

Environmental Assessment and Review Framework

February 2012

BAN: Greater Dhaka Sustainable Urban Transport Project

Prepared by Roads Division under the Ministry of Communications, Government of Bangladesh, for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 29 February 2012)

Currency unit	–	Taka (Tk)
Tk.1.00	=	\$0.01223
\$1.00	=	Tk. 81.750

ABBREVIATIONS

ADB	–	Asian Development Bank
BRT	–	bus rapid transit
EIA	–	environmental impact assessment
EMP	–	environmental management plan
EPCM	–	engineering, procurement, and construction management
ESC	–	environmental and social circle division
ESO	–	environmental and safety officer
GDSUTP	–	Greater Dhaka Sustainable Urban Transport Project
GOB	–	Government of Bangladesh
IEE	–	initial environmental examination
IES	–	international environmental and safety specialist
NGO	–	nongovernment organization
MOC	–	Ministry of Communications
MOEF	–	Ministry of Environment and Forests
PIU	–	project implementation unit
PPE	–	personal protective equipment
REA	–	rapid environmental assessment
RHD	–	Road and Highways Department
RRD	–	Roads and Railways Division
SPS	–	Safeguard Policy Statement
ECA	–	Environmental Conservation Act (1995)
ECR	–	Environmental Conservation Rules (1997)
TOR	–	terms of reference
TTMP	–	temporary traffic management plan

WEIGHTS AND MEASURES

cm	–	centimeter
dB	–	decibels
ha	–	hectare
kg	–	kilogram
km	–	kilometer
km ²	–	square kilometer
l	–	liter
m	–	meter
m ²	–	square meter
m ³	–	cubic meter
mg/l	–	milligrams per liter
ml	–	milliliter
MLD	–	million liters per day
mm	–	millimeter
µg/m ³	–	micrograms per cubic meter

NOTE

In this report, "\$" refers to US dollars.

This environmental assessment and review framework 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.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

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I. INTRODUCTION

A. Project Description

1. The project will contribute to developing a sustainable urban transport system (UTS), within the Tongi and Gazipur *Pourashavas* Area (TGPA), which forms part of north Greater Dhaka, through the delivery of a 20-km bus rapid transit (BRT) corridor. This pilot project provides a holistic solution for integrated urban mobility, with a demonstration effect, as no modern mass transit system exists in Bangladesh yet. The project is the first in a series of planned BRT lines in Dhaka, and is approximately 20 km from the southern terminal, near the international airport, to the Gazipur Terminal. The existing alignment is on the main National Highway 3 (NH3) to Joydebpur Chowrasta. The target date for project completion is the end of 2017.

B. Purpose of the EARF

2. The environmental assessment and review framework (EARF) aims to provide guidance on safeguard screening, assessment, institutional arrangements, and processes to be followed for non-sensitive components of projects, where design takes place after Board approval. There is one component of the project which has yet to be defined in detail which is the subject of this EARF. There are about 155 feeder roads either side of the main project corridor that will be improved in favour of non-motorized transport (NMT), and some of these will include vendor markets and parking facilities. The borrower will agree with ADB on screening and categorization, environmental assessment, preparation and implementation, monitoring, and updating existing safeguard plans for the feeder roads to facilitate compliance with the requirements specified in ADB Safeguard Policy Statement (SPS, 2009) and government rules and laws. Accordingly, this EARF has been prepared for this project.

3. This EARF (i) describes the project and its components; (ii) explains the general anticipated environmental impacts and mitigation measures for the feeder road components which will be financed under the project after ADB Board approval; (iii) specifies the requirements that will be followed in relation to feeder roads screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements; (iv) assesses the capability of the project proponents to implement national laws and ADB's requirements, and identifies needs for capacity building; (v) specifies implementation procedures, institutional arrangements, and capacity development requirements; and (vi) specifies monitoring and reporting requirements.

4. The locations of the feeder road improvements are not fully known, and the specific proposals and detailed design will come later. Therefore, conformance to subproject selection criteria is required as presented in this EARF. The IEE for the main BRT project and the environmental management plan (EMP) shall guide the environmental assessments of the feeder road improvements that will be defined when detailed designs are known. Table 1 describes the components this EARF will apply.

Table 1: Description of Component

S No	Name of the Components	Description
1	Small-scale improvement works, including improvements to the local markets and implementation of parking policy	This component will include small improvements along feeder roads, including; (i) paving of the first 100 m and other small roads improvements including drainage; (ii) organization of rickshaw parking within the RoW; (iii) small improvements to proposed vendor markets (e.g., footpaths, tube wells, etc.); (iv) parking strategy to encourage private land owners to voluntarily use their land for paid public parking; (v) improvements to public lands used for vendor markets; and (vi) pedestrian facilities (2 pilot schemes). The improvements to the markets will be within the lands belonging to the <i>pourashavas</i> or market committees. Land acquisition will occur in the event of non-availability of land at these locations, and is expected to be minimal. Proposed locations for parking (as part of the implementation of the parking policy) along the feeder roads shall be through voluntary donation. Land acquisition and resettlement impacts are not envisaged.

RoW= right of way.

C. Environmental Categorization

5. As part of the project preparatory technical assistance (TA 7415 BAN), the environmental assessment for the BRT conducted rapid environmental assessment and produced an IEE with an EMP in accordance with requirements of SPS. The project has been classified into environmental category B. The feeder road improvements are expected to be category C or category B due to the low-impact nature of such works. No category A type of works (with significant impacts) will be considered.

II. ASSESSMENT OF LEGAL FRAMEWORK

6. The implementation of the project including the feeder roads and will be governed by ADB's Safeguard Policy Statement (SPS, 2009) and the environmental laws, policies and regulations of the Government of Bangladesh.

A. Institutional Framework

7. **Asian Development Bank.** The ADB SPS stipulates addressing environmental concerns, if any, of a proposed activity in the initial stages of project preparation. Safeguard frameworks will: (i) reflect fully the policy objectives, relevant policy principles, and safeguard requirements governing preparation and implementation of components; (ii) explain the general anticipated impacts of the components to be financed under the proposed project; (iii) specify the requirements that will be followed for feeder roads screening and categorization, assessment, and planning, including arrangements for information disclosure, meaningful consultation with measures to involve vulnerable groups including women, grievance redress mechanism, and where applicable, safeguard criteria that are to be used in selecting components; (iv) describe implementation procedures, including budgets, institutional arrangements, and capacity development requirements; (v) specify monitoring and reporting requirements; and (vi) specify the responsibilities and authorities of the borrower/client, ADB, and relevant government agencies in relation to the preparation, submission, review, and clearance of feeder roads safeguard documents, and monitoring and supervision of safeguard plan implementation.

8. To determine whether the application of safeguard frameworks is appropriate, ADB will assess the borrower's or client's capacity to manage environmental and social impacts and risks and to implement national laws and ADB's requirements. If gaps exist between ADB's

requirements and a country's laws, or where gaps in borrowers' capacity are apparent, the safeguard frameworks should include the details of the specific gap-filling requirements to ensure that policy principles and safeguard requirements are achieved.

9. **Government of Bangladesh.** The GOB laws, regulations, and standards for environmental assessment are summarized in Appendix A. The main provisions for environmental protection and pollution control in Bangladesh are contained in the Environmental Conservation Act (ECA, 1995) and Environmental Conservation Rules (ECR 1997). Under the ECR, projects are classified as green, orange, or red to determine the level of environmental assessment required. The overall project is categorized as red, because it involves construction, reconstruction, and extension of roads and bridges, and it will require an environmental clearance certificate (ECC).¹ Water, power, and gas distribution line-laying and relaying, and extension, construction, reconstruction, or expansion of national roads and bridges (with a length of 100 m and above) are all red category activities under the ECR.

10. In addition to the IEE and EMP prepared for ADB for the overall project, an environmental impact assessment (EIA) must be prepared for the government. This will be preceded by submission of the IEE and an application to the Department of Environment for terms of reference (TOR). An environmental impact assessment (EIA) must then be prepared in the prescribed format and submitted to the DOE in due course. In order to gain approval under Rule 7 of the ECR, the EIA application will need to be submitted to include the following:

- (i) Environmental impact assessment (based on the TOR)
- (ii) Feasibility study (e.g. final TA report)
- (iii) TOR issued by DOE
- (iv) Layout plan
- (v) Operational plan
- (vi) Environmental management plan
- (vii) No objection certificate from the local authorities (Dhaka, Tongi , Gazipur)
- (viii) Emergency response plan
- (ix) Rehabilitation plan (resettlement plan)
- (x) Other necessary information (where applicable)

11. DOE will review within 60 days the EIA and application under Rule 7 of the ECR and issue environmental clearance in due course.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

12. The potential environmental impacts are likely to be within the scope of the impacts described in the IEE, which identifies mitigation measures to minimize impacts in the design, construction, and operational phases. Environmental analysis covered potential direct, indirect, cumulative, and induced impacts, but primarily focusing on the physical impacts within the BRT corridor along the Dhaka-Mymensingh Road and Chowrasta-Gazipur Road.

13. Based on current information, it is anticipated that the feeder roads component will be environment category B or C. Environmental impacts will only arise during the construction phase, and will be completely reversible but will require mitigation. Depending on the designs and construction methods, there will be typical construction impacts from the leveling and

¹ Consultation with the DOE during the course of this environmental assessment confirmed that the project is category red and requires EIA under the ECA and ECR.

resurfacing of the roads. Dust and noise, waste disposal, and water quality impacts arising during the construction and phases will have very manageable environmental impacts that will require mitigation. The necessary mitigation measures are already included in the EMP for the IEE. The residual impacts should be minor, as the impacts will be mostly reversible. Health and safety hazards to workers and the public, elevated dust and noise levels, nuisance due to stockpiling of materials, and disruption of community services due to reprovisioning of drainage and other utilities can all be controlled through the implementation of an EMP to address predicted negative environmental impacts.

14. **Physical impacts.** The main physical issues relate to impacts such as temporary traffic arrangements, supply and installation of bitumen surfacing, erection of poles for power and telecommunications, earthworks for relaying gas and water mains, noise, dust, and general waste disposal. The construction will create some additional unavoidable dust, noise, and vibration in addition to the main civil works, and all the above need to be addressed. The EMP provided in the IEE will be sufficient to cover all foreseeable negative environmental impacts. However, environmental assessment for environmental review for feeder roads should take place at the detailed design stage in case any unforeseen impacts arise in future.

15. **Management issues.** The main management issues relate to planning to control impacts, temporary traffic management measures, management of waste disposal, materials supply, drainage, noise and dust, and managing workers and public safety.

16. **Biological impacts.** The main biological issues relate to possible removal of roadside trees in the work areas and compensatory planting. There is no issue of interference with sites protected for their biodiversity. There will be no interference with protected forests, as the works will be in the urban area.

17. **Social impacts.** The social and human impacts to street level activities and impacts to social infrastructure will be mitigated through implementation of the resettlement plan.

IV. ENVIRONMENTAL ASSESSMENTS FOR COMPONENTS

A. Environmental Criteria for Feeder Roads Components

18. Although the feeder roads have not yet been designed in detail, it is unlikely that any of the roads would need to be excluded on environmental grounds. Moreover, the feeder roads will need to be defined more precisely in an environmental assessment to reconfirm that impacts are as expected at this stage, and that impacts can be mitigated by the EMP in the IEE. The environmental assessment report shall be updated by RRD and approved by ADB during the implementation of the project and prior to commencement of any site works for feeder roads. Environmental selection criteria is as follows:

Table 2: Environmental Criteria for Components

Environmental Criteria
<ul style="list-style-type: none"> • Will avoid resettlement/relocation. If unavoidable, the extent of resettlement will be minimized. • Will avoid significant impact on vulnerable persons. • Will not involve social conflict. • Will avoid locating facilities close to socially and culturally important buildings and sites, including schools, health centres, temples, and shrines. • Will not result in destruction/disturbance to historical and cultural places/values. • Will not bring about significant change in land use from residential and/or institutional to commercial, transport, or industrial in the vicinity of the subproject site. • Will reflect inputs from public consultation and disclosure for site selection. • Pre-project planning shall identify existing infrastructure, areas to be served in increments of expansion, appropriate types of facilities for target communities, and means for engaging local private suppliers and operators in the provision of materials and in servicing.

B. Environmental Assessment

a. Screening

19. Environmental categorization for the feeder roads shall be determined by ADB. ADB's rapid environmental assessment (REA) checklist (Appendix 2) shall be used for determining environmental categorization. Given that none of the feeder roads will be category A, the roads to be identified and prepared after the loan approval may be assigned to one of the following categories:

- (i) **Category B.** A proposed project is classified as category B and an IEE is required if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases, mitigation measures can be designed more readily than for category A projects.
- (ii) **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required, although environmental implications need to be reviewed.

b. Environmental Assessment Report

20. RRD/ESSU shall liaise with ADB's Regional Department to determine the specific requirements for environmental assessment of feeder roads. However, any environmental assessment can be included into the existing IEE and EMP during the detailed design stage. The conduct of the environmental assessment shall be consistent with Appendix 1 (Safeguard Requirements 1: Environment) and Annex to Appendix 1 (Outline of an EIA Report) of ADB's SPS 2009. Appendix 1 outlines the requirements that borrowers/clients should meet when delivering environmental safeguards for projects supported by ADB. It discusses the objectives and scope of application, and underscores the requirements for undertaking the environmental assessment process. The document also includes particular environmental safeguard requirements pertaining to pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resources. It also outlines specific environmental criteria to be used for feeder roads selection—for example, exclusion from negative lists for procurement or environmentally sensitive areas, unless specific requirements in the SPS 2009 are met.

21. The environmental assessment report shall include an updated EMP detailing the following: (i) mitigation measures for all identified adverse impacts during preconstruction and

construction stages of the feeder roads; (ii) monitoring measures to assess environmental performance and impacts to ambient environment; and (iii) implementation arrangements, including responsibilities and schedule.

22. During the construction works and commissioning of feeder roads, if unexpected impacts arise, the environmental assessments will be reviewed and the EMP updated in response to any new assumptions on construction and operational issues or any unpredicted impacts.

V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation

23. ADB's SPS 2009 requires public consultation as a mandatory part of environmental assessment of category B projects. RRD/ESSU shall undertake at least one public consultation for the feeder roads during preparation of the environmental assessments under this EARF, and cover sample areas that are representative of the feeder roads. RRD/ESSU will disclose, in a timely manner, adequate information in a readily accessible form to the affected people. All the relevant views of affected people and other stakeholders arising from the consultation will be taken into account in project design, mitigation measures, and the sharing of development benefits and opportunities. The environmental assessment for feeder roads will document the results of public consultation by providing details of the environmental issues and concerns raised by stakeholders, and by indicating how these will be addressed in the project design and mitigation measures. Proofs of consultations, such as attendance sheets and minutes of meetings, shall be included in the environmental assessment. ADB shall determine if adequate public consultation has been made and may require additional consultations, as necessary.

B. Information Disclosure

24. Based on ADB requirements, the following safeguard documents to be prepared and submitted by ESSU shall be posted on the ADB website:

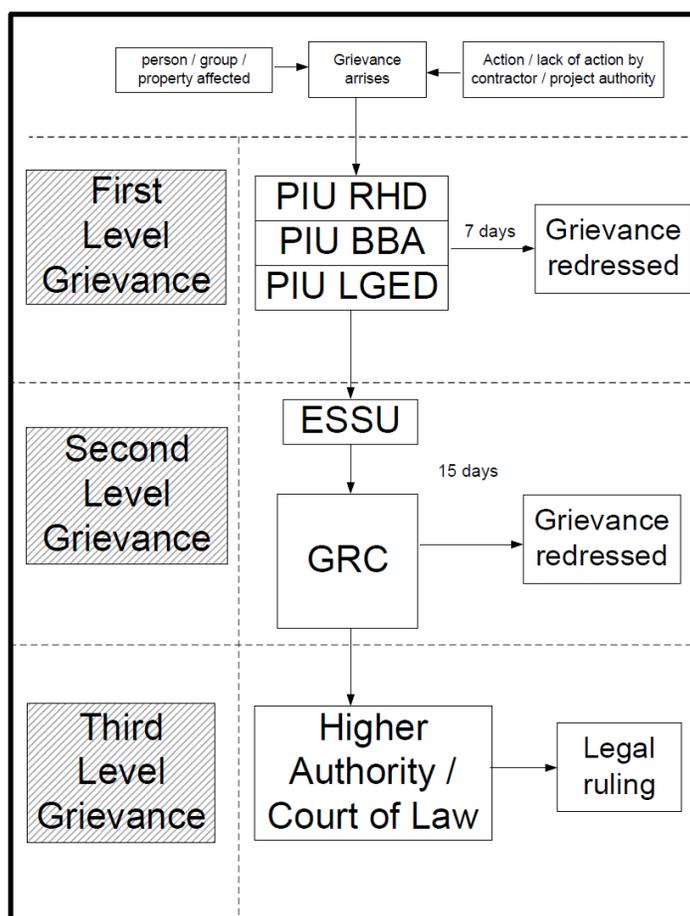
- (i) final environmental assessment upon receipt from ESSU;
- (ii) new or updated environmental assessment reports if prepared to reflect significant changes in the project during design or implementation;
- (iii) corrective action plan prepared during project implementation to address unanticipated environmental impacts, and to rectify noncompliance to EMP provisions; and
- (iv) semiannual environmental monitoring reports submitted by PPCTH during project implementation upon receipt.

25. RRD/ESSU shall be responsible for ensuring that all environmental assessment documents and environmental monitoring reports are properly and systematically kept as part of the project records. RRD/ESSU shall prepare these documents in English for submission to ADB, and make these documents available in a form and language and at a location in which they can be readily accessed by stakeholders.

C. Grievance Redress Mechanism

26. RRD/ESSU will establish a grievance redress mechanism (GRM) to facilitate resolution of complaints by affected people and grievances about the project's environmental performance, in line with the requirement of ADB's SPS 2009. The GRM will be coordinated by the designated ESSU officer with portfolio for environmental matters, in liaison with the people's committees at the district level. The public will be made aware of the relevant contact numbers and contact person in ESSU through media publicity and notice boards at the construction sites for the feeder roads and local authority offices. The GRM will address affected people's concerns and complaints promptly, using an understandable and transparent process. The GRM shall provide a framework for resolving complaints at the project level as well as beyond the project (that is, involving relevant government offices such as *pourashava* committees, DOE, etc.), using the existing judicial or administrative remedies. The GRM shall be described in detail in the environmental assessment for feeder roads. The figure below illustrates the GRM under the project, which is described in more detail in the IEE.

Figure 1: Grievance Redress Mechanism



BBA= Bangladesh Bridges Authority, ESSU= environmental and social safeguard unit, GRC= grievance redress committee, LGED= local government engineering division, PIU= project implementation unit, RHD= roads and highway department.

VI. INSTITUTIONAL ARRANGEMENTS AND CAPACITY ASSESSMENT

A. Implementation Arrangements

27. An **Interministerial Steering Committee** chaired by the Secretary of Roads Division (RD) under the Ministry of Communication (MOC) was established for the project in January 2011 to provide policy guidance and interagency coordination. The committee will provide guidance on any issues related to safeguards, particularly in delays in the land acquisition and resettlement process, or environmental management.

28. **Project management unit.** The executing agency is the RD, which will establish a project management unit (PMU) headed by a full-time project director (PD), and supported by RRD staff responsible for management and coordination among the implementing agencies of the project. The PMU will receive support from the project management, coordination and capacity building (PMCCB) consultants. An environmental and social safeguard unit (ESSU) will be established in the PMU. The PMU/ESSU will consist of an environmental and safety officer (ESO) and a social safeguards officer (SSO) to oversee safeguards implementation. The ESO will submit an updated IEE for review and approval (prior to contract award) and semiannual monitoring reports to ADB for review. The ESO will also be responsible (with assistance from EPCM) for submitting an EIA (including preparation of safeguard plans for the feeder roads) to facilitate compliance with the requirements to DOE, and to obtain environmental clearance for the project under Rule 7 of the ECR.

29. **Project implementing units.** There will be three implementing agencies, as follows:

- (i) Roads and Highway Department (RHD) – will implement the main corridor restructuring, except the elevated section.
- (ii) Bangladesh Bridges Authority (BBA) – will implement the 4.5-km elevated section, integrating the new Tongi Bridge and the Abdullahpur intersection flyover.
- (iii) Local Government Engineering Division (LGED) – will implement BRT depot facilities in Gazipur, and municipal infrastructures improvements (local roads, drains, and local markets).

30. A project implementation unit (PIU) will be established in each of these IAs, which will be headed by a full-time project manager to take full responsibility for and manage all activities of the PIU. Each PIU will be responsible for the following in relation to their respective works: (i) assisting the IAs in implementing the project; (ii) carrying out procurement and engaging the contractors; (iii) liaising and coordinating with the PSC, PMU, and other PIUs; and (iv) managing the contractors, and liaising with other stakeholders, on the day-to-day implementation of project activities. Each PIU will contain a deputed staff to serve as the environmental officer (EO) to oversee implementation of the EMP for their respective works, and a resettlement officer (RO) to oversee implementation of the resettlement plan. PIUs will receive support from the engineering, procurement, construction management and supervision of the construction (EPCM) consultants, and will be assisted by a nongovernment organization to implement the resettlement plan (NGORP). Safeguard specialists for environment and resettlement will be part of the EPCM, including an international environmental specialist (IRS) and a national environmental specialist (NRS), to update the draft IEE during detailed design and supervise implementation of the EMP during construction. These specialists will also conduct safeguards capacity building activities within the PMU/ESSU and PIUs, and assist PMU/ESSU with the environmental clearance.

31. A special purposes organization (SPO) will be set up to manage and coordinate the implementation and operation of the project, and will be placed under and will report directly to RD.² Its board will be chaired by the secretary of RD, and the members will include representatives of all main stakeholders of the project. The SPO will receive safeguards capacity support from the international and national environmental specialists in the EPCM consultants. After the project is completed, the PMU and PIUs will be converted into the SPO to manage, operate, and maintain the BRT³

32. **Consultant support for environment.** The engineering, procurement, and construction management (EPCM) will be engaged to carry out the detailed design, supervision, and management of the project. Environmental specialists (one international and one national) of the EPCM team will revise the draft IEE based on detailed design, and ensure that sound methodologies and practices are followed in the implementation of the EMP. Apart from capacity building and training on environmental safeguards related issues of the project, the consultants will advise the PMU/ESSU and the PIUs on EMP implementation, participate in meetings with the contractor, NGORP, and PIU, and monitor the work of the contractors in the field. The consultants will also help the PIUs prepare quarterly progress reports to be submitted to the PMU/ESSU, who will submit semiannual reports to ADB for review.

33. To facilitate EMP implementation during construction, the contractors must be prepared during the tendering and preconstruction phase to cooperate with PIUs, ESSU, EPCM, and the local population in the mitigation of impacts. However, experience suggests that contractors may have little impetus or interest in dealing with environmental problems in the absence of performance-related criteria. Therefore, the contractor will be required (with the assistance of the EPCM) to update the draft site-specific EMPs (SEMP) prepared by the EPCM during detailed design phase. Clearances for payments will include certification from the EPCM as to the effective implementation of the SEMPs and all other mitigation measures specified in the EMP. The completion of implementation of mitigation measures will therefore be linked to payment schedules.

B. Institutional Capacity for Environmental Planning and Management

34. The environmental specialists in EPCM will make sure that the PMU, RHD's PIU, BBA's PIU, and LGED's PIU and RHD environment and social circle (ESC) are trained and prepared to ensure that future contractors will cooperate with the implementing agency, project management, EPCM, and local population in the mitigation of environmental impacts. ESC indicated that there were several staff in RHD who, of their own volition, had taken post-graduate qualifications in environmental management, but these particular individuals were currently not designated in ESC. ESC will not have the resources to dedicate staff to undertake environmental management for the project. Therefore, it is proposed that the RHD's PIU will engage staff as environmental officer (EO) and resettlement officer (RO) to undertake environmental management and resettlement planning for RHD works on the project. These staff will have qualifications and experience in environmental management. These staff may be already qualified individual staff in RHD seconded from other departments or engaged by other means. It is also proposed that BBA's PIU and LGED's PIU will also engage staff as

² The government has agreed to create a special purposes organization (SPO) to (i) and ensure coordination among all implementing agencies during construction; and (ii) design and negotiate the business model of the BRT with the private sector, and monitor the future BRT operations. The SPO will be established under the 1994 Companies Act, as a 100% government-owned public company, tentatively named "TransDhaka" by PPTA consultants.

³ All three PIUs will be housed in the PMU offices and will be coordinated by the PMU management. All consultants recruited by the project will also be housed in the PMU office.

environmental officers (EOs) to undertake environmental management for the BBA and LGED project responsibilities. The EPCM will develop a strengthening plan for environmental management by PMU, RHD's PIU, BBA's PIU and LGED's PIU and the ESC in RHD for retention of environmental staff. Details of the proposed environmental capacity building are provided in Chapter VIII (environmental management plan).

C. Responsibilities

35. The responsibilities for the preparation, submission, review, and clearance of IEE for feeder roads are presented below. All staff in the PMU/ESSU and PIUs will receive training and capacity support from the EPCM safeguard specialists to ensure learning and development, as well as smooth and effective implementation of the EMP and RP.

Table 3: Responsibilities for EMP Implementation

Agency	Responsibilities
Roads Division (RD) under the Ministry of Communication (MOC), project management unit (PMU)	<ul style="list-style-type: none"> • Executing agency with overall responsibility for project construction and operation • Ensure that sufficient funds are available to properly implement the EMP • Ensure that project, regardless of financing source, complies with the provisions of the EMP and ADB Safeguard Policy Statement 2009 (SPS) • Ensure that project implementation complies with government environmental policies and regulations • For project duration, ensure that the project management and coordination consultant (PMCC) commits and retains dedicated staff as environment and safety managers in the environmental and social safeguard unit (ESSU) to oversee EMP implementation • Ensure that environmental protection and mitigation measures in the EMP are incorporated in the detailed designs • Obtain necessary location and environmental clearances certification under ECR from DOE prior to award of civil works contracts • Establish and implement an environmental grievance redress mechanism, as described in the IEE, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance • Confirm that bidding and contract documents include the EMP • Submit semiannual monitoring reports on EMP implementation to ADB
Project implementation units (PIUs) in RHD/BBA and LGED)	<ul style="list-style-type: none"> • Ensure that bidding and contract documents include the EMP • Submit quarterly monitoring reports on EMP implementation to PMU • Include the EMP in the project EMP and specify requirement for preparation and implementation of method statement/site-specific EMPs (SEMPs) as described in the IEE/EMP • Ensure that EMP provisions are strictly implemented during various project phases (design/preconstruction, construction, and operation) to mitigate environmental impacts to acceptable levels • Ensure that project implementation complies with ADB's Safeguards Policy Statement (SPS 2009) principles and requirements • For project duration, commit and retain a dedicated staff within each PIU as environment and safety officer (ESO) to oversee EMP implementation • Check that environmental protection and mitigation measures in the EMP are incorporated in the detailed designs • Check that necessary environmental clearances and approvals are obtained from DOE prior to award of civil works contracts • Participate in an environmental grievance redress mechanism, as described in the IEE, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance • Undertake monitoring of the implementation of the EMP (mitigation and monitoring measures) with assistance from EPCM • Report to ADB on all aspects of environmental management and monitoring at 6-month intervals, based on the results of EMP monitoring

Agency	Responsibilities
	<ul style="list-style-type: none"> • With support from EPCM, prepare semiannual environmental monitoring reports for submission to ADB • Based on the results of EMP monitoring, identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission to ADB
Engineering, procurement, and construction management (EPCM) consultant	<ul style="list-style-type: none"> • Incorporate into the project design the environmental protection and mitigation measures identified in the EMP for the design stage • Update the IEE and EMP based on detailed design • Assist PMU/PIUs/ESOs to ensure that all environmental requirements and mitigation measures from the IEE and EMP are incorporated in the bidding and contract documents • During detailed design phase, prepare draft method statement/SEMPs (traffic management, utilities, runoff control, waste management and spoils disposal, noise and dust control, etc.) described in the IEE/EMP • Prior to construction, review and approve in writing the updated SEMPs/method statements prepared in consultation with contractors • Implement all mitigation and monitoring measures for various project phases specified as EPCM's tasks in the EMP • Work within PIUs to execute any additional environmental assessment prior to project construction as required in the EMP (e.g., preparation of new or supplementary environmental assessment in case of change in alignment that will result in adverse environmental impacts that are not within the scope of the IEE prepared during loan processing, etc.) • On behalf of PMU, prepare and submit statutory EIA and obtain environmental clearance certification prior to project construction as required in the EMP. Also prepare new or supplementary environmental assessment in case of change in alignment that will result in adverse environmental impacts that are not within the scope of the IEE prepared during loan processing, etc. • Assist PMU/ESSU and PIUs in obtaining environmental approvals and certification (e.g., LCC and ECC) under ECR from DOE prior to award of civil works contracts • Undertake environmental management capacity building activities for RHD/BBA and LGED PIUs/ESOs, as described in the IEE and EMP • Engage one international (IES) and three national environment and safety specialists (ESS) to ensure proper implementation of EMP provisions. Through these specialists, the EPCM shall: (i) ensure proper and timely implementation of EPCM's tasks specified in the EMP; (ii) conduct environmental training as specified in the IEE/EMP for RHD/BBA/LGED PIUs/ESOs; (iii) conduct contractors workers' orientation on EMP provisions; (iv) undertake regular monitoring of the contractor's environmental performance, as scheduled in the EMP; (v) conduct field measurements for sediment, surface water quality, dust, and noise as required in the EMP, and (vi) prepare environmental baseline report and environmental semiannual environmental monitoring reports, as specified in the EMP, for PIU submission to ADB
Contractor	<ul style="list-style-type: none"> • Recruit qualified environmental and safety agents (ESA) to ensure compliance with environmental statutory and contractual obligations and proper implementation of EMP • Implement traffic management plan with relevant authorities • Implement utility and telecoms reprovisioning plan in close coordination with relevant authorities • Prior to start of construction, update the draft SEMPs for approval by EPCM • Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP, and segregate these sums in the bidding documents • Implement additional environmental mitigation measures for unexpected impacts
BRT operator	<ul style="list-style-type: none"> • Responsible for operation and maintenance of project corridor • Implement EMP monitoring during operation
Department of Environment	<ul style="list-style-type: none"> • Review and approve environmental assessment reports required by the government • Undertake monitoring of project's environmental performance based on their mandate

ADB= Asian Development Bank, BBA= Bangladesh Bridges Authority, EMP= environmental management plan, EPCM= engineering, procurement, and construction management consultant, ESA= environmental and safety agents, IEE= initial environmental examination, PMU= project management unit, SEMP= site-specific EMP.

36. To facilitate EMP implementation during construction, the contractors must be prepared during the tendering and preconstruction phase to cooperate with PIUs, ESSU, EPCM, and the local population in the mitigation of impacts. However, experience suggests that contractors may have little impetus or interest in dealing with environmental problems in the absence of performance-related criteria. Therefore, as mentioned in Chapter V, the contractor will be required (with the assistance of the EPCM) to update the draft site-specific EMPs (SEMP) prepared by the EPCM during detailed design phase. Clearances for payments will include certification from the EPCM as to the effective implementation of the SEMPs and all other mitigation measures specified in the EMP. The completion of implementation of mitigation measures will therefore be linked to payment schedules.

D. Environmental Costs

37. The costs of mitigation measures such as spoil management, safety, signage, dust prevention, noise mitigation, etc. will be included in the design costs of the project. The costs include monitoring costs during construction and capacity building costs on environmental management, which are absorbed into EPCM or contractors' work packages. The costs for training proposed include the costs incurred towards site visits, travel to the training program by the participants, printing of training materials, and other logistic arrangements. The costs involved in preparation of training material and imparting of training are covered in the EPCM fees. The budget for the environmental management costs for the project is presented in Table 4 below. The government counterpart funding will require covering the costs for environmental permits and tree planting, and are included as a separate line item under the total project costs.

Table 4: Summary of Estimated Costs for EMP Implementation (4 Years)*

Item	Estimated Total Cost (US\$)	Costs Covered By
Environmental specialists in EPCM		
International (one person for 12 person-months \$25,000/month intermittent over 3 years)*	300,000	EPCM
National (one person for 36 months @ \$3,000/month)*	118,500	EPCM
Environmental management capacity building program/training to be undertaken by EPCM	20,000	EPCM
Environmental impact monitoring (allow \$3,000/quarter)	36,000	Contractor
Mitigation measures (included in project costs)	To be determined during detailed design as part of project design costs	Contractor
Environmental permit**	2,175	PMU
Tree planting	72,786	PMU

EPCM= engineering, procurement, construction management and supervision consultant, PMU= project monitoring unit.

*includes design and construction phases.

** N.B. Permits for environmental clearance certificate under ECR required from DOE.

VII. MONITORING AND REPORTING

A. Environmental Reporting

38. The EMP will be part of the overall project monitoring and supervision, and will be mainly implemented by the contractor with oversight from RD/ESSU. The EPCM shall provide support to RD/ESSU and the PIUs in implementation of the EMP, such as monitoring of the contractor's environmental performance and other provisions. RD/ESSU will submit reports on EMP implementation to ADB on a semi annual basis.

39. The contract documents will contain the EMP that includes all required mitigation measures, and a timeframe for monitoring of these activities. The monitoring will comprise surveillance to check whether the contractor is meeting the provisions of the contract during construction. During project implementation, ESSU and PIUs, in cooperation EPCM, will be required to:

- (i) develop an environmental auditing protocol for the construction period, and formulate a detailed monitoring and management plan; and
- (ii) supervise the environmental monitoring regularly, and submit environmental monitoring reports semiannually to ADB based on the monitoring data and laboratory analysis reports. The main parameters to be monitored by the contractor are outlined in the EMP.

B. Environmental Monitoring Reports

40. In addition, the PIU shall submit the following environmental reporting documentation to the PMU/ADB:

- (i) **Environmental monitoring reports** – The environmental monitoring reports will include environmental mitigation measures undertaken, environmental monitoring activities undertaken, details of monitoring data collected, and analysis of monitoring results, recommended mitigation measures, environmental training conducted, and environmental regulatory violations. The environmental monitoring reports will be submitted to the government twice a year during the construction period.
- (ii) **Project completion environmental monitoring report** – After completion of construction, the PMU shall submit a project completion environmental monitoring report to the government and ADB, which will summarize the overall environmental impacts from the project.

41. **Semiannual environmental monitoring reports.** Semiannual environmental monitoring reports shall cover the status of EMP implementation in terms of required mitigation measures for different project phases, results of environmental effects monitoring (air quality, noise, and surface water quality), necessary remedial actions to effectively address negative environmental impacts due to project implementation, and status of environmental capacity building activities, as well as documentation of complaints received and corresponding action/resolution. The environmental monitoring reports will be submitted to ADB semiannually during the construction period.

APPENDIX 1: GOVERNMENT ENVIRONMENTAL POLICIES, LAWS, REGULATIONS, AND STANDARDS

Statute	Outline	Relevance
Environmental Conservation Act 1995	Conservation of environment, improvement of environmental standards, and control and mitigation of environmental pollution. The Environmental Conservation Rules, 1997 have been framed.	The provisions of the act apply to all of the project interventions in the construction and operation stages.
Environmental Conservation Rules (ECR), 1997	Prescribes processes and requirements for obtaining environmental clearance by rules, an environmental clearance certificate (ECC) from the Director General” of the Department of the Environment (DOE). Projects are classified according to impact on the environment.	The project is categorized as red. All requisite clearances (LCC and ECC) from the DOE shall be obtained prior to commencement of civil works on ground. RHD will proceed with application for clearances in due course.
Environmental Court Act, 2000	Establishes environment courts and procedure to make rules for protection of environmental pollution. Environment courts are at district level, but government may establish courts outside the districts. Environment courts have the power to directly take into account offenses relating to environmental pollution.	An environmental court has been established in Dhaka.
City Corporations Act, 2009	Assigned responsibilities to ensure public health for residents by providing primary and public health services, sanitation, water supply, vector and infectious disease control, etc.	Project must integrate community health and hygiene of the residents and workers in the construction stage, and take forward appropriate issues to the operational stage.
National Forestry Policy, 1994	Rules related to forest protection, often a domain of environmental management, are found in the Bangladesh Forest Departments National Forestry Policy 1994. Due to the dearth of forests, forestation is actively pursued with targets to “implement programs of tree plantation and forestation on fallow and hinterland, the bank of the pond and homestead land, which are under private ownership.”	There is no statutory requirement to replace street trees planted for beautification of streets but it is desirable to incorporate tree planting in the project corridor wherever it is practicable to do so as requested by the Commissioner for Forests.
Dhaka Forest Transit Rules, 1959	Applies to all timber transported in the Dhaka area. The project is in Dhaka North area. Some street trees may be under forestry authority control. Others may be street trees planted for beautification.	The Commissioner for Forests should be consulted to reconfirm street trees planted for beautification and other protected trees, and confirm rules for marking and removal.
Inspection and Enforcement Manual (2008)	This manual has been written to provide national standards and uniformity in environmental sampling for the inspections, investigations, and chemists in the Department of Environment (DOE) in Bangladesh.	To be complied with where relevant to sampling and analysis
Acquisition Properties Ordinance (1982)	The acquisition of immovable property rules, 1982 (No. S. R. O. 172-U82) The government made these rules in exercise of the powers conferred upon it by section 46 of Acquisition and Requisition of Immovable Property Ordinance, 1982 (Ordinance No. II of 1982).	To be complied with (see resettlement plan)

APPENDIX 2: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

Instructions:

- 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 Chief Compliance Officer of the Regional and Sustainable Development Department.
- 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.

Country/Project Title:

Sector Division:

SCREENING QUESTIONS	Yes	No	REMARKS
A. PROJECT SITING			
IS THE PROJECT AREA ADJACENT TO OR WITHIN ANY OF THE FOLLOWING ENVIRONMENTALLY SENSITIVE AREAS...			
▪ CULTURAL HERITAGE SITE	<input type="checkbox"/>	<input type="checkbox"/>	
▪ PROTECTED AREA	<input type="checkbox"/>	<input type="checkbox"/>	
▪ WETLAND	<input type="checkbox"/>	<input type="checkbox"/>	
▪ MANGROVE	<input type="checkbox"/>	<input type="checkbox"/>	
▪ ESTUARINE	<input type="checkbox"/>	<input type="checkbox"/>	
▪ BUFFER ZONE OF PROTECTED AREA	<input type="checkbox"/>	<input type="checkbox"/>	
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY	<input type="checkbox"/>	<input type="checkbox"/>	
B. POTENTIAL ENVIRONMENTAL IMPACTS			
WILL THE PROJECT CAUSE...			
▪ encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?	<input type="checkbox"/>	<input type="checkbox"/>	

SCREENING QUESTIONS	Yes	No	REMARKS
▪ alteration of surface water hydrology of waterways crossed by the alignment, resulting in increased sediment in streams affected by increased soil erosion at construction site?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from workers' camps and chemicals used in construction?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ water resource problems (e.g. depletion/ degradation of available water supply, deterioration for surface and ground water quality) and pollution of receiving waters?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ overpaving leading to lowered ground water table, leading to land subsidence, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ road blocking and temporary flooding due to land excavation during rainy season?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ traffic disturbances due to construction material transport and wastes?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ increased local air pollution due to rock crushing, cutting and filling works, concrete mixing, and chemicals from asphalt processing?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ noise, vibration, and dust from construction and operation activities?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ noise and vibration due to blasting?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ social conflicts between construction workers from other areas and local workers?			
▪ hazardous driving conditions where construction interferes with pre-existing roads?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ creation of temporary breeding habitats for mosquito vectors of disease?	<input type="checkbox"/>	<input type="checkbox"/>	
▪ dislocation and involuntary resettlement of people living in right-of-way?	<input type="checkbox"/>	<input type="checkbox"/>	