, telapia, nilotica, etc. have also been introduced for commercial pisciculture in ponds and tanks.

67. Reptile includes Anjila, Dhura Shap, Matia Shap, Tiktiki, Daraish Shap, Gui Shap, etc. Comon mamals are Babur, Idur, Shial, Chika, Beji, etc. Avifauna (birds) includes Choroi, Doyel, Kak, Ghugho, Shalik, Tuntuni, Machranga, Haludpakhi, Gangchil, etc. Insect fauna includes Dragon fly nymph, Damsel fly nymph, Water strider, Midge, Flies, Ant, Caddisfly,

etc. None of these species are listed as Threatened, Nearly Threatened or Rare list in IUCN Red List.

68. This bio-survey data might not reflect the actual biodiversity of that area. One species found in the monsoon might not be seen in the winter. Extensive survey over the year might give an actual status of biodiversity. Present bio-survey list is a snapshot prepared based on the species found during the field visit time.

69. There are two National Parks such as Madhupur National Park (32 km from Mymensingh town) and Kadigarh National Park (more than 50 km from Mymensingh town).

C. Physical and Cultural Heritage

70. Mymensingh, a former district of British India, was in the Dhaka division of Eastern Bengal and Assam at the era of Indian Sub-continent. It occupies a portion of the alluvial valley of the Brahmaputra east of the main channel (called the Jamuna) and north of Dhaka. The administrative headquarters were at Nasirabad, usually called Mymensingh town. The district was acquired by the East India Company with the Dewani Grant from the Mughal Emperor in 1765.

71. The area which constitutes Mymensingh was once a part of the kingdom of Kumrupa. Sultan Hossain Shah of Gaur occupied this area and named it Nasrat Shahi after the name of his son Nasrat Shah. During the period of Mughal Emperor Akbar this area was renamed as Mominshahi Pargana after the name of Mominshah, a prominent lieutenant of the Sultan of Bengal. This area was again renamed as Mymensingh in 1787, the early part of the British rule.

72. Mymensingh is famous in Archaeological as physical and cultural heritage. Archaeological heritage sites are Rajbaris and Bokaynagar Durgo (fort) of Gauripur and Muktagacha Rajbari and Shashi kanti Lodge, Musium, Durgabari, Kella Tajpur, Mymensingh Town Hall Fort, Rajbari, Alexandra Castle and Gospel Church in Mymensingh Sadar. Dakbungalow's Char of Mymensingh Sadar, Chakbazar, Jelkhana Char, River bank of Shambhuganj, Boror Char, Bangladesh Agricultural University Compound etc.

D. Socio-economic environment

73. **Population:** Mymensingh Pourashava consists of 21 wards and 95 mahallas. The Pourashava covers an area of 21.73sq.km (BBS, 2011). In 2011 the population of the Pourashava was 258,040 (BBS, 2011); the population density is 11,875 persons per km2; male 51%, female 49%. The literacy rate among the people in Mymensingh sadar Upazila is 51.7% (BBS, 2013).

74. Mymensingh Pourashava has experienced reasonably high population growth over a long period in the past (1981-2011). Although the annual growth rate differs between various inter-census periods during the period, but the average annual growth rate over a 30-year period between 1981 and 2011 shows 3.25 percent annual growth of population. Infrastructure improvements will help sustain a reasonably a high growth of population in the Pourashava.

75. Besides, the Pourashava is the divisional headquarters of Mymensingh Division and may soon become a city corporation. These positive changes in favor of the Pourashava will help Mymensingh Pourashava to sustain a high growth rate. A 3.50 percent annual average population growth, therefore, seems to be reasonable and may continue in the long-term future.

76. **Livelihood Practices and Economic Activities:** Agriculture 34.57 %, non-agricultural labourer 4.05%, industry 1.01%, commerce 19.18%, transport and communication 6.68%, service 16.54%, construction 4.03%, religious service 0.24%, rent and remittance 0.86% and others 12.84%. (*Source: Banglapedia*). Ownership of agricultural land Landowner 45.26%, landless 54.74%. Agricultural landowner: urban 37.57% and rural 52%. Fish of different

varieties abound in this district. Moreover, varieties of fish are caught from rivers, tributary channels, even from paddy field during rainy season. Some valuable timber and forest trees are grown in the district. Out of 4363.48 sq. km. of the district, forest and river in areas occupy about 147.00 sq. km. and 106.71 sq. km. respectively.

77. Other than these, diary, poultry and hatchery are also present. Noted manufactories are garments factory, Textile mills, Fish Feed, Jute Mill, Steel Factory, flour mill, ice factory, tannery, welding factory, bidi factory and Shambhuganj Power Station. Among small industries citable are cottage industries, Goldsmith, blacksmith, potteries, wood work, bamboo work, weaving, embroidery, silk work, tailoring etc. Main exports are paddy, banana, leather, vegetables.

78. Main crops are Paddy, jute, sugarcane, wheat, oil seed and pulse, betel leaf, karalla, sweet potato, turmeric, ginger, brinjal, cauliflower etc. Main fruits are Jackfruit, banana, pineapple, papaya, kadbel, guava, boroi, amloki, palm, latkon etc.

E. Infrastructures

79. **Water Supply:** At present, piped water is supplied to the consumers through 8,233 nos. service connections. All types of the service connections are metered at Mymensingh. Connection fees of 38 mm and 50 mm dia. for domestic, commercial and institutional connections were increased from 1st July, 2016. At present, water supply coverage is only 31% (by production).

80. **Drainage system:** The drainage system of the Pourashava is limited, with the four primary khals— namely the Sehra, Makarjani, Gohailkandi and Akua Khals—which are stretching from north to south with culverts under the rail line. These khals are fed with almost all the secondary and tertiary drains of the Pourashava except the few drains falling directly to the river. The Sehra, Makarjani and the Gohailkandi Khals are again falling to the Akua Khal and almost all the storm runoff of the Pourashava is draining through the Akua Khal. The Akua Khal is running out of the Pourashava and ultimately falls to the Brahmaputra River away from the Pourashava. Therefore the efficiency of drainage of the Pourashava is depending upon the condition of these four khals. In respect of drains, the aggregate drainage length in the Pourashava (PS) stands at 139.95 km. The lengths of brick drain, cement concrete (CC) drain, and RCC drain are 100.24 km, 4.52 km, 4.76 Km, and 30.43km respectively. The condition of the drains is largely poor with most of them have no proper outfall.

81. **Water Logging:** Because of the lack of an integrated drainage system, heavy rainfall causes disruption to road communication. In the most water logged areas water logging lasts for 2~3 hours and depth of inundation is about 1~2 feet. In some areas which are not connected with any drainage system, water logging can continue for several days and even months. The main water logging areas are:

- Dhopkhola Mohila Caret College area (Ward-13)
- Gaghnarpar at town hall more to station road (Ward-7 and 8).
- Sehra Munshipara area (Ward-16).
- Porohitpara and Bramman polly area (Ward-16 and17)
- College road and Academy road area (Ward-5).

F. Description of site and surroundings

82. The Pourashava is free from any large scale carbon emission as there is small number of vehicular transport and small number of smoke emitting industries in the Pourashava.

83. Enquiries about the extent to which land and dwellings are affected by water logging reveal that the land around just under 45% of households is water logging every year. Almost 7% of the land around other households is water logging only some years. The number of times ranges from 1 to 10 times. The average is just over 2.3, while the average depths range 1–80cm.

84. Mymensingh, a historic town more than 200 years old, was once a major urban center. In the past two decades, however, the municipal population growth rate has declined, in contrast to Bangladesh's urbanization trend. The wood based and food production industries are the most important industries within the Pourashava boundary. The master plan notes that less than 2% of the population is engaged in these industries.

85. The Climate Resilient Integrated Urban Plan report prepared by MDS Consultants for preparation of additional financing provides a short account of the potential and vulnerabilities of the Pourashava's economy. Mymensingh has two primary economic drivers, the education and the health service sectors. Despite its proximity to Dhaka, it currently lacks propulsive industries with interdependent linkages that are critical to stimulating economic growth. Current development is mainly organized in a linear pattern along transportation routes. Residential development appears to be expanding in different directions simultaneously, with a widespread distribution of housing that municipal services have not been able to match. Municipal services are severely limited and inadequate to meet current demand.

G. Impacts of Climate Change

86. While there is a lack of infrastructure for drainage, roads, solid waste, water supply and sanitation, identification of the resilience dimensions and prioritization of goals for development would be the major tasks for climate resilient integrated urban development in the Pourashava.

87. Besides, fast growing town, Mymensingh is under threat of climate change impact. It is likely to face the following potential climate change impacts:

i. Due to increase of rainfall, road/drainage congestion, water logging will increase. Low laying areas will be inundated, prevail unhygienic condition in drainage and sanitation, will result disease spreading.
ii. There will be an increase in the number and severity of tropical cyclones causing damage to property and life.
iii. The major problem contributing to Mymensingh's vulnerability as a whole is the lack of basic services, especially water supply, drainage, sanitation and waste management.
iv. Unplanned development and lack of control over development arising from lack of attention to urban planning, will cost dearly in the long run.
v. There will be increased costs of infrastructure development, and O & M.
vi. Agriculture will be affected leading to an increase in poverty. More funds will have to be injected to tackle unemployment and poverty.
vii. River bed rise already makes gravitational flow of drainage water into the river difficult.
viii. With agriculture affected in rural areas, there will be poverty and increased rural- urban migration. Urban poverty will increase, requiring more money for poverty alleviation.

V. ASSESSMENT OF ENVIRONMENTAL IMPACTS AND SAFEGUARDS

A. Methodology

88. Issues for consideration have been raised by the following means: (i) input from interested and affected parties; (ii) desktop research of information relevant to the proposed subproject; (iii) site visits; and (iv) evaluation of proposed design scope as per Consultants study and potential impacts.

89. The corridors of impact considered include: (i) existing alignment and width of roads and drains to be rehabilitated/improvement; and (ii) existing RoWs. No additional land is required beyond the RoWs. Categorization of the sub-project and formulation of mitigation measures have been guided by ADB's REA Checklist for Roads (**Appendix-1**) and ADB SPS, 2009.

B. Screening out Areas of No Significant Impact

90. From the detailed design and results of the rapid environmental assessment, it is clear that implementation of Mymensingh Pourashava roads and drains sub-project will not have major negative impacts because activities will be localized/site-specific and short in duration and construction will be conducted within a relatively small area. Because of these there are several aspects of the environment that are not expected to be affected by the sub-project Table 15 thus can be screened out of the assessment at this stage but will be assessed again during detailed design stage and before implementation.

Table 15: Fields in which the Sub-project Components Not Expected to Have Significant Impacts

Environmental components	Anticipated impacts
A. Physical Characteristics	
Topography, landforms, geology and soils	Required amount of materials will not cause alteration of topography, landforms, geology and soils. Erosion hazard is insignificant as trenching and excavation works will be conducted only during construction stage (short-term) and specific to sites along public ROWs.
Climatic conditions	Short-term production of dust is the only effect on atmosphere. However, impact is short-term, site-specific and within a relatively small area. There are well developed methods for mitigation.
B. Biological Characteristics	
Biodiversity	Activities being located in the built-up area of Mymensingh Pourashava will not cause direct impact on biodiversity values. Based on preliminary design construction activities do not anticipate any cutting of trees (to be reassessed during detailed design stage).
C. Socioeconomic Characteristics	
Land use	No alteration on land use. Rehabilitation of existing roads and drains is prioritized over new construction, using vacant government land and ROWs.
Type of community spread	No alteration on type of community spread.
Socio-economic status	There is no requirement for land acquisition. Affected persons and structures will be addressed separately in the resettlement plan developed as per Government of Bangladesh laws and ADB SPS, 2009. Manpower will be required during the construction stage, this can result to generation of contractual employment and increase in local revenue.
D. Historical, Cultural, and Archaeological Characteristics	
Physical and cultural heritage	The sub-project components are not located in or near and excavation works will not be conducted in the vicinities of identified historical and sites.

C. Anticipated Impacts and Mitigation Measures – Planning and Design Phase

91. **Sub-project selection criteria:** The project environmental assessment and review framework specifies environmental criteria to avoid or minimize adverse impacts during the identification and finalization of road and drain sub-project. Table 16 summarizes criteria and design considerations as per final design.

Table 16: Site and Design Considerations to Meet EARF Environmental Criteria

Sl. No.	Components	Environmental Selection Guidelines	Remarks
1.	Overall Selection Guideline	i. Comply with all requirements of relevant national and local laws, rules, and guidelines.	- ECC was issued from DoE, renewal letter also issued and being inclusion of additional Pourashava in the ECC prior to commencement of works
		ii. Avoid/minimize where possible locations in protected areas, including notified reserved forests or biodiversity conservation hotspots (wetlands, national reserves, forest reserves, and sanctuaries).	- Not present in Mymensingh Pourashava
		iii. Avoid possible locations that will result in destruction/disturbance to historical and cultural places/ values.	- Use of "chance find" procedures in the EMP that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.
		v. Avoid tree-cutting where possible. Retain mature roadside trees which are important/ valuable or historically significant. If any trees have to be removed, plant two new trees for every one that is lost.	- Permit for tree-cutting to be obtained by contractor/sprier to commencement of work - Compensatory plantation for trees lost at a rate of 2 trees for every tree cut, in addition to tree plantation as specified in the design, will be implemented by the contractor, who will also maintain the saplings for the duration of his contract.
		. Ensure all planning and design interventions and decisions are made in consultation with local communities and include women. Reflect inputs from public consultation and disclosure for site selection.	- All consultations during project preparation are documented and concerns expressed by public addressed in the IEE.
		i. Synchronize all road improvement and pipe laying works (to extent possible) to minimize disturbance and optimize use of resources (e.g., water pipes laid prior to road improvements).	- Considered in the detailed design
2.	Roads and Drains Improvement	i. Include the provision of new or improved storm water drainage to remove the increased runoff caused by increasing the road surface area ii. Include tree planting alongside roads to provide a natural barrier to noise and visual impacts, and include additional man-made barriers where suitable for public safety.	- Considered in the detailed design - included in the EMP

92. **Land acquisition and resettlement:** The proposed roads and drains will be located in public RoWs. Involuntary resettlement impacts on encroachers along RoWs will be

addressed by the resettlement plan prepared for the sub-project as per ADB SPS, 2009 and applicable Bangladesh laws. Cutting of trees will not be required as per detailed design. This will be reassessed during detailed design stage and if cutting of trees will be required, compensatory plantation for trees lost at a rate of 2 trees for every tree cut will be implemented by the Contractor, who will also maintain the saplings for the duration of his Contract.

93. Planning principles and detailed design considerations have been reviewed and incorporated into the site planning process whenever possible. Locations and sitting of the proposed infrastructures were considered to further reduce impacts. The sub-project will be in properties held by the Pourashava and access to the sub-project sites is through public ROW and existing roads and drains hence, land acquisition and encroachment on private property will not occur.

94. The concepts considered in detailed design of the Mymensingh Pourashava road and drain sub-project are: (i) locating components on public RoW's to avoid the need for land acquisition and relocation of people; (ii) taking all possible measures in design and selection of site or alignment to avoid resettlement impacts; (iii) avoiding where possible locations that will result in destruction/disturbance to historical and cultural places/values; (iv) avoiding tree-cutting where possible; (v) ensuring all planning and design interventions and decisions are made in consultation with local communities and reflecting inputs from public consultation and disclosure for site selection.

95. **Climate Change Adaptation and Disaster Risk Management Considerations:** The Pourashava needs to deal with the impacts of climate change that are mainly associated with increased rainfall, rain-driven drainage congestion and urban flash flooding. Inadequate drainage and waste management systems are contributing to localized flooding, drainage congestion, water logging and water pollution. The majority of waterlogged areas seem to be in the municipality's newer areas, away from its historic business district. Inadequate drainage and waste management systems are contributing to localized flooding, drainage congestion, water logging and water pollution.

96. Flash flood and water logging will be accelerated due to increase of climate change impacts. This may have no impact on sub-project. Frequent water logging due to heavy rainfall is an issue for Mymensingh Pourashava. This will be accelerated due to increase of climate change impacts. It is recommended that project design construction, especially design material, method of construction should be taken appropriate to make the Project climate-proof and disaster resilient. During the detailed design, the Environment Specialist properly consulted with the design team to incorporate this impact. The climate change impact and necessary consideration in design for adaptation is shown in Table 17.

Table 17: Climate change impact and Mitigate against Project Effects of resilience for Road & Drain

Climate Change Effect	Impact	Mitigation Measures
Water level high/Sea level rise	Riverbank erosion or breaching the road embankment,	• Tree plantation need both side of the embankment, create buffer zone beside embankment, introduce guide wall to protect erosion and sliding for CC roads & drains;
Heavy rainfall	Increased rainfall quantity and runoff Increased frequency of storms	• Improve O & M, organizational capacity, resource allocation, etc. • Work with relevant stakeholders to manage water use and flood discharges more effectively • Improve collection and disposal of solid waste • Control encroachments • Improve public behaviour through active and prolonged information, education and communication campaigns to reduce uncontrolled

Climate Change Effect	Impact	Mitigation Measures
		solid waste disposal, encroachments, damage to infrastructure, unregulated development in key areas, etc., supported by enforcement. • Guide wall to protect erosion and sliding for roads & drains with adjacent water bodies/ponds
Salinity	All construction material will be impacted due to salinity: corrosion and dampness	• All construction material should saline resistant, anti-saline admixture can be used
Floods and water logging	Erosion to road surface and structural damage to drain and road due to over topping and water logging;	• Proper side drainage and cross drainage should be provided to road, road and drain design should consider high flood level,
Drought	Impact on plant and vegetation, water scarcity, construction quality may suffer due to lack of water for curing, drain blockage may happen due to disposal of waste to dry drain	• Curing should be properly taken care of and sufficient water should be ensured during construction; Regular cleaning and maintenance should be done for drain
Construction materials' quality		• Choose most durable materials possible, even if higher cost, e.g. concrete, high quality bricks. • Monitor and control construction quality
Rising temperatures		• Works during most favourable times of year and day should be executed; Preparing, placing and curing concrete and mortar, to ensure placement, etc., during most favourable times should be monitored and controlled; plain high-quality un-rendered brickwork and high quality cement mortar in preference to rendered low-grade bricks should be used; sulphate resisting cement should be used in vulnerable locations (higher heat gain during curing) or cement containing fly ash (less heat gain, so preferred)
Runoff		• Use trapezoidal section side drains with small low-flow section for low flows • Lined side drains to achieve higher discharge velocities without increasing risk of scour, etc.

Source: MDS Consultants team

97. Detailed designs integrate a number of measures, both structural and non-structural, to mainstream climate resilience into the Mymensingh Pourashava roads and drains sub-project, including: (i) road level rise as required; (ii) increase of bitumen carpeting thickness; (iii) proper compaction; (iv) prefer cement concrete (CC) pavement where there are threats of inundation; (v) temperature reinforcement in CC pavement where there are threats of inundation; (vi) cross-drains as required; (vii) for CC roads & drains, guide wall to protect erosion and sliding; and (vii) turf and tree plantation along the roads. As a result, some measures have already been included in the subproject designs. This means that the impacts and their significance have already been reduced.

D. Anticipated Impacts and Mitigation Measures – Construction Phase

i. Beneficial impact

98. The immediate benefits of road and drain construction and improvement will come in the form of direct employment opportunities during construction for the road & drain side communities specially those engaged as wage laborers and petty contractors and suppliers of raw materials.

99. Improvement of the roads and drains section will result in better connectivity to the main roads and smooth flow of traffic, prevention of water logging during heavy rains to benefit different stakeholders. Reduction in travel time due to reduction in traffic congestion and lower vehicle operating cost i.e. per km vehicle operating cost from the general improvement work and an absolute saving in cost due to reduction in fuel consumption for the existing traffic. Improved access and reduced travel times and costs will be major stimuli to economic growth.

ii. Adverse Impacts

100. In the case of this subproject (i) most of the individual elements are relatively small and involve straightforward construction, so impacts will be mainly localized and not greatly significant; (ii) most of the predicted impacts are associated with the construction process, and are produced because that process is invasive, involving excavation and earth movements; and (iii) being located in the built-up area of the Pourashava will not cause direct impact on biodiversity values.

101. **Construction method:** Trenches will be dug by backhoe digger, supplemented by manual digging where necessary. Excavated soil will be placed nearby, and the materials (brought to site on trucks and stored on unused land nearby) will be placed in the trench by crane or using a small rig. The infrastructures will be constructed manually according to design specifications. Any excavated road will be reinstated.

102. There is sufficient space for a staging area, construction equipment and stockpiling of materials. However, the contractor will need to remove all construction and demolition wastes on a daily basis.

103. Although construction of these project components involves quite simple techniques of civil work, the invasive nature of excavation and the project sites in built-up areas of Mymensingh Pourashava where there are a variety of human activities, will result to impacts to the environment and sensitive receptors such as residents, businesses, and the community in general. These anticipated impacts are short-term, site-specific and within a relatively small area. There are no impacts that are significant or complex in nature, or that need an in-depth study to assess the impact. Thus, Mymensingh Pourashava roads and drains sub-project is unlikely to cause significant adverse impacts. The potential adverse impacts that are associated with construction activities can be mitigated to acceptable levels with the following mitigation measures Table 18.

Table 18: Anticipated Impacts and Mitigation Measures – Construction Phase

Field	Impacts	Mitigation Measures
A. Physical Characteristics		
Topography, landforms, geology and soils	Significant amount of gravel, sand, asphalt and cement will be required for this subproject. Extraction of construction materials may cause localized changes in topography and landforms. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Utilize readily available sources of materials. If contractor procures materials from existing burrow pits and quarries, ensure these conform to all relevant regulatory requirements. • Borrow areas and quarries (If these are being opened up exclusively for the subproject) must comply with environmental requirements, as applicable. No activity will be allowed until formal agreement is signed between PIU, landowner and contractor.
Water quality	Trenching and excavation, run-off from stockpiled materials, and chemical contamination from fuels and lubricants may result to silt-laden runoff during rainfall which may cause siltation and reduction in the quality of	• Prepare and implement a spoil management plan (see Appendix 3 for outline). • Prioritize re-use of excess spoils and materials in construction activities. If spoils will be disposed, consult with Mymensingh

Field	Impacts	Mitigation Measures
	adjacent bodies of water. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	local authority on designated disposal areas. • All earthworks must be conducted during dry season to maximum extent possible to avoid the difficult working conditions that prevail during monsoon season such as problems from runoff. • Location for stockyards for construction materials shall be identified at least 300m away from watercourses. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. • Take all precautions to minimize the wastage of water in the construction activities. • Take all precautions to prevent entering of wastewater into streams, watercourses, or irrigation system. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies. • Ensure diverting storm water flow during construction shall not lead to inundation and other nuisances in low lying areas. • While working across or close to any water body, the flow of water must not be obstructed. Ensure no construction materials like earth, stone, or appendage are disposed of in a manner that may block the flow of water of any watercourse and cross drainage channels. • Monitor water quality according to the environmental management plan.
Air quality	Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle-related pollutants (such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons) which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Damp down exposed soil and any sand stockpiled on site by spraying with water when necessary during dry weather; • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of windscreens, water sprinklers, and dust extraction systems shall be provided at all hot-mix plants, batching plants and crushers (if these establishments are being set up exclusively for the subproject). • Monitor air quality.
Acoustic environment	Construction activities will be on settlements, along and near schools, and areas with small-scale businesses. Temporary increase in noise level and vibrations may be caused by excavation equipment, and the transportation of equipment, materials, and people. However, the proposed subproject will follow	• Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Plan activities in consultation with Mymensingh local authority so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least

Field	Impacts	Mitigation Measures
	existing ROW alignment and impact is short-term, site-specific and within a relatively small area. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	disturbance. • Use of high noise generating equipment shall be stopped during night time. • Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; • Utilize modern vehicles and machinery with the requisite adaptations to limit noise and exhaust emissions, and ensure that these are maintained to manufacturers' specifications at all times. • All vehicles and equipment used in construction shall be fitted with exhaust silencers. Use silent-type generators (if required). • Monitor noise levels. Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. • If it is not practicable to reduce noise levels to or below noise exposure limits, the contractor must post warning signs in the noise hazard areas. Workers in a posted noise hazard area must wear hearing protection. • Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Complete work in these areas quickly.
Aesthetics	The construction activities do not anticipate any cutting of trees but will produce excess excavated earth (spoils), excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Prepare the Debris Disposal Plan • Remove all construction and demolition wastes on a daily basis. • Coordinate with Mymensingh local authority for beneficial uses of excess excavated soils or immediately dispose to designated areas Avoid stockpiling of any excess spoils • Suitably dispose of collected materials from drainages, unutilized materials and debris either through filling up of pits/wasteland or at pre-designated disposal locations. • All vehicles delivering fine materials to the site and carrying waste debris for disposal shall be covered to avoid spillage of materials. All existing roads used by vehicles of the contractor, shall be kept clear of all dust/mud or other extraneous materials dropped by such vehicles. • Lighting on construction sites shall be pointed downwards and away from oncoming traffic and nearby houses. • In areas where the visual environment is particularly important or privacy concerns for surrounding buildings exist, the site may require screening. This could be in the form of shade cloth, temporary walls, or other

Field	Impacts	Mitigation Measures
		suitable materials prior to the beginning of construction. • The site must be kept clean to minimize the visual impact of the site. Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
B. Biological Characteristics		
Biodiversity	Activities being located in the built-up area of Mymensingh Pourashava. There are no protected areas in or around sub-project sites, and no known areas of ecological interest. There are no trees along ROWs that need to be removed.	• Check if tree-cutting will be required during detailed design stage. No trees, shrubs, or groundcover may be removed or vegetation stripped without the prior permission of project management unit (PMU). • If during detailed design cutting of tress will be required, compensatory plantation for trees lost at a rate of 2 trees for every tree cut, in addition to tree plantation as specified in the design, will be implemented by the contractor, who will also maintain the saplings for the duration of his contract. • All efforts shall be made to preserve trees by evaluation of minor design adjustments/ alternatives (as applicable) to save trees. • Special attention shall be given for protecting giant trees and locally-important trees (with religious importance) during implementation. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna (animal) including fishing in any water body in the subproject vicinity. • Prohibit employees from poaching wildlife and cutting of trees for firewood.
C. Socioeconomic Characteristics		
Existing provisions for pedestrians and other forms of transport	Road closure is anticipated. Hauling of construction materials and operation of equipment on-site can cause traffic problems. However, the proposed subproject will follow existing ROW alignment. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Prepare and implement a Traffic Management Plan (see Appendix 4 for sample) • Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. • Maintain safe passage for vehicles and pedestrians throughout the construction period. • Schedule truck deliveries of construction materials during periods of low traffic volume. • Erect and maintain barricades, including signs, markings, flags and flagmen informing diversions and alternative routes when required. • Notify affected sensitive receptors by providing sign boards informing nature and duration of construction activities and contact numbers for concerns/complaints.

Field	Impacts	Mitigation Measures
		• Leave spaces for access between mounds of soil. • Provide walkways and metal sheets where required to maintain access across for people and vehicles. • Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools. • Consult businesses and institutions regarding operating hours and factoring this in work schedules. Ensure there is provision of alternate access to businesses and institutions during construction activities, so that there is no closure of these shops or any loss of client age. • Ensure any damage to properties and utilities will be restored or compensated to pre-work conditions.
Socio-economic status	Sub-project components will be located in government land and existing ROWs thus there is no requirement for land acquisition or any resettlements. Manpower will be required during the 18-month construction stage. This can result in generation of contractual employment and increase in local revenue. Thus potential impact is positive and long-term.	• Employ at least 50% of labor force from communities in the vicinity of the site. This will have the added benefit of avoiding social problems that sometimes occur when workers are imported into host communities, and avoiding environmental and social problems from workers housed in poorly serviced camp accommodation. • Secure construction materials from local market.
Other existing amenities for community welfare	Although construction of subproject components involves quite simple techniques of civil work, the invasive nature of excavation and the subproject sites being in built-up areas of Mymensingh Pourashava where there are a variety of human activities, will result in impacts to the sensitive receptors such as residents, businesses, and the community in general. Excavation may also damage existing infrastructure (such as water distribution pipes, electricity pylons, etc) located alongside the roads. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Obtain details from Pourashava nature and location of all existing infrastructure, and plan excavation carefully to avoid any such sites to maximum extent possible; • Integrate construction of the various infrastructure subprojects to be conducted in Mymensingh (roads, drains etc.) so that different infrastructure is located on opposite sides of the road where feasible and roads and inhabitants are not subjected to repeated disturbance by construction in the same area at different times for different purposes. • Consult with local community to inform them of the nature, duration and likely effects of the construction work, and to identify any local concerns so that these can be addressed. • Existing infrastructure (such as water distribution pipes, electricity pylons, etc.) shall be relocated before construction starts at the subproject sites. • Prior permission shall be obtained from respective local authority for use of water for construction. Use of water for construction works shall not disturb local water users. • If construction work is expected to disrupt

Field	Impacts	Mitigation Measures
		users of community water bodies, notice to the affected community shall be served 7 days in advance and again 1 day prior to start of construction. • Ensure any damage to properties and utilities will be restored or compensated to pre-work conditions.
Community health and safety	Construction works will impede the access of residents and businesses in limited cases. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures. Poor safety signage and lack of barriers at work site and trenches will create hazard to pedestrians and children.	• Provide safety signage at all sites visible to public • Provide safety barriers near any trenches, and cover trenches with planks during non-work hours. • Contractor's activities and movement of staff will be restricted to designated construction areas. • Locations of hot-mix plants, batching plants and crushers (if these establishments are being set up exclusively for the subproject) shall be located at least 100 m away from the nearest dwelling preferably in the downwind direction. • Consult with Mymensingh local authority on the designated areas for stockpiling of, soils, gravel, and other construction materials. • If the contractor chooses to locate the work camp/storage area on private land, he must get prior permission from the environment management specialist and landowner. • Use small mechanical excavators to attain faster trenching progress. For rock and concrete breaking, use non-explosive blasting chemicals, silent rock cracking chemicals, and concrete breaking chemicals. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Recycling and the provision of separate waste receptacles for different types of waste shall be encouraged. • A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules: (i) no alcohol/drugs on site; (ii) prevent excessive noise; (iii) construction staff are to make use of the facilities provided for them, as opposed to ad hoc alternatives (e.g. fires for cooking, the use of surrounding bushes as a toilet facility); (iv) no fires permitted on site except if needed for the construction works; (v) trespassing on private/commercial properties adjoining the site is forbidden; (vi) other than pre-approved security staff, no workers shall be permitted to live on the

Field	Impacts	Mitigation Measures
		construction site; and (vii) no worker may be forced to do work that is potentially dangerous or that he/she is not trained to do. • Interested and affected parties need to be made aware of the existence of the complaints book and the methods of communication available to them. The contractor must address queries and complaints by: (i) documenting details of such communications; (ii) submitting these for inclusion in complaints register; (iii) bringing issues to the national/regional environmental specialist's attention immediately; and (iv) taking remedial action as per national/regional environment specialist's instruction. • The contractor shall immediately take the necessary remedial action on any complaint/grievance received by him and forward the details of the grievance along with the action taken to the national/regional environmental specialist within 48 hours of receipt of such complaint/grievance.
Workers health and safety	There is invariably a safety risk when construction works such as excavation and earthmoving are conducted in urban areas. Workers need to be mindful of the occupational hazards which can arise from working in height and excavation works. Potential impacts are negative and long-term but reversible by mitigation measures.	• Comply with requirements of Government of Bangladesh Labor Law of 2006 and all applicable laws and standards on workers health and safety (H&S). • Ensure that all site personnel have a basic level of environmental awareness training. If necessary, the national/regional environmental specialist and/or a translator shall be called to the sites to further explain aspects of environmental or social behavior that are unclear. • Produce and implement a site H&S plan which include measures as: (i) excluding the public from worksites; (ii) ensuring all workers are provided with and required to use personal protective equipment (reflectorized vests, footwear, gloves, goggles and masks) at all times; (iii) providing H&S training for all site personnel; (iv) documenting procedures to be followed for all site activities; and (v) maintaining accident reports and records. • Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances • Maintain necessary living accommodation and ancillary facilities in functional and hygienic manner in work camps. Ensure (i) uncontaminated water for drinking, cooking and washing, (ii) clean eating areas where workers are not exposed to hazardous or noxious substances; and (iii) sanitation facilities are available at all times. • Provide medical insurance coverage for

Field	Impacts	Mitigation Measures
		workers; • Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; • Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; • Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; • Ensure moving equipment is outfitted with audible back-up alarms; • 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. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and • Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.
D. Historical, Cultural, and Archaeological Characteristics		
Physical and cultural heritage	Construction works will be on existing roads and in built-up areas of Mymensingh thus risk for chance finds is low.	• All fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest discovered on the site shall be the property of the government. • Prevent workers or any other persons from removing and damaging any fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest. • Stop work immediately to allow further investigation if any finds are suspected.

E. Anticipated Impacts and Mitigation Measures – O & M Phase

104. In the operations and maintenance (O & M) phase, the roads and drains will operate with routine maintenance, which should not affect the environment. Routine repairs and unblocking of side drains will be very small in scale, to conducted manually by small teams of men with simple equipment (shovels, wheelbarrows, etc.) and works will be very short in duration, thus will not cause significant physical impacts. Traffic may be interrupted temporarily but this work will be very small in scale, infrequent, and short in duration, so there will be no economic or other implications. The infrastructures will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only. O & M will be the responsibility of Mymensingh Pourashava local authority, which will be given training by this project.

105. To maintain the safety of workers and road-users, such work should be coordinated with the local police department so that adequate warning signs and traffic diversions can be set up when necessary. Debris/sediments from drainages need to be collected and disposed at a designated site such as the landfill. It is important that the designated disposal site's base is of a non-permeable membrane in order to prevent leach ate that can contaminate the soil and groundwater. The potential adverse impacts that are associated with O&M activities can be mitigated to acceptable levels with the following mitigation measures in the Table 19 bwlow.

Table 19: Anticipated Impacts and Mitigation Measures – O&M Phase

Field	Impacts	Mitigation Measures
A. Physical Characteristics		
Water quality	Run-off from stockpiled debris/sediments from drainages which may cause siltation and reduction in the quality of adjacent bodies of water. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Take all precautions to prevent run-off into streams, watercourses, or irrigation system. Install temporary silt traps or sedimentation basins along drainage leading to the water bodies. • Remove all debris/sediments immediately. • Dispose debris/sediments at a designated site such as landfill.
Air quality	Moving debris/sediments may create dusts during dry season. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Use tarpaulins to cover soils, sand and other loose material.
Acoustic environment	Temporary increase in noise level and vibrations. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Plan activities in consultation with Mymensingh local authority so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance. • Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Complete work in these areas quickly.
B. Biological Characteristics		
Biodiversity	Activities in the built-up area of Mymensingh Pourashava. There are no protected areas in or around subproject sites, and no known areas of ecological interest.	• No trees, shrubs, or groundcover may be removed or vegetation stripped without the prior permission. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna (animal).
C. Socioeconomic Characteristics		
Existing provisions for pedestrians and other forms of transport	Road closure is not anticipated. Traffic may be interrupted temporarily. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Maintain safe passage for vehicles and pedestrians during maintenance activities. • Erect and maintain barricades, including signs, markings, flags and flagmen informing diversions and alternative routes when required. • Notify affected sensitive receptors by providing sign boards informing nature and duration of maintenance activities and contact numbers for concerns/complaints. • Leave spaces for access between mounds of soil. • Provide walkways and metal sheets where required to maintain access across for people and vehicles. • Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools. • Consult businesses and institutions regarding operating hours and factoring this in work schedules.

Field	Impacts	Mitigation Measures
		• Ensure any damage to properties and utilities will be restored or compensated to pre-work conditions.
Workers health and safety	Workers need to be mindful of the occupational hazards working in confined spaces such as closed drains. Potential impacts are negative and long-term but reversible by mitigation measures.	• Comply with requirements of Government of Bangladesh Labor Law of 2006 and all applicable laws and standards on workers H&S. • Ensure that all site personnel have a basic level of H&S training. • Produce and implement a O&M health and safety (H&S) plan which include measures as: (i) excluding the public from worksites; (ii) ensuring all workers are provided with and required to use personal protective equipment (reflectorized vests, footwear, gloves, goggles and masks) at all times; (iii) providing (H&S) training[a] for all site personnel; (iv) documenting procedures to be followed for all site activities; and (v) maintaining accident reports and records. • Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances • Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; • Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; • Mark and provide sign boards. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate. • Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.
D. Historical, Cultural, and Archaeological Characteristics		
Physical and cultural heritage	Construction works will be on existing drainages and built-up areas of Mymensingh thus risk for chance finds is low.	• All fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest discovered on the site shall be the property of the government. • Prevent workers or any other persons from removing and damaging any fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest. • Stop work immediately to allow further investigation if any finds are suspected.

[a] *Some of the key areas that may be covered during training as they relate to the primary causes of accidents include (i) slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; (iv) workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker.*

F. Cumulative Impact Assessment

106. The cumulative impact assessment examined the interaction between the subproject's residual effects (i.e., those effects that remain after mitigation measures have been applied) and those associated with other past, existing, and reasonably foreseeable future projects or activities. The interaction of residual effects associated with multiple projects and/or activities can result in cumulative impacts, both positive and negative. The project's potential cumulative effects were considered with respect to valued components in environmental and socioeconomic categories, in four areas:

i. of any potential residual project effects that may occur incrementally over time;
ii. consideration of other known relevant projects or activities within the specified study area boundaries, even if not directly related to the project;
iii. potential overlapping impacts that may occur due to other developments, even if not directly related to the proposed subproject; and
iv. future developments that are reasonably foreseeable and sufficiently certain to proceed.

107. The project has identified the valued components as air quality, acoustic environment, socioeconomic and socio-community components, and human health and safety. There are no foreseeable projects that will overlap with the sub-project. The spatial boundary of the subproject is the area along the corridor of impact (alignment and width of the roads and ROWs) and the temporal boundary can be considered as the whole Mymensingh Pourashava.

108. It is recommended that infrastructures be (i) designed to the current best practice standard and notified Government of Bangladesh codes; (ii) built that the floods do not damage them; and (iii) side drains are to be kept free from wastes and siltation. Short-term negative impacts are the same with or without climate change measures except that with climate change measures there are increased demand for construction materials and more time to complete the works. No negative cumulative impact and the potential long-term environmental impacts are positive; including mainstreaming climate risk reduction into infrastructure development ensures subprojects infrastructure are less vulnerable to floods, storm surge, landslides and impacts of other extreme weather events.

109. **Water quality:** The outfall of all the drains is ultimately to a flowing river through the canal which indicates that its impact on the surrounding people's livelihood is nil.

110. **Air quality:** Emissions of common air contaminants and fugitive dust may be elevated in proximity to active work sites during construction and O & M phases, these impacts will be short-term and localized to the immediate vicinity of roads and Greenhouse gas (GHG) emissions may increase as a result of the subproject activities (i.e., vehicle and equipment operation, concrete production, disposal of excavated material, land-filling of residual wastes). Given the subproject's relatively minor contribution to common air contaminants and GHG emissions during construction, the overall significance rating of both these potential residual effects is considered to be negligible.

111. **Acoustic environment:** Noise levels during construction and O & M activities in immediate proximity of work sites are expected to increase. The duration of exposure will be relatively brief and imperceptible. The exposure represents a temporary, localized, adverse residual effect of low significance for affected receptors. While building damage due to ground vibrations is unlikely, there may be annoyance to spatially located receptors during construction and O & M activities. The overall significance rating of potential residual effects is considered to be negligible.

112. **Socioeconomic and socio-community:** Concerns on existing provisions for pedestrians and other forms of transport will occur spatially during construction and O&M activities. Traffic movement along the roads will be improved once the activities are

completed. Since the subproject will be improvement of existing infrastructures, it will not conflict with existing or planned land use. However, following improvement in infrastructures and services, added residential developments, commercial, and business facilities and increased densities are expected to develop and enhance Mymensingh Pourashava. This can be considered a long-term cumulative benefit of the subproject.

113. Given the scale of the project it is likely that a number of local people will obtain at least temporary socio-economic benefits, by gaining employment in the construction workforce, and thus raising their levels of income. In addition, a significant amount of employments will be generated associated with the O&M of the facilities to be developed under the subprojects. These benefits can bring wider social gains if they are directed at vulnerable groups.

114. Upon completion of the project, the socio-community will be the major beneficiaries of this subproject. The citizens, businesses, and communities in Mymensingh will be provided with reliable and climate-resilient roads resulting to enhanced safety, cost savings, and economic growth. Benefits for all Mymensingh citizens include: safer travel, reduced congestion, reduced fuel usage, reduced vehicle maintenance costs, job creation and related positive economic impact, and improved quality of life. These are considered a long-term cumulative benefit.

115. **Community and worker's health and safety:** No adverse residual effects to human health will occur as a result of construction or O & M activities, and mitigation measures are in place to ensure public and worker safety, and will be closely monitored. While exposure to elevated noise levels, fugitive dust and common air pollutants will occur in proximity to work sites, due to their short-term and localized nature, these effects are expected to be minor and insignificant with no measurable effects on human health.

116. Therefore the project will benefit the general public by contributing to the long-term improvement of municipal services and community livability in Mymensingh Pourashava.

VI. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

A. Approach

117. During construction stage of MDS Consultant team engagement, consultations were held with the LGED, ADB and during site visits, consultation were held with Pourashava local staff, local people and beneficiaries on issues pertaining to the selection of sub-projects and identification of key issues including addressing the current gaps in provision of basic services and improvement of municipal infrastructures within Mymensingh Pourashava. These consultations provided inputs in identification of the sub-projects' needs of the communities, and the relevant stakeholders, awareness about subprojects, benefits of sub-projects, possible environmental impacts and possible mitigation measures. The REA Checklist for each sub-project was also shared during the consultations. Table 19 provides the summary of consultations carried out.

118. The environmental experts of the MDS Consultant team Regional Environmental Specialist have contacted the local people through field workers and Mymensingh Pourashava staff. Meetings were arranged in the form of Focus Group Discussion (FGD) with the consent of the local stakeholders at scheduled venues chosen by the locals (Figure 9). Participant attendance is attached in Appendix 9.

B. Major Finding

119. The information on the conducted FGD and key issues identified during consultations is presented on the Table 20. No vulnerable groups are identified during the preparation of the draft IEEs in the sub-project area. Consultation process will continue during implementation and vulnerable groups, if any, will be included.

Table 20: Focus group discussion and key issues identified during Consultations

Place, Date and Discussion on sub-projects	Participants	Key issues discussed
Location: S.A. Sarak road, Ward-6 Meeting Place: Nayanmoni Market more Date: 04-10-2017 Time: 10.30 am	Service, Labour, Agriculture, business man, driver No. of participants: 11	• Water logging occur during raining season • Traffic congestion is not a major issue, no major concern on air pollution • Road and drains' improvement is very necessary • Regular repair and maintenance is important for longevity of road • All the proposed infrastructure implementation is needed for Mymensingh town, all will provide benefit, no major environmental concern • All development works are essential but sound design and construction is necessary so that they are not affected by environmental pollution. • During construction period public safety and workers' safety is important • Noise and air pollution is required to be controlled
Location: Baghmara road, Ward-17 Meeting Place: In front of Robin miah house Date: 04-10-2017 Time: 04.50 am	Service holders, business man, councilor, worker No. of participants: 09	• Major problem is drainage congestion, less cleaning, drains are filled with solid waste • Water logging and flooding are major concerns, road and drains needs to be improved • The causes of water logging problem is mainly the inadequate drainage network, seasonal sub-mergence, clogging due to garbage dumping • All development works are essential but sound design and construction is necessary so that they are not affected by environmental pollution. • Road and drains' improvement is very necessary

Place, Date and Discussion on sub-projects	Participants	Key issues discussed
		• All development works are essential but sound design and construction is necessary so that they are not affected by environmental pollution.

Figure 9: Stakeholders consultations at Mymensingh town

C. Summary

120. The proposed road and drain alignments are spread in all the Pourashava area. As a nomenclature ward number 6 and 17 were consulted, as they were representative. People want to have all development works but they want to have sound design and construction so that they are not affected by environmental pollution. This is to be addressed in design. Construction supervision should ensure sound and sustainable engineering practice so that there is no further environmental impact to people's life. Following points from FGD can be cited:

i. All the proposed infrastructure implementation is needed for Mymensingh town, all will provide benefit, no major environmental concern
ii. All development works are essential but sound design and construction is necessary so that they are not affected by environmental pollution.
iii. Major problem is drainage congestion, less cleaning, drains are filled with solid waste
iv. Water logging and flooding are major concerns, roads and drains needs to be improved
v. The causes of water logging problem is mainly the inadequate drainage network, seasonal sub-mergence, clogging due to garbage dumping
vi. Special safety measures should be taken to avoid land subsidence due to heavy construction activities
vii. Flooding and water logging both affect access to key activities and damage to road
viii. Regular repair and maintenance of road is very important
ix. Traffic management is important
x. During construction period public safety and workers' safety is important
xi. Noise and air pollution is required to be controlled

VII. GRIEVANCE REDRESS MECHANISM

121. A project-specific grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of AP's concerns, complaints, and grievances about the social and environmental performance at the level of the project. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project.

122. **Common GRM:** A common GRM will be in place for social, environmental, or any other grievances related to the project; the resettlement plans (RPs) and IEEs will follow the GRM described below, which is developed in consultation with key stakeholders. The GRM will provide an accessible and trusted platform for receiving and facilitating resolution of affected persons' grievances related to the project. The multi-tier GRM for the project is outlined below, each tier having time-bound schedules and with responsible persons identified to address grievances and seek appropriate persons' advice at each stage, as required.

123. Pourashava-wide public awareness campaigns will ensure that awareness on grievance redress procedures is generated through the campaign. The project implementation unit (PIU) will conduct Pourashava-wide awareness campaigns to ensure that poor and vulnerable households are made aware of grievance redress procedures and entitlements and will work with the PMU and management, design and supervision consultants (MDSC) to help ensure that their grievances are addressed.

124. Affected persons (APs) will have the flexibility of conveying grievances/suggestions by dropping grievance redress/suggestion forms in complaints/suggestion boxes that have already been installed by project Pourashavas or through telephone hotlines at accessible locations, by e-mail, by post, or by writing in a complaints register in Pourashava offices. Careful documentation of the name of the complainant, date of receipt of the complaint, address/contact details of the person, location of the problem area, and how the problem was resolved will be undertaken. The project management unit (PMU) safeguard officer will have the overall responsibility for timely grievance redress on environmental and social safeguards issues and for registration of grievances, related disclosure, and communication with the aggrieved party through the PIU designated safeguard focal person

125. **Grievance redress process:** In case of grievances that are immediate and urgent in the perception of the complainant, the contractor and MDSC on-site personnel will provide the most easily accessible or first level of contact for quick resolution of grievances. Contact phone numbers and names of the concerned PIU safeguard focal person and contractors will be posted at all construction sites at visible locations.

i. **1st Level Grievance:** The phone number of the PIU office 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.
ii. **2nd Level Grievance:** All grievances that cannot be redressed within 7 days at field/ward level will be reviewed by the grievance redress cell (GRC) headed by Panel Mayor of the Pourashava with support from PIU designated safeguard focal person and MDSC regional environment and resettlement specialists. GRC will attempt to resolve them within 15 days. The PIU designated safeguard focal person will be responsible to see through the process of redress of each grievance.
iii. **3rd Level Grievance:** The PIU designated safeguard focal person will refer any unresolved or major issues to the PMU safeguard officer and MDSC national environmental and resettlement specialists. The PMU in consultation with these officers/specialists will resolve them within 30 days.

126. Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing

the GRM and is not dependent on the negative outcome of the GRM.

127. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism (AM) through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB Bangladesh Resident Mission (BRM). The complaint can be submitted in any of the official languages of ADB's DMCs. The ADB Accountability Mechanism information will be included in the PID to be distributed to the affected communities, as part of the project GRM.

128. **Recordkeeping:** Records of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were effected and final outcome will be kept by PIU. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the PMU office, Pourashava office, and on the web, as well as reported in monitoring reports submitted to ADB on a semi-annual basis.

129. **Periodic review and documentation of lessons learned:** The PMU safeguard officer will periodically review the functioning of the GRM in each Pourashava and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances.

130. **Costs:** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the concerned PIU at Pourashava-level; while costs related to escalated grievances will be met by the PMU.

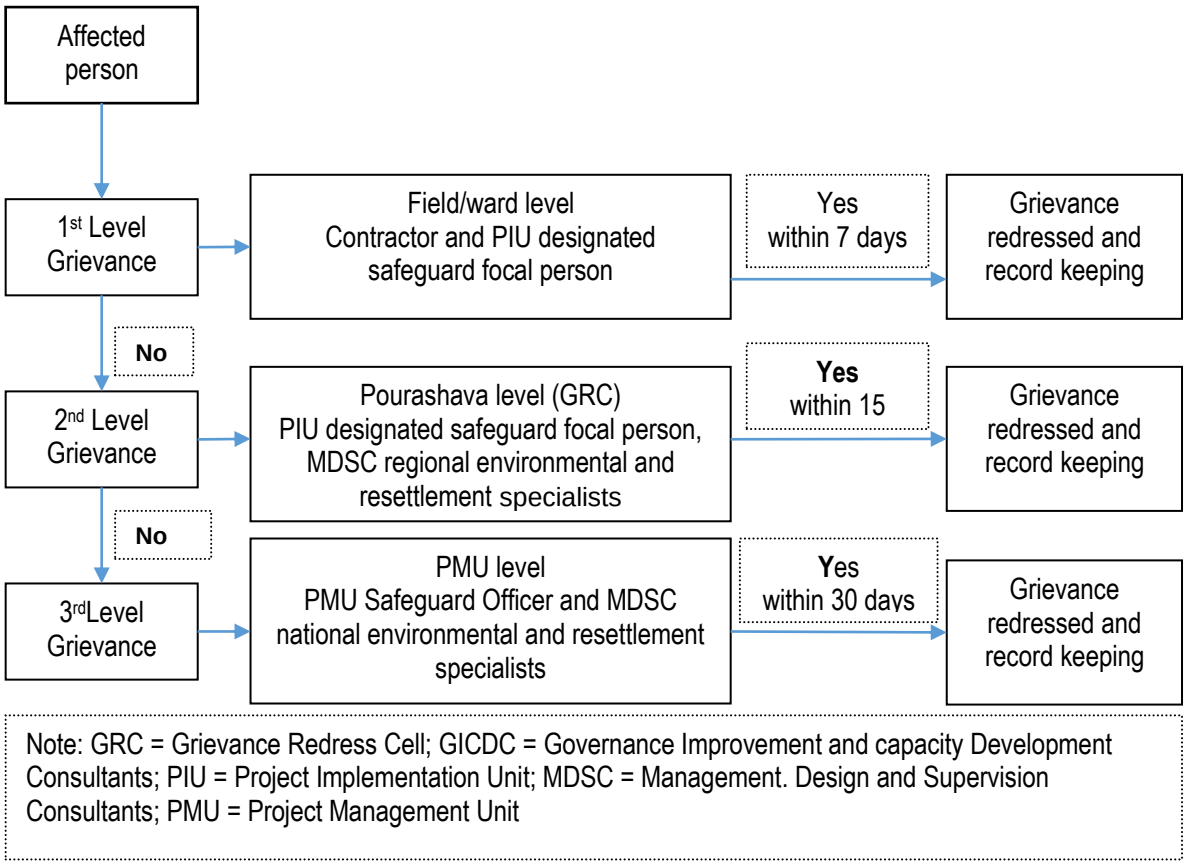


Figure 10: Project Grievance Redress Mechanism

VIII. ENVIRONMENTAL MANAGEMENT PLAN

131. The purpose of the environmental management plan (EMP) is to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of: (i) providing a proactive, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.

132. A copy of the EMP must be kept on work sites at all times. This EMP will be included in the bid documents and will be further reviewed and updated during implementation. The EMP will be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

133. For civil works, the contractor will be required to (i) establish an operational system for managing environmental impacts (ii) carry out all of the monitoring and mitigation measures set forth in the EMP; and (iii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE and EMP. The contractor shall allocate a budget for compliance with these EMP measures, requirements and actions.

A. Institutional Arrangement

134. **Executing and implementing agencies:** The Local Government Engineering Department (LGED) and the Department of Public Health Engineering (DPHE), both under the Local Government Division (LGD) of the Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C) and having extensive experience in managing urban and water supply projects financed by ADB, are the executing agencies of the project. The participating Pourashavas are the implementing agencies.

B. Safeguard Implementation Arrangement

135. **Project Management Unit:** A PMU has been established for the overall management of the project. The PMU is headed by Project Director (PD) supported by officials including three project managers in charge of (i) municipal infrastructure (excluding water supply and sanitation), (ii) water supply and sanitation, and (iii) governance improvement and capacity development, respectively. the PMU will receive support from national environmental specialist and national resettlement specialist on the MDSC team. Key tasks and responsibilities of the PMU safeguard (environment) officer are as follows:

i. confirm existing IEEs/EMPs are updated based on detailed designs, and that new IEEs/EMPs are prepared in accordance with the EARF and subproject selection criteria related to safeguards;
ii. confirm whether IEEs/EMPs are included in bidding documents and civil works contracts;
iii. provide oversight on environmental management aspects of subprojects and ensure EMPs are implemented by project implementation unit (PIU) and contractors;
iv. establish a system to monitor environmental safeguards of the project, including monitoring the indicators set out in the monitoring plan of the EMP;
v. facilitate and confirm overall compliance with all government rules and regulations regarding site and environmental clearances, as well as any other environmental requirements (e.g., location clearance certificates, environmental clearance certificates, etc.), as relevant;
vi. supervise and provide guidance to the PIUs to properly carry out the environmental monitoring and assessments as per the EARF;

vii. review, monitor, and evaluate the effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
viii. consolidate monthly environmental monitoring reports from PIUs and submit semi-annual monitoring reports to ADB;
ix. ensure timely disclosure of final IEEs/EMPs in locations and form accessible to the public; and
x. address any grievances brought about through the grievance redress mechanism in a timely manner.

136. **Project implementation unit:** The participating Pourashavas have established PIUs within the Pourashava structure. The PIUs will (i) be responsible for land acquisition; (ii) take necessary action for obtaining rights of way; (iii) plan, implement and monitor public relations activities, gender mainstreaming initiatives and community participation activities at Pourashava level; (iv) disseminate information related to the project to the public and media; (v) ensure compliance with loan covenants concerning safeguards measures; and (vi) facilitate implementation of safeguards plans. The PIUs will each designate a Safeguard Officer and will receive assistance from the assigned MDSC regional environmental specialist to:

i. update IEEs/EMPs during detailed design stage and prepare new IEEs/EMPs in accordance with the EARF;
ii. conduct environmental compliance audit of existing facilities as per Item of ADB SPS, 2009;
iii. include IEEs/EMPs in bidding documents and civil works contracts;
iv. comply with all government rules and regulations;
v. take necessary action for obtaining rights of way;
vi. oversee implementation of EMPs including environmental monitoring by contractors;
vii. take corrective actions when necessary to ensure no environmental impacts;
viii. submit monthly environmental monitoring reports to PMU,
ix. conduct continuous public consultation and awareness;
x. address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs; and
xi. organize an induction course for the training of contractors preparing them on EMP implementation, environmental monitoring requirements related to mitigation measures; and taking immediate actions to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation.

137. **Project Management, Design and Supervision Consultants (MDSC):** MDS Consultant has been engaged to work closely with and advise the PMU, to be involved in project supervision including monitoring during construction phase. The MDSC has one national environmental specialist and three regional environmental specialists as well as one national resettlement specialist and three regional resettlement specialists. The MDSC national environmental specialist will, but not limited to:

i. work under the general supervision of the team leader and the deputy team leader;
ii. review the environmental guidelines and requirement of the government of Bangladesh and ADB SPS, 2009, environmental sub-project selection guidelines and EARF;
iii. Guide the implementation of future subprojects;
iv. provide technical support to the PMU and PIUs including review and update of EARF and guidelines for specific type of subprojects and assist in preparing terms of reference for environmental assessment;
v. assist and guide the MDSC regional environmental specialists to provide support to environmental management functions including updating subproject IEEs in respect to EMP;
vi. assist in preparing IEEs and in monitoring impact and mitigation measures associated with subprojects;

vii. assist PIUs and MDSC regional environmental specialists working in the steps for preparing the EIA/IEE, capacity building and training, preparation of guidelines and procedure and subproject specific guidance;
viii. provide support and guidance to PIUs in undertaking environmental monitoring
ix. support PMU in submitting semi-annual environmental monitoring reports to ADB;
x. facilitate in grievance redress and corrective actions;
xi. train PIU officials regarding environmental requirement and issues; and
xii. perform any other task assigned by the team leader, deputy team leader and the project director.

138. **The MDSC regional environmental specialists will, but not limited to:**

i. work under the supervision and guidance of the team leader, deputy team leader and MDSC national environmental specialist;
ii. assist PIUs in preparing and updating IEEs including EMPs in accordance with the EARF, and assist in monitoring impact and mitigation measures associated with subprojects including implementation of EMPs by contractors;
iii. assist in preparation of IEEs and in the environmental review of subproject consisting of screening at Pourashava level by PIU through a committee formed with municipal mayor as chairman and representatives from DOE, LGED and other relevant district office as members;
iv. assist PIUs in the steps for preparing EIA/IEE, capacity building and training, preparation of guidelines and procedure and subproject specific guidance;
v. support PIU in environmental monitoring and submit monitoring reports to PMU as inputs into the semi-annual monitoring report submitted to ADB;
vi. undertake mitigation measures and other specific measures in the construction contract;
vii. facilitate in grievance redress and corrective actions;
viii. follow subproject selection guidelines and EARF to ensure compliance with the environmental guidelines and requirement of the Government of Bangladesh and ADB SPS, 2009;
ix. support PMU and MDSC national environment specialist by providing data, information and all other requested assistance;
x. train PIU officials regarding environmental issues
xi. perform any other task assigned by MDSC national environment specialist, team leader, deputy team leader and the project director.

139. **Civil works contracts and contractors:** EMPs are to be included in bidding and contract documents and verified by the PIUs and PMU. The contractor will be required to designate an environmental supervisor to (i) coordinate with MDSC on updating the IEE/ EMP based on detailed designs, and (ii) ensure implementation of EMP during civil works. Contractors are to carry out all environmental mitigation and monitoring measures outlined in their contract.

140. **Governance Improvement and Capacity Development Consultants (GICDC):** The PMU and PIUs will require support on a range of activities related to governance improvement and capacity development of Pourashavas. The GICDC will support PMU and PIUs in implementing urban government improvement action plan (UGIAP) by providing capacity development, community mobilization and other facilitation services. There are 4 GICDC regional offices consisting of 4 regional coordinators at each regional office. There are 2 Local Capacity Development Associates in each project Pourashava. The regional coordinators are assisting the Pourashavas and the Local Capacity Development Associates in the activities related to community participation and inclusive development. The Local Capacity Development Associates have been posted at the Pourashava and (i) are working maintaining close liaison with the mayor, councilors, Pourashava staffs and communities, (ii) providing assistance and support to PIU regarding planning and implementation of citizen awareness and participation activities, urban planning, equity and inclusiveness of women

and urban poor. The GICDC also have a training specialist who is responsible for identifying and coordinating capacity building activities at Pourashava level.

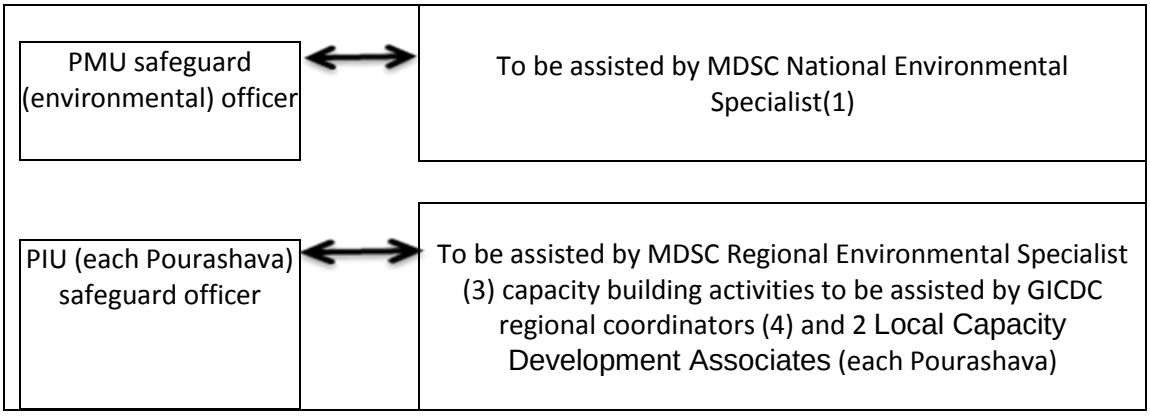


Figure 11: Safeguards Implementation Arrangement

Table 21: Environment al Management and Monitoring Plan – Prior, During, and Post Construction Phase

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
1. Prior to Construction Activities						
Consents, permits, clearances, no objection certificate (NOC), etc.	Failure to obtain necessary consents, permits, NOCs, etc can result to design revisions and/or stoppage of works	• Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. • Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc. • Include in detailed design drawings and documents all conditions and provisions if necessary	Project management unit (PMU), project implementing unit (PIU), Management Design Supervision Consultants (MDSC)	• Incorporated in final design and communicated to contractors.	• Prior to award of contract	• No cost required. Cost of obtaining all consents, permits, clearance, NOCs, etc. prior to start of civil works responsibility of PMU and PIU. • Mitigation measures are included as part of TOR of PMU, PIU, MDSC
Updating of IEE based on detailed design	Site-specific impacts not identified, mitigation measures not appropriate and sufficient to address impacts	• Update IEE and EMP based on detailed design • Ensure updated EMP is provided to contractors • Relevant information disclosed	PMU	• Updated IEE and EMP reviewed, approved and disclosed	• Upon completion of detailed design	• No additional cost required
Existing utilities	Disruption of services.	• Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction activities • Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. • Require contractors to prepare spoils management plan (see Appendix 3 for outline) and traffic management plan (see Appendix 7)	PMU, PIU, MDSC	• List of affected utilities and operators; • Bid document to include requirement for a contingency plan for service interruptions (example provision of water if disruption is more than 24 hours), spoil management plan (see Appendix 3 for outline), and traffic management plan (see Appendix 7)	• During detailed design phase • Review of spoils management plan: Twice (once after first draft and once before final approval)	• No cost required. • Mitigation measures are included as part of TOR of PMU, PIU, MDSC.
Construction work camps,	Disruption to traffic flow and sensitive	• Determine locations prior to award of construction contracts.	PMU, PIU, and MDSC	• List of selected sites for construction work	• During detailed design phase	• No cost required.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
hot mix plants, stockpile areas, storage areas, and disposal areas.	receptors			camps, hot mix plants, stockpile areas, storage areas, and disposal areas. • Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land		• Mitigation measures are included as part of TOR of PMU, PIU, and MDSC.
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, Pounding and water logging, and water pollution.	• Prepare list of approved quarry sites and sources of materials	PMU, PIU, and MDSC	• List of approved quarry sites and sources of materials; • Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.	• During detailed design phase, as necessary with discussion with detailed design engineers and PIUs	• No cost required. • Mitigation measures are included as part of TOR of PMU, PIU, and MDSC.
EMP Implementation Training	Irreversible impact to the environment, workers, and community	• Project manager and all key workers will be required to undergo EMP implementation including spoils management, Standard operating procedures (SOP) for construction works; health and safety (H&S), core labor laws, applicable environmental laws, etc	Construction Contractor	• Proof of completion (Safeguards Compliance Orientation) • Posting of proof of completion at worksites • Posting of EMP at worksites	• During detailed design phase prior to mobilization of workers to site	• Cost of EMP Implementation Orientation Training to contractor is responsibility of PMU and PIU. • Other costs responsibility of contractor.
2. During Construction Activities						
A. Physical Characteristics						
Topography, landforms, geology and soils	Significant amount of gravel, sand, and cement will be required for this subproject. Extraction of construction	• Utilize readily available sources of materials. If contractor procures materials from existing burrow pits and quarries, ensure these conform to all relevant regulatory requirements. • Borrow areas and quarries (If these are	Construction Contractor	• Records of sources of materials	• Monthly by PIU	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
	materials may cause localized changes in topography and landforms. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	being opened up exclusively for the subproject) must comply with environmental requirements, as applicable. No activity will be allowed until formal agreement is signed between PIU, landowner and contractor.				
Water quality	Trenching and excavation, run-off from stockpiled materials, and chemical contamination from fuels and lubricants may result to silt-laden runoff during rainfall which may cause siltation and reduction in the quality of adjacent bodies of water. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Prepare and implement a spoils management plan (see Appendix 3 for outline). • Prioritize re-use of excess spoils and materials in construction activities. If spoils will be disposed, consult with Mymensingh local authority on designated disposal areas. • All earthworks must to be conducted during dry season to maximum extent possible to avoid the difficult working conditions that prevail during monsoon season such as problems from runoff. • Location for stockyards for construction materials shall be identified at least 300m away from watercourses. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. • Take all precautions to minimize the wastage of water in the construction activities. • Take all precautions to prevent entering of wastewater into streams, watercourses, or irrigation system. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies.	Construction Contractor	• Areas for stockpiles, storage of fuels and lubricants and waste materials; • Number of silt traps installed along trenches leading to water bodies; • Records of surface water quality inspection; • Effectiveness of water management measures; • No visible degradation to nearby drainages, khals or water bodies due to construction activities	• Visual inspection by PIU and supervision consultants on monthly basis • Frequency and sampling sites to be finalized during detailed design stage and final location of subproject components	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
		• Ensure diverting storm water flow during construction shall not lead to inundation and other nuisances in low lying areas. • While working across or close to any water body, the flow of water must not be obstructed. Ensure no construction materials like earth, stone, or appendage are disposed of in a manner that may block the flow of water of any watercourse and cross drainage channels. • Monitor water quality according to the environmental management plan.				
Air quality	Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle-related pollutants (such as carbon monoxide, sulfur oxides, particulate matter, nitrous oxides, and hydrocarbons) which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Damp down exposed soil and any sand stockpiled on site by spraying with water when necessary during dry weather; • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of windscreens, water sprinklers, and dust extraction systems shall be provided at all hot-mix plants, batching plants and crushers (if these establishments are being set up exclusively for the subproject). • Monitor air quality.	Construction Contractor	• Location of stockpiles; • Number of complaints from sensitive receptors; • Heavy equipment and machinery with air pollution control devices; • Certification that vehicles are compliant with air quality standards.	• Visual inspection by PIU and supervision consultants on monthly basis • • Frequency and sampling sites to be finalized during detailed design stage and final location of subproject components	• Cost for implementation of mitigation measures responsibility of contractor.
Acoustic	Construction activities	• Involve the community in planning the work	Construction	• Number of complaints	• Visual	• Cost for

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
environment	will be on settlements, along and near schools, and areas with small-scale businesses. Temporary increase in noise level and vibrations may be caused by excavation equipment, and the transportation of equipment, materials, and people. However, the proposed subproject will follow existing ROW alignment and impact is short-term, site-specific and within a relatively small area. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Plan activities in consultation with Mymensingh local authority so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance. • Use of high noise generating equipment shall be stopped during night time. • Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; • Utilize modern vehicles and machinery with the requisite adaptations to limit noise and exhaust emissions, and ensure that these are maintained to manufacturers' specifications at all times. • All vehicles and equipment used in construction shall be fitted with exhaust silencers. Use silent-type generators (if required). • Monitor noise levels. Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the vehicle/s. • If it is not practicable to reduce noise levels to or below noise exposure limits, the contractor must post warning signs in the noise hazard areas. Workers in a posted noise hazard area must wear hearing protection. • Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity.	Contractor	from sensitive receptors; • Use of silencers in noise-producing equipment and sound barriers; • Equivalent day and night time noise levels	inspection by PIU and supervision consultants on monthly basis • • Frequency and sampling sites to be finalized during detailed design stage and final location of subproject components	implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
		Complete work in these areas quickly.				
Aesthetics	The construction activities do not anticipate any cutting of trees but will produce excess excavated earth (spoils), excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Prepare the Debris Disposal Plan • Remove all construction and demolition wastes on a daily basis. • Coordinate with Mymensingh local authority for beneficial uses of excess excavated soils or immediately dispose to designated areas Avoid stockpiling of any excess spoils • Suitably dispose of collected materials from drainages, unutilized materials and debris either through filling up of pits/wasteland or at pre-designated disposal locations. • All vehicles delivering fine materials to the site and carrying waste debris for disposal shall be covered to avoid spillage of materials. All existing roads used by vehicles of the contractor, shall be kept clear of all dust/mud or other extraneous materials dropped by such vehicles. • Lighting on construction sites shall be pointed downwards and away from oncoming traffic and nearby houses. • In areas where the visual environment is particularly important or privacy concerns for surrounding buildings exist, the site may require screening. This could be in the form of shade cloth, temporary walls, or other suitable materials prior to the beginning of construction. • The site must be kept clean to minimize the visual impact of the site. Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;	Construction Contractor	• Number of complaints from sensitive receptors; • Worksite clear of hazardous wastes such as oil/fuel • Worksite clear of any wastes, collected materials from drainages, unutilized materials and debris • Transport route and worksite cleared of any dust/mud	• Visual inspection by PIU and supervision consultants on monthly basis • • Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject components	• Cost for implementation of mitigation measures responsibility of contractor.
B. Biological Characteristics						

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
Biodiversity	Activities being located in the built-up area of Mymensingh Pourashava. There are no protected areas in or around subproject sites, and no known areas of ecological interest. There are no trees at the site that need to be removed.	• Check if tree-cutting will be required during detailed design stage. No trees, shrubs, or groundcover may be removed or vegetation stripped without the prior permission of the environment management specialist. • If during detailed design cutting of trees will be required, compensatory plantation for trees lost at a rate of 2 trees for every tree cut, in addition to tree plantation as specified in the design, will be implemented by the contractor, who will also maintain the saplings for the duration of his contract. • All efforts shall be made to preserve trees by evaluation of minor design adjustments/ alternatives (as applicable) to save trees. • Special attention shall be given for protecting giant trees and locally-important trees (with religious importance) during implementation. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna (animal) including fishing in any water body in the subproject vicinity. • Prohibit employees from poaching wildlife and cutting of trees for firewood.	Construction Contractor	• PMU and PIU to report in writing the number of trees cut and planted if tree-cutting will be required (to be determined during detailed design stage) • Number of complaints from sensitive receptors on disturbance of vegetation, poaching, fishing, etc. •	• Visual inspection by PIU and supervision consultants on monthly basis • • Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject components	• Cost for implementation of mitigation measures responsibility of contractor.
C. Socioeconomic Characteristics						
Existing provisions for pedestrians and other forms of transport	Road closure is not anticipated. Hauling of construction materials and operation of equipment on-site can cause traffic problems. However, the proposed subproject will follow existing	• Prepare and implement a Traffic Management Plan (see Appendix 7) • Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. • Maintain safe passage for vehicles and pedestrians throughout the construction period.	Construction Contractor	• Traffic route during construction works including number of permanent signage's, barricades and flagmen on worksite as per Traffic Management Plan (see Appendix 4 for sample);	• Visual inspection by PIU and supervision consultants on monthly basis • Frequency and sampling sites to be finalized	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
	ROW alignment. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Schedule truck deliveries of construction materials during periods of low traffic volume. • Erect and maintain barricades, including signs, markings, flags and flagmen informing diversions and alternative routes when required. • Notify affected sensitive receptors by providing sign boards informing nature and duration of construction activities and contact numbers for concerns/complaints. • Leave spaces for access between mounds of soil. • Provide walkways and metal sheets where required to maintain access across for people and vehicles. • Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools. • Consult businesses and institutions regarding operating hours and factoring this in work schedules. Ensure there is provision of alternate access to businesses and institutions during construction activities, so that there is no closure of these shops or any loss of client age. • Ensure any damage to properties and utilities will be restored or compensated to pre-work conditions.		• Number of complaints from sensitive receptors; • Number of signage's placed at project location • Number of walkways, signage's, and metal sheets placed at project location	during detailed design stage and final location of) subproject components	
Socio-economic status	Sub-project components will be located in government land and existing ROWs thus there is no requirement for land	• Employ at least 50% of labor force from communities in the vicinity of the site. This will have the added benefit of avoiding social problems that sometimes occur when workers are imported into host communities, and avoiding environmental	Construction Contractor	• Employment records; • Records of sources of materials • Records of compliance to Bangladesh Labor Law of 2006 and other	• Visual inspection by PIU and supervision consultants on monthly basis	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
	acquisition or any resettlements. Manpower will be required during the 18 months construction stage. This can result to generation of contractual employment and increase in local revenue. Thus potential impact is positive and long-term.	and social problems from workers housed in poorly serviced camp accommodation. • Secure construction materials from local market.		applicable standards	• Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject components	
Other existing amenities for community welfare	Although construction of subproject components involves quite simple techniques of civil work, the invasive nature of excavation and the subproject sites being in built-up areas of Mymensingh Pourashava where there are a variety of human activities, will result to impacts to the sensitive receptors such as residents, businesses, and the community in general. Excavation may also damage existing infrastructure (such as water distribution pipes, electricity	• Provide safety signage at all sites visible to public • Provide safety barriers near any trenches, and cover trenches with planks during non-work hours. • Obtain details from Pourashava nature and location of all existing infrastructure, and plan excavation carefully to avoid any such sites to maximum extent possible; • Integrate construction of the various infrastructure subprojects to be conducted in Mymensingh (roads and drains etc.) so that different infrastructure is located on opposite sides of the road where feasible and roads and inhabitants are not subjected to repeated disturbance by construction in the same area at different times for different purposes. • Consult with local community to inform them of the nature, duration and likely effects of the construction work, and to identify any local concerns so that these	Construction Contractor	• Utilities Contingency Plan • Number of complaints from sensitive receptors	• Visual inspection by PIU and supervision consultants on monthly basis • Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject components	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
	pylons, etc) located alongside the roads. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	can be addressed. • Existing infrastructure (such as water distribution pipes, electricity pylons, etc.) shall be relocated before construction starts at the subproject sites. • Prior permission shall be obtained from respective local authority for use of water for construction. Use of water for construction works shall not disturb local water users. • If construction work is expected to disrupt users of community water bodies, notice to the affected community shall be served 7 days in advance and again 1 day prior to start of construction. • Ensure any damage to properties and utilities will be restored or compensated to pre-work conditions.				
Community health and safety	Construction works will impede the access of residents and businesses in limited cases. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures. Poor safety signage and lack of barriers at work site and trenches will create hazard to pedestrians and children.	• Provide safety signage at all sites visible to public • Provide safety barriers near any trenches, and cover trenches with planks during non-work hours. • Contractor's activities and movement of staff will be restricted to designated construction areas. • Locations of hot-mix plants, batching plants and crushers (if these establishments are being set up exclusively for the subproject) shall be located at least 100 m away from the nearest dwelling preferably in the downwind direction. • Consult with Mymensingh local authority on the designated areas for stockpiling of, soils, gravel, and other construction materials.	Construction Contractor	• Number of permanent signages, barricades and flagmen on worksite as per Traffic Management Plan (see Appendix 4 for sample); • Number of complaints from sensitive receptors; • Number of walkways, signages, and metal sheets placed at project location • Agreement between landowner and contractors in case of using private lands as work camps, storage	• Visual inspection by PIU and supervision consultants on monthly basis • Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject components	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
		• If the contractor chooses to locate the work camp/storage area on private land, he must get prior permission from the environment management specialist and landowner. • Use small mechanical excavators to attain faster trenching progress. For rock and concrete breaking, use non-explosive blasting chemicals, silent rock cracking chemicals, and concrete breaking chemicals. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Recycling and the provision of separate waste receptacles for different types of waste shall be encouraged. • A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules: (i) no alcohol/drugs on site; (ii) prevent excessive noise; (iii) construction staff are to make use of the facilities provided for them, as opposed to ad hoc alternatives (e.g. fires for cooking, the use of surrounding bushes as a toilet facility); (iv) no fires permitted on site except if needed for the construction works; (v) trespassing on private/commercial properties adjoining the site is forbidden; (vi) other than pre-approved security staff, no workers shall be permitted to live on the construction site; and (vii) no worker may be forced to do work that is potentially dangerous or that he/she is not trained to do.		areas, etc.		

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
		• Interested and affected parties need to be made aware of the existence of the complaints book and the methods of communication available to them. The contractor must address queries and complaints by: (i) documenting details of such communications; (ii) submitting these for inclusion in complaints register; (iii) bringing issues to the national/regional environmental specialist's attention immediately; and (iv) taking remedial action as per national/regional environment specialist's instruction. • The contractor shall immediately take the necessary remedial action on any complaint/grievance received by him and forward the details of the grievance along with the action taken to the national/regional environmental specialist within 48 hours of receipt of such complaint/grievance.				
Workers health and safety	There is invariably a safety risk when construction works such as excavation and earthmoving are conducted in urban areas. Workers need to be mindful of the occupational hazards which can arise from working in height and excavation works. Potential impacts are negative and long-term but reversible by	• Comply with requirements of Government of Bangladesh Labor Law of 2006 and all applicable laws and standards on workers H&S. • 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. • Produce and implement a site health and safety (H&S) plan which include measures as: (i) excluding the public from worksites; (ii) ensuring all workers are provided with	Construction Contractor	• Site-specific H&S Plan • Equipped first-aid stations • Medical insurance coverage for workers • Number of accidents • Records of supply of uncontaminated water • Condition of eating areas of workers • Record of H&S orientation trainings • Use of personal protective equipment • % of moving equipment	• Visual inspection by PIU and supervision consultants on monthly basis • • Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
	mitigation measures.	and required to use personal protective equipment (reflectorized vests, footwear, gloves, goggles and masks) at all times; (iii) providing (H&S) training for all site personnel; (iv) documenting procedures to be followed for all site activities; and (v) maintaining accident reports and records. • Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances • Maintain necessary living accommodation and ancillary facilities in functional and hygienic manner in work camps. Ensure (i) uncontaminated water for drinking, cooking and washing, (ii) clean eating areas where workers are not exposed to hazardous or noxious substances; and (iii) sanitation facilities are available at all times. • Provide medical insurance coverage for workers; • Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; • Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted; • Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; • Ensure moving equipment is outfitted with audible back-up alarms;		outfitted with audible back-up alarms • Permanent sign boards for hazardous areas • Signages for storage and disposal areas • Condition of sanitation facilities for workers	components	

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
		• 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. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and • Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.				
D. Historical, Cultural, and Archaeological Characteristics						
Physical and cultural heritage	Construction works will be on existing roads and in built-up areas of Mymensingh thus risk for chance finds is low.	• All fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest discovered on the site shall be the property of the government. • Prevent workers or any other persons from removing and damaging any fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest. • Stop work immediately to allow further investigation if any finds are suspected.	Construction Contractor	• Records of chance finds	• Visual inspection by PIU and supervision consultants on monthly basis • Frequency and sampling sites to be finalized during detailed design stage and final location of) subproject components	• Cost for implementation of mitigation measures responsibility of contractor.
E. Others						
Submission of EMP implementation report	Unsatisfactory compliance to EMP	• Appointment of supervisor to ensure EMP implementation • Timely submission of monitoring reports including pictures	Construction contractor	• Availability and competency of appointed supervisor • Monthly report	• Monthly monitoring report to be submitted by PIU to PMU	• Cost for implementation of mitigation measures responsibility of contractor.

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
					• PMU to submit semi-annual monitoring report to ADB	
3. Post-construction Activities						
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and • All excavated roads shall be reinstated to original condition. • All disrupted utilities restored • All affected structures rehabilitated/compensated • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. • All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the revegetation specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services. • Request PMU/CSS to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.	Construction Contractor	• PMU/CSS report in writing that (i) worksite is restored to original conditions; (ii) camp has been vacated and restored to pre-project conditions; (iii) all construction related structures not relevant to O&M are removed; and (iv) work site clean-up is satisfactory.	• Prior to turn-over of completed works to Pourashava	• Cost for implementation of mitigation measures responsibility of contractor.

Table 22: Environmental Management and Monitoring Plan – O&M Phase

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
A. Physical Characteristics						
Water quality	Run-off from debris/sediments from repair and maintenance of road and bridge which may cause siltation and reduction in the quality of adjacent bodies of water. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Take all precautions to prevent run-off into streams, watercourses, or irrigation system. Install temporary silt traps or sedimentation basins along drainage leading to the water bodies. • Remove all debris/sediments immediately. • Dispose debris/sediments at a designated site such as landfill.	Mymensingh Pourashava	• No visible degradation to nearby drainages, *khals* or water bodies due to construction activities	Duration of repair works	• Included in O&M cost
Air quality	Moving debris/sediments may create dusts during dry season. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Use tarpaulins to cover soils, sand and other loose material. •	Mymensingh Pourashava	• No complaints from sensitive receptors	Duration of repair works	• Included in O&M cost
Acoustic environment	Temporary increase in noise level and vibrations. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Plan activities in consultation with Mymensingh local authority so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance. • Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Complete work in these areas quickly.	Mymensingh Pourashava	• No complaints from sensitive receptors	Duration of repair works	• Included in O&M cost
B. Biological Characteristics						
Biodiversity	Activities in the built-up area of Mymensingh Pourashava. There are no protected areas in or around subproject sites, and no known areas of ecological interest.	• No trees, shrubs, or groundcover may be removed or vegetation stripped without the prior permission. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna (animal).	Mymensingh Pourashava	• No complaints from sensitive receptors	Duration of repair works	• Included in O&M cost

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
C. Socioeconomic Characteristics						
Existing provisions for pedestrians and other forms of transport	Road closure is not anticipated. Traffic may be interrupted temporarily. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• Maintain safe passage for vehicles and pedestrians during maintenance activities. • Erect and maintain barricades, including signs, markings, flags and flagmen informing diversions and alternative routes when required. • Notify affected sensitive receptors by providing sign boards informing nature and duration of maintenance activities and contact numbers for concerns/complaints. • Leave spaces for access between mounds of soil. • Provide walkways and metal sheets where required to maintain access across for people and vehicles. • Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools. • Consult businesses and institutions regarding operating hours and factoring this in work schedules. • Ensure any damage to properties and utilities will be restored or compensated to pre-work conditions.	Mymensingh Pourashava	• No complaints from sensitive receptors	Duration of repair works	• Included in O&M cost
Workers health and safety	Workers need to be mindful of the occupational hazards working in confined spaces such as closed drains. Potential impacts are negative and long-term but reversible by mitigation measures.	• Comply with requirements of Government of Bangladesh Labor Law of 2006 and all applicable laws and standards on workers H&S. • Ensure that all site personnel have a basic level of H&S training. • Produce and implement a O&M H&S plan which include measures as: (i) excluding the public from worksites; (ii) ensuring all workers are provided with and required to use personal protective equipment (reflectorized vests, footwear, gloves, goggles and masks) at all times; (iii) providing H & S training for all site	Mymensingh Pourashava	• No complaints from sensitive receptors • No complaints from workers related to O&M activities • Zero accident	Duration of repair works	• Included in O&M cost

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring	Cost and Source of Funds
		personnel; (iv) documenting procedures to be followed for all site activities; and (v) maintaining accident reports and records. • Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances • Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; • Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; • Mark and provide sign boards. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate. • Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.				
D. Historical, Cultural, and Archaeological Characteristics						
Physical and cultural heritage	Mymensingh Pourashava was established in 1869. However, construction works will be on existing roads and in built-up areas of Mymensingh thus risk for chance finds is low.	• All fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest discovered on the site shall be the property of the government. • Prevent workers or any other persons from removing and damaging any fossils, coins, articles of value of antiquity, structures and other remains of archaeological interest. • Stop work immediately to allow further investigation if any finds are suspected.	Mymensingh Pourashava	• Records of chance finds	Duration of repair works	• Included in O&M cost

C. Institutional Capacity Development Program

141. The MDSC national and regional environmental specialists are responsible for trainings on environmental awareness and management in accordance with both ADB and government requirements. Accordingly the PIU Safeguard officer of Mymensingh Pourashava has attended in the safeguard orientation/training program previously held in PMU head office. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in road and drain projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project along with the frequency of sessions is presented in Table 23.

Table 23: Training Program for Environmental Management

Items	Pre-construction/prior to construction	Construction	
Training Title	Orientation workshop	Orientation program/ workshop for contractors and supervisory staffs	Experiences and best practices sharing
Purpose	To aware the participants of the environmental safeguard requirements of ADB and GOB and how the project will meet these requirements	To build the capacity of the staffs for effective implementation of the designed EMPs aimed at meeting the environmental safeguard compliance of ADB and GOB	To share the experiences and best practices aimed at learning lessons and improving implementation of EMP
Contents	**Module 1: Orientation** • ADB Safeguards Policy Statement • Government of Bangladesh Environmental Laws and Regulations **Module 2: Environmental Assessment Process** • ADB environmental process, identification of impacts and mitigation measures, formulation of an environmental management plan (EMP), implementation, and monitoring requirements • Review of environmental assessment report to comply with ADB requirements • Incorporation of EMP into the project design and contracts	• Roles and responsibilities of officials/contractors/consultants towards protection of environment • Environmental issues during construction • Implementation of EMP • Monitoring of EMP implementation • Reporting requirements	Experiences on EMP implementation – issues and challenges Best practices followed
Duration	1 day	1 day	1 day on a regular period to be determined by PMU, PIUs, and PMSC
Participants	LGED, DPHE, PMU, and PMU staffs (technical and environmental) involved in the project implementation	PMU/ PIUs Contractors	PMU /PIUs Contractors

D. Staffing Requirement and Budget

142. Costs required for implementing the EMP will cover the following activities:

i. Updating IEE, preparing and submitting reports and public consultation and disclosure;
ii. Application for environmental clearances; and
iii. Implementation of EMP, environmental monitoring program and long-term surveys.

143. The infrastructure involved in each scheme is generally straightforward and will take between three and nine months to build. Environmental monitoring during construction will also be straightforward and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by MDSC environmental management specialist assisted by the PMU environment officer. The environmental management specialist will use the IEE as necessary and perform tasks as specified in the TOR. Therefore no separate budget required for MDSC environment management specialist.

144. The cost of mitigation measures and surveys during construction stage will be incorporated into the contractor's costs, which will be binding on him for implementation. The surveys will be conducted by the contractors.

145. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of Mymensingh Pourashava. All monitoring during the operation and maintenance phase will be conducted by LGED therefore, there are no additional costs.

146. The indicative costs of EMP implementation are shown in Tables 24 and 25 (by source of funds).

Table 24: Indicative Cost of EMP Implementation

Sl	Particulars	Stages	Sub-project/ package	Total number	Rate (BDT)	Cost (BDT)	Costs covered by
A. Mitigation Measures							
1.	Environmental mitigation / enhancement measures integrated into the designs and costs included as part of civil works	Construction				Covered under BoQ of Construction Document (CCD)	Civil Works Contract
2	Compensatory plantation measures	Construction	Per tree	0	1,500	000	Civil works contract
3.	Air Quality Monitoring	Before construction	Per contract package	3	20,000	60,000	Civil work contractor
4.	Noise level	Before construction	Per contract package	3	5,000	15,000	Civil work contractor
5.	Water Quality monitoring (Surface water)	Before construction	Per contract package	3	20,000	60,000	Civil work contractor
C. Monitoring parameter during construction							
1.	Air Quality monitoring	Construction	Per contract package	3	20,000	60,000	Civil work Contractor
2.	Noise level	Construction	Per contract package	3	5,000	15,000	Civil work contractor
3.	Water Quality monitoring (Surface water)	Construction	Per contract package	3	20,000	60,000	Civil work Contractor
4.	Survival Rate of Plantation and landscaping	Post construction	Per contract package,	2	5,000	10,000	Civil work Contractor
D. Monitoring Parameter during operation							
1.	Air Quality monitoring	Operation	Per subproject per year	2	20,000	40,000	Mymensingh Pourashava
2.	Noise level (near school, hospital etc.)	Operation	Per subproject per year	5	5,000	25,000	Mymensingh Pourashava
3	Survival Rate of Plantation and landscaping	Operation	Per subproject per year	2	5,000	10,000	Mymensingh Pourashava
4	Traffic congestion/Road accident	Operation	Per subproject per year	2	5,000	10,000	Mymensingh Pourashava
E. Capacity Building							
1.	i) Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement, Government of Bangladesh	Module 1 – immediately upon engagement of the MDSC	lump sum 1 times		Module 1 –50,000	450,000	Covered under MDSC

Sl	Particulars	Stages	Sub-project/ package	Total number	Rate (BDT)	Cost (BDT)	Costs covered by
	environmental laws and regulations, and environmental assessment process; (ii) induction course contractors, preparing them on EMP implementation and environmental monitoring requirements related to mitigation measures; and taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation;	environmental specialists Module 2 – prior to award of civil works contracts (twice a year for 3.5 years) Module 3 – prior to start of Phase 3 and upon completion of the project	7 times 1 times (Combined for all subprojects)		Module 2 –50,000 Module 3 –50,000		
3.	Experiences and best practices sharing	Construction (before phase 2)	Cumulative for all subprojects	LS		100,000	Covered under MDSC
D	**Public Consultation**	During detailed design (For update of IEE/EIA) and preconstruction		LS		500,000	Covered under MDSC
E	**GRM implementation**	During construction	As per requirement			As per PMU budget	Covered under PMU & PIUs
F	**Consultant cost**						
	MDSC national environmental specialist (1 person)	Responsible for environmental safeguards of the project	person months (spread over entire project implementation period)	36 person months	320,000 per person month	11,520,000	Remuneration and budget for travel covered in the MDSC contract
	MDSC regional environmental specialists (2 persons)	Responsible for environmental safeguards of the project	person months (spread over entire project implementation period)	36+17 each = 53 person-months	320,000 per person-month	16,960,000	Remuneration and budget for travel covered in the MDSC contract
G	**Administrative cost**						
	Legislation, permits, and agreements	During construction Permit for excavation, tree-	Per package	LS		50,000	These consents are to be obtained by contractor at his own

Sl	Particulars	Stages	Sub-project/ package	Total number	Rate (BDT)	Cost (BDT)	Costs covered by
		cutting permits, etc					expense.
	Environmental assessment and environmental clearances as per ECA and ECR requirements	Before construction ECC for red and Orange subproject	Per subproject (where applicable)	LS		500,000	LGED cost for municipal infrastructure
H	**Other costs**						
	Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising during construction phase and defect liability period		LS		Contractors' liability	Can be covered through contractor's insurance

Table 25 : Indicative Cost of EMP Implementation – Per Source of Funding

Sl	Particulars	Stages	Sub-project/ package	Total number	Rate (BDT)	Cost (BDT)	Costs covered by
A. Contractor							
1.	Environmental mitigation / enhancement measures integrated into the designs and costs included as part of civil works	Construction				Covered under BoQ of Construction Document (CCD)	Civil Works Contract
2.	ɔmpensatory plantation measures	ɔnstruction	Per tree	0	1,500	000	Civil works contract
3.	Air Quality Monitoring	Before construction	Per contract package	3	20,000	60,000	Civil works contractor
4.	Noise level	Before construction	Per contract package	3	5,000	15,000	Civil works contractor
5.	Water Quality monitoring (Surface water)	Before construction	Per contract package	3	20,000	60,000	Civil works contractor
6.	Air Quality monitoring	Construction	Per contract package	3	20,000	60,000	Civil works Contractor
8.	Water Quality monitoring (Surface water)	Construction	Per contract package	3	20,000	60,000	Civil work Contractor
9.	Survival Rate of Plantation and landscaping	Post construction	Per contract package,	2	5,000	10,000	Civil work Contractor
10.	Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising during construction phase and defect liability period		LS		Contractors' liability	Can be covered through contractor's insurance
12.	Compensatory plantation measures	Construction	Per tree	50	1,500	75,000	Civil works contract
B. PIU/Pourashava							
1.	Air Quality monitoring	Operation	Per subproject per year	3	20,000	60,000	Mymensingh Pourashava
2.	Noise level (near school, hospital etc.)	Operation	Per subproject per year	3	5,000	15,000	Mymensingh Pourashava
3	Survival Rate of Plantation and landscaping	Operation	Per subproject per year	3	5,000	15,000	Mymensingh Pourashava
4	Traffic congestion/Road accident	Operation	Per subproject per year	2	5,000	10,000	Mymensingh Pourashava
C. MDSC							

Sl	Particulars	Stages	Sub-project/ package	Total number	Rate (BDT)	Cost (BDT)	Costs covered by
1.	i) Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement, Government of Bangladesh environmental laws and regulations, and environmental assessment process; (ii) induction course contractors, preparing them on EMP implementation and environmental monitoring requirements related to mitigation measures; and taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation;	Module 1 – immediately upon engagement of the MDSC environmental specialists Module 2 – prior to award of civil works contracts (twice a year for 3.5 years) Module 3 – prior to start of Phase 3 and upon completion of the project	lump sum 1 times 7 times 1 times (Combined for all subprojects)		Module 1 – 50,000 Module 2 – 50,000 Module 3 – 50,000	450,000	Covered under MDSC
2	Experiences and best practices sharing	Construction (before phase 2)	Cumulative for all subprojects	LS		100,000	Covered under MDSC
3	Public Consultation	During detailed design (For update of IEE/EIA) and preconstruction		LS		500,000	Covered under MDSC
4	MDSC national environmental specialist (1 person)	Responsible for environmental safeguards of the project	person months (spread over entire project implementation period)	36 person months	320,000 per person month	11,520,000	Remuneration and budget for travel covered in the MDSC contract
5	MDSC regional environmental specialists (2 persons)	Responsible for environmental safeguards of the project	person months (spread over entire project implementation period)	36+17 each = 53 person-months	320,000 per person-month	16,960,000	Remuneration and budget for travel covered in the MDSC contract
D. PMU							
1	GRM implementation	During construction	As per requirement			As per PMU budget	Covered under PMU& PIUs
2	Legislation, permits, and agreements	During construction Permit for excavation,	Per package	LS		50,000	These consents are to be obtained by

Sl	Particulars	Stages	Sub-project/ package	Total number	Rate (BDT)	Cost (BDT)	Costs covered by
		tree- cutting permits, etc					contractor at his own expense.
3	Environmental assessment and environmental clearances as per ECA and ECR requirements	Before construction ECC for red and Orange sub-project	Per sub-project (where applicable)	LS		500,000	LGED cost for municipal infrastructure

Table 26: EMP in Bidding Document (Road and Drainage sub-project)

Environmental Management Plan mentioned environmental impacts and their mitigation measures for this sub-project; the following items are included in the BOQ:

Item No.	Description of Item	Amount (Tk.)
	Overall environmental management in addition to compliance to the clauses 27, 28 and 29 of GCC of tender documents and IEE to the entire satisfaction of E-I-C	
1.	a) Construction of Temporary site office with NCF floor on BFS, wall with brick work, CI sheet on the top on wooden purlins etc. including furniture, waste disposal facility and sanitary latrine with potable water supply facility all complete as per direction of the E-in-C.	1,00,000.00
	b) Storage and disposal of all types of used mobile, washing well and greasing materials in a safe place as per direction of the E-in-C.	5,000.00
2.	**Providing and maintaining adequate potable water supply and sanitation facilities (Separate for Male and Female) at labour camp site including first aid box with necessary drugs to the entire satisfaction of E-in-C.**	
	a) Sanitation: 2 nos. of Toilets (1 no for male and 1 no for female) @ Tk. 10000.00	20,000.00
	b) Collection and dumping of waste including kitchen waste from labour shed to Pourashava waste disposal system.	5,000.00
	c) Supply of Personal Protection Equipment (PPE) helmet, gloves, safety shoes & glass, safety signs, first aid box with necessary drugs etc. for workers.	15,000.00
3.	Proper storage of construction materials in a safe place and covering the sand with tarpaulins and fencing the site with barbed wire and cement should be stored on a dun age to avoid cake formation to the entire satisfaction of the E-in-C.	20,000.00
4.	Proper maintenance of drainage system during rains to drain out the surface water.	5,000.00
5.	**Environmental monitoring will be done at any one location in core area and one location at outside of core area at work site 1st time at commencement of work, 2nd time after 30% and 3rd time after 80% progress of work:**	
	i) Air Quality test (PM_{10}, $PM_{2.5}$, RPM and CO during Construction period)	90,000.00
	ii) Surface Water Quality Monitoring during Construction	60,000.00
	iii) Noise Levels at one place in core area and one place outside of core area	20,000.00
	Total	**3,40,000.00**

. **** Cost of the EMP items should be as fixed budget**

IX. MONITORING AND REPORTING

147. PMU will monitor and measure the progress of EMP implementation. The monitoring activities will correspond with the project's risks and impacts, and will be identified in the EIAs/IEEs for the projects. In addition to recording information on the work and deviation of work components from original scope PMU, PIUs, and MDSC will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome. Corrective actions to be taken quickly and reported in monitoring reports.

148. MDSC will submit monthly monitoring and implementation reports to PMU, who will take follow-up actions, if necessary. PMU will submit semi-annual monitoring reports to ADB. Sub-project budgets will reflect the costs of monitoring and reporting requirements. Monitoring reports will be posted in a location accessible to the public.

149. LGED will document monitoring results, identify the necessary corrective actions, reflect them in a corrective action plan, and for each quarter, will study the compliance with the action plan developed in the previous quarter. Compliance with loan covenants will be screened by ADB.

150. ADB will review project performance against the commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

i. conduct periodic site visits for projects with adverse environmental or social impacts;
ii. conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
iii. review the periodic monitoring reports submitted by EAs to ensure that adverse impacts and risks are mitigated, as planned and as agreed with ADB;
iv. work with EAs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance as appropriate; and
v. prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

X. CONCLUTION AND RECOMMENDATIONS

151. The process described in this document has assessed the environmental impacts of all elements of Mymensingh Pourashava roads and drains sub-project. All potential impacts were identified in relation to design and location, construction, and operation phases.

152. Planning principles and detailed design considerations have been reviewed and incorporated into the site planning process whenever possible; thus, environmental impacts as being due to the project design or location were not significant.

153. Most of the individual elements of the sub-project are relatively small and involve straightforward construction and operation, so impacts will be mainly localized and not greatly significant. Most of the predicted impacts are associated with the construction process, and are produced because that process is invasive, involving trenching and other excavation. However, the routine nature of the impacts means that most can be easily mitigated. Mitigation measures have been developed to reduce all negative impacts to acceptable levels. Mitigation will be assured by a program of environmental monitoring to ensure that all measures are implemented, and will determine whether the environment is protected as intended. It will include observations on and off-site, document checks, and interviews with workers and beneficiaries. Any requirements for corrective action will be reported to the ADB.

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

155. The PMU and MDS Consultant will be responsible for monitoring. The MDSC will submit monthly monitoring reports to PMU, and the PMU will send semi-annual monitoring reports to ADB. ADB will post the environmental monitoring reports on its website.

156. The EMP will assist the PMU, MDSC, and contractors in mitigating the environmental impacts, and guide them in the environmentally sound execution of the proposed project. The EMP will also ensure efficient lines of communication between the implementing agency, project management unit, and contractors. A copy of the EMP shall be kept on-site during the construction period at all times. The EMP shall be made binding on all contractors operating on the site, and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document shall constitute a failure in compliance.

157. Therefore the proposed sub-project is unlikely to cause significant adverse impacts and net environmental benefits to citizens of Mymensingh will be positive. The potential impacts that are associated with design, construction and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures.

158. As per Government of Bangladesh Environment Conservation Act, 1995 (ECA, 1995) and Environment Conservation Rules (ECR, 1997), the sub-project is categorized as “Orange-B”. ECC and renewal of ECC for UGIIP-III has been issued by DoE. Further necessary steps are being taken to include additional Pourashavas in the Environmental Clearance Certificate (ECC) from the DoE.

Appendix-1 Rapid Environmental Assessment (REA) Checklist

Rapid Environmental Assessment (REA) Checklist for Screening of Road Sub–Project

➢ This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the LEGD / MDS Consultant
➢ This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
➢ This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
➢ Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. use the "remarks" section to discuss any anticipated mitigation measures.

Name of Pourashava : Mymensingh		
Name of Sector	**:**	**Infrastructure of Road Improvement.**
Sub-project /Scheme	**:**	Improvement of RCC road at Gulkibari road starting from. Part-A. Sankipara road to college road. Ch.0+00-0+420m, Part-B. starting from Gulkibari road to Mohammad Ali road. Ch.0+00-0+150m, Improvement of RCC road at Mohammad Ali road starting from College road to Zila school. Ch.0+00-0+368m & Part-B. Mohammad Ali road to RHD road. Ch.0+00-0+180m

Field Survey on Environmental Questionnaire

SCREENING QUESTIONS	Tick Mark		Remarks
	YES	NO	
A. Sub -Project Location :*Weather the project area is adjacent to or within any of the following environmentally sensitive area :*			
1. Cultural heritage site		✓	
2. Protected Area		✓	
3. Wetland		✓	
4. Mangrove		✓	
5. Estuary		✓	
6. Protected Buffer area		✓	
7. Middle of protective areas		✓	
8. Specially protective biodiversity area		✓	
B. Sub -Project Particulars :			
1. Road length < 20 Km.	✓		L= 1118m
2. Road length > 20 Km.		✓	
3. Landslide		✓	
4. Location of Electric poles		✓	
5. Widening of Road Formation.		✓	
6. Repair /Improvement of road.	✓		Improvement of Road by RCC
7. Road length within /abutting permanent Wetland.		✓	
8. Road constructed along river or irrigation canal (km).		✓	
9. Road crossing any stream, canal, river.		✓	
10. Increase no. of Road Cross- drainage Structure.	✓		
11. Occurrence record of flood on either side of the Road.		✓	
12. Tree Cutting on the Road alignment		✓	
13. Plantation scope on the Road sides.		✓	
C. Potential Environmental Impacts: *Will the Sub-project causes ……..*			
1) Any change of landscape due to road construction?		✓	
2) Occupancy the land from any protective areas.		✓	

SCREENING QUESTIONS	Tick Mark		Remarks
	YES	NO	
3) Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams by increased soil erosion due to road construction?	✓		Some problem can arise during construction period.
4) Surface water contamination from workers' camp and chemicals used in construction site?		✓	
5) Local air pollution due to rock crushing, cutting etc. and chemicals from asphalt processing?		✓	
6) Noise and vibration due to blasting and other civil works?	✓		Proper attention during construction period
7) Road blocking and temporary flooding due to land excavation during the rainy season?		✓	
8) Traffic disturbance due to construction materials transport and wastes?	✓		Temporary problem during construction period
9) Temporary silt runoff due to construction?		✓	
10) Inconveniences in living condition and upper respiratory problems or stress for the people?		✓	
11) Chemical hazardous condition for the proposed road with construction of the existing road?		✓	
12) Poor sanitation and solid waste disposal in construction camp/ site which may transmit communicable diseases from workers to the local populations?	✓		Local labour will be engaged
13) Creation of temporary breeding of mosquitoes?		✓	
14) Dislocation and compulsory resettlement of people living in ROW (right-of-way)?		✓	
15) Noise and air pollution due to increase of traffic volume?	✓		Dust will be suppressed through water spraying
16) Increased risk of water pollution from oil, grease, spills etc from vehicles/ other equipment's during road construction?		✓	
17) Contamination of water due to solid waste disposal during road construction?		✓	
18) Health and safety hazards to workers from toxic gases which may emission from hot mix plant and bitumen?		✓	
19) Chance of spread of water born diseases?		✓	
20) Social conflicts between construction workers from other areas and community workers?	✓		Local labour will be engaged
21) Chance of spread of HIV/ AIDS and STD?		✓	

Rapid Environmental Assessment (REA) Checklist for Screening of Drainage Sub–Project

♦This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the LEGD/MDS Consultant		
♦This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.		
♦ Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. use the "remarks" section to discuss any anticipated mitigation measures.		
Name of Pourashava : Mymensingh		
Name of	**:**	**Infrastructure of Drain Improvement**
Sub-project /Scheme	**:**	Development of drainage system with rehabilitation of canal with Footpath starting from station Traffic mour to Chorpara culvert via Malgudam with repair of the road (ch.0+00 ~1+475km).

Field Survey on Environmental Questionnaire

SCREENING QUESTIONS	Tick Mark		Remarks
	YES	NO	
A. Project siting			
Is the Project area adjacent to or within any of the following environmentally sensitive areas?		✓	
Cultural Heritage site		✓	
Protected Area		✓	
Wetland		✓	
Mangrove		✓	
Estuarine		✓	
Buffer zone of protected area		✓	
Special area for protecting biodiversity		✓	
B. Sub -Project Particulars :			
Drain length and with	✓		L= 1475m
Type of drain	✓		U- type RCC drain
Tree cutting on the drainage alignment		✓	
Outfall of drainage?	✓		Outfall of existing drain to Sehora khal
Existences of cross drainage. Is it hampering drainage flow?		✓	
C. Potential Environmental Impacts			
Will the Project cause…			
Pollution of the receiving water body		✓	
pollution or interfere with the irrigation canal / channel		✓	
affect the structures near the out fall		✓	
Affect the community structures at the or near by the out fall		✓	
Potential ecological problems due to increased soil erosion and siltation?		✓	
Creation of temporary breeding habitats for mosquito vectors of disease due to water stagnancy in the drains?		✓	
Access problem for the house dwellers	✓		Proper attention during construction period
Impact on commercial and business establishment during construction	✓		Temporary problem arisen during construction period

SCREENING QUESTIONS	Tick Mark		Remarks
	YES	NO	
Impact on livelihood of Hawkers during construction	✓		Temporary problem during construction period
Impact on land due to disposal of sludge from the desolation of the drains		✓	
Pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?		✓	
Impairment of historical/cultural monuments/areas and loss/damage to these sites		✓	
increased road traffic due to interference of construction activities	✓		Sometime problem during construction period
Continuing soil erosion/silt runoff from construction operations?		✓	
increased volume of sullage (wastewater from cooking and washing) and sludge		✓	
poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of		✓	
Dislocation or involuntary resettlement of people?		✓	
Potential social conflicts arising from land tenure and land use issues?		✓	
Soil erosion before compaction and lining of canals?		✓	
Labor-related social problems especially if workers from different areas are hired?		✓	
Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		✓	
Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		✓	
Downstream water pollution from discharge of Fish pond effluents with drain water?		✓	
Soil erosion (furrow, surface)?		✓	
Scouring of canals?		✓	
Logging of canals by sediments?		✓	
Clogging of canals by weeds?		✓	
Pollution from oil and fuel spills and bilge flushing?		✓	

Appendix-2 Checklist for Preliminary Climate Risk Screening

Screening Questions		Score	Remarks[a]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?	1	During high Floods road and drain may overtop
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?	0	
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	1	During inundated condition damage may occur to road and drain surface
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	1	During inundated condition damage to road and drain may increase maintenance
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

[a] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): Medium risk

Subproject Classification as per ADB SPS 2009:

The impacts are minor, local and mostly construction related. Sub-project is an improvement of existing road. No significant irreversible impacts are envisioned on human populations or environmentally sensitive areas including wetlands, forests, grasslands, and other natural habitats.

Classification: Category B

Subproject Categorization as per DOE (ECR 1997)

Classification: Orange B

Environmental Assessment Requirements: EMP only as it is only existing road and drain improvement

All the roads and drains under Phase 2 and 3 in Mymensingh Pourashava are only improvement of existing roads there is no new road construction. Therefore all are similar in nature and hence, similar classification.

Prepared by: MDS consultant team for project preparation/existing safeguard team of MDSC of UGIIP-3 additional financing

Designation: Regional Environmental Safeguard Specialist and National Environmental Safeguard Specialist

(i) Date: 04-05 October 2017

Appendix-3 Sample outline spoils management spoils

I. Spoils information

A. Materials type
B. Potential contamination
C. Expected volume and sources
D. Spoil classification

II. Spoils management

A. Transportation of spoil
B. Storage of spoil
C. Contaminated spoil
D. Approved reuse and/or disposal sites

III. Records of reuse and/or disposal

Appendix-4 Photograph of proposed roads and drains schemes

Proposed drain D-1

Proposed drain (road alignment) D-7

Proposed drain (road alignment) D-10

Proposed drain D-4

Proposed drain D-3

Proposed road R-8

Proposed road R-9

Proposed road R-20

Proposed road R-23

Proposed road R-24

Proposed road R-30

Proposed road R-31

Proposed drain D-14

Proposed drain D-41

Proposed road R-21

Proposed road R-42

Proposed road R-39

Proposed road R-4

Appendix-5 Environment Clearance Certificate (ECC)

Government of the People's Republic of Bangladesh
Department of Environment
Head Office, Paribesh Bhaban
E-16 Agargaon, Dhaka-1207
www.doe.gov.bd

Memo No: DOE/Clearance/5444/2015/187 Date:02/05/2016

Subject: Environmental Clearance for Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III)

Ref : Your application dated 08/03/2016 and 12/04/2016.

With reference to the above, I have the pleasure to convey the approval of Environmental Clearance for Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III) at 31 selected Pourashava in Dhaka, Chittagong, Rajshahi, Rangpur, Khulna and Sylhet Divisions.

A copy of the said Environmental Clearance Certificate is attached herewith for your necessary action.

02.05.2016

(Syed Nazmul Ahsan)
Director (Environment Clearance, c.c)
Phone # 02-8181673

Project Director
Third Urban Governance and Infrastructure
Improvement (Sector) Project (UGIIP-III)
Local Government Engineering Department (LGED)
Level-12, LGED Bhaban,Sher-E-Bangla Nagar
Agargaon, Dhaka-1207.

Copy Forwarded to :

1) PS to the Secretary, Ministry of Environment and Forests, Bangladesh Secretariat, Dhaka.
2) Director, Department of Environment, Dhaka/Chittagong Regional Office, Dhaka/Chittagong.
3) Director, Department of Environment, Rajshahi/Khulna/Sylhet Divisional Office, Bogra/Khulna/Sylhet.
4) Assistant Director, Office of the Director General, Department of Environment, Head Office, Dhaka.

Appendix-6 Renewal Letter of Environment Clearance Certificate (RECC)

Government of the People's Republic of Bangladesh
Department of Environment
Head Office, Paribesh Bhaban
E-16 Agargaon, Dhaka-1207
www.doe.gov.bd

Memo No: DoE/Clearance/5444/2015/372 Date: 3/08/2017

Subject: Renewal of Environmental Clearance Certificate for Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III).

Ref: Your Application dated 22/05/2017 and 02/07/2017.

With reference to the above, the Department of Environment has decided to renew the Environmental Clearance Certificate for Third Urban Governance and Infrastructure Improvement (Sector) Project (UGIIP-III) subject to fulfilling the following terms and conditions.

I. The terms and conditions as stated in the Environmental Clearance Certificate issued on 02.05.2016 vide DoE/Clearance/5444/2015/187 shall remain valid for the renewed period.
II. This renewal is valid upto 01.05.2018. Application for further renewal along with the renewal fee and Vat on renewal fee in separate Treasury Chalan shall have to be submitted to the Director General, Department of Environment, Head Office, Dhaka, with a copy to Dhaka Regional/Chittagong Regional/Rajshahi Divisonal/Khulna Divisonal/ Sylhet Divisional office of the DOE at least 30 days ahead of expiry.

03.08.2017

(Syed Nazmul Ahsan)
Director (Environmental Clearance)
Phone # 8181673

Project Director
Third Urban Governance and Infrastructure
Improvement (Sector) Project (UGIIP-III)
Local Government Engineering Department (LGED)
Level-12, LGED Bhaban, Sher-E-Bangla Nagar
Agargaon, Dhaka-1207.

Copy Forwarded to :

1) PS to the Secretary, Ministry of Environment and Forests, Bangladesh Secretariat, Dhaka.
2) Director, Department of Environment, Dhaka/Chittagong Regional Office, Dhaka/Chittagong.
3) Director, Department of Environment, Rajshahi/Khulna/Sylhet Divisional Office, Bogra/Khulna/Sylhet.
4) Assistant Director, Office of the Director General, Department of Environment, Head Office, Dhaka.

Appendix-7 Sample Outline Traffic Management Plan

A. Principles

1. One of the prime objectives of this TMP is to ensure the safety of all the road users along the work zone, and to address the following issues:

i. The safety of pedestrians, bicyclists, and motorists travelling through the Construction zone;
ii. Protection of work crews from hazards associated with moving traffic;
iii. Mitigation of the adverse impact on road capacity and delays to the road users;
iv. Maintenance of access to adjoining properties; and
v. Addressing issues that may delay the project.

B. Operating Policies for TMP

2. The following principles will help promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.

(i) Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
(ii) Inhibit traffic movement as little as possible.
(iii) Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
(iv) Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
(v) Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
(vi) Train all persons that select, place, and maintain temporary traffic control devices.
(vii) Keep the public well informed.
(viii) Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

3. Figure A2 to Figure A3 illustrates the operating policy for TMP for the construction of water pipes and the sewers along various types of roads.

C. Analyse the impact due to street closure

4. Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

(i) approval from the ULB/CMC/Public Works Department (PWD) to use the local streets as detours;
(ii) consultation with businesses, community members, traffic police, PWD, etc, regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
(iii) determining of the maximum number of days allowed for road closure, and 3 incorporation of such provisions into the contract documents;
(iv) determining if additional traffic control or temporary improvements are needed along the detour route;
(v) considering how access will be provided to the worksite;
(vi) contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
(vii) developing a notification program to the public so that the closure is not a surprise. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

5. If full road-closure of certain streets within the area is not feasible due to inadequate capacity of the detour Street or public opposition, the full closure can be restricted to

weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning peak period.

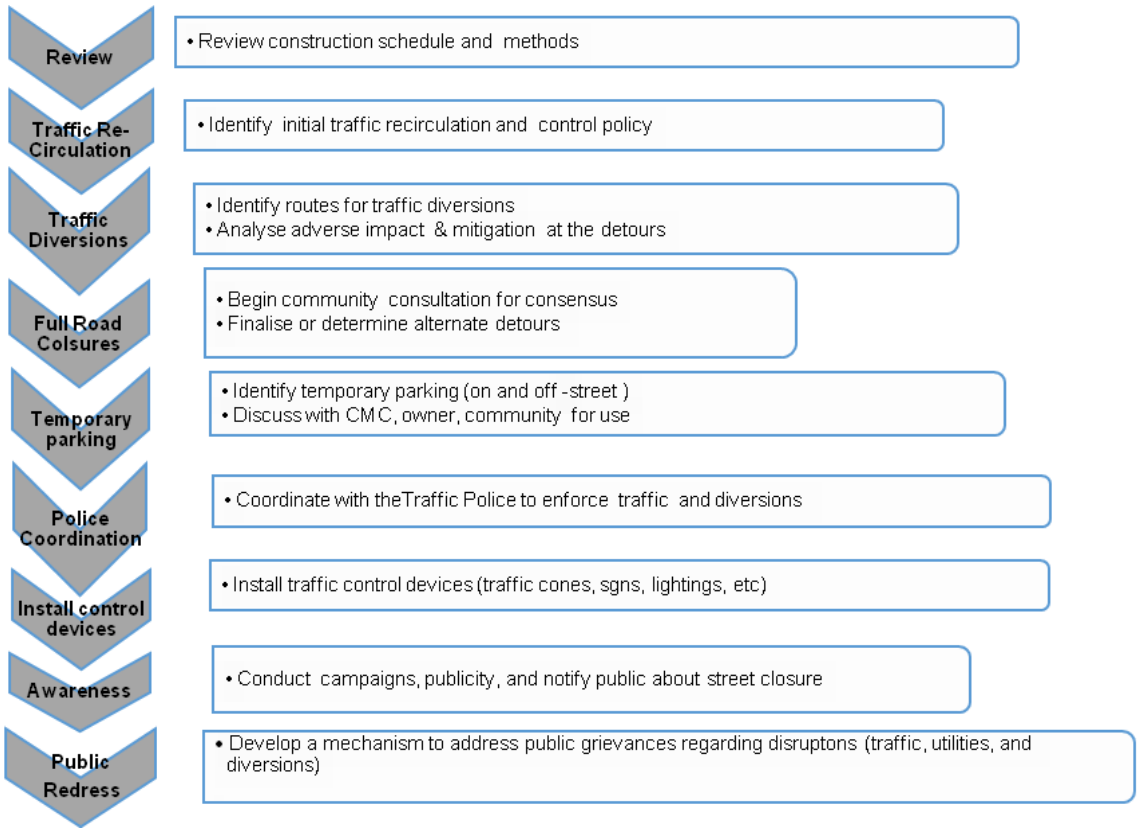


Figure A1: Policy Steps for the TMP

D. Public awareness and notifications

6. As per discussions in the previous sections, there will be travel delays during the constructions, as is the case with most construction projects, albeit on a reduced scale if utilities and traffic management are properly coordinated. There are additional grounds for travel delays in the area, as most of the streets lack sufficient capacity to accommodate additional traffic from diverted traffic as a result of street closures to accommodate the works.

7. The awareness campaign and the prior notification for the public will be a continuous activity which the project will carry out to compensate for the above delays and minimize public claims as result of these problems. These activities will take place sufficiently in advance of the time when the roadblocks or traffic diversions take place at the particular streets. The reason for this is to allow sufficient time for the public and residents to understand the changes to their travel plans. The project will notify the public about the roadblocks and traffic diversion through public notices ward level meetings and city level meeting with the elected representatives.

8. The PIU will also conduct an awareness campaign to educate the public about the following issues:

i. traffic control devices in place at the work zones (signs, traffic cones, barriers, etc.);
ii. defensive driving behaviour along the work zones; and
iii. reduced speeds enforced at the work zones and traffic diversions.

9. It may be necessary to conduct the awareness programs/campaigns on road safety during construction.

10. The campaign will cater to all types of target groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centres. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the PIU, and the contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

(i) explain why the brochure was prepared, along with a brief description of the project;
(ii) advise the public to expect the unexpected;
(iii) educate the public about the various traffic control devices and safety measures adopted at the work zones;
(iv) educate the public about the safe road user behaviour to emulate at the work zones;
(v) tell the public how to stay informed or where to inquire about road safety issues at the work zones (name, telephone, mobile number of the contact person; and
(vi) indicate the office hours of relevant offices.

E. Install traffic control devices at the work zones and traffic diversion routes

11. The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is a key to achieve the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices are used in work zones:

- Signs
- Pavement Markings
- Channelizing Devices
- Arrow Panels
- Warning Lights

12. Procedures for installing traffic control devices at any work zone vary, depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. The main roads carry considerable traffic; internal roads in the new city areas are wide but in old city roads very narrow and carry considerable traffic. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary “STOP” and “GO”).

13. Figure A4 to Figure A5 illustrates a typical set-up for installing traffic control devices at the work zone of the area, depending on the location of work on the road way, and road geometrics:

i. Work on shoulder or parking lane
ii. Shoulder or parking lane closed on divided road
iii. Work in Travel lane
iv. Lane closure on road with low volume
v. Lane closure on a two-line road with low volume (with yield sign)
vi. Lane closure on a two-line road with low volume (one flagger operation)
vii. Lane closure on a two lane road (two flagger operation)
viii. Lane closure on a four lane undivided Road
ix. Lane closure on divided roadway
x. Half road closure on multi-lane roadway
xi. Street closure with detour

14. The work zone should take into consideration the space required for a buffer zone between the workers and the traffic (lateral and longitudinal) and the transition space required for delineation, as applicable. For the works, a 30 cm clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 cm is necessary to install the temporary traffic signs and cones.

15. Traffic police should regulate traffic away from the work zone and enforce the traffic diversion result from full street closure in certain areas during construction. Flaggers/ personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LGED type) for regulating the traffic during night time.

16. In addition to the delineation devices, all the construction workers should wear fluorescent safety vests and helmets in order to be visible to the motorists at all times. There should be provision for lighting beacons and illumination for night constructions.

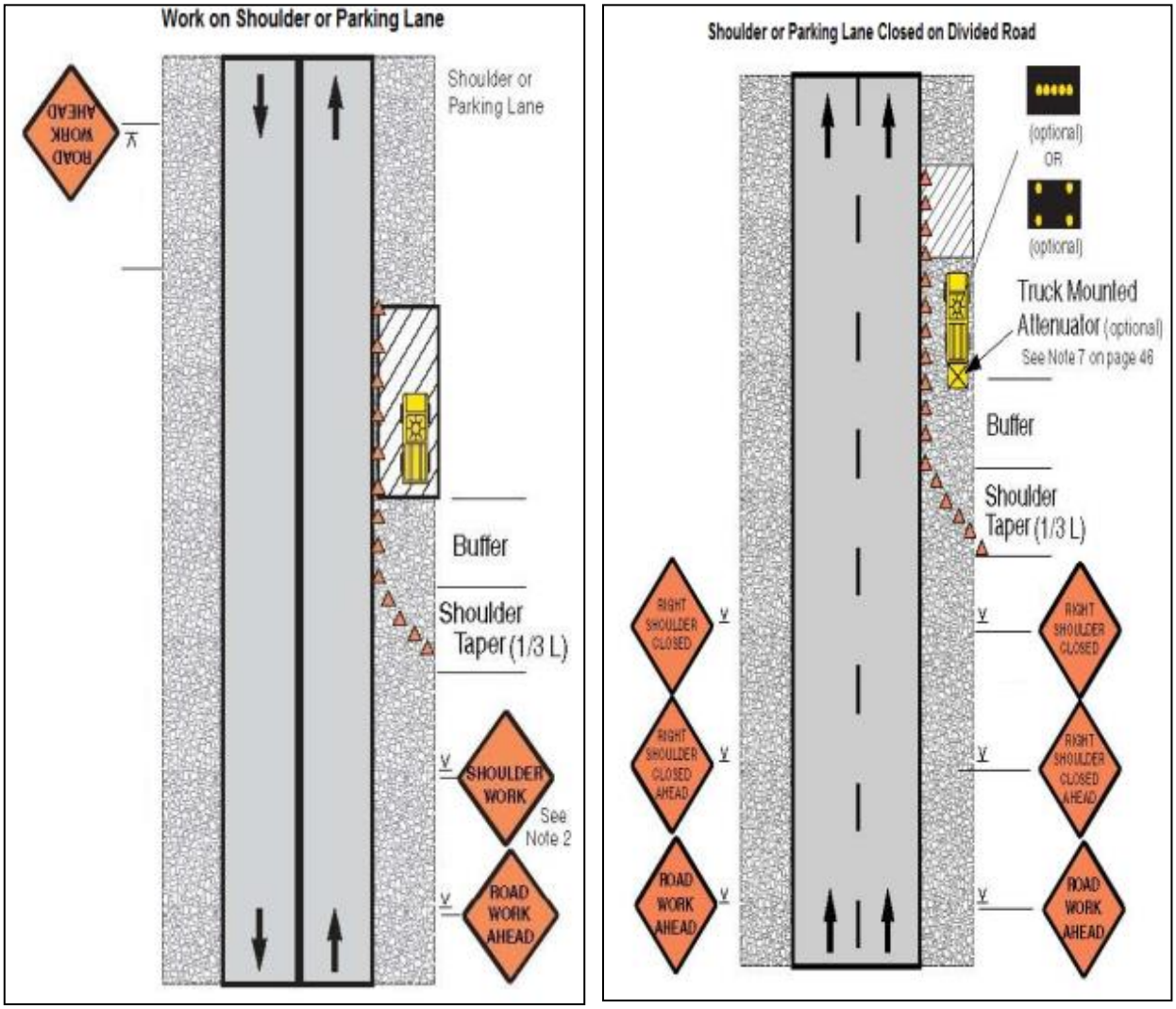


Figure A2 & A3: Work on shoulder or parking lane and shoulder or parking lane closed on divided road

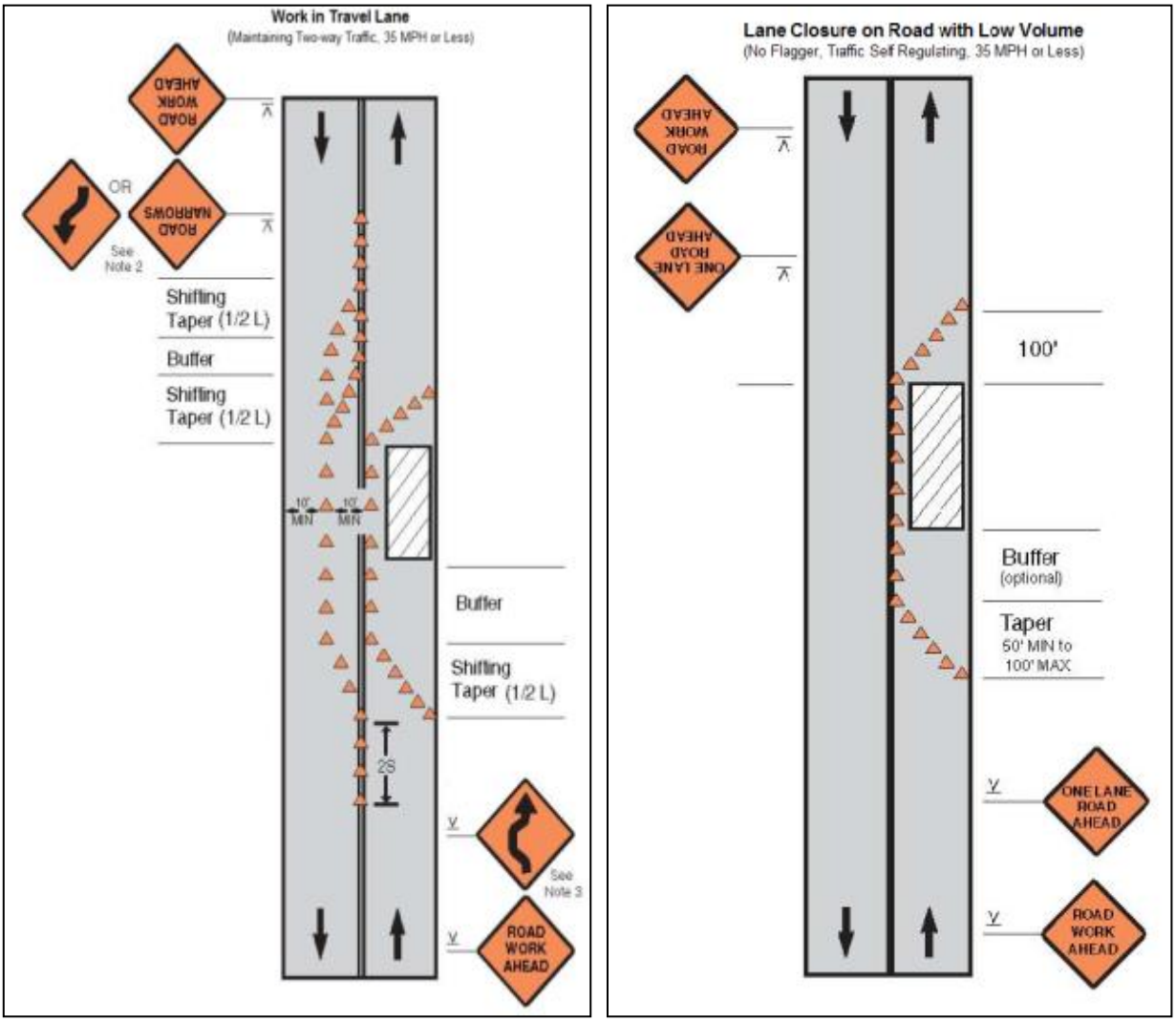
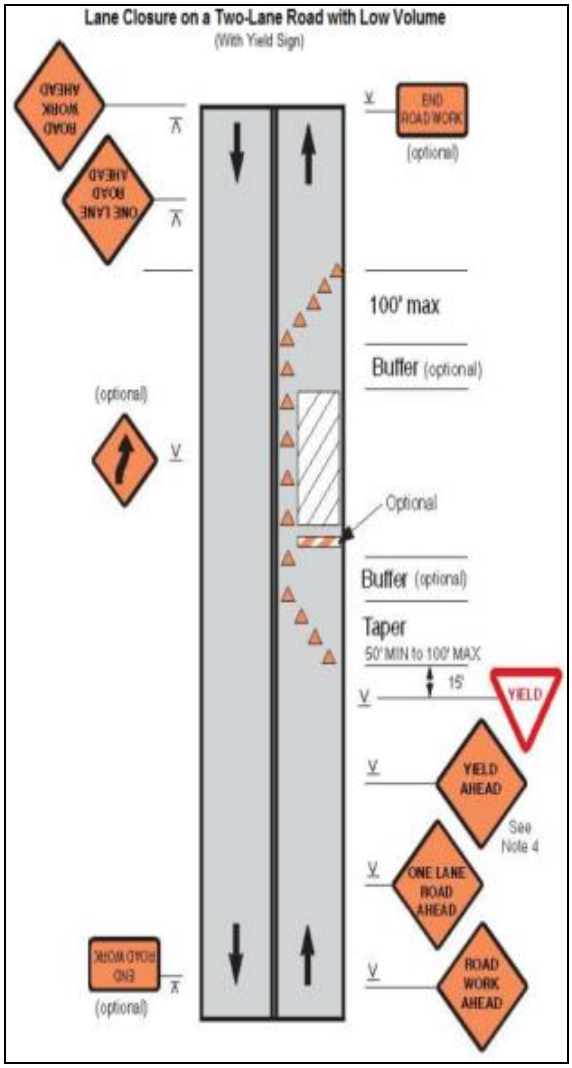


Figure A4 & A5: Work in Travel lane & Lane closure on road with low volume



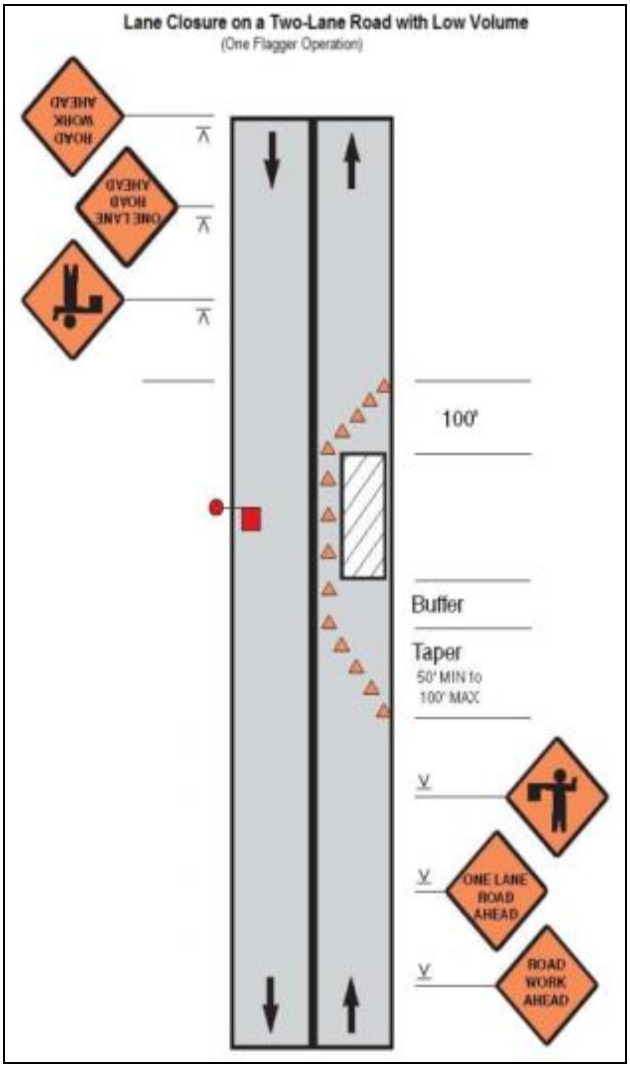


Figure A4.6 & A4.7: Lane closure on a two-line road with low volume (with yield sign) & Lane closure on a two-line road with low volume (one flagger operation)

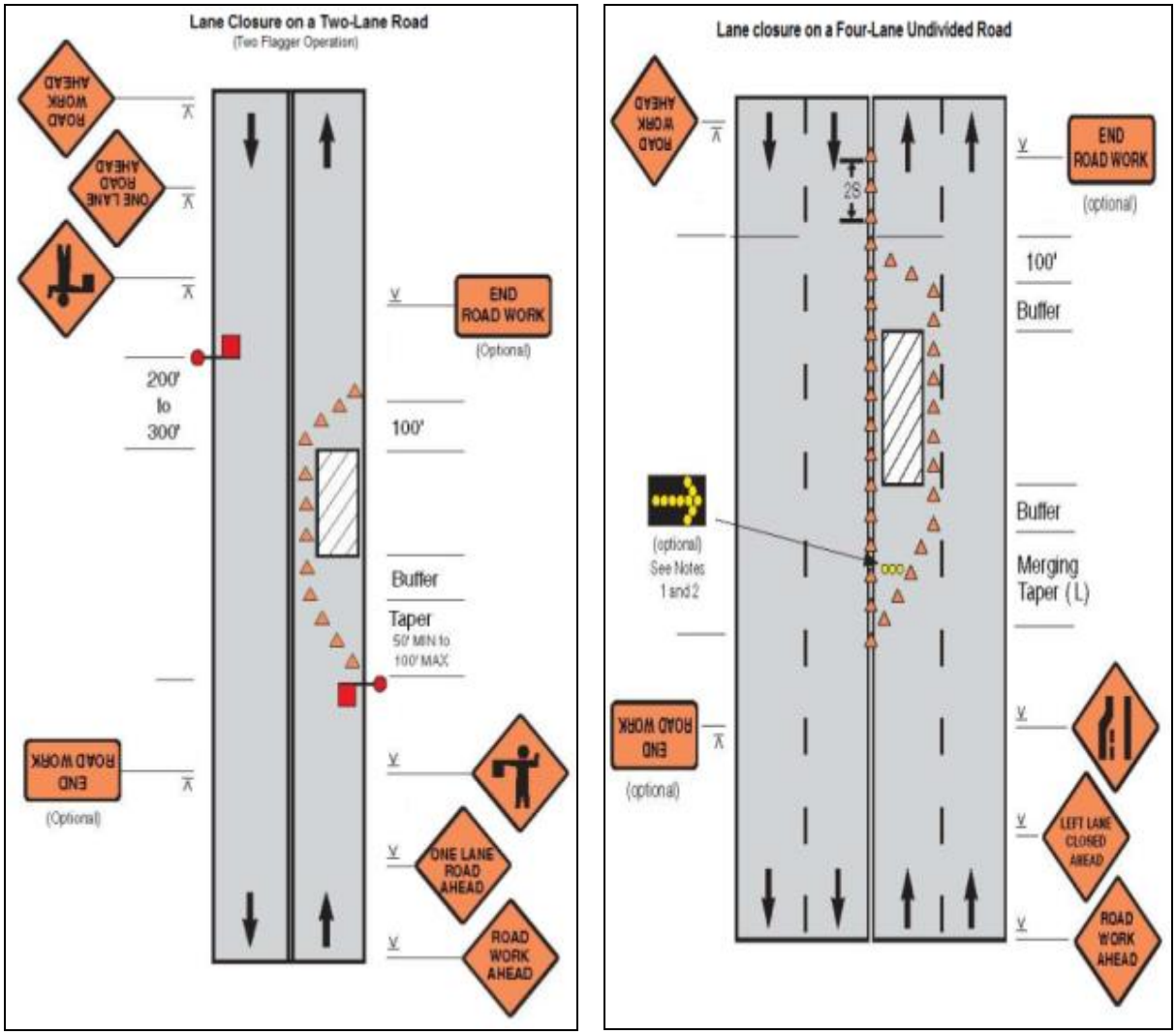
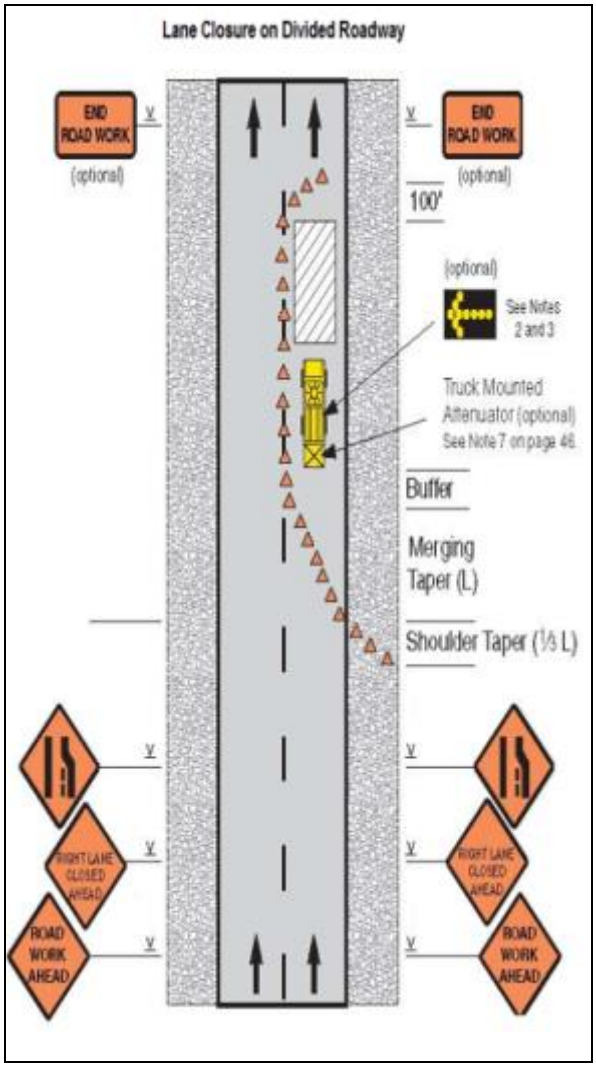


Figure A4.8 & A4.9: Lane Closure on a Two-Lane Road (Two Flagger Operation) & Lane Closure on a Four-Lane Undivided Road



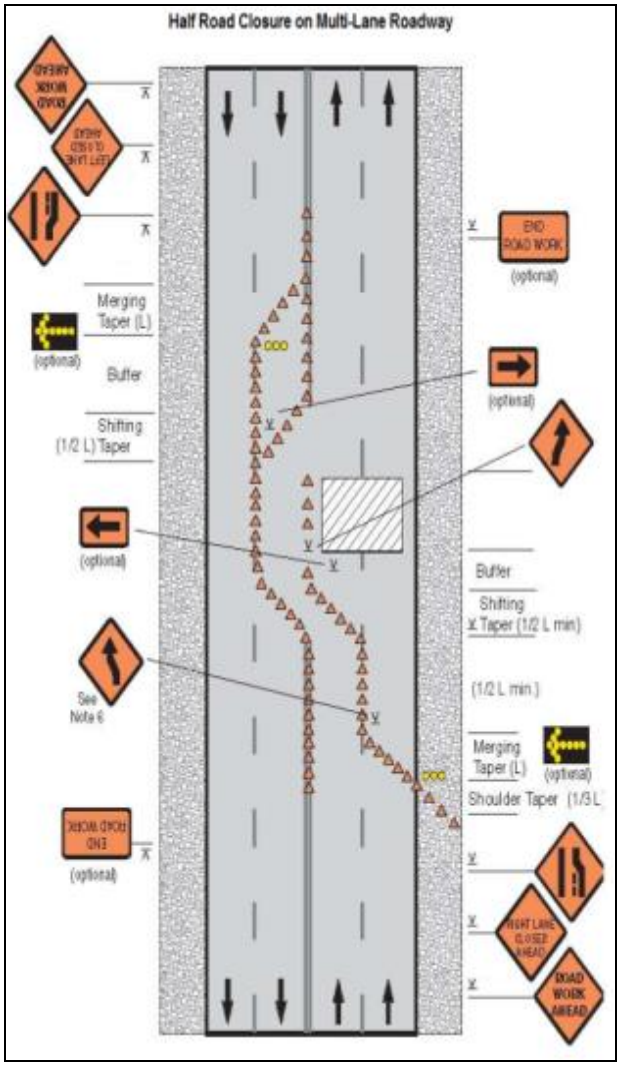


Figure A4.10 & A4.11: Lane Closure on a Divided Roadway & Half Road Closure On Multi-Lane Roadway

Appendix-8 Level of service for proposed component roads and drains

Road Part	Existing Standard	Proposed Standard	Additional Climate Change for UGIIP-3
Design Life	20 years		20 years with consideration for 50 years flood frequency for rights of way (RoW)
Minimum width	Minor roads 1.0-3.0 m Town Roads 3.0-5.0 m	3.0 m for minor access roads with 1.0 shoulder only if RoW permits. 5.0 m with 2 x 1.15 meter shoulders where RoW exists	
Crest level	600 mm above normal flood level	600 mm above normal flood level	200 mm above A1B[a] scenario sea levels in 2034
Surface material	BC, CC or HBB depending on width		All CC with minimum thickness of 150 mm with adequate reinforcement and 150 mm plastic pipes to be placed at 50 meter intervals under roads for services
Pavements	Thickened sand cushion or sometimes sand aggregate. (7 to 11 meters wide)		All thickened sand aggregate. Sub-base to be 0.25 meters wider than overlying layer.
Earthworks	Compacted where necessary either by hand or machine.	Machine compacted in layers and tested.	
Embankments	Slope 1:1.5	Embankments strengthened with edge protection. Where possible, trees or bushes should be planted on earth embankments	Additional strengthening on roads in flood areas, either concrete brick work.
Run-off / drainage	Culverts provided as necessary	Ensure side drains are integrated into town's drainage system	Increase cross drainage structures as necessary. Full width drainage layer in sub-base Assess need for larger culverts
			Strengthen abutments and approaches

[a] *A1B represents a mid-range emission scenario for the future global emission of Greenhouse gases. A1B makes assumptions about future growth and development of human activities during the next century. It was used for the IPCC climate change assessments in 2007. Source: MDS Consultant (UGIIP-3).*

Appendix-9 Public Consultation

MDS Consultancy Services for Third Urban Governance & Infrastructure Improvement (Sector) Project [UGIIP-III]

SMEC In JV with AQUA ACE In association with EADS

[ADB Loan: 3142 BAN (SF)]

Local Government Engineering Department

PUBLIC CONSULTATION – Environmental/Social Safeguard (FOR RD/DR Sub-Projects)

Name of Pourashava : Mymensingh

Name of Location : S. A. Sarkar Road (Ward No: 6) Nayanmoni Market More.

Visit/Meeting date : 04.10.2017 **Time:** 10.30 AM

List of Participants

Sl.	Name	Address	Occupation	Signature
01				
02				
03				
04				
05				
06	Mehrab Hossain (Pavel)			
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				

Photograph of the Public Consultation:

Consultation on Pourashava office and Nayanmoni Market mour (ward-06)

Public Consultation Meeting-01

Sub-project: Construction of Road and Drainage sub-project in different locations of Mymensingh Pourashava

Venue: Mymensingh Pourashava office and Nayanmoni Market mour (Ward – 06)

No. of Participants: 16

Date: 04.10.2017 Time: 10.30 A.M.

Agenda: Public Consultation Meeting for environmental assessment on construction of Road and Drainage schemes at different locations of the Pourashava

A public consultation meeting was held at Pourashava office and Nayanmoni Market mour at ward no. 06 in Mymensingh Pourashava. These meetings were presided over by the Mayor, Mr. Ekramul Haque Titu and Syed Shafiqul Islam Mintu, Councillor, Ward no. 06, Mymensingh Pourashava.

Consultant from Environmental Safeguard unit of MDSC, UGIIP-III was present in the meeting. The Road users, local elites, safeguard officers of the Pourashava, Executive Engineer, Asstt. Engineer, businessmen, labourers and other stakeholders were also present in the meeting.

The participants came from different parts of the Mymensingh Pourashava and they have discussed regarding damage of road top and water stagnant by the side of the road due to excessive heavy traffic and inadequate drainage network. Students living in the surrounding areas, attending late in their schools, employees of different government or non-government institutions facing problems to attending their workplace. Pregnant women and serious patients facing risk during travel to nearby hospitals/clinics. The farmers facing trouble during carrying their agricultural goods to the nearest market places and sale their product at a highest price. Police administration can't take immediate action against any offended, such as Murderer, Eve-teaser etc.

The Regional Environmental Specialist, MDSC, UGIIP-III, briefed the participants regarding the goals and objectives of the projects and environmental issues which may arise during implementation period and also probable mitigation measures. The Chairman of the meeting informed the participants that no land acquisition is required for sub-project implementation as the activities will be implemented inside the RoW of the roads and also informed the meeting that no indigenous/tribal people are living in Mymensingh Pourashava.

The meeting concluded with thanks from the chair to the participants.

MDS Consultancy Services for Third Urban Governance & Infrastructure Improvement (Sector) Project [UGIIP-III]

SMEC In JV with AQUA ACE In association with EABS

[ADB Loan: 3142 BAN (SF)]

Local Government Engineering Department

PUBLIC CONSULTATION – Environmental/Social Safeguard (FOR RD/DR Sub-Projects)

Name of Pourashava : Mymensingh

Name of Location : Baghmara Road (Ward No: 17)

Visit/Meeting date : 04.10.17 Time: 4.50 P M

List of Participants

Sl.	Name	Address	Occupation	Signature
01	Md. Nazrul Islam	বাঘমারা রোড	কাউন্সিলর	
02	Md. Naymur Rahman	বাঘমারা	ব্যবসা	
03	[illegible]	"	[illegible]	[illegible]
04	[illegible]	বাঘমারা	ব্যবসা	
05	[illegible]	বাঘমারা	[illegible]	
06	[illegible]	"	[illegible]	
07	MD. RONI	BAGHMAR	[illegible]	
08	[illegible]	"	[illegible]	
09	[illegible] (Engg.)	Baghmara	[illegible]	
10	[illegible]	বাঘমারা	[illegible]	
11	[illegible]	"	"	
12	[illegible]	"	"	
13	[illegible]	"	[illegible]	
14				
15				
16				

Consultation on In front of Robin Miah house at Mymensingh Pourashava

Public Consultation Meeting-02

Sub-project: Construction of Road and Drainage sub-project in different locations of Mymensingh Pourashava

Venue: Baghmara Road near Robin Miah House (Ward – 17)

No. of Participants: 13

Date: 04.10.2017 Time: 4.50 A.M.

Agenda: Public Consultation Meeting for environmental assessment on construction of Road and Drainage schemes at different locations of the Pourashava

A public consultation meeting was held on Baghmara Road near Robin Miah House at ward no. 17 in Mymensingh Pourashava. These meetings were presided over byMd. Nazrul Islam, Councillor, Ward no. 17, Mymensingh Pourashava.

Consultant from Environmental Safeguard unit of MDSC, UGIIP-III was present in the meeting. The Road users, local elites, safeguard officers of the Pourashava, Asstt. Engineer, businessmen, labourers and other stakeholders were also present in the meeting.

Lack of smooth road network is the substantial problem in Mymensingh Pourashava. Attendence in the school has reduced and business in the area has comes down. Here the Pourashava communication network consists predominantly of BC, RCC, HBB and earth. Deterioration of road and drain is a common phenomenon with time. Some roads in this Pourashava were badly damaged because of the inadequate quality control, lack of back-log maintenance, uncontrolled movement of heavy vehicles. Poor or no repair of the road and drain together with no periodic or emergency maintenance are the main reason of this deterioration.

For a rapid economic growth these road and drain should be maintained properly, as these are the economic indicators of a Pourashava. Proper planning and design, use of quality construction materials and proper quality control during the construction process can produce sustainable infrastructure of road and drain.

The Regional Environmental Specialist, MDSC, UGIIP-III, briefed the participants regarding the goals and objectives of the projects and environmental issues which may arise during implementation period and also probable mitigation measures. The Chairman of the meeting informed the participants that no land acquisition is required for sub-project implementation as the activities will be implemented inside the RoW of the roads and also informed the meeting that no indigenous/tribal people are living in Mymensingh Pourashava.

The meeting concluded with thanks from the chair to the participants.

Appendix 10: Sample Grievance Notification Form

The Project welcomes complaints, suggestions, queries and comments regarding Project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback. Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing 'CONFIDENTIAL' above your name. Thank you.

Date	Place of registration				
Contact Information/Personal Details					
Name		Gender	* Male *	Age	
Home Address					
Place					
Phone no.					
E-mail					
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					
FOR OFFICIAL USE ONLY					
Registered by: (Name of Official registering grievance)					
Mode of communication: Note/Letter E-mail Verbal/Telephonic					
Reviewed by: (Names/Positions of Official(s) reviewing grievance)					
Action Taken:					
Whether Action Taken Disclosed: Yes ( ) No ( )					
Means of Disclosure:					