

# Environmental Management Framework (EMF)

Fourth Primary Education Development Program (PEDP4)

Directorate of Primary Education (DPE)  
December 2018

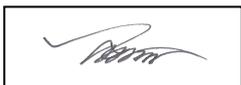




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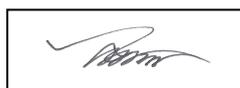
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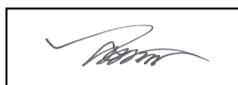


## ABBREVIATIONS

ADB	-	Asian Development Bank
AusAid	-	Australian Overseas Aid Program
BDT	-	Bangladeshi Taka (currency)
BNBC	-	Bangladesh National Building Code
CHT	-	Chittagong Hills Tract
CIDA	-	Canadian International Development Agency
DLI	-	Disbursement-Linked Indicator
DOE	-	Department of Environment
DPE	-	Directorate of Primary Education
DPs	-	Development Partners
DPHE	-	Department of Public Health Engineering
ECA	-	Environmental Conservation Act
ECC	-	Environmental Clearance Certificate
ECR	-	Environmental Conservation Rules
EIA	-	Environmental Impact Assessment
EMF	-	Environment Management Framework
EMP	-	Environmental Management Plan
EEP	-	Eligible Expenditure Program
Fc	-	Fecal coliform
Fe	-	Iron
FI	-	Financial Intermediary
GIS	-	Geographic Information System
GOB	-	Government of Bangladesh
ICT	-	Information and Communication Technology
IDA	-	International Development Agency
IEE	-	Initial Environmental Examination
LGED	-	Local Government Engineering Department
MOEF	-	Ministry of Environment and Forests
MOU	-	Memorandum of Understanding
Mn	-	Manganese
NCTB	-	National Curriculum and Textbook Board
NEMAP	-	National Environmental Management Action Plan
NSDWSSP	-	National Safe Drinking Water Supply and Sanitation Policy
OP	-	Operational Policies
PEDP3	-	Third Primary Education Development Project
PEDP4	-	Fourth Primary Education Development Program



PTI	-	Primary Teacher Training Institute
SLIP	-	School Level Improvement Plan
SMC	-	School Management Committee
SWAP	-	Sector-Wide Approach
UPEP	-	<i>Upazila</i> Primary Education Plan
URC	-	<i>Upazila</i> Resource Center
USD	-	United States Dollar (currency)
WASH		Water, Sanitation, and Hygiene.



## EXECUTIVE SUMMARY

The proposed Fourth Primary Education Development Program (PEDP4) is financed by the Government of Bangladesh and development partners including the Asian Development Bank (ADB) from FY2018–2019 to FY2022–2023.<sup>1</sup> The PEDP4 follows the Third Primary Education Development Program (July 2011–June 2018), which is completed in June 2018, and will build on its achievements and lessons learnt. The PEDP4 aims to provide quality education to all children from pre-primary to grade 5 through an efficient, inclusive, and equitable education system. It is targeted to improve student learning outcomes and equity in access and participation for boys and girls. The PEDP4 will be implemented nationwide including geographically challenged areas like hilly terrain, waterlogged *haor*, and coastal areas. The Ministry of Primary and Mass Education (MOPME) is the executing agency, and the Directorate of Primary Education (DPE) is the implementing agency. The Local Government Engineering Department (LGED) and the Department of Public Health Engineering (DPHE) will be the partner implementing agencies for need-based infrastructure development.

The Directorate of Primary Education (DPE), in consultation with relevant stakeholders including Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE), and Ministry of Primary Mass Education (MOPME), etc., has updated the Environmental Management Framework (EMF) for the PEDP4 to support the implementing partners of the program to deal with environmental issues/impacts.

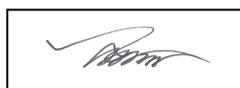
Since the specific “subprojects” are not yet identified, specific information on types of “subprojects” like site/location of the “subprojects”, land requirements, local communities, geophysical land features and nature for majority of them is not available, this EMF has been prepared to establish the mechanism to determine and assess future potential environmental impacts of “subprojects” that are to be identified and cleared based on a community demand driven process, and to set out mitigation, monitoring and institutional measures to be taken during implementation and operation of the “subprojects” to eliminate adverse environmental impacts, or to reduce them to acceptable limits.

The key intervention of PEDP4 is a need-based infrastructure development of the following:

- (i) Renovation/expansion (horizontal or vertical direction) of school buildings for new classrooms/reconstruction of school buildings within the existing school premises/ construction of new school and office buildings/ maintenance of school buildings.
- (ii) Water supply option (tube-well)/sanitary latrine/Wash Blocks and water, sanitation, and hygiene
- (iii) The purpose of the EMF is to ensure that neither the infrastructure, both in terms of needs nor quality at primary schools, nor the environment is compromised through the program intervention. The specific objectives of the EMF are (a) to outline a framework for environmental screening procedures and methodologies for the “subprojects” to be financed under the program and (b) to specify appropriate roles and responsibilities to carryout environmental screening/assessment, environmental management (mitigation, monitoring and compensation) and reporting related to “subprojects”. Due to implementation of the subprojects, various environmental impacts may occur, such as loss of top

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<sup>1</sup> The other joint financing development partners include European Union, United Nations Children’s Fund, and the World Bank, with others possible (such as Australia, Canada, and Japan International Cooperation Agency).



soils, drainage congestion, surface/ground water pollution, disruption of natural ecosystem, dust and air pollution, noise pollution, occupational health and safety, arsenic (As) and other parameters such as pH, Mn, Fe, Fc and salinity risk, environmental risks (improper planning, design and construction, natural disaster/extreme climate events such as cyclone flood, salinity etc.), risk from poor school sanitation and WASH block and insufficient lighting and ventilation, employment generation/income, occupational health and safety and community health and safety.

A wide range of laws and regulations related to environmental issues are in place in Bangladesh. The most important of these are: Environmental Conservation Act (ECA, 1995) and Environmental Conservation Rules (ECR, 1997). In addition, there are several other policies, plans, and strategies of specially ADB and World Bank which deal with the sectors such as water, agriculture, coastal area, protected area disaster management and climate change. The details of the national as well as ADB and development partner's safeguard policies, rules and regulations are presented in Appendix -1 of the EMF report.

To avoid negative environmental impacts and enhance environmental outcomes of the activities implemented under individual "subprojects", of PEDP4, DPs Safeguard Policy is triggered for this program. The environmental management process mainly are: (i) categorization of sub projects, (ii) environmental screening of impacts (checklist), (iii) impact assessment, (iv) analysis of alternatives, and (v) formulation of environmental management plan (EMP) (mitigation/enhancement plan and monitoring plan). Table 1 shows the environmental screening process of various PEDP4 subprojects.

**Table 1: Environmental Screening for Subprojects under PEDP4**

SL. No.	Types/ Interventions of Subprojects	DOE Category	Environmental Documentation Required
1	Maintenance of school and office buildings, ICT laboratory, etc.	Green	No environmental screening and EMP are required as the subproject are likely to have no negative environmental impacts.
2	Vertical or horizontal extension for new classrooms/reconstruction of school and office buildings, water supply (tube wells)/sanitation/WASH blocks facilities etc.	Orange-A	Environmental screening and EMP are required as the subproject are likely to have minimal environmental impacts.
3	Construction of new school and office buildings more than 6 storied (if any).	Orange-B	The IEE is required as the subproject is likely to have potential environmental impacts. Environmental clearance from the DOE is required (TOC for IEE is given Annex-H).

The main objective of the EMP is to avoid or eliminate or reduce the negative environmental impacts by possible mitigation measures and to enhance the positive impacts by enhancement measures. The aim of the EMP is to ensure implementation of the recommended mitigation and enhancement measures effectively. The mitigation measures are designed either to prevent impacts or by mitigating those to reduce the negative impacts to an acceptable level that complies with the environmental guidelines of the Department of Environment (DOE) and guidelines of DPs. The typical mitigation/enhancement measures for the environmental impacts due to implementation of the subprojects of the PEDP4 have been formulated and given in the following Table 9,10 and 11 of the main text. The



Monitoring Plan is a tool which is required to implement the mitigation/enhancement measure more effectively. The monitoring plan is presented in the table 12,13 and 14 of the main text.

The LGED and DPHE are responsible for design, implementation and maintenance of the class rooms/new school buildings and office buildings under the program. The executive engineer, PEDP4 located at the headquarters would ensure the overall coordination and would be responsible for monitoring of environmental safeguard issues. Seven monitoring officers/sub-assistant engineers would be responsible for coordination and reporting of environmental safeguard issues and each would be assigned two regions. The assistant engineer at Regional Office would act as the environmental focal point and be responsible for coordinating environmental activities at the field level. The *upazila* assistant engineer/sub-assistant engineers will be responsible for carrying out the screening and preparing subproject specific EMP. The *upazila* engineer will review the screening report and EMP through field visit. The *upazila* engineer will also be responsible for supervision and monitoring of environmental mitigation activities at *upazila* level. The executive engineer at Regional Office will review all initial environmental examination and monitor the implementation of EMP. The assistant engineer at headquarters will ensure quality control and reporting at the regional level. The environmental specialist will prepare training materials; conduct staff training; prepare screening, initial environmental examination report and site-specific EMP on sample basis; review a certain percentage of the EMP; and prepare the annual monitoring reports of the PEDP4.

A team under the leadership of an additional chief engineer at the headquarters will coordinate the activities under PEDP4. The executive engineer, PEDP4, located at the headquarters, would ensure the overall coordination and would be responsible for monitoring of the environmental safeguard issues. At the field level under the supervision of field executive engineer in every DPHE district office, supported by the assistant engineers, sub-assistant engineers, estimators, and drafts-man execute the project works of installation of water sources and WASH blocks.

In addition, DPE will assign safeguard specialist (minimum 10 years relevant experience and master's degree on environment) to implement EMF of subprojects and monitor at least 10% of the infrastructure implemented by LGED and DPHE. The terms of reference for the safeguard specialist is given in Appendix -7 of the EMF report. The monitoring will include the environmental performance of the "subprojects", on physical progress, construction quality, environmental safeguard, and operation status of the infrastructure.

The monitoring activities of PEDP4 will include the compliance of the EMP implementation. In general, the consultant will monitor the following indicators during field visit as 'spot check' and the related mitigation measures as mentioned in the above table. The DPE has signed a memorandum of understanding with DPHE for the construction of WASH blocks and annual drinking/ground water quality monitoring as mentioned in above table. The DPHE/LGED should ensure that school/office buildings have a provision of septic tanks along with soak well and program activities do not infringe upon natural ecosystems during the design stage. The DPHE will coordinate and implement the testing water quality as mentioned in the above Table 2 to 5 through its field office and prepare the analytical report. The DPHE will also carry out 5% quality check in their zonal laboratories.

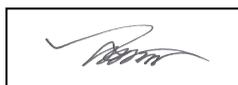
The environmental guidelines including health and safety of the project workers will be included in the tender/contract document of the subproject. The guidelines will be included as special condition of the contracts. Details of the guidelines are attached as an Appendix -5.

On behalf of DPE, a consultant carried out the field visit of the existing PEDP 3 project sites. The consultant reviewed the existing documents in field, school conditions, water supply and sanitation facilities, discussed with all relevant stakeholders and took their



opinions how to improve the environmental practices in primary education program and to integrate environmental concerns to improve the sustainability of the program interventions. This revised EMF includes the recommendations from these local level consultations and field visit observations. The finalized EMF will be disclosed by the DPE and LGED in their websites for public comments. During EMF for PEDP3, the following were not considered which are included in EMF for PEDP4.

In addition to the identified environmental potential impacts during the EMF for PEDP3, the following potential environmental impacts have been identified in the EMF for PEDP4: (i) loss of top soils and its management, (ii) in addition to arsenic, very important drinking water parameters such as pH, Fe, Mn, Fc & salinity (for coastal areas), (iii) sensitive/cultural sites, (iv) employment generation/income and community H&S were not considered. Potential environmental risks mainly relate to substandard or improper architectural planning and design and construction accordingly. Furthermore, recurrence of natural disasters (such as raising of school premises above high flood level by earth filling) will also exert requirement on disaster risk resilience for the school infrastructures.



## I. INTRODUCTION

### A. Background

1. The Fourth Primary Education Development Program (PEDP4) is financed by the Government of Bangladesh and development partners including the Asian Development Bank (ADB) from FY2018–2019 to FY2022–2023. The PEDP4 aims to reach “an efficient, inclusive, and equitable primary education system delivering effective and relevant child-friendly learning to all Bangladesh’s children from pre-primary to grade 5”. It is targeted to improve student learning outcomes and completion rate for both boys and girls. A key intervention is need-based infrastructure development for improved accessibility. The PEDP4 will be implemented in the whole country including geographically challenged areas like hilly terrain, waterlogged *haor*, and coastal areas. The Ministry of Primary and Mass Education (MOPME) is the executing agency, and the Directorate of Primary Education (DPE) is the implementing agency. The Local Government Engineering Department (LGED) and the Department of Public Health Engineering (DPHE) will be the partner implementing agency for need-based infrastructure development.

2. The PEDP will promote the concept of green school through construction of new infrastructure, hygiene promotion, and education awareness program. Besides, water, sanitation, hygiene (WASH) facilities, the program will also support new classroom construction with environment-friendly features by making them well-lit and ventilated that ensures the maximum penetration of natural light and outside air into the classrooms. This improves indoor air quality of classrooms (decrease CO<sub>2</sub>) and creates good environment in classrooms. In this way, investment in education is more productive. Alternative energy by installation of solar panels will be considered to provide electricity to the schools. Cleaning of school premises, landscaping/tree plantation, and flower gardening will be done by rain water harvesting which will save scarce groundwater resources.

3. The environmental management framework (EMF) provides general policies, guidelines, and procedures to be integrated into the implementation of “subprojects” under the PEDP4. The purpose of the EMF is to ensure that neither the infrastructure (both in terms of need and quality) at primary schools nor the environment is compromised through the program intervention. The basic principles of the EMF regarding small-scale infrastructure development are: (i) harmonizing design of infrastructure with local surroundings; (ii) preserving the natural ecosystems around school buildings (no hill-cutting, no invasive species plantation) and using locally available construction materials during construction of schools in Chittagong Hill Tracts (CHTs.); (iii) climate-proofing design in vulnerable coastal areas; (iv) preference of students and teachers in designing infrastructure; and (v) strict adherence to Environmental Codes of Practice (ECP, Annex-F) during construction activities (i.e. new school building/additional classrooms). The basic principles of the EMF regarding water supply and sanitation provisions include: (i) regular drinking water testing (at least once a year), (ii) adequate sanitation facilities and its maintenance, and (iii) alternate sources for safe drinking water where tube wells are not feasible. An operational manual was also developed to explain the general process of infrastructure planning, implementation, quality control and monitoring. A WASH block maintenance manual has also been prepared by DPHE to be circulated to all schools.

4. The EMF provides an opportunity to enhance systems to ensure provision of safe, clean and hygienic environment for students while also providing an opportunity to improve measures regarding water supply, sanitation and promotion of hygiene. Having a properly maintained WASH facilities in schools can have a multitude of benefits including: (i) reducing the disease burden associated with unsafe water supply and sanitation and improve the



quality of life and (ii) decreasing of dropout and increasing academic performance. WASH promotion in school is a first step towards ensuring a healthy physical learning environment.

5. **Lessons learned and basic revisions.** Reviewed the EMF for the Third Primary Education Development Project (PEDP3), and found that in addition to the identified environmental potential impacts during the EMF for PEDP3, the following potential environmental impacts have been identified in the EMF for PEDP4: (i) loss of top soils and its management; (ii) in addition to arsenic (As), very important drinking water parameters such as pH, Fe & salinity (for coastal areas); (iii) sensitive/cultural sites, and (iv) employment generation/income and community H&S were not considered. Potential environmental risks mainly relate to substandard or improper architectural planning and design and construction accordingly. Furthermore, recurrence of natural disasters (such as raising of school premises above high flood level by earth filling) will also exert requirement on disaster risk resilience for the school infrastructures. In addition, training capacity building is also considered in PEDP4 which was not considered during PEDP3 as well as improved the EMP (including approximate budget) of the subprojects.

## **B. Program Objectives**

6. The program development objective is to provide quality education to all children of Bangladesh from pre-primary up to grade 5 through an efficient, inclusive and equitable education system. In order to achieve the program development objective, the program is designed to achieve three high-level outcomes pertaining respectively to quality; access and participation; and governance, financing and management: (i) quality teaching-learning practices in all schools enable children to acquire the essential grade-level competencies stipulated in the curriculum; (ii) learning environments support participation of all children ensure continuity of education, and enable quality; and (iii) strong governance, adequate and equitable financing, and good management enable the provision of quality education that is efficient, inclusive and equitable.

7. The PEDP4 has three components accordingly: (i) quality; (ii) access and participation; and (iii) management, governance, and financing.

8. **Sub-component 1: Needs-based Infrastructure.** The objective of this component is to improve the quality of physical learning and working environments through the construction of classrooms and other infrastructure, and the provision of associated furniture. The PEDP4 will finance the construction of approximately 1,14,801 classrooms, teachers' rooms, head teacher rooms and multipurpose room (ICT/library/storage facilities) with a view to ensuring that all schools have sufficient rooms to operate on a staggered (double-shift) basis with the provision for gradual increase in single-shifts. It will construct 80,000 WASH blocks so as to ensure that all schools have at least one gender-segregated and disability-accessible WASH block. 15,000 safe water sources will be installed to ensure a safe drinking water point for each school, and these will be monitored regularly for contamination by the DPHE. Further, PEDP4 will construct new premises for URCs in 285 Upazilas; and civil works at the PTIs based on updated master plan. UEO and DPEO premises will be expanded in 200 Upazilas and 10 districts, respectively. New DPEO building will be constructed in 10 districts. All needs-based infrastructure will include furniture. Construction and expansion of DPE HQ, vertical extension of DPE central warehouse, Leadership Training Center at Cox's Bazaar, and NAPE will be implemented under PEDP4. No objection Certificate will be collected from DOE (Department of Environment) for construction and expansion of DPE HQ, vertical extension of DPE central warehouse, Leadership Training Center at Cox's Bazaar,

9. **Sub-component 2: Needs-based Furniture.** The objective of this component is to improve the quality of the physical learning environment by supplying schools with furniture that is child-friendly and appropriate for participatory teaching and learning. Necessary



furniture will be supplied to schools to replace furniture that is needed as a result of enrollment increases.

10. **Sub-component 3: Maintenance.** The objective of this component is to ensure that schools and other primary education system infrastructure remain clean and tidy in a functional state throughout the whole of their expected life, through routine maintenance and repair. Funds will be allocated annually to schools, NAPE, PTIs, URCs and field offices for routine maintenance of buildings including WASH Blocks. Schools will also be eligible for funds every three years to cover either major or minor repairs. The maintenance guidelines now at the draft level will comprehensively be finalized incorporating the relevant activities of DPE HQ, NAPE, PTIs, URCs and primary education field offices.

11. **Sub-component 4: Water and Sanitary Hygiene.** The objective of this component is to ensure that each school has a full complement of functioning, accessible (including for those with disability) and clean WASH-related facilities and its students and staff practice good sanitary hygiene. Hygiene promotion will be integrated as part of the curriculum revision and new textbooks development, as well as during the revision of the DPE and CPD curricula. WASH topics will also be incorporated into strengthened SLIP guidelines and orientations for AUEOs, SMCs and CHTs on school and Upazila-level planning. Environmental sanitation and the control of vector-borne diseases will be addressed through regular maintenance and cleaning of WASH facilities and the school grounds, as well as ensuring the proper siting of water points and the effective disposal of solid waste and waste water. Funds for regular maintenance and cleaning will be incorporated into a budget line of the SLIP; while the schools will ensure that a school plan/roster for cleaning activities is implemented. The infrastructure-related activities are covered in the component on needs-based infrastructure.

### **C. Objectives of the EMF**

12. The purpose of the EMF is to ensure that neither the infrastructure (both in terms of needs and quality) at primary schools nor the environment is compromised through the program intervention. The EMF will contribute the goal of attaining environmental sustainability by (i) Enhancing environmental outcomes of the activities implemented under individual “subprojects”; (ii) Preventing and/or mitigating any negative environmental impact that may emerge from the “subprojects”; (iii) Ensuring the long-term sustainability of benefits from “subprojects” by securing the natural resource base on which they are dependent; and (iv) Facilitating pro-active “subprojects” that can be expected to lead to increased efficiency and improved management in the use of natural resources resulting in improvements in local environmental quality and human well-being.

13. More specifically, the objectives of the EMF are: (i) To outline a framework for environmental screening procedures and methodologies for the “subprojects” to be financed under the program; and (ii) To specify appropriate roles and responsibilities to carryout environmental screening/assessment, environmental management (mitigation, monitoring and compensation) and reporting related to “subprojects”.

14. This will also cover institutional/organizational needs of the implementing agency in executing the recommendations to mitigate any possible environmental negative impacts and other climate induced impacts.

15. As agreed with the Government of Bangladesh (GOB) and involved Development Partners (DP), a common harmonized EMF is prepared where inputs from the GOB and DP were incorporated. This common and harmonized EMF will be followed during the implementation of sub-project activities.



#### D. General Principles of EMF

16. The general principles of the EMF for the PEDP4 are as follows:

- (i) The Joint Program Director or assigned official at the DPE will be responsible overall for environmental compliance in PEDP4.
- (ii) The Program Coordinators (Superintending Engineers) of the LGED and DPHE will be responsible for subproject specific environmental compliance and relevant reporting in PEDP4.
- (iii) All the “subprojects” to be funded under the PEDP4 will be subjected to an environmental screening/assessment in order to prevent execution of “subprojects” with significant negative environmental impacts.
- (iv) The design should avoid or minimize the need for resettlement of population, as well as the impact on green and recreational areas and buildings of historical or architectural value. If above impacts are unavoidable, resettlement plans, mitigation and compensatory measures will be included in project costs.
- (v) The design should be harmonized with local surroundings including landscaping and planning for other uses for all additionally created spaces to minimize negative impacts on environmental quality and property values.
- (vi) It is assumed that there is likely to be no major harmful impacts on environment from civil construction under the program. However, particularly in the case of Chittagong Hill Tracts, given the remote and inaccessible locations of many areas where carrying costs of construction materials could be comparatively high, there should be priority given on the use of locally available construction materials (e.g. bamboo and wood). Another, particularly important point in this regard is the preservation of the surrounding ecosystems around the school building which means there should not be any hill cutting and destruction of ecosystem for civil works. Planting of exotic/alien invasive species (e.g. teak) of trees will be avoided rather indigenous tree species will be planted to conserve the native biodiversity and maintain ecosystem integrity.
- (vii) Design and construction of school building in the vulnerable coastal areas will consider ‘climate proofing design’ (e.g. raising of plinth level above high flood level, increase strength of building to resist cyclone and storm surge, avoidance of erosion prone site, etc.).
- (viii) Alternative solutions and final designs should be subjected to public and community consultation with special emphasis on students/teachers. The preference of students and teachers will be given priority in designing the infrastructure.
- (ix) To minimize public nuisances, construction activities should follow strict environmental guidelines. Construction schedules and the timing of necessary interruption of public utilities should be informed to the affected community.
- (x) The implementing agency will be responsible for obtaining and ensuring clearance required from government or local government agencies/committees, if necessary.
- (xi) All areas and infrastructure affected during construction should be restored to their original condition, specially sidewalks, green street dividers,



gardens, sidewalk trees, utilities, and side streets impacted by traffic diversion.

- (xii) At least annual water quality monitoring of the installed tube-wells under PEDP4 will be carried out to ensure safe drinking water facilities to the students and teachers.
- (xiii) Provision for adequate sanitation facilities for the teachers and students will be made and a mechanism for regular cleaning and routine maintenance will be developed.
- (xiv) No program activities will be carried out in disputed lands or lands restricted for development or environmentally sensitive areas.
- (xv) Climate resilient and flood proofing considerations will be integrated in the design of relevant “subprojects”.
- (xvi) Environment friendly and energy-efficient options will be promoted in the infrastructure.
- (xvii) To solve the drinking water problem in remote hilly areas and coastal areas, rainwater harvesting, and other feasible options will be explored.

## II. PROGRAM AREAS

17. The PEDP4 will be implemented all over Bangladesh. However, the schools will be selected and prioritized based on the certain parameters. Through several consultations, the followings are the agreed parameters for need assessment and prioritization: (i) While schools may run in double shift, none should be overcrowded; (ii) Minimum 3 classrooms with one teachers’ room in a school; (iii) Classroom/student ratio 1:40 with flexibility of overcrowding up to 40%; (iv) Number of teachers - at least 4 per school; (v) Number of teachers’ toilets – common with boys’ and girls’ toilets; (vi) Number of girls’ WC-cum- urinal: one for every 50 girls; (vii) Number of boys’ WC: one for every 75 boys; (viii) Number of boys’ urinal: one for every 60 boys; (ix) At least one source of drinking water (DW) – tap water supply or tube well; (x) Boys’ and girls’ toilets to be given separately and proportionately, and (xi) One school for habitations having catchments of 2000 sqm and no school within 2 km<sup>2</sup>.

18. The following criteria have adopted for ranking the infrastructure:

- a. **Order of Prioritization: Additional Classroom:** (i) Additional class; (ii) Additional teachers; (iii) Teachers’ room; (iv) Replace kacha/damaged buildings; and (v) Number of students.
- b. **Order of Prioritization: Repair and Maintenance:** (i) Major repair; (ii) Minor repair; and (iii) Number of students.
- c. **Order of Prioritization: Toilets:** (i) Girls’ WC; (ii) Girls’ enrollment; (iii) Boys’; and (iv) Urinals
- d. **Order of Prioritization: Drinking Water:** (i) Proposed water; (ii) Girls’ enrolment; and (iii) Number of students.
- e. **Order of Prioritization: WASH blocks:** (i) Girls” one; and (ii) Boys” one (separately).



### III. INFRASTRUCTURE AND THEIR CONSTRUCTION ACTIVITIES

#### A. Type of Infrastructure

19. Additional class rooms would be constructed to reduce overcrowding in the class rooms under PEDP4. These are basically of two types, vertical extension and horizontal extension. The architectural plan of the vertical extension is determined by the architectural plan of the existing buildings. In such case, capacity assessment of the foundation of the existing building is extremely important to find out the feasibility of a vertical extension. It is to be noted that in most of the cases, design of the existing buildings is not available. So, it is highly recommended that the possibility of vertical extension should be explored first so that land can be made available for a playground. Only if that seems to be unfeasible, a horizontal extension can be considered. As the DPHE is constructing the WASH blocks in the same school campus in many schools, coordination among the two agencies is extremely important. New school buildings are also going to be constructed under PEDP4. The LGED will construct school cum cyclone shelters in the cyclone prone areas and school cum flood shelters in the flood prone areas. In such cases, the ground floor of the school is kept open and the class rooms are built at the 1st floor. Some schools are also planned in the Chittagong Hill Tracts region where special designs are being prepared considering the norms and culture of the local people, difficulties in carrying construction materials in some of the high and remoter locations and availability of suitable locally available construction materials. Improper/Substandard design of the infrastructure will create environmental hazards. Hence according to the Bangladesh National Building Code (BNBC), all relevant basic planning norms will be adopted for the development of the school buildings.

#### B. Categories of PEDP4 Interventions

20. There three categories of subprojects/ interventions considered under PEDP4 which are: (i) Need-based school infrastructure;(ii) Primary education field office buildings including DPE HQ, Cox's Bazar Leadership Training Centre, PTIs & URCs; and (iii) Office buildings of other institutes under MOPME, National academy for primary education (NAPE).

Category	Interventions
1. Need Based School Infrastructure:	<ul style="list-style-type: none"> <li>a. Additional classrooms (PP class, Grade- I to V class);</li> <li>b. Additional teacher rooms;</li> <li>c. HT rooms;</li> <li>d. Multi-purpose rooms (library/store/ICT facilities);</li> <li>e. Additional WASH Blocks;</li> <li>f. Safe water sources for drinking;</li> <li>g. Boundary wall;</li> <li>h. Playing items/accessories;</li> <li>i. Reconstruction of old and damaged school buildings.</li> </ul>
2. Primary Education Field Office buildings including DPE HQ e, Cox's Bazar Leadership Training Centre, PTIs & URCs	<ul style="list-style-type: none"> <li>a. Construction and expansion of DPE HQ including a mosque;</li> <li>b. Vertical extension of DPE central warehouse,</li> <li>c. Expansion/new construction of division offices;</li> <li>d. Expansion/new construction of DPE Offices;</li> <li>e. Construction and expansion of leadership training center at Cox's Bazar;</li> <li>f. Expansion/new construction UEO Offices;</li> <li>g. Expansion/new construction of URCs;</li> <li>h. PTI infrastructure development.</li> </ul>
3. National academy for primary education (NAPE)	<ul style="list-style-type: none"> <li>a. Land development;</li> <li>b. Boundary wall &amp; gate;</li> <li>c. Trainees' dormitory building;</li> <li>d. Renovation of DG's quarter;</li> <li>e. A multi-storied officers' quarter;</li> <li>f. Guest house renovation;</li> <li>g. DTW &amp; Water Supply Lines;</li> <li>h. Internal roads, walkways and circular jogging track;</li> <li>i. Drainage system;</li> <li>j. Walkway; and</li> <li>k. Generator room.</li> </ul>



#### IV. RELEVANT ENVIRONMENTAL SAFEGUARD POLICIES AND REGULATORY FRAMEWORK

##### A. National Environmental Safeguard Policies and Regulatory Framework

21. A wide range of laws and regulations related to environmental issues are in place in Bangladesh. Many of these are cross-sectoral and several of them are directly related to environmental issues. The most important of these are the Environment Conservation Act, 1995 (ECA,1995) and its Amendment in 2010, and the Environment Conservation Rules (ECRs, 1997) and its Amendment in 2010. The ECA 1995 is primarily an instrument, establishing the Department of Environment (DOE), and for controlling industrial and project related pollution. The Act also defines in general terms that if any activity is causing damage to the ecosystem, the responsible party will have to apply corrective measures. Until the appearance of ECRs, 1997, enforcement of the Act was not possible, as many of the clauses refer to specifications detailed in the Rules. In addition, there are other national policies, plans and strategies which deal with the water sector, agricultural development, coastal area, protected area disaster management and climate change. These are: National Water Policy, 1999; Forest Act 1927 (modified in 2000); National Forest Policy,1994; National Conservation Strategy1992;; National Environmental Management Action Plan (NEMAP), 1995; Coastal Zone Policy, 2005; Coastal Development Strategy, 2006; National Agricultural Policy, 1999; National Fisheries Policy, 1996; National Livestock Development Policy, 2007; Standing Orders on Disaster, 1999 (revised in 2010); Bangladesh Climate Change Strategy and Action Plan, 2009; National Plan for Disaster Management, 2010-2015. The Bangladesh National Building Code (BNBC), 2006 and Bangladesh Labor Act (BLA), 2006 will also be important regarding the occupational health and safety of workers to be involved in the Project's infrastructure development. The details of the relevant national environmental safeguard policies are presented in Appendix -1 of the EMF.

##### B. Development Partner's Environmental Safeguard Policy

22. **ADB's Environmental Policy Statement (2009):** All projects funded by ADB must comply with the Safeguard Policy Statement (SPS, 2009) and Operational Manual F1 (2010). ADB's SPS set out the policy objectives, scope and triggers, and principles for three key safeguard areas: (i) environmental safeguard (ii) involuntary resettlement safeguards, and (iii) Indigenous Peoples safeguards. The safeguard policies require that impacts are identified and assessed early in the project cycle; plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and affected people are informed and consulted during project preparation and implementation.

23. **The SPS (2009)** requires a number of additional considerations, including (i) project risks and respective mitigation measures and project assurances; (ii) project level grievance redress mechanism including documentation in the EMP; (iii) definition of the project area of influence; (iv) physical cultural resources damage prevention analysis; (v) climate change mitigation and adaptation; (vi) occupational and community health and safety requirements (including emergency preparedness and response); (vii) economic displacement that is not part of land acquisition; (viii) biodiversity conservation and natural resources management requirements; (ix) provision of sufficient justification if local standards are used; (x) ensuring adequate consultation and participation; and (xi) ensuring that the EMP includes an implementation schedule and (measurable) performance indicators.

24. The details of the relevant ADB and development partner's environmental safeguard policies are presented in Appendix -1 of the EMF.



### **C. Implications of Safeguard Policies**

25. The relevant policy and legislation documents underscore the importance of environmental consideration in the project planning and implementation to promote sustainable development. These provide the general guidelines to integrate environmental issues with different sector projects and programs. The ECR'97 (with amendments later on) is the main legislation in Bangladesh. ECR'97 defined different sectors (industries and projects) as 'Green', 'Orange-A', 'Orange-B' and 'Red' categories, without considering the extent and types of interventions. Construction of multi-storied buildings is considered as the 'Orange B' category in ECR'97. However, there is no fixed definition of a multi-storied building. In practice, building more than 10 storied within Dhaka City (as per building construction rules of RAJUK) and building a more than 6-storied building outside of Dhaka city will be considered as 'Orange B' category. It is expected that the primary schools outside of the Dhaka will not be more than 6- storied building and as such, no environmental clearance may not be required. However, if new construction of more than 6-storied building is considered such as the DPE HQ building, IEE would be required to get the environmental clearance from the DOE as per ECR'97. In addition, EMF would need to be submitted to the DOE for their review and concurrence.

26. Many primary schools in disaster prone areas are also used as cyclone/flood shelters for the community. If the school will be considered as shelter, the concerned District Committee should be consulted about its location and other information. As per the policies/guidelines on water supply and sanitation, provision for As, pH, Fe and salinity safe drinking water and adequate sanitation will have to be ensured for schools. The water quality needs to be monitored to ensure that the supplied water is safe for drinking. The latrines to be constructed in the PEDP3 must be hygienic-confinement of feces away from the environment, blocking the pathways for flies and other insects, proper ventilation of foul gases, proper maintenance for continual use with improved hygiene practice. It has been decided that WASH blocks having hand washing facilities along with toilets and urinals would be constructed instead of standalone toilets during the remaining period of PEDP3 and in PEDP4.

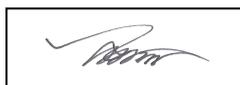
### **V. ENVIRONMENTAL MANAGEMENT PROCESS**

27. The environmental management process will pass through the following three steps:

- (i) Categorization of the subprojects;
- (ii) Environmental Screening (Checklist) and preparation of EMP of the subprojects; and
- (iii) Initial Environmental Examination (IEE).

#### **A. Categorization and Environmental Screening of Subprojects**

28. In general, the environmental categorization identifies what level of environmental assessment is required for the subprojects under PEDP4. Considering the large numbers of the "subprojects", the PEDP4 proposes a flexible approach for the environmental documentation for different types of the project. Table-8 provides a guideline for categorization of "subprojects" that will determine the level of environmental assessment to be required for the PEDP4 subprojects.



**Table 8: Environmental Categorization of Subprojects**

NO.	Types/ Interventions of Subprojects (Details of interventions are given in chapter 3.2)	Environmental Documentation Required
1	Maintenance of school and office buildings, ICT laboratory etc.	<b>No environmental screening required</b> as these subprojects are likely to have no negative environmental impacts.
2	Vertical and horizontal expansion for new classrooms / reconstruction of school and office buildings/water supply (tube wells (deep tube wells)/sanitary latrines/WASH Blocks facilities etc.	<b>Require environmental screening and EMP</b> are required as these subprojects are likely to have minimal environmental impacts. (Formats are given in Appendix -1.3 & -4)
3	Construction of new school and Office buildings more than 6 storied (if any).	<b>Require an IEE</b> as these subprojects are likely to have potential environmental impacts. Environmental clearance from DOE is required. (TOC for IEE is given in Appendix - 8).

29. The screening process also provides information to decision-making authorities about the nature of a subproject before its implementation. The purpose of the environmental screening is to get relevant concerns addressed early on before further design of a project and to ensure that actions to mitigate environmental impacts or enhance environmental opportunities are budgeted for. The participation and consultation with beneficiaries/local communities are important in identifying the potential impacts of the interventions. Environmental screening including EMP will be carried to get more information for the major renovation/extension in vertical or horizontal direction of the school buildings/reconstruction of the school buildings to achieve the following objectives: (i) To establish the environmental baseline in the study area and to identify potential environmental issue; (ii) To identify potential impacts and assessment; (iii) To integrate the environmental issues/impacts in the project planning and design; (iv) To consider alternatives; and (v) To formulate appropriate EMP for implementing, monitoring and reporting of the environmental mitigation and enhancement measures. Environmental screening format and templates for EMP are attached in Appendix- 3 and 4.

**B. Initial Environmental Examination (IEE)**

30. As indicated in Table 8, new construction of school or office building (more than 6 story) will require an IEE and EMP for identification and mitigation of negative environmental impacts. Appendix- 8 provides the details table of contents for preparation of an IEE. In general, the IEE process in the PEDP-4 involves the followings:

- a. **Establish Environmental Baseline.** Most relevant baseline information on physical, biological/ecological, and socio-economic environment will be required to be collected from available secondary sources (literature review, published journals, reports, maps etc.) and conduct reconnaissance field study using the Checklist. At the same time, public consultation at the subproject sites will play an important role to collect primary baseline information. The main purposes for collecting required information are follows.



- b. Examine the existing status of the environment condition and trends of environmental factors against which predicted changes can be compared and evaluated in terms of importance; and
- c. Environmental condition change detection by monitoring once a project has been initiated.

31. The environmental implications of different alternatives will be briefly assessed, particularly focusing on location of the proposed infrastructure and design and orientation, method of construction, source of construction materials, and schedule of construction.

- a. **Assessment for Identification of Environmental Impacts:** Based on the collected base line data/information, checklist as well as environmental expert's judgement, environmental assessment will be carried out for identification of environmental impacts in terms of their significance, extent, reversibility, and duration.
- b. **Preparation of Environmental Management Plan (EMP):** The EMP for the subprojects should be prepared mentioning the impact mitigation measures with institutional responsibilities (supervision and monitoring). From the extensive literature review and applying expert judgment and based on impacts assessment, a list of possible mitigating measures for the negative impacts and enhancement for the positive impacts should be prepared. It should consider the following during the preparation of mitigation measures: (i) Project alternatives; (ii) Preventive and remedial measures; and (iii) Compensatory measures to restore or replace damaged resources.

32. Also, Environmental Monitoring Plan should be prepared that will include monitoring parameters, location, frequency, method and responsible organizations. Monitoring Plan will be helpful to identify whether the proposed mitigation measures are enough to alleviate or set off the anticipated negative impacts and to enhance beneficial impacts. The monitoring will also provide feedback to improve the infrastructure quality and/or to modify some mitigation measures.

## VI. POTENTIAL ENVIRONMENTAL IMPACTS

3. The nature of civil works proposes to be financed under the program is not likely to cause significant and/or irreversible adverse environmental impacts. Most of the project impacts would be localized due to the relatively small-scale activities. However, there are some issues of concern that cut across the range of proposed interventions. Field studies and lessons from similar programs show that issues such as selection of appropriate sites, preference of students and teachers are some of the key concerns that influence project success and sustainability. Based on the screening of the environmental impacts by using Screening Checklist (Appendix-3), Environmental Specialist will assess the impacts. The typical environmental impacts related to the school construction and water supply and sanitation issues are discussed below.

34. **Problems associated with Site Clearance and Preparation:** The sites for the extension or reconstruction of primary schools do not pose any environmental risks regarding site clearance, as they are already in use. However, in case of dismantled materials, wastes etc. within the school premises, if not cleared properly prior to start construction, these will create environmental nuisance as well as health hazard of the workers during construction. Vegetation such as trees, flowers etc. (if any) within the school premises, if not properly removed also will cause environmental nuisance. Site clearance could also lead to or aggravate soil erosion, especially during monsoon. During design phase, suitable option on site clearance should be included in the Layout Plan/Construction Management Plan (CMP).



35. **Loss of Top Soils:** For raising the school premises above Highest Flood Level (HFL) (if required), earth will be required, and contractor will collect this earth from nearest agricultural lands. As a result, top soils of the agricultural lands will be affected and ultimately will reduce crop production. During design phase, suitable option should be explored and assessed to identify suitable land, which has no impact on agricultural production. Better to avoid using agricultural lands for raising of the school building area above the HFL and to collect earth from nearby silted up ponds or rivers or fallow lands. Surrounding of the school premises, agricultural land may gradually be converted to non-agricultural uses which should be stopped by the SMC/local leaders. Filling of school premises which are flooded during high flood will impact the top clay soils that can be used later the top of the sandy filling surface. Prior to start construction, top clay soils should be excavated at 0.5m depth and stored for using on the sandy ground surface and slopes.

36. **Drainage Congestion:** Due to lack of proper drainage for rainwater/wastewater owing to the construction activities harms the environment in terms of water and soil contamination and mosquito generation. Stagnant water due to poor drainage, blocked sewers, and overflowing septic tanks or soak pits will create health impact negatively. These issues should be properly addressed and taken into consideration during the design phase of “subprojects” and act accordingly during construction stage.

37. **Surface/Ground Water Pollution:** During construction, surface water quality may deteriorate due to construction activities, and sewerage from construction sites and work camps (if construction of school is located nearby permanent waterbodies). Dust from construction material stockpiles (mainly sand) may also increase sediment and contaminant loading of surface water bodies. Any construction materials and wastes should not be disposed into the water bodies. In addition, construction equipment and vehicle should not be washed in the water bodies. In case of accidental spillage of hazardous materials (such as paints, oil etc.) on the ground, ground water will be polluted. As a mitigative measure, wood dust or dry sand can be used.

38. **Disruption of Natural Ecosystem:** Earthwork may disrupt the integrity of existing ecology and natural ecosystem and biodiversity. Clearing of vegetation (mainly trees) from the school premises may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas of wildlife specially birds. In addition, illegal sourcing of fuel wood by construction workers will impact natural flora and fauna. Precautionary measure should be put in place in case of construction of the school building in ecologically critical areas and other nature reserve.

39. **Dust/Air Pollution:** Dust generation from construction sites, material stockpiles and access roads are a nuisance in the environment and can be a health hazard. Dust pollution occurs due to handling of soils during construction and mainly from lack of watering on the dusty earth surface. Such pollution is also a function of weather conditions in dry season nuisance is more; during monsoon, dust nuisance subsides. Indoor air pollution will be occurred during operation stage of the subprojects. Dust pollution can be minimized by watering on dusty earth surface and covered the sand stockpile area by grass, water hyacinth or by synthetic clothing.

40. **Noise Pollution:** Noise pollution is normally due to some construction-related activities, operation of equipment and generators. Noise will impact school students, teachers, project workers, nearby residents and wildlife (specially birds, snakes etc.), and another nocturnal animal and break the synchrony of natural ecosystem. Maintenance of equipment in time and installation of generator in closed room can minimized noise. Construction activities should not be during night time (from 9:00 PM to 6:00 AM).



41. **Occupational Health and Safety:** Construction activities may pose health and safety risks to the construction workers and nearby residents leading to severe injuries and deaths in extreme cases or a major accident. There is potential for diseases to be transmitted including malaria, diarrhea, and dysentery etc. exacerbated by inadequate health and safety practices. The population in the proximity of the construction site and the construction workers will be exposed to several (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.) and (ii) risk factors resulting from human behavior (e.g. STD, HIV etc.). A lack of first aid facilities and health care facilities in the immediate vicinity would aggravate the health conditions of the victims. Lack of water and sanitation facilities at construction sites inconveniences construction workers and affect their personal hygiene. A first aid boxes, PPE, adequate safe drinking water and hygienic sanitation facilities should be provided at the construction sites by the contractors during construction.

42. **Community Health and Safety:** Improper health and safety policy maintained at the site may lead to outbreak of different diseases to the surrounding communities/public through the sick migrant construction workers. Movement of project vehicles on rural roads in the rural areas which may also affect the health of the local community.

43. **Arsenic and Other Parameters:** The major environmental concern for the installation of new tube-well is to ensure safe drinking water provision to the students. Arsenic (As) as well as pH, Fe, and salinity (only for coastal areas) poses the major environmental and health risk in the project. In the absence of proper testing facilities and alternative option, students may continue to consume As and other parameters (pH, Fe, Mn, Fc, Salinity) contaminated water in pH, As, Fe & salinity affected-areas of the project. The long-term exposures to As, pH, Fe, & salinity in drinking water may result in black spots, thickening and roughness of palms and soles, white intermittent dots, nodular growth on palms and soles, swelling of feet and legs, peripheral neuropathy, kidney and liver disorder etc. in initial and secondary stages. Gangrene or cancer may result in the final stage. All these water parameters should be tested at least once a year and based on the result, proper action should be taken,

44. **Disaster and Extreme Climate Events:** Due to the increased frequency and intensity of tropical cyclone, storm surge, sea level rise, flooding, river erosion, salinity intrusion and other extreme climate events, the coastal areas of the project site may be vulnerable for workers and students. Therefore pre-disaster, disaster and post disaster preparedness would be required in the project site. Proper adaptation and disaster risk reduction measure will be adopted in the emergency situation.

45. **Risk from Poor School Sanitation and WASH Block:** Sanitary latrines and WASH Blocks provide enormous health benefits to communities. However, they should be designed, constructed and maintained properly. Close location of latrines to tube- wells can lead to groundwater contamination. Again, lack of proper design, construction and maintenance can create poor school sanitation. Inadequate maintenance of latrines and water logging also may create mosquito-breeding habitat. Proper design of sanitation facilities and wash blocks should be done and implement accordingly at the subproject sites.

46. **Poor Lighting and Ventilation System:** Poor indoor lighting in classroom will have health impact on health and well- being (e.g. eyesight) of teachers and students. Inadequate ventilation in classrooms will lead to respiratory problems, and easier transmission of infectious diseases. Adequate lighting and ventilation in the classrooms should be ensured.

47. **Employment Generation/Income:** During construction, a considerable quantity of workers (both male & female) will be required for the construction works. Conflict between male & female may be arisen if women workers are deprived. Some local people may also involve themselves in small businesses (e.g. tea stall, grocery shop etc.). Local people



especially poor men and women can be involved in the project construction work as per their skill.

## **VII. ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR PEDP4**

### **A. General**

48. The primary objective of the EMP is to avoid or eliminate or reduce the negative environmental impacts by possible mitigation measures and to enhance the positive impacts by enhancement measures. It would also address any unexpected or unforeseen impacts that may arise during construction and operation stages of the subprojects. The aim of the EMP is to ensure implementation of the recommended mitigation and enhancement measures effectively. The mitigation measures are designed either to prevent impacts or by mitigating those to reduce the negative impacts to an acceptable level that complies with the environmental guidelines of the DOE and DPs.

49. For the decision of the new tube-well installation, the following information should be collected and analyzed. (i) Arsenic concentration of the tube-wells (with depth and year of installation) within 500m; (ii) radius of proposed point; (iii) Level of dissolved iron and salinity in the locality; (iv) The depth of water tables; (v) Geological information; (vi) Distance from closest sanitary latrine; (vii) Drainage facility; and (viii) pH of water.

50. The following information should be collected and analyzed for the sanitary latrine construction. (i) Distance from water source; (ii) Drainage facility; (iii) Closest water table; and (iv) Soil condition.

51. The EMP is an integrated part of the project planning and implementation. The EMP should be a part of the contract document for all subprojects under the PEDP4. The main components of the EMP are (i) Mitigation Plan; (ii) Monitoring Plan; and (iii) Institutional Arrangement for Implementation of the EMP.

52. Templates for EMP and environmental monitoring of school buildings and WASH blocks are provided in Appendix- 4.

### **B. Mitigation Plan**

53. Mitigation measures have been suggested based on the identified environmental impacts, knowledge of the environmental expert, suggestions of the stakeholders including Aps and others. The mitigation measures will be considered as successful when it complies with the Environmental Quality Standards (EQS), policies, legal requirements set by DOE and other relevant GOB organizations and ADB. In absence of DOE's own EQS, other relevant international or other recognized organization's quality standard will have to be followed.

54. This mitigation plan presents practical and proven methods to maximize the beneficial impacts and avoid or minimize adverse impacts. The mitigation measures basically follow common-sense approach that aims to viable, practical and cost-effective solutions, which in turn would supplement its environmental sustainability. As such, four approaches are followed: preventive measures, alternatives, corrective measures and compensation where impacts are unavoidable. The typical mitigation/enhancement measures for the environmental impacts due to subprojects of the PEDP4 have been formulated and given in the following table 9-11. More detailed technical discussion on environmental principles for corrective and preventive measures in improvement works are provided in Appendix- 6 (Environmental Code of Practices, ECP 1-11). The relevant ECPs and Clauses of bidding documents (Appendix- 5) must be attached with the tenders and contracts to address environmental concerns/ problems by the contractor.



**Table 9: Mitigating/Enhancement Plan for Environmental Impacts of Extension/Reconstruction of School and Office Buildings (During Construction)**

Environmental Issues/Impacts	Mitigation/Enhancement Measures along with Approx. Budget	Implementation	Supervision
Loss of Top Soils	Ensure to avoid using top spoils from agricultural lands for raising of the school premises above high flood level. Use nearby fallow lands or silted up ponds and rivers. Prior to start construction, top clay soils of the school premises should be excavated at 0.5m depth and stored for using on the sandy ground surface and slopes. Follow ECP-4(Appendix - 6)..	Contractor	LGED
Drainage Congestion	Adequate drainage facilities should be provided in subproject and construction camp. Budget will be included in civil works. Follow ECP-3.	Contractor	LGED
Waste Management	Collect organic wastes in one bin and inorganic wastes in another bin at the source and dump in separate chamber of the concrete pit with cover and pocket (1 chamber for organic and other for inorganic wastes) in the camp. Budget will be included in civil works. Follow ECP-1..	Contractor	LGED
Poor Sanitation/Wash Block	Adequate hygienic toilets (according to Bangladesh National Building Code (BNBC) one toilet for 10 persons) and wash blocks to be provided. Budget will be included in civil works. Follow ECP-11.	Contractor	DPHE
Water Pollution/Arsenic Risk	Tube well to be installed at least 10m far from toilets. Prior to install tube well, quality ground water (parameters: As, pH, Fe, & salinity (salinity for coastal areas) should be confirmed by laboratory testing. For yearly testing BDT 25,000 will to be required. Follow ECP-2.	Contractor	DPHE
Dust Pollution	Construction materials carrying vehicles have to be covered, regular water spray manually where dust flows and provide musk to the construction workers. Budget will be approx. BDT 50,000. Follow ECP-5.	Contractor	LGED
Noise Pollution	Construction activities have to be confined to day time and noise level monitoring and workers have to be provided earplug where noise exceeded the DOE standard. Budget will be included in civil works. Follow ECP-6.	Contractor	LGED
Sensitive Cultural Sites	Avoid construction of new school/office building nearby any sensitive/cultural sites (such as religion structures, permanent water body, garden and densely residential area). Follow ECP-10.	Contractor	LGED
Income/Job Opportunities	Priority should be given to the local poor and Project Affected Persons (Aps) and gender equity and equal wage have to be ensured.	Contractor	LGED
Occupational Health and Safety (OHS)	Project workers have to be provided Personal Protective Equipment (PPE), First Aid Box, face mask, quality drinking water, hygienic toilets and wash blocks and to be ensured that workers use PPE properly. Budget will be approximately BDT 50,000. Follow ECP-11.	Contractor	LGED
Community Health and	Safety barrier and warning sign surrounding the construction site; Generators should be placed in	Contractor	DPHE



Safety	the closed room; Formulate and implement emergency risk management plan by the contractor.		
Environmental Risk (Substandard architectural planning, design and construction, natural disaster such as cyclone, flood, lightning, salinity etc.),	Standard planning and design and construction accordingly.	Contractor	LGED/DPHE

Approximate total budget for mitigation measures for a subproject = BDT 125,000 + Budget included in civil works.

**Table 10: Mitigating/Enhancement for Environmental Impacts of Extension/Reconstruction of School Buildings (During Operation)**

Environmental Issues/Impacts	Mitigation/Enhancement Measures along with Approx. Budget	Implementation	Supervision
Drainage Congestion	Clean drains properly as and when required.	Contractor	LGED
Waste Management	Collect organic wastes in one bin and inorganic wastes in another bin at the source and dump in separate chamber of the concrete pit with cover and pocket (1chamber for organic and other for inorganic wastes) in the camp. Maintain waste pit properly and distribute organic fertilizer among the farmers.	Contractor	LGED
Poor Sanitation/Wash Block	Adequate hygienic toilets (according to BNBC 1 toilet for 10 persons) and wash blocks to be provided. Clean toilets and wash block regularly.	Contractor	DPHE
Water Pollution/Arsenic Risk	Maintain tube well and test water quality (parameters: As, pH, Fe, & salinity (salinity only for coastal areas) at least biannually/annually. Budget will be approximately BDT 25,000/year.	Contractor	DPHE
Tree plantation	Total about 50 saplings (wood, fruit and medicine @ 2.5m interval) on the boundary of school and office building to be done. Budget will be approximately BDT 20 thousand (sapling and nursing for min.1 year).	Contractor	LGED/FD
Lighting and Ventilation	Maintain lighting and ventilation system in the classroom as required.	Contractor	LGED

Approximate total budget for mitigation measures for a subproject = BDT 45,000 + Budget included in civil works.



**Table-11: Mitigating/ Enhancement Plan for Water, Sanitation and WASH block Facilities (During Construction)**

Environmental Issues/Parameters	Mitigation Measures	Implementation	Supervision
Removal of existing damaged water supply, sanitation and wash blocks facilities	<ul style="list-style-type: none"> <li>-Prior to start construction, all these facilities should be shifted with the consultation of relevant authorities.</li> <li>-Prior to start construction, alternative option for WS, Sanitation and wash blocks should be arranged for the students by the contractors.</li> <li>-Proper health and safety measures for the workers should be taken during shifting of these facilities to avoid any accidents.</li> </ul>	Contractor	DPHE
Sanitation Hazard	<ul style="list-style-type: none"> <li>-Provide hygienic sanitation, through septic tank and soak well.</li> <li>-Provide separate latrines and bathing places for males and females workers with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every 10 persons.</li> <li>-Ensure the sanitary facilities are kept clean and without any odor.</li> <li>-Educate the workers of using the facilities.</li> </ul>	Contractor	DPHE
Wash Block	Provide hygienic wash blocks for the workers and students.	Contractor	DPHE
Ground/Drinking Water Pollution	<ul style="list-style-type: none"> <li>-Prevention of spillage, and proper management of solid and liquid waste at construction site will facilitate protection of the water quality.</li> <li>-Confirm water quality by testing quarterly.</li> <li>-Follow ECP-2(Appendix -6).</li> </ul>	Contractor	DPHE
Income/Job Opportunities	<ul style="list-style-type: none"> <li>-Priority should be given to the local poor and affected people during recruitment; and <ul style="list-style-type: none"> <li>▪ Gender equity and equal wage must be ensured.</li> </ul> </li> </ul>	Contractor	LGED
Occupational Health and Safety (OHS)	<ul style="list-style-type: none"> <li>-Workers must be provided PPE (ear protection gear, mask, gloves, goggles, safety shoes, helmet, etc.) and it must be ensured that they use PPE properly;</li> <li>-First Aid Box should be readily available at construction site and labour camp;</li> <li>-Separate toilet facilities (wash room, urinal etc.) for female workers; and</li> <li>-Quality drinking water should be provided (After installation of tube-wells, presence of arsenic in the drinking will be tested and be used only it satisfy the DOE Standard);</li> <li>-Follow ECP-11.</li> </ul>	Contractor	LGED
Environmental Risk (Substandard architectural planning, design and construction, natural disaster such as cyclone, flood, lightning, salinity etc.),	Standard planning and design and construction accordingly.	Contractor	LGED/DPHE



### C. Monitoring Plan

55. The Monitoring Plan (MP) is one of the important tools/key components of the EMP for implementing the mitigation plan for the Project. The main objectives of the Monitoring Plan are to (i) Monitor changes in the environment during various stages of the project life cycle with respect to baseline conditions; and (ii) Manage environmental issues arising from construction works through closely monitoring their actual/potential environmental impacts.

56. A monitoring mechanism is developed for each identified impact and proposed mitigation measures. It includes (i) Location of monitoring (near the Project activity, sensitive receptors or within the Project influence area); (ii) Means of monitoring, i.e. methods of monitoring (visual inspection, consultations, interviews, surveys, field measurements, sampling and analysis); (iii) Frequency of monitoring (daily, weekly, monthly, seasonally, annually or during implementation of an activity); and (iv) Implementing agencies for monitoring.

57. The monitoring program will also include regular monitoring of construction activities for their compliance with the environmental requirements as per relevant standards, specifications and EMP; The purpose of such monitoring is to assess the performance of the undertaken mitigation measures and to immediately formulate additional mitigation measures and/or modify the existing ones aimed at meeting the environmental compliance as appropriate during the construction stage. The Monitoring Plan is presented in the following Table 12 - 14 and a template for monitoring plan during construction is given in the Appendix-4.

58. The environmental parameters that may be qualitatively and quantitatively measured and compared are selected as 'explicit indicators' and recommended for monitoring during project implementation and O/M stages. These monitoring indicators will be continuously monitored (Table 12-14) to ensure compliance with the national or other applicable standards and comparison with the baseline conditions established during the preconstruction/design stage of the project.

**Table 12: Environmental Monitoring Plan for Extension/Reconstruction of School Buildings (During Construction Stage)**

Environmental Issues/Impacts	Monitoring	Location	Frequency	Implementation	Monitoring
Drainage Congestion	Check drains are cleaned properly.	Subproject site	Daily during monsoon	LGED/SMC	LGED/SMC
Waste Management	-Check construction wastes are separated and reused. -Check concrete waste pit is constructed and use properly.	Subproject site	Daily	LGED/SMC	LGED/SMC
Water Pollution/Arsenic risk	Check tube well is installed atleast 10m far from toilet and prior to install tube well, quality of ground water (As, pH, Fe & salinity (salinity for coastal areas)) is confirmed by laboratory testing.	Tube well location	Quarterly	DPHE/SMC	DPHE/SMC



Environmental Issues/Impacts	Monitoring	Location	Frequency	Implementation	Monitoring
Dust Control	Frequent water spray manually where dust blows;	Earthwork sites	Daily	LGED/SMC	LGED/SMC
Noise Pollution	Noise level to be monitored and workers have to be provided earplug.	Pile driving/generator sites	Weekly	LGED/SMC	LGED/SMC
Occupational Health and Safety (OHS)	<ul style="list-style-type: none"> <li>▪ Check safe water supply, hygienic toilet, wash block is available at the site;</li> <li>▪ Check toilets are close to construction site and separate toilet for female workers;</li> <li>▪ Check First Aid Box with required medicines;</li> <li>▪ Check PPE for worker are available.</li> </ul>	Subproject site	Daily	LGED/SMC	LGED/SMC

**Table 13: Environmental Monitoring Plan of Extension/Reconstruction of School Buildings (During Operation Stage)**

Environmental Issues/Impacts	Monitoring	Location	Frequency of Monitoring	Implementation	Monitoring
Drainage Congestion	Check drainage congestion is occurred in the subproject site.	Subproject site	Daily during monsoon	LGED/SMC	LGED/SMC
Waste Management	Maintain waste pit properly and distribute organic fertilizer among the farmers.	Subproject site	Daily	LGED/SMC	LGED/SMC
Poor Sanitation/Wash Block	Check adequate hygienic toilets and wash blocks are provided and functioned properly.	Toilet/WASH block site	Daily	DPHE/SMC	DPHE/SMC
Water Pollution/Arsenic risk	Check tube well is maintained and test water quality (parameters: As, pH, Fe & salinity (salinity for coastal areas) at least annually.	Tube well location	Quarterly	DPHE/SMC	DPHE/SMC
Tree plantation	Check saplings are survived. If not need to be replanted new saplings. Also watering to	School boundary slopes	Daily	LGED/SMC	LGED/SMC

Environmental Issues/Impacts	Monitoring	Location	Frequency of Monitoring	Implementation	Monitoring
	saplings during dry period regularly.				
Poor Lighting and Ventilation	Maintain lighting and ventilation system in the classroom as required.	Class room/office room.	Weekly.	LGED/SMC	LGED/SMC

EMP for Subproject-1 (water supply, sanitation and wash blocks) is presented in Annex-C (EMF).

**Table 14: Environmental Monitoring for Water, Sanitation and Wash Block Facilities (During Construction Stage)**

Environmental Issues/Parameters	Monitoring	Location	Frequency	Implementation	Monitoring
Removal of damaged water supply, sanitation and wash blocks facilities	Check whether sites are cleared or not.	Subproject site	Daily during removal	LGED/SMC	LGED/SMC
Sanitation	Check sanitation hazard is going or not	Subproject site	Daily	DPHE/SMC	DPHE/SMC
Wash Block	Check any environmental nuisance is going on or not	Subproject site	Daily	DPHE/SMC	DPHE/SMC
Ground/Drinking Water Pollution	Check prevention of spillage, and proper management of solid and liquid waste at construction site.	Subproject site	Daily	DPHE/SMC	DPHE/SMC
Income/Job Opportunities	Check availability of equipment for watering and frequent water spray where dust flows;	Subproject site	Weekly	LGED/SMC	LGED/SMC
Occupational Health and Safety (OHS)	Check safe water supply, hygienic toilet is available at construction sites; Check toilets are close to construction site and separate toilet for female workers; -Check First Aid Box with required tools and medicines; and -Check of	Subproject site	Daily	LGED/SMC	LGED/SMC



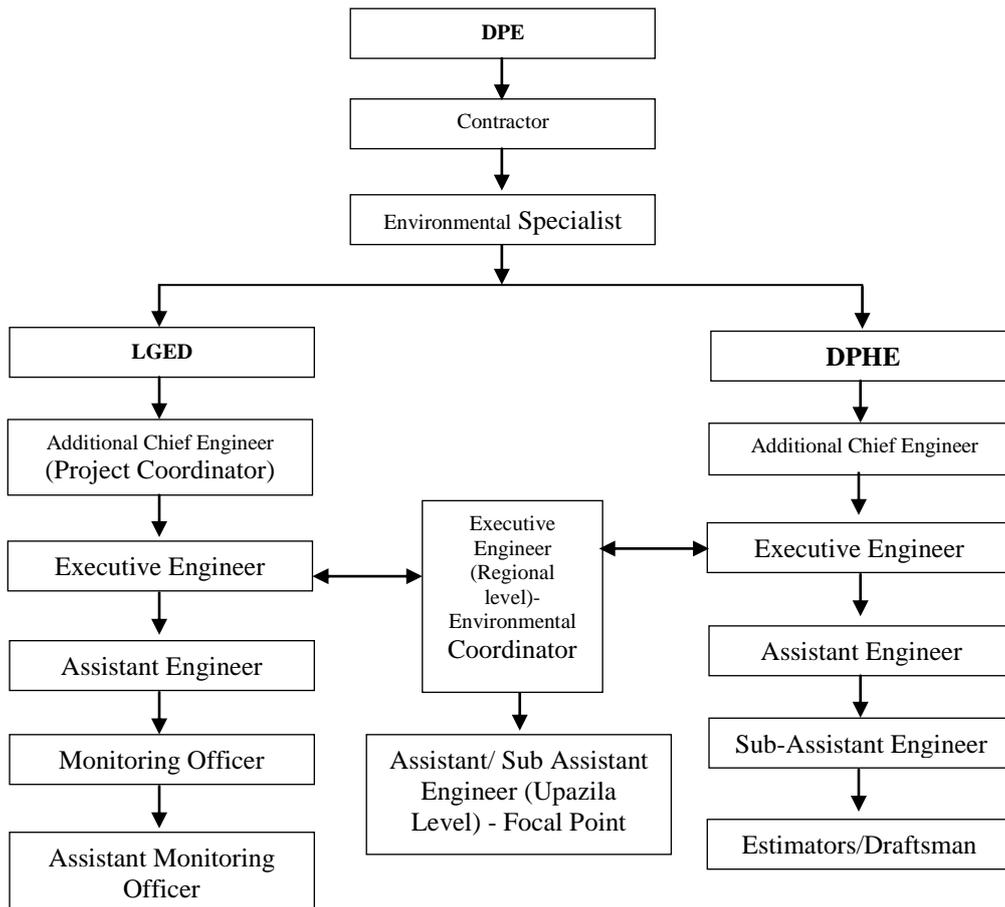
Environmental Issues/Parameters	Monitoring	Location	Frequency	Implementation	Monitoring
	personal protective equipment (PPE) for worker at the sites.				

#### D. Institutional Arrangement for Capacity

59. The Local Government Engineering Department (LGED) was assigned for the infrastructure development in the Primary Education Development Project 3 (PEDP 3). LGED has set-up its institutional arrangements for the implementation of the PEDP3 (Figure-1). The Superintending Engineer (Education) acts as the Project Coordinator for infrastructure development. The Superintendent Engineer Office supported the Executive Engineer (Education) with 74 staff (technical and support staff). The key staffs are 1 Senior Assistant Engineer, 8 Assistant Engineers, 10 Monitoring Officers, 10 Assistant Monitoring Officers and 3 computer operators. The Superintending Engineer is supported by a number of individual consultants. LGED also set-up 10 regional level offices at Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, Barisal, Rangpur, Mymensingh, Faridpur and Comilla. Each Regional Office is headed by an Executive Engineer (Education and Training) with 19 technical and support staff. The key staffs at the regional office are: 1 Assistant Engineer, 1 Monitoring Officer, 1 Estimator (Sub- Assistant Engineer), 1 Draftsman (Sub-Assistant Engineer), 2 Sub-Assistant Engineers and an Assistant Monitoring Officer. In addition, at the district levels and Upazilla levels, LGED offices are also involved in the implementation of the program activities. The LGED will maintain the same institutional structure for the PEDP 4 implementation and will include an Environmental Specialist as an individual consultant. The TOR of the Environment Specialist (individual consultant) is attached in Annex-7.



**Figure 1: Institutional Framework for EMP Implementation in LGED/DPHE**



60. The Executive Engineer, PEDP4, located at HQ will ensure the overall coordination and responsible for monitoring of environmental safeguard issues. Seven Monitoring Officers/Sub-Assistant Engineers would be responsible for coordination and reporting of environmental safeguard issues and each would be assigned two regions. The Assistant Engineer at Regional Office will act as the Environmental Focal Point and will responsible for coordinating environmental activities at field level. The Upazilla LGED Office will be responsible for reviewing existing facilities, “Subproject” screening and environment management plan (EMP) preparation and implementation. Specifically, the Upazilla Sub-Assistant Engineer/Assistant Engineer will be responsible for carrying out the screening and preparing subproject specific EMP preparation. The Upazilla Engineer will review the screening report and EMP through field visit. The Upazilla Engineer will also be responsible for supervision and monitoring of environmental mitigation activities at Upazilla level. The Assistant Engineer at Regional Office will review at least 25% of the screening and EMP reports and implementation of EMP at field level. If IEE is required, it will be the responsibility of the Assistant Engineer at the Regional Office. The Environmental Specialist will prepare the training materials, conduct training of staff, prepare screening, IEE report and EMP on sample basis, review certain percentage of the EMP and prepare Quarterly and Annual Environmental Reports of the PEDP4.

61. In addition, DPE will hire the consultant services to monitor at least 10% of the infrastructure implemented by the LGED. The monitoring will include the environmental performance (environmental screening, EMP and implementation of environmental mitigation measures) of the “subprojects”. The monitoring report will have a dedicated section on Environment. A Geographic Information System (GIS) will be developed at DPE to record all the Primary School locations and data. The development partner(s) in consultation with DPE

may also assign a firm/institute as third-party monitoring of the physical progress, construction quality, and environmental safeguard and operation status of the infrastructures.

62. The DPHE have an Additional Chief Engineer as a focal person for the environmental management and reporting (Figure 1). The Assistant Engineer at Upazila level primarily undertakes the environmental screening of the works with the help of the Sub-Assistant Engineers. The Executive Engineer at district level verify the reports and send those to the HQ where a consultant with the help of the DPHE Engineers working at HQ prepare the compiled report.

63. For the purpose of annual water quality monitoring, DPE has signed a Memorandum of Understanding (MoU) with the Department of the Public Health Engineering (DPHE). The DPE will provide all the tube-wells information and field test kits to the DPHE Research and Development (R&D) Division. The DPHE will coordinate and implement the testing through its field office and prepare the analytical report. DPHE will also carry out 5% quality check in their zonal laboratories. The DPE will pay DPHE the laboratory test cost, field test cost and reporting cost. As DPHE would also be responsible for construction of WASH Blocks and various source of drinking water, they would follow the similar reporting pattern as LGED with the help of their field level officials and coordinated by the staff at DPHE HQ.

64. For climate proof and disaster resilient school building, LGED may work together with Department of Disaster Management (DDM), BUET and other relevant organizations for designing and construction of climate resilient school building in vulnerable coastal areas. Based on expected climate impacts in vulnerable coastal areas such as flooding, cyclone, storm surge, the project will adopt simple measures such as raising the plinth level of the school structures, safeguards against cyclone and storm surge or river bank erosion of foundation and providing adequate structural strength to withstand high wind pressure etc. A climate change adaptation expert would be consulted to advise such measures at the program level.

65. The other key stakeholder is the School Management Committee (SMC). The SMC will be responsible for the site selection, the design criteria definition as per teachers and student's needs, supervising the construction, ensuring proper operation and maintenance of the water supply and sanitation facilities as well as the cleaning and maintenance of school room and premises.

66. The Capacity building at different levels is necessary to implement the EMF successfully. The suggested capacity building measures, for example include: i) providing environmental competency/human-resources, ii) training, orientation and awareness, activities on environmental planning and management of school and school-facilities, and iii) mechanisms for coordination and for accessing specific environmental services e.g. water-quality testing, climate resilient school building design and construction, etc.

67. The Environmental Specialist will lead the capacity development efforts in LGED Education Unit. The Project Coordination will form a team who will be responsible for the environmental training in the PEDP I V staff. The team will work in close cooperation with the LGED Environmental Unit and Environment Specialist. The team with the support of environmental specialist will: (i) coordinate environmental training for staff and local contractors; (ii) develop and review different training materials; and (iii) assess further capacity needs for environmental training. The staff assigned as the Environmental Focal Points and also all the Executive Engineers and Assistant Engineers will receive training on priority basis. The other staff and selected staff of DPE will also receive training gradually.

68. Capacity building program should be undertaken for the DPHE field and HQ staff so that the environmental screening of the works can be accomplished properly. The consultant working at DPHE should play important role in preparing training plan and training material to



impart such training at various levels. Orientation Program is imparted by the management both in head quarter and field level to increase awareness on roles and responsibilities of quality works of water sources and WASH blocks.

69. The program will also consider the capacity building of the SMC for the maintenance of the water supply and sanitation facilities. The option of linking with the existing government program of health and hygiene education will also be explored. Special attention will be provided to the boys and girls for encouraging them to spread the messages they have learned from teachers, health workers or other sources. Children have special advantages and special roles in spreading health messages to others. This will also help to properly maintain the hygienic condition of the urinals, toilets and water supply conditions in the schools.

70. The LGED & DPHE will engage contractors who have also relevant adequate work experience for execution of the EMP of the similar projects. For implementing the EMP for the project, the contractors should have experienced persons who have knowledge on environment, health and safety. Responsibilities of the contractor in relation to the implementation of environmental management plan will be incorporated into the construction tender documents and EMP. Detail tasks of the contractors are given in Appendix- 5.

#### **E. Grievance Redress Mechanism**

71. Environmental issues will be integrated with the project Grievance Redress System (GRS). A grievance redress procedure will be established to deal with various non-legal issues that may arise during preparation and implementation of the infrastructure and environmental activities. The grievance redress mechanism should be scaled to the risks and adverse impacts of the project. It should address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no costs and without retribution.

72. The concern/grievances from local/affected people may come up related to inappropriate implementation of various components of EMP or the overall components/activities of the subproject itself. These issues will be addressed through acknowledgement, evaluation and corrective action and response approach. A Grievance Redress Mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of affected people's concerns, complaints, and grievances about the social and environmental performance of the project. The GRM aims to provide a trusted way to voice and resolve concerns linked to the project, and to be an effective way to address affected people's concerns.

73. The Environmental and Social Unit (ESU) of the LGED/DPHE shall make the public aware of the GRM through public awareness campaigns. The contact phone number of the respective ESU will serve as a hotline for complaints and shall be publicized through the media and placed on notice boards outside their offices and at construction sites. The project information brochure will include information on the GRM and shall be widely disseminated through the project area by the Environmental Specialist/Engineer in the SEU, with support from the NGOs and communication firm. Grievances can be filed in writing or by phone with any member of the ESU. Figure 2 represents how GRM will be implemented for the project. The affected people will be appropriately informed about the mechanism. Complainants can however send letters of complaint to any level and the level where they are received will act these upon. The Grievance Redress Committees (GRCs) will try to resolve conflicts amicably by bringing together the directly concerned parties. The GRCs will however not provide legal advice to the contestants. Decisions made by using this mechanism will be binding on the project authority.



## **F. Capacity Building Training**

74. Advanced training on environmental management and monitoring would be useful for the engineers of the DPE/LGED/DPHE/contractors in successfully implementing the EMP. It is advised to provide the basic training for project staff on regulatory requirements, environmental impacts, and environmental assessment and management in home. They can participate in field-based training including the environmental screening, impact assessment, mitigation and monitoring of construction/reconstruction and maintenance works of the subprojects. Different organizations in Bangladesh like: DOE, IEB, FD, Climate Change Unit, training institutes/organizations etc. may provide training on environment, disaster, climate change etc. issues that would be better for their capacity development.

75. The contractor is responsible for informing employees and subcontractors of their environmental obligations, and for ensuring that employees are adequately experienced and properly trained to conduct the works in a manner to minimize environmental impacts. Prior to commencing site works, employees and subcontractors will attend an environmental briefing. The briefing will be conducted by the Environmental Specialist of the PEDP4 to ensure details of the Project's environmental requirements, and how they are to be implemented, are known and understood. The contractor will be required to provide induction and training for the project site staff. Where necessary, Environmental Specialist of the PEDP4 will be used by construction contractors for training purposes. Records of all briefing and training sessions including a list of attendees should be retained by the contractor.

## **VIII. CONSULTATION AND INFORMATION DISCLOSURE**

### **A. Consultation**

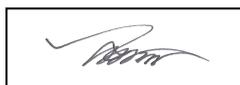
76. On behalf of DPE, Environmental Specialist of the Consultants carried out the field visit of the existing PEDP3 project sites as part of the EMF preparation. The consultant reviewed the existing documents in field, school conditions, geographic location of school, water supply and sanitation facilities, discussed with all relevant stakeholders and took their opinion how to improve the environmental practices in primary education program and to integrate environmental concerns to improve the sustainability of the program interventions. Field visit were undertaken during implementation of PEDP3 which revealed useful information regarding improving environmental safeguard. This revised EMF included the recommendations from consultations and field visits observations.

### **B. Disclosure**

77. The revised EMF will be disclosed by the DPE in their website for public comments within 30 days of the notice published in the two daily national newspapers (one English and another Bangla). The LGED and DPHE will also disclose this document on their website. In addition, ADB will publish the EMF in its website.

### **C. Monitoring and Reporting**

78. The LGED and DPHE will monitor and measure the progress of implementation of the EMP. The extent of monitoring activities will be commensurate with the project's risks and impacts. In addition to recording information to track performance, LGED and DPHE will undertake inspections to verify compliance with the EMP and progress toward the expected outcomes. The LGED and DPHE will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. They will implement these corrective actions and follow up on these actions to ensure their effectiveness. They will prepare periodic monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. They will submit at least half yearly monitoring reports during construction for subprojects likely to have negative potential environmental impacts or when requested by any of the DPs.



## **APPENDIX -1: RELEVANT POLICIES AND REGULATORY FRAMEWORK**

### **I. National Environmental Safeguard Policies and Legislations**

#### **A. Environment Conservation Act, 1995**

1. The national environmental legislation known as Environmental Conservation Act, 1995 (ECA'95) is currently the main legislative document relating to environmental protection in Bangladesh, which replaced the earlier environment pollution control ordinance of 1992 and has been promulgated in Environmental Conservation Rules, 1997 (ECR' 97). This Act is amended in 2000 and 2002. The main objectives of ECA '95 are: (i) conservation of the natural environment and improvement of environmental standards; and (ii) control and mitigation of environmental pollution. The main strategies of the act can be summarized as:

- (i) Declaration of ecologically critical areas, and restriction on the operation and process, which can be continued or cannot be initiated in the ecologically critical areas.
- (ii) Regulation with respect to vehicles emitting smoke harmful to the environment.
- (iii) Environmental clearances.
- (iv) Remedial measures for injuries to ecosystems.
- (v) Regulation of projects and other development activities.
- (vi) Promulgation of standards for quality of air, water, noise and soil for different areas for various purposes.
- (vii) Promulgation of standard limit for discharging and emitting waste.
- (viii) Formulation and declaration of environmental guidelines.

2. The Department of Environment (DOE) implements the Act. The DOE is under the Ministry of Environment and Forest (MOEF) and is headed by a Director General (DG). The DG has complete control over the DOE. The power of DG, as given in the Act, may be outlined as follows:

- (i) The DG has the power to shut down any activities considered harmful to human life or the environment. The operator has the right to appeal and procedures exist for this purpose. However, if the incident is considered an emergency, there is no opportunity for appeal.
- (ii) The DG has the power to declare an area affected by pollution as an ecologically critical area. The DOE governs the type of work or activities that can take place in such an area.
- (iii) Before beginning new development project, the project proponent must obtain the Environmental Clearance Certificate (ECC) from the DOE. The procedures to obtain such clearance are in place.
- (iv) Failure to comply with any part of ECA'95 may result in punishment by a maximum of 10 years imprisonment or a maximum fine of BDT1,000,000 or both.



## **B. Environmental Conservation Rules, 1997**

3. The ECRs, 1997 provide a first set of rules under the ECA, 1995. This rule is further amended in 2002 and 2003. These provide, amongst other items, standards and guidelines for:

- (i) Categorization of industries and development projects, including roads and bridges based on actual and anticipated pollution load.
- (ii) Requirement for undertaking the IEE and EIA, as well as formulating the EMP according to categories of industries/development projects/activities.
- (iii) Procedure for obtaining ECC.
- (iv) Environmental Quality Standards (EQS) for air, surface water, groundwater, drinking water, industrial effluents, noise and air.

4. The Rules incorporate "inclusion lists" of projects requiring varying degrees of environmental investigation. The GOB is also empowered to specify which activities are permissible and which restricted in the ecologically critical area. Under this mandate, MOEF has declared Sunderban, Cox's Bazar-Tekhnaf Sea Shore, Saint Martin Island, Sonadia Island, Hakaluki Haor, Yanguar Haor, Marzat Baor and Gulshan-Baridhara Lake as ecologically critical areas and accordingly has prohibited certain activities in those areas.

5. Under the ECRs, 1997 a classification system was established for development projects and industries on basis of the location, the size and the severity of potential pollution. It classifies industrial units and projects into four categories for issuance of ECC. These categories are: (i) Green; (ii) Orange A; (iii) Orange B, and (iv) Red.

6. Green Category projects are considered relatively pollution-free and hence do not require IEE and EIA. The ECC from the DOE is adequate for a project that fall into the Green Category. Orange Category projects fall into two categories. Orange A projects are required to submit general information, a feasibility report, a process flow diagram and schematic diagrams of waste treatment facilities along with their application for obtaining DOE environmental clearance. Orange B projects are required to submit an IEE report, along with their application and the information and papers specified for Orange B projects. Red Category projects are those which may cause 'significant negative' environmental impacts and are, therefore, required to submit the EIA report. It should be noted that they may obtain an initial site clearance on the basis of an IEE report, and subsequently submit an EIA report for obtaining ECC along with other necessary documents, such as feasibility study reports and no objections from local authorities. The DOE has recently developed IEE and EMP checklists in order to simplify the preparation of conventional and voluminous IEE and EMP reports that may contain irrelevant and unnecessary information.

7. As per ECRs, 1997, all existing and new industries and projects in Orange B and Red category require the EMP to be prepared (after conducting IEE or EIA) and submitted along with other necessary documents while applying for the ECC.

## **C. National Water Policy, 1998**

8. The National Water Policy was promulgated in 1999 with the intention of guiding both public and private actions to ensure optimal development and management of water in order to benefit both individuals and the society at large. The policy aims to ensure progress towards fulfilling national goals of economic development, poverty alleviation, food security, public health and safety, a decent standard of living for the people and protection of the natural environment. According to the policy, all agencies and departments entrusted with water resource management responsibilities (regulation, planning, construction, operation



and maintenance) will have to enhance environmental amenities and ensure that environmental resources are protected and restored while executing their activities. Environmental needs and objectives will be treated equally with the resources management needs. The policy has several clauses related to the protection and conservation of the natural environment to ensure sustainable development.

#### **D. National Safe Drinking Water Supply and Sanitation Policy, 1998**

9. The National Safe Drinking Water Supply and Sanitation Policy (NSDWSSP, 1998) was adopted in 1998, and sets out the basic framework for the improvement of public health quality and to ensure an improved environment, together with a set of broad sectoral action guidelines. The policy offered the following various objectives to achieve the goal:

- (i) To manage water supply and sanitation related basic needs for all.
- (ii) To bring about a positive change of peoples' attitude towards water and sanitation.
- (iii) To reduce the outbreak of water-borne diseases.
- (iv) To increase the efficiency of the Local Government and associated communities for handling the problems related to water supply and sanitation more effectively.
- (v) To improve and make the water supply and sanitation system more sustainable.
- (vi) To promote proper conservation, management and use of surface water and to control water pollution in light of the scarcity of groundwater.
- (vii) To take necessary steps to capture and use rain water.

10. Ensuring the installation of one sanitary latrine in each household in the rural areas and improving public health standard through inculcating the habit of proper use of sanitary latrines is mentioned as one of the objectives. About urban sanitation, the policy objective is to ensure sanitary latrine within easy access of every urban household through technology options ranging from pit latrines to water borne sewerage. Installing public latrines in schools, bus stations and important public places and community latrines in densely populated poor communities without enough space for individual household latrines is also emphasized.

#### **E. National Policy for Arsenic Mitigation, 2004**

11. The policy provides a guideline for mitigating the effect of arsenic on people and environment in a holistic and sustainable way. This policy also supplements the National Water Policy 1998, National Policy for Safe Water Supply and Sanitation 1998 in fulfilling the national goals of poverty alleviation, public health and food security. Policy statement includes: access to safe water for drinking and cooking shall be ensured through implementation of alternative water supply options in all arsenic affected areas. All arsenic cases shall be diagnosed and brought under an effective management system. Impact of arsenic on agricultural environment shall be assessed and addressed. This policy gives preference to surface water over groundwater. The policy has set the target of providing arsenic free water by 2010 in the worst affected communities.

#### **F. National Sanitation Strategy, 2005**

12. The goal of National Sanitation Strategy 2005 was to achieve 100% sanitation coverage by 2010. The strategy aims to delineate the ways and means of achieving the national target through providing a uniform guideline for all concerned. It defines 100% sanitation – at the very least, the term “100% sanitation” will mean to include all of the followings: (i) no open defecation; (ii) hygienic latrines available to all; (iii) use of hygienic latrines by all; (iv) proper maintenance of latrines for continual use, and (v) improved hygiene



practice. The strategy also defines the Hygiene Latrine - A hygiene latrine would mean to include all of the following: (i) confinement of feces away from the environment; (ii) sealing of that passage between the squat hole and the pit to effectively block the pathways for flies and other insect vectors thereby breaking the cycle of disease transmission, and (iii) venting out foul gases generated in the pit through a properly positioned vent pipe to keep the latrine odor free and encourage continual use of the hygiene latrine. The key suggested strategies for sanitation improvement include: (i) creating effective demand through health education and hygiene promotion; (ii) ensuring individual and community actions; (iii) activating local government institutions to play the key role for improving sanitation coverage; (iv) facilitating adequate supply chain of 'hygiene latrines'; (v) reaching the hardcore poor; (vi) improvement in urban sanitation; (vii) media campaign; (viii) strategies for sustainability; (ix) financing for sanitation programs; (x) monitoring and evaluation; and (xi) emergency response.

### **G. National Environment Management Action Plan (NEMAP), 1995**

13. The NEMAP is an environmental planning exercise initiated by the government through the MOEF following the commitments made under Agenda 21 at UNCED in Rio de Janeiro in June 1992. The key element that distinguishes the NEMAP from the NCS is the commitment to full participation of the population at large interest groups, resource users and environmental stockholders, NEMAP identified the key environmental concerns to Bangladesh and provided an action plan to halt or reduce the rate of environmental degradation, improve the natural and manmade environment, conserve habitats and biodiversity, promoting sustainable development and improving quality indicators of human life. NEMAP has prioritized 57 actions on the environmental front and the government is in the process of creating a second-order priority list for immediate implementation. NEMAP outlines an Action Plan not only for the government, but for the community, the society and suggest what each citizen can do to protect the environment. The management actions considered in NEMAP are all essential to the sustainable development and environmental protection of the natural and human resources of Bangladesh. For the purpose of management, implementation, acquiring dedicated funds and enabling all different agencies to initiate or implement their own programs singly or in combination of agencies, all the actions have been grouped under four heads: institutional, sectoral, location specific and long-term issues. Sectoral issues mainly are: Health and Sanitation, Forest, Biodiversity, Natural Hazards, Education and Awareness, Industry, Water, Agriculture, Energy, Fisheries, Land, Housing and Transport.

### **H. Bangladesh National Building Code (BNBC), 2006**

#### **Demolition of Structure (3.1.11a)**

14. The BNBC sets guideline for demolition of structure. The highlights of the guideline are as follows: (i) At planning stage, detailed survey and study shall be carried out before demolishing the structure, (ii) A written notice will be delivered to the adjoining property holder, (iii) Required pedestrian precaution should be taken into account before commencing the demolition, (iv) All utility lines will be disconnected, and the sequence of demolition will be maintained as mentioned in the BNBC, and (v) The owner will provide compensation for all damages and loss of life.

#### **Occupational Health and Safety (3.1.11b)**

15. Part-7, Chapter -1 of the Bangladesh National Building Code (BNBC) clearly sets out the constructional responsibilities according to which the relevant authority of a particular construction site shall adopt some precautionary measures to ensure the safety of the workmen. According to section 1.2.1 of chapter 1 of part 7, "In a construction or demolition work, the terms of contract between the owner and the contractor and between a consultant



and the owner shall be clearly defined and put in writing. These however will not absolve the owner from any of his responsibilities under the various provisions of this Code and other applicable regulations and bye-laws. The terms of contract between the owner and the contractor will determine the responsibilities and liabilities of either party in the concerned matters, within the provisions of the relevant Acts and Codes (e.g.) the Employers' Liability Act, 1938, the Factories Act 1965, the Fatal Accident Act, 1955 and Workmen's Compensation Act 1923". (After the introduction of the Bangladesh Labor Act, 2006, these Acts have been repealed).

16. Section 1.4.1 of chapter-1, part-7 of the BNBC, states the general duties of the employer to the public as well as workers. According to this section, "All equipment and safeguards required for the construction work such as temporary stair, ladder, ramp, scaffold, hoist, run way, barricade, chute, lift etc. shall be substantially constructed and erected so as not to create any unsafe situation for the workmen using them or the workmen and general public passing under, on or near them".

17. Part-7, Chapter-3 of the Code has clarified the issue of safety of workmen during construction and with relation to this, set out the details about the different safety tools of specified standard. In relation with the health hazards of the workers during construction, this chapter describes the nature of the different health hazards that normally occur in the site during construction and at the same time specifies the specific measures to be taken to prevent such health hazards. According to this chapter, exhaust ventilation, use of protective devices, medical checkups etc. are the measures to be taken by the employer to ensure a healthy workplace for the workers.

18. To prevent workers falling from heights, the Code in section 3.7.1 to 3.7.6 of chapter 3 of part 7 sets out the detailed requirements on the formation and use of scaffolding. According to section 3.9.2 of the same chapter, "every temporary floor opening shall either have railing of at least 900 mm height or shall be constantly attended. Every floor hole shall be guarded by either a railing with toe board or a hinged cover. Alternatively, the hole may be constantly attended or protected by a removable railing. Every stairway floor opening shall be guarded by railing at least 900 mm high on the exposed sides except at entrance to stairway. Every ladder way floor opening, or platform shall be guarded by a guard railing with toe board except at entrance to opening. Every open sided floor or platform 1.2 m or more above adjacent ground level shall be guarded by a railing on all open sides except where there is entrance to ramp, stairway or fixed ladder. The above precautions shall also be taken near the open edges of the floors and the roofs".

19. The major challenge is the proper implementation of the Code as section 2.1 of chapter 2 of part 1 duly states that, "The GOB shall establish a new or designate an existing agency responsible for the enforcement of this Code with a given area of jurisdiction. For administering and enforcing the provisions of the Code, the enforcing agency shall have the authority of the GOB and shall herein be referred to as the Authority."

20. Part 9, 1.2.1 states that if the land is changed and the occupants of the area are against the change, no change in use of an existing building will be allowed.

21. Section 1.2.4 of Part 9 clearly states, "Additions to existing building shall comply with all of the requirements of the BNBC for new constructions. The combined height and area of the existing building and the new addition shall not exceed the height and open space requirements for new building specified in Part 3 of the Code. Where a firewall that complies with Table 3.3. Of Part 3 is provided between the addition and the existing building, the addition shall be considered as a separate building."



## I. Bangladesh Labor Act (BLA), 2006

22. The BLA, 2006 provides the guidance of employers' extent of responsibility and workmen's extent of right to get compensation in case of injury by accident while working. Some of the relevant sections are:

23. **Section 150. Employer's Liability for Compensation:** (i) If personal injury is caused to a workman by accident arising out of and in the course of his employment, his employer shall be liable to pay compensation in accordance with the provisions of this Act; and (ii) Provided that the employer shall not be so liable – (a) in respect of any injury which does not result in the total or partial disablement of the workman for a period exceeding three days; (b) in respect of any injury, not resulting in death or permanent total disablement, caused by an accident which is directly attributable to – (i) the workman having been at the time thereof under the influence of drink or drugs, or (ii) the willful disobedience of the workman to an order expressly given, or to a rule expressly framed, for the purpose of securing the safety of workmen, or (iii) the willful removal or disregard by the workman of any safety guard or other device which he knew to have been provided for the purpose of securing the safety of workmen.

24. **Section 151:** (i) Amount of Compensation: Subject to the provisions of this Act, the amount of compensation shall be as follows, namely: (a) where death results an amount equal to fifty per cent of the monthly wages of the deceased workman multiplied by the relevant factor; or an amount of fifty thousand rupees, whichever is more; (b) where permanent total disablement results an amount equal to sixty per cent of the monthly wages of the injured workman multiplied by the relevant factor, or an amount of sixty thousand rupees, whichever is more; and (ii) On the ceasing of the disablement before the date on which any half-monthly payment falls due, there shall be payable in respect of that half-month a sum proportionate to the duration of the disablement in that half-month.

## J. LGED Environmental Guidelines for Primary Education Infrastructure Supervision, PEDP, January 2017

25. The school should be environmentally sound and sustainable. For this, it has established a dynamic environment for teaching and learning:

- (i) The land for school should be selected so that agricultural land is not affected. Trees and grass should be removed (if available).
- (ii) Construction sites shall not be chosen so that trees are affected.
- (iii) The school building should not be selected that will cause stoppage of cross drainage.
- (iv) Surface water should not be affected by dumping of spoils.
- (v) Construction should be done in such a way that it does not cause sound and dust hazards.
- (vi) Facilities like water supply and sanitation should be maintained in the construction sites for the labors.

## K. Others: Standing Orders on Disaster

26. The 'Standing Orders on Disaster, 2010' is a substantial improvement over the previous editions (English 1999 and Bangla 1887). New features introduced in this edition include, among others, the following: i) an outline of disaster management regulative



framework, ii) an introduction of core groups for emergency response at various levels, iii) multi-agency disaster incident management system, iv) risk reduction roles and responsibilities for all committees and agencies, v) new outlines for local level plans, vi) revised storm warning signals, vii) a report on cyclone shelter design. Conceptually, this edition follows a comprehensive approach emphasizing risk reduction as well as emergency responses relating to all hazards and all sectors. Consequently, it must be followed not only during disasters, but also at normal times. The Standing Order is designed to enhance capacity at all tiers of government administrative and social structures for coping with and recovering from disasters. The document contains guidelines for construction, management, maintenance and use of cyclone shelters. According to the guideline, geographical information system (GIS) technology will be applied at the planning stage to select the location of cyclone shelter considering habitation, communication facilities, distance from the nearest cyclone-center etc. The advice of the concerned District Committee is to be obtained before final decision. The cyclone shelters should have effective communication facilities so that in times of distress there are no unnecessary delays. For this reason, the road communication from the cyclone shelters should link to cities, main roads and neighboring village areas. Provision of emergency water, food, and sanitation and shelter space for livestock during such periods should also be considered for future construction of shelters.

#### **L. Implication of Policies and Legislations with the PEDP4**

27. The relevant policy and legislation documents underscore the importance of environmental consideration in the project planning and implementation to promote sustainable development. These provide the general guidelines to integrate environmental issues with different sector projects and programs. The ECR '97 (with amendments later) is the main legislation in Bangladesh. ECR '97 defined different sectors (industries and projects) as 'Green', 'Orange-A', 'Orange-B' and 'Red' categories, without considering the extent and types of interventions. Construction of multi-storied buildings is considered as the 'Orange B' category in ECR'97. However, there is no fixed definition of a multi-storied building. In practice, building more than 10 storied within Dhaka City (as per building construction rules of RAJUK) and building a more than 6-storied building outside of Dhaka city will be considered as 'Orange B' category. It is expected that the primary schools outside of the Dhaka will not be more than 6- storied building and as such, no environmental clearance will be required. However, if new construction of more than 6-storied building is considered such as the DPE HQ building, Initial Environmental Examination (IEE) and Environmental Management Plan (EMP) would be required to get the environmental clearance from the Department of Environment (DOE) as per ECR'97. In addition, the Environmental Management Framework (EMF) would need to be submitted to the Department of Environment (DOE) for their review and concurrence.

28. The BNBC and BLA have defined certain measures to ensure proper safety and work environment as well as the compensation measures to the laborers. By national law, in order to be compensated, contractors must follow these safety provisions and compensation arrangements. The implementing agency must ensure that the appropriate occupational health and safety provisions have been included in the bidding documents and are being implemented by the contractor.

29. Many primary schools in disaster prone areas are also used as cyclone/flood shelters for the community. If the school will be considered as shelter, the concerned District Committee should be consulted about its location and other information.

30. As per the policies/guidelines on water supply and sanitation, provision for As as well as pH, Fe and salinity safe drinking water and adequate sanitation will have to be ensured for schools. The water quality needs to be monitored to ensure that the supplied water is safe for drinking. The latrines to be constructed in the PEDP3 must be hygienic-confinement of feces



away from the environment, blocking the pathways for flies and other insects, proper ventilation of foul gases, proper maintenance for continual use with improved hygiene practice. It has been decided that WASH blocks having hand washing facilities along with toilets and urinals would be constructed instead of standalone toilets during the remaining period of PEDP3 and also in PEDP4.

## **II. Development Partner's Environmental Safeguards Policy**

### **I. ADB's Safeguard Policy Statement, 2009**

31. All projects funded by ADB must comply with the Safeguard Policy Statement (SPS, 2009) and Operational Manual F1 (2010). The purpose of the SPS is to establish an environmental review process to ensure that projects undertaken as part of programs funded under ADB loans are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards. The SPS requires a number of additional considerations, including (i) project risks and respective mitigation measures and project assurances; (ii) project level grievance redress mechanism including documentation in the EMP; (iii) definition of the project area of influence; (iv) physical cultural resources damage prevention analysis; (v) climate change mitigation and adaptation; (vi) occupational and community health and safety requirements (including emergency preparedness and response); (vii) economic displacement that is not part of land acquisition; (viii) biodiversity conservation and natural resources management requirements; (ix) provision of sufficient justification if local standards are used; (x) ensuring adequate consultation and participation; and (xi) ensuring that the EMP includes an implementation schedule and (measurable) performance indicators.

32. ADB's SPS include operational policies that seek to avoid, minimize, or mitigate adverse environmental and social impacts, including protecting the rights of those likely to be affected or marginalized by the development process. ADB's SPS set out the policy objectives, scope and triggers, and principles for three key safeguard areas: (i) environmental safeguard (ii) involuntary resettlement safeguards, and (iii) Indigenous Peoples safeguards. All three safeguard policies involve a structured process of impact assessment, planning, and mitigation to address the adverse effects of projects throughout the project cycle. The safeguard policies require that impacts are identified and assessed early in the project cycle; plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and affected people are informed and consulted during project preparation and implementation. A basic principle of the three existing safeguard policies is that implementation of the provisions of the policies is the responsibility of the borrower/client. Borrowers/clients are required to undertake social and environmental assessments, carry out consultations with affected people and communities, prepare and implement safeguard plans, monitor the implementation of these plans, and prepare and submit monitoring reports. All the ADB projects are classified into the four environmental assessment categories as shown in the following Table A-1.



**Table A-1: ADB Environmental Screening**

Category	Category 'A'	Category 'B'	Category 'C'	Category FI
Description	The project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works	The project has potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—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	The project is likely to have minimal or no negative environmental impacts	A project is classified as category FI if it involves the investment of ADB funds to, or through, a financial intermediary.
EA Requirements	For a Category 'A' project, an EIA is required	An IEE is required	No environmental assessment is required although environmental implications need to be reviewed	All FIs will ensure that their investments are following applicable national laws and regulations and will apply the prohibited investment activities list.

## II. World Bank Environmental Guidelines

33. The World Bank requires environmental assessment of projects proposed for World Bank's financing to help ensure that they are environmentally sound and sustainable. The World Bank's environmental assessment policy and recommended processing are described in Operational Policy (OP) / Bank Procedure (BP) 4.01: Environmental Assessment. This policy is considered to be the umbrella policy for the World Bank's environmental "safeguard policies" which among others include: natural habitats (OP 4.04), forests (OP 4.36), pest management (OP 4.09), physical cultural resources (OP 4.11)), and safety of dams (OP 4.37). The Operational Policies (OPs) are the statement of policy objectives and operational principles including the roles and obligations of the Borrower and the World Bank, whereas its Bank Procedures (BP) are the mandatory procedures to be followed by the Borrower and the World Bank.

34. The most relevant policy of World Bank in PEDP3 activities is OP/BP 4.01: Environmental Assessment. The PEDP3 has been classified as 'Category B', because the project may have minor site-specific environment impacts, which cannot be determined upfront since the "subprojects" are not defined at this stage. Most of the impacts are not expected to be very significant or irreversible. The project requires partial environmental assessment of "subprojects" before implementation. The partial environmental assessment examines the project's potential negative and positive environmental impacts and



recommends any measures needed to prevent, minimize, mitigate, or compensate for negative impacts and improve environmental performance. In World Bank operations, the purpose of environmental assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted.

35. All World Bank projects are classified into three environmental assessment categories as shown in the following Table A-2.

**Table A-2: World Bank Environmental Screening**

Category	Category 'A'	Category 'B'	Category 'C'
Description	The project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works	The project has potential adverse environmental impacts on human populations or environmentally important areas — including wetlands, forests, grasslands, and other natural habitats — 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.	The project is likely to have minimal or no adverse environmental impacts
Environmental assessment Requirements	For a Category 'A' project, the project sponsor is responsible for preparing a report, normally an EIA	Environmental assessment is narrower than that of Category 'A' environmental assessment. Like Category 'A' environmental assessment, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.	Beyond screening, no further environmental assessment action is required for a Category 'C' project

EIA = environmental impact assessment

### III. AusAID Environmental Management Guidelines

36. The Environmental Management Guide for Australia's Aid Program, 2003 provides an overview of AusAID's Environmental Management System (EMS) and outlines the steps to be followed in environmental assessments of activities and the procedures for managing potential environmental impacts. The EMS forms an integral part of its overall management system and activity cycle. The objective of the EMS is to ensure activities in the Australian Government's aid program that are likely to have impacts on the environment are properly assessed and managed. The EMS enables AusAID to meet its legal obligations under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999). The EMS also provides the means for AusAID to continuously improve environmental performance in aid activities and to demonstrate the agency's commitment to sound environmental management practices. For each policy, program, plan, or activity an initial assessment is carried out to evaluate the environmental impacts by answering environmental marker questions, identifying DAC (subsector) codes, and selecting environment generic field codes. Findings are incorporated into the policy, program, plan or activity implementation and monitoring and evaluation.



### III. Category of the Subprojects under PEDP4

37. According to DOE (ECR 1997 and ECA 1997) classification, categories are: Green, Orange A, Orange B, Red, and Not Listed. (Details are given above in Chapter 4.2).
38. According to DOE, ECR 1995 and ECA 1997:
- (i) Maintenance of school and office buildings/ICT laboratories etc. is categorized as Green;
  - (ii) Expansion of vertical and horizontal direction for additional new class rooms/reconstruction of school and office buildings is categorized as Orange A;
  - (iii) Considering the potential environmental impacts, construction of new school and office buildings (more than 6 storied) can consider as Orange-B.
39. According to ADB classification, categories are: Category A, Category B, Category C, and Category F1. (Details are given above in Chapter 4.2).
- (i) According to ADB classification, maintenance of school and office buildings/ICT laboratories is categorized as Category -F1 (as no impacts);
  - (ii) Expansion in vertical and horizontal direction for additional new class rooms/reconstruction of school and office buildings are categorized as Category- C (as minimal impacts); and
  - (iii) Considering the potential environmental impacts, construction of school and office buildings (more than 6 storied) is categorized as Category- B



## APPENDIX -2: ENVIRONMENTAL CATEGORIZATION OF SUBPROJECTS

1. The subprojects are screened according to type, location, scale and sensitivity and the magnitude of their potential environmental impacts, including direct, indirect, induced and cumulative impacts. Subprojects are classified into the following four categories:

Project Category	Significance and nature of impacts
<b>Category A</b>	A subproject is likely to have significant adverse environmental impacts that are irreversible, diverse or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. <b>Remarks:</b> For this category of the subprojects, an EIA including an EMP is required. It is applicable for none of the subprojects under PEDP4.
<b>Category B</b>	The subproject's potential adverse environmental 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. An IEE is required. <b>Remarks:</b> It is applicable for the subprojects such as construction of new school and office buildings (if any).
<b>Category C</b>	A subproject is likely to have minimal environmental impacts. An IEE/EIA is not required but environmental screening and EMP are required. <b>Remarks:</b> It is applicable for the subprojects such as vertical or horizontal expansion for new classrooms / reconstruction of school and office buildings/water supply/sanitary latrine/wash blocks.
<b>Category FI</b>	A subproject involves the investment of ADB funds to or through a financial intermediary. The financial intermediary must apply and maintain an environmental and social management system unless all the financial intermediary's business activities have no environmental impacts or risks. <b>Remarks:</b> It is applicable for maintenance of the school buildings.

ADB = Asian Development Bank, CHT = Chittagong Hills Tract, FI = Financial Intermediary, IEE = Initial Environmental Examination, EIA = Environmental Impact Assessment, EMP = Environment Management Plan



### APPENDIX -3: ENVIRONMENTAL SCREENING OF SUBPROJECTS

#### Appendix-3.1: SUB-PROJECT IDENTIFICATION FOR CONSTRUCTION OF CLASS ROOMS

Name of the Work/School/Office: \_\_\_\_\_

Name of the District: \_\_\_\_\_

Name of the Upazila, Union & Village: \_\_\_\_\_

EMIS Code of the School: \_\_\_\_\_

#### Appendix-3.2: PROPOSED ACTIVITIES AS PER PRELIMINARY SCHEME DESIGN

Title of Activities	Description of Proposed Activities (Length, width, area, volume, height etc.)	Remarks
Land development	Filling a low land by Sand filling (30ft X 20 ft X 10 ft)	
Construction of main school building (extension)		
Construction of boundary wall		
Construction of internal Roads		
Construction of water supply and sanitary latrine (toilet)/WASH Block		



**Appendix-3.3:** Project Influence Area (PIA) map (please draw an updated site map containing key environmental features and proposed interventions including outlet of the drainage network). The design should harmonize with local surroundings, including landscaping and planning for other uses for all additionally created spaces, proper ventilation, and lighting to minimize negative impacts on environmental quality and property values.

PIA map to be drawn by SSEE team

**SHOW THE PRESENCE OF INFRASTRUCTURE WITHIN 100 FEET FROM SCHOOL BOUNDARY LINE**

# SCHOOL BOUNDARY

(All Physical Features)



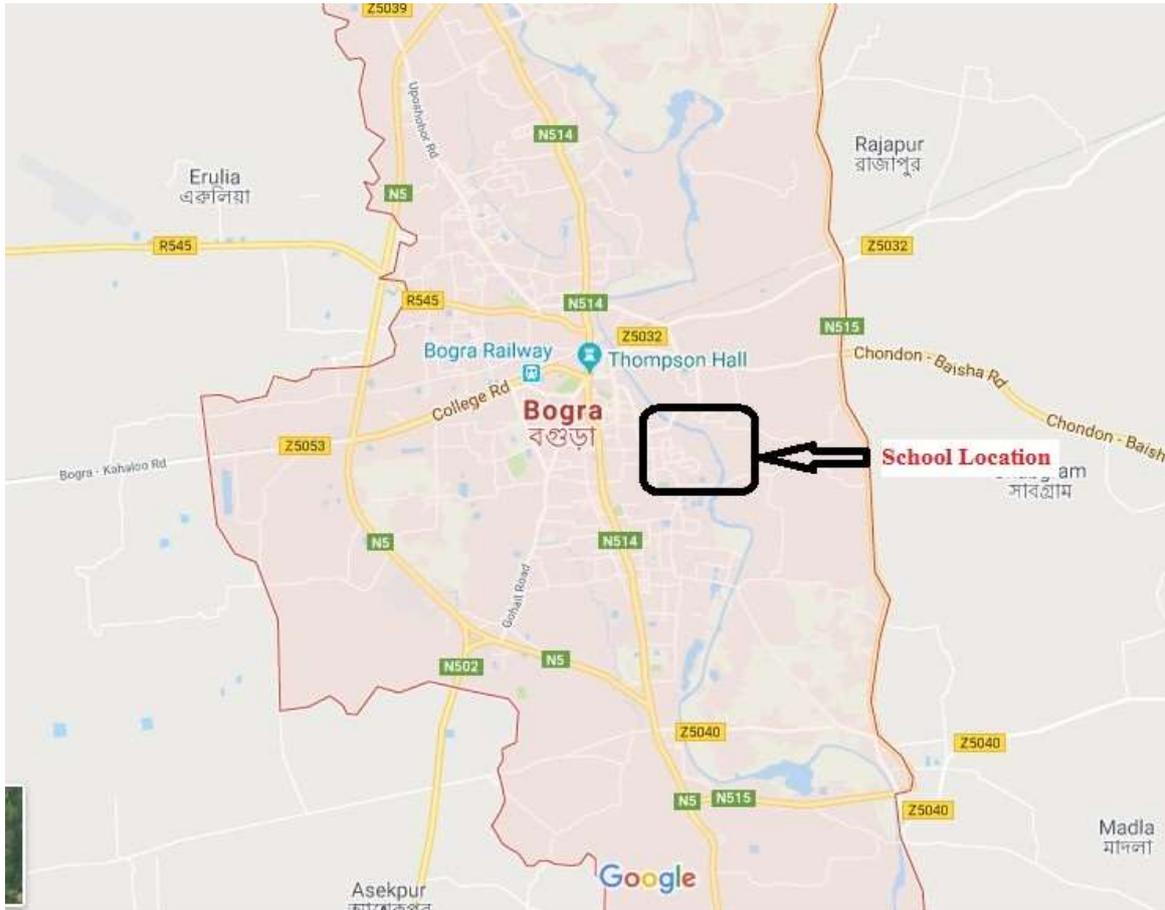


Figure 1: Sample Location Map of the School in Google Map.

**Appendix-3.4: ENVIRONMENTAL SCREENING FOR EXTENSION/RECONSTRUCTION OF SCHOOL & OFFICE BUILDINGS**

Project Name: Fourth Primary Education Development Program (PEDP4)

Date of Screening: \_\_\_\_\_

Category of component based on environmental regulations of the Government of Bangladesh:

Name of School: \_\_\_\_\_

District: \_\_\_\_\_ Upazila: \_\_\_\_\_

Union: \_\_\_\_\_ Village: \_\_\_\_\_

Type of Subproject: \_\_\_\_\_

Major Activities of the Subproject:

SCREENING QUESTIONS	Yes	No	Impact Scale (Low-1 and High-6)	If "Yes", please provide REMARKS
<b>A. Subproject Siting</b> Is the subproject area adjacent to or within any of the following environmentally sensitive areas?				

SCREENING QUESTIONS	Yes	No	Impact Scale (Low-1 and High-6)	If "Yes", please provide REMARKS
Protected Area				
Wetland				
Unstable slope, landslide, erosion area				
Disaster prone area (e.g. flood, cyclone, storm surge)				
<b>B. Potential Environmental Impacts Will the subproject cause.....?</b>				
Loss of agricultural/forest land?				
Negative effects on rare, (vulnerable), threatened, or endangered species of flora and/or fauna or their habitat?				
Negative effects on designated wetlands?				
Negative effects on locally important or valued ecosystems or vegetation?				
Destruction of trees and vegetation?				Mainly due to horizontal extension of school.
Insufficient drainage leading to water logging?				
Negative effects on surface water quality, quantities or flow?				
Block any road/access/approach?				
Will there be any long-term impacts on local hydrology?				
Is adequate water supply to school available?				
Increased noise due to day-to-day construction activities?				
<b>C. Other Potential Impacts Will the subproject cause.....?</b>				
Degradation or disturbance of historical or culturally important sites (mosque, graveyards, monuments etc.)?				
Health risks to labors involved in activities?				
<b>D. Potential Positive Environmental Impacts</b>				
Improved sanitation and personal hygiene				
Enhanced quality of school environment				
<b>E. Environmental assessment category as per GOB</b>				
What is the environment assessment category (DDR or IEE) as per ECA 97 and ECR97 of GOB and ADB's SPS?				As per DOE (ECA & ECR 97), Category- Orange A & ADB, Category-C.
Will project enhance quality of education?				
<b>Score Total</b>				

Notes: Exact screening results will be site specific of subproject. ADB = Asian Development Bank, DDR = Due Diligence Report, ECA = Environmental Conservation Act, ECR = Environmental Conservation Rules, GOB = Government of Bangladesh, IEE = initial environmental examination, SPS = Safeguard Policy Statement

**Type of Environmental Assessment to be undertaken:**

Completed by: \_\_\_\_\_

Designation: \_\_\_\_\_



Filled and signed by LGED/DPHE Assistant Engineer: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed and signed by LGED/ DPHE Executive Engineer:

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Appendix-3.5: SUB-PROJECT IDENTIFICATION (FOR WATER AND SANITATION/WASH BLOCKS FACILITIES)**

Name of the Work/School: \_\_\_\_\_

Name of the District: \_\_\_\_\_

Name of the Upazila: \_\_\_\_\_

EMIS Code of the School: \_\_\_\_\_

**SECTION-3.3: PROPOSED ACTIVITIES AS PER PRELIMINARY SCHEME DESIGN**

Title of Activities	Description of Proposed Activities (Length, width, area, volume, height etc.)	Remarks
Land development	Filling a low land by Sand filling (30ft X 20 ft X 10 ft)	
Construction of WASH Block		
Installation of DTW		



**Appendix-3.6: ENVIRONMENTAL SCREENING OF WATER  
SUPPLY/SANITATION/WASH BLOCKS FACILITIES**

Project Name: Fourth Primary Education Development Program (PEDP4)

Date of Screening: \_\_\_\_\_

Category of component based on environmental regulations of the GOB: \_\_\_\_\_

Name of School/Office: \_\_\_\_\_

District: \_\_\_\_\_ Upazila: \_\_\_\_\_

Union: \_\_\_\_\_ Village: \_\_\_\_\_

Type of Subproject: \_\_\_\_\_

Major Activities under the Subproject:

SCREENING QUESTIONS	Yes	No	Impact Scale (Low-1 and High-6)	If "Yes", please provide REMARKS
<b>A. Subproject Siting</b> <b>Is the subproject area adjacent to or within any of the following environmentally sensitive areas?</b>				
Protected Area				
Wetland				
Unstable slope, landslide, erosion area				In hill tracks areas
Disaster prone area (e.g. flood, cyclone, storm surge)				
<b>B. Potential Environmental Impacts</b> <b>Will the subproject cause.....?</b>				
Loss of agricultural/forest land?				
Negative effects on rare, (vulnerable), threatened, or endangered species of flora and/or fauna or their habitat?				
Negative effects on designated wetlands?				
Negative effects on locally important or valued ecosystems or vegetation?				
Destruction of trees and vegetation?				
Insufficient drainage leading to water logging?				
Negative effects on surface water quality, quantities or flow?				
Block any road/access/approach?				
Will there be any long-term impacts on local hydrology?				
Is adequate water supply to school available?				
Increased noise due to day-to-day construction activities?				
<b>C. Other Potential Impacts</b> <b>Will the subproject cause.....?</b>				
Degradation or disturbance of historical or culturally important sites (mosque, graveyards, monuments etc.)?				
Health risks to labors involved in activities?				



SCREENING QUESTIONS	Yes	No	Impact Scale (Low-1 and High-6)	If "Yes", please provide REMARKS
<b>D. Potential Positive Environmental</b>				
Improved sanitation and personal hygiene				
Enhanced quality of school environment				
<b>E. Environmental assessment</b>				
What is the environment assessment category (DDR or IEE) as per ECA 97 and ECR97 of GOB and ADB's SPS?				As per DOE (ECA & ECR 97), Category- Orange A & ADB, Category-C.
Will project enhance quality of Education?				
<b>Score Total</b>				

ADB = Asian Development Bank, DDR = Due Diligence Report, ECA = Environmental Conservation Act, ECR = Environmental Conservation Rules, GOB = Government of Bangladesh, IEE = Initial Environmental Examination, SPS = Safeguard Policy Statement;

**Type of Environmental Assessment to be undertaken:**

Completed by: Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Filled and signed by LGED/ DPHE Assistant Engineer:

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed and signed by LGED/ DPHE Executive Engineer: \_\_\_\_\_

Name: \_\_\_\_\_



**APPENDIX -4: TEMPLATE FOR ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

**Appendix-4.1: Mitigating/Enhancement Plan for Environmental Impacts (During Construction)**

Environmental Issues/Impacts Requiring Mitigation	Mitigation/Enhancement Measures	Implementation By	Supervision By

Note: The above Table should be filled with the help of Table 2 of the EMF Report.

**Appendix-4.2: Mitigating/Enhancement Plan for Environmental Impacts (During Operation)**

Environmental Issues/Impacts Requiring Mitigation	Mitigation/Enhancement Measures	Implementation By	Supervision By

Note: The above Table should be filled with the help of Table 3 of the EMF Report.

**Appendix-4.3: Environmental Monitoring Plan (During Construction Stage)**

Environmental Issues/Impacts to be Monitored	Monitoring Indicators	Location	Frequency	Implementation By	Monitoring By

Note: The above Table should be filled with the help of Table 5 of the EMF Report.

**Appendix-4.4: Environmental Monitoring Plan (During Operation Stage)**

Environmental Issues/Impacts to be Monitored	Monitoring Indicators	Location	Frequency of Monitoring	Implementation By	Monitoring By

Note: The above Table should be filled with the help of Table 6 of the EMF Report.



## APPENDIX -5: CLAUSES FOR BIDDING DOCUMENTS

1. The following environmental clauses will be included in the bidding document of the subprojects:

- (i) The contractor will erect sufficient number of temporary sanitary toilets and shelter both for male and female workers at the site with proper sanitation system.
- (ii) The contractor will ensure supply of pure drinking water to the workers during construction.
- (iii) The contractor will provide First Aid Box. Personnel Protective Equipment (PPE) such as safety helmets, safety shoes, hand gloves, goggles, face mask, ear plugs etc. and security for the workers at the sites.
- (iv) The contractor will provide hygienic accommodation for the migrant workers (if any).
- (v) The contractor will stack materials systematically in a safe place so that pedestrians do not fall in troubles/ accident and will not occupy any class room.
- (vi) The contractor will not engage any child labor (below 18 years old) and pregnant women in the work.
- (vii) The contractor will not pollute any nearby source of surface water by any of their activities.
- (viii) The contractor will collect filling earth from nearby rivers, silted up ponds and fallow lands (if required) to avoid agricultural land loss.
- (ix) The contractor will reduce dust emission by watering during the dry period of the construction.
- (x) The contractor will try to minimize noise pollution.
- (xi) The contractor will engage local people specially Project Affected Persons (PAPs) and vulnerable destitute women.
- (xii) The contractor will not hamper the drainage network of the area by any of their activities.
- (xiii) The contractor will not cut or damage any tree in and around the project area.
- (xiv) The contractor will not set any temporary burner under any tree.
- (xv) No class rooms would be used by the contractors for the construction works.

2. In addition, the contractor should follow environment management plan (EMP) of the subproject including ECP1-11 (Appendix -6).



## APPENDIX -6: ENVIRONMENTAL CODES OF PRACTICE (ECP)

1. The objective of the Environmental Codes of Practice (ECP) is to address less significant environmental impacts and all general construction related impacts of the proposed project implementation. The ECP will provide guidelines for safe operating practices and environmental management to be followed by the contractor for sustainable management of all project related environmental issues and potential impacts. The ECP developed for the PEDP4 are given below:

### ECP-1: WASTE MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>General Waste</b>	Soil, water and air pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall: <ul style="list-style-type: none"> <li>▪ Ensure proper collection and disposal of solid wastes within the construction camps</li> <li>▪ Insist waste separation by source means organic wastes in one bin/pot and inorganic wastes in another bin/pot at household level.</li> <li>▪ Store inorganic wastes in one chamber and inorganic waste in other chamber of the covered three chambered small concrete pit in the suitable location of the construction camp. When fill the chamber, inorganic wastes can be sold to the vender and organic wastes can be covered with earth for converting fertilizer. The local farmers can use fertilizer for their agricultural lands free of cost.</li> <li>▪ Do not burn/throw in to the waterbodies any general wastes.</li> </ul>
<b>Construction Wastes</b>	Construction waste and environmental impacts due to improper waste management practices	The Contractor shall: <ul style="list-style-type: none"> <li>▪ Collect construction wastes (such as piece of rod, wood, bamboo, tin sheet, brick etc.) separately from the sources and store in a designated area in the construction camp for re use and avoiding potential environmental pollution.</li> <li>▪ Collect and store all hazardous wastes appropriately in container/bunded area and make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. Do not dispose hazardous liquid waste on soils.</li> <li>▪ Do not burn/throw in to the waterbodies any construction wastes.</li> </ul>

### ECP-2: SURFACE/GROUND/DRINKING WATER MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Drinking/Ground Water</b>	Ground/Drinking water at shallow depths is contaminated with arsenic and other parameters and hence not suitable for drinking purposes.  Pollution of ground/drinking water resources.	The Contractor shall: <ul style="list-style-type: none"> <li>▪ Select aquifers for drinking water free from arsenic and other contaminants.</li> <li>▪ Tube wells will be installed with due regard for the surface environment, protection of groundwater from surface contaminants, and protection of aquifer cross contamination.</li> <li>▪ According to BNBC, toilets should be min. 10m distance from the tube wells.</li> </ul>
<b>Discharge from construction sites</b>	During construction both surface and ground water quality may be deteriorated due to construction activities, disposal of wastes into the nearby waterbodies (if any), connection of toilets with	The Contractor shall: <ul style="list-style-type: none"> <li>▪ Install temporary drainage works (drains) in areas required for around storage areas for construction materials.</li> <li>▪ Divert runoff from undisturbed areas around the construction site.</li> <li>▪ Stockpile materials away from drainage lines.</li> <li>▪ Prevent disposal of all solid and liquid wastes into</li> </ul>



Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	the water bodies and accidental spillage of liquid waste.	the nearby waterbodies and on the areas other than designated waste dumping sites.

### ECP-3: DRAINAGE MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Excavation and earth works, and construction yards</b>	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth.	The Contractor shall: <ul style="list-style-type: none"> <li>Prepare a program for prevent/avoid standing waters, which LGED/DPHE will verify in advance and confirm during implementation.</li> <li>Rehabilitate internal road side drains immediately if damaged by any construction activities.</li> <li>Construct wide drains instead of deep drains to avoid earth deposition in the drains that require frequent cleaning.</li> <li>Protect natural slopes of drainage channels to ensure adequate storm water drains.</li> <li>Regularly inspect and maintain all drains to assess and alleviate any drainage congestion problem.</li> </ul>
<b>Ponding of water</b>	Health hazards due to mosquito breeding	<ul style="list-style-type: none"> <li>Do not allow ponding of water especially in the drains and in the construction camps.</li> <li>Discard all the storage containers that are capable of storing of water, after use or store them in inverted position.</li> </ul>

### ECP-4: TOP SOIL MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Land clearing and earth works of construction camp</b>	Filling of school premises which are flooded during high flood will impact the top clay soils that can be used later on the top of the sandy filling surface.	The Contractor shall: <ul style="list-style-type: none"> <li>Strip the top soil to a depth of min 0.50m and stock piles of height not exceeding 2m.</li> <li>Remove unwanted materials from top soil like grass, roots of trees and similar others.</li> <li>Locate topsoil stockpiles in areas outside drainage lines and protect from erosion.</li> <li>Construct silt fences around the topsoil stockpiles to prevent loss of topsoil.</li> <li>Spread the topsoil to maintain the physic-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites.</li> <li>Prior to the re-spreading of topsoil over the subproject filling areas, the ground surface will be ripped to assist the bonding of the soil layers, water penetration and re-vegetation.</li> </ul>

### ECP-5: DUST/AIR QUALITY MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Construction vehicles</b>	Air quality can be affected by dust, generated due to movement of vehicles and combustion of fuels.	The Contractor shall: <ul style="list-style-type: none"> <li>Fit vehicles with appropriate exhaust systems and emission control devices.</li> <li>Operate the vehicles in a fuel-efficient manner.</li> <li>Cover haul vehicles carrying dusty materials moving outside the construction site.</li> </ul>



Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		<ul style="list-style-type: none"> <li>▪ Impose speed limits on all vehicle movement at the worksite to reduce dust emissions.</li> <li>▪ Control the movement of construction traffic.</li> <li>▪ Service all vehicles regularly to minimize emissions.</li> <li>▪ Watering filling sandy earth surface and cover asap by top soils.</li> </ul>
<b>Construction equipment</b>	Air quality can be affected by emissions from equipment and combustion of fuels.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors.</li> <li>▪ Machinery causing excess pollution (e.g. visible smoke) will be banned immediately from construction sites.</li> <li>▪ Service all equipment regularly to minimize emissions.</li> </ul>
<b>Construction activities</b>	Dust generation from construction sites, material stockpiles specially dredged material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	<ul style="list-style-type: none"> <li>▪ Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. dry period and high winds). Stored materials such as sand shall be covered by vegetation/grass-turfing.</li> <li>▪ Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations.</li> </ul>

#### ECP-6: NOISE MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Construction vehicles</b>	Noise quality will be deteriorated due to vehicular traffic	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures.</li> <li>▪ Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, use of cell phone during driving etc.</li> <li>▪ Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site.</li> </ul>
<b>Construction equipment</b>	Noise may have an impact on workers, local residents, wildlife, livestock, etc.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Appropriately site all noise generating activities to avoid noise pollution to local residents.</li> <li>▪ Use the quietest available plant and equipment.</li> <li>▪ Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment.</li> <li>▪ Install temporary noise barriers by screen, tin, wood around generators to reduce noise levels.</li> <li>▪ Avoid the unnecessary use of alarms, horns and sirens.</li> <li>▪ Use ear plugs in noisy areas of the construction activities.</li> </ul>
<b>Construction activities</b>	Noise and vibration may have an impact on workers, residents, wildlife,	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Train the operators of construction equipment on potential noise problems.</li> <li>▪ Employ best available work practices on-site to minimize</li> </ul>



Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	livestock	<p>occupational noise levels.</p> <ul style="list-style-type: none"> <li>Install temporary noise control barriers by tin sheets, screen etc. where appropriate.</li> <li>Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas.</li> </ul>

### ECP 7: TOPOGRAPHY LANDSCAPING

Project Activities/Impact Source	Environmental Impacts	Mitigation Measures/Management Guidelines
<b>Earthworks</b>	<p>Almost plain land of the existing Project area will be affected by the construction of various project activities especially earthworks will change topography and disturb the natural rainwater/flood water drainage and change the local landscape.</p>	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Ensure the topography of the final surface of the all raised subproject land areas are conducive to enhance natural draining of rainwater/flood water.</li> <li>Keep the finished surface of all the raised lands free from any kind of depression that insists water logging.</li> <li>Undertake mitigation measures for prevention by grass-turfing and tree plantation, where there is a possibility of rain-cut that will change the shape of topography.</li> <li>Cover immediately the uncovered open surface that has no use of construction activities with grass—cover and tree plantation to prevent soil erosion and bring improved landscaping.</li> </ul>

### ECP 8: PROTECTION OF FLORA

Project Activities/Impact Source	Environmental Impacts	Mitigation Measures/Management Guidelines
<b>Vegetation clearance</b>	<p>Local flora within the existing school premises are important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to school students and teachers. As such damage to flora has negative environmental impacts.</p>	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Reduce disturbance to vegetation.</li> <li>Use appropriate and minimum size of machine to avoid disturbance to adjacent vegetation's.</li> <li>Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill etc.</li> <li>Do not burn off cleared vegetation — where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping.</li> <li>Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from.</li> <li>Ensure excavation works occur progressively and re-vegetation done at the earliest.</li> <li>Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction.</li> </ul>

### ECP-9: CONSTRUCTION CAMP MANAGEMENT

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Siting and Location</b>	Campsites for construction	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Locate the construction camp at areas which are acceptable</li> </ul>



Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>of construction camps</b>	workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	<p>from environmental, cultural or social point of view.</p> <ul style="list-style-type: none"> <li>Consider the location of construction camps away from communities to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities.</li> <li>Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities to maintain effective surveillance over public health, social and security matters.</li> </ul>
<b>Construction Camp Facilities</b>	Lack of proper infrastructure facilities such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	<p>Contractor shall provide the following facilities in the camp sites:</p> <ul style="list-style-type: none"> <li>Adequate accommodation for all workers. Separate accommodation for male and female workers.</li> <li>Safe and reliable water supply. Water supply from tube wells that meets the national standards.</li> <li>Hygienic sanitary facilities for all labors. According to BNBC, the minimum number of toilet facilities required is one toilet for every ten persons.</li> </ul>
<b>Disposal of wastes</b>	Management of wastes is crucial to minimize impacts on the environment	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Ensure proper collection and disposal of solid wastes within the construction camps</li> <li>Insist waste separation by source; organic wastes in one bin/pot and inorganic wastes in another bin/pot at household level.</li> <li>Store inorganic wastes in one chamber and inorganic waste in other chamber of the covered three chambered small concrete pit in the suitable location of the construction camp. When fill the chamber, inorganic wastes can be sold to the vender and organic wastes can be covered with earth for converting fertilizer. The local can use fertilizer for their agricultural lands free of cost.</li> </ul>
<b>Health and safety</b>	There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint designated first aider or nurse.</li> <li>Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies. Regular mosquito repellent sprays during monsoon.</li> <li>Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers.</li> </ul>

### ECP-10: SENSITIVE/CULTURAL ISSUES

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
<b>Construction activities near sensitive/cultural sites (such as mosque, mandir, pagoda, madrasha,</b>	Disturbance from construction works to the sensitive/cultural sites, and contractors lack of knowledge on cultural issues cause social disturbances.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>Communicate to the public through community consultation and announcement regarding the scope and schedule of construction, as well as certain construction activities causing disruptions.</li> <li>Do not block access to sensitive/cultural sites, wherever possible.</li> </ul>



Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
permanent water body, eidgah, garden etc.)		<ul style="list-style-type: none"> <li>▪ Stop construction works that produce noise (particularly during prayer time) should there be any mosque/religious institute close to the construction sites and users make objections.</li> <li>▪ Take special care when working next to a sensitive/cultural institution.</li> <li>▪ Show appropriate behavior with all construction workers especially women and elderly people.</li> <li>▪ Resolve cultural issues in consultation with local leaders and DPE/LGED/DPHE.</li> <li>▪ Establish a mechanism that allows local people to raise grievances arising from the construction process.</li> </ul>

### ECP 11: OCCUPATIONAL HEALTH AND SAFETY

Project Activities/Impact Source	Environmental Impacts	Mitigation Measures/Management Guidelines
<b>Best practices</b>	Construction works may pose health and safety risks to the construction workers to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to several (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, vector transmitted diseases etc.), (ii) risk factors resulting from human behaviour and (iii) road accidents from construction traffic.	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guideline's) and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the GOB (e.g. The Bangladesh Labor Code, 2006).</li> <li>▪ Provide the workers with a safe and healthy work environment, considering inherent risks in its construction activity and specific classes of hazards in the work areas.</li> <li>▪ Provide Personal Protection Equipment (PPE) for workers, such as safety shoes, safety helmets, face masks, hand gloves, protective clothing, goggles, full—face eye shields, and ear plugs. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones.</li> <li>▪ Safety procedures include provision of information, training on use of hazardous materials etc.</li> <li>▪ Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps to maintain effective surveillance over public health, social and security matters.</li> </ul>
	Child and pregnant women	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Not hire children of less than 18 years old and pregnant women in accordance with the Bangladesh Labour Code, 2006.</li> </ul>
<b>Accidents</b>	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	<ul style="list-style-type: none"> <li>▪ Provide health care facilities and first aid facilities are readily available.</li> <li>▪ Prepare report on occupational accidents/incidents (if any).</li> <li>▪ Prevent accidents, injury, and disease arising from, associated with, or occurring during work by minimizing, so far as reasonably practicable, the causes of hazards.</li> <li>▪ Provide awareness to the construction drivers to strictly</li> </ul>



Project Activities/Impact Source	Environmental Impacts	Mitigation Measures/Management Guidelines
		<p>follow the driving rules.</p> <ul style="list-style-type: none"> <li>▪ Provide adequate lighting in the construction areas.</li> </ul>
<b>Construction Camps</b>	<p>Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.</p>	<p>The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ECP-9: Construction Camp Management.</p> <ul style="list-style-type: none"> <li>▪ Adequate ventilation facilities.</li> <li>▪ Safe and reliable water supply. Water supply from tube wells that meets the national standards.</li> <li>▪ Hygienic sanitary facilities and sewerage system.</li> <li>▪ Storm water drainage facilities.</li> <li>▪ Safe storage facilities for chemicals.</li> <li>▪ Solid waste collection and disposal system in accordance with ECP-1.</li> <li>▪ Arrangement for trainings.</li> <li>▪ Security fence at least 2 m height.</li> <li>▪ Sick bay and first aid facilities.</li> </ul>
<b>Water and sanitation facilities at the construction sites</b>	<p>Lack of water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.</p>	<p>The contractor will follow ECP-2 and 9.</p>
<b>Trainings</b>	<p>Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.</p>	<p>The Contractor shall:</p> <ul style="list-style-type: none"> <li>▪ Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI)).</li> <li>▪ Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training should consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate.</li> </ul>



## **APPENDIX -7: SAMPLE TERMS OF REFERENCE OF ENVIRONMENT SPECIALIST**

1. The environmental specialist, preferably with the post-graduation specialization in environmental engineering/environmental science, shall have at test 5 years of working experience related to preparation of EA, integration of environmental and social issues in the design, implementation and operation of the project preferably rural infrastructure projects. Experience in environmental management of school infrastructure and health and safety is preferred.

2. The specific roles and responsibilities of the environmental specialist shall include, but not limited to the following:

- (i) Lead the overall EMF implementation and capacity building in LGED education unit.
- (ii) Monitor and review the certain percentage of screening process for “subprojects”.
- (iii) Review costing subproject specific EMP.
- (iv) Ensure inclusion of EMP and its cost in bidding document.
- (v) Supervise the implementation of the EMP by the Contractors.
- (vi) Develop good practice construction guidelines to assist the contractors in implementing the EMP.
- (vii) Carry out environmental monitoring to ensure compliance with the EMP and GOB requirements.
- (viii) Prepare and submit regular environmental monitoring and implementation progress reports.
- (ix) Continuously interact with the implementing agency regarding the implementation of the environmental compliance.
- (x) Work closely Training team and ensure proper capacity building of staff and contractors.

### **Qualification of Environmental Specialist:**

- (i) At least master’s degree in environmental science or environmental engineering.
- (ii) At least 5 years of experience in the field of environment. Experience in environmental management of school infrastructure and health and safety is preferred.
- (iii) Experience in rural infrastructure development projects or other projects in similar nature.
- (iv) Experience in education project is preferable.
- (v) Ability to lead, organize and co-ordinate.
- (vi) Good verbal and written communication skills in both English and Bangla.
- (vii) Demonstrated interpersonal skills, and proven ability to work in a different multicultural context.



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