



BANGLADESH LAND PORT AUTHORITY

CONTRACTOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (C-ESMP) FOR DEVELOPMENT OF SHEOLA LAND PORT

Development of Sheola Land Port under the Project Bangladesh Regional Connectivity Project-1

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EXECUTIVE SUMMARY

Introduction

The Contractor Environmental and Social Management Plan (C-ESMP) describes and recommends the systems and procedures to ensure management of project specific potential environmental impacts including natural, physical, social and all other relevant issues associated with and arising from construction work and relevant activities for the Development of Sheola Land Port at Biani Bazar, Sylhet under Bangladesh Regional Connectivity Project-1. The C-ESMP is a site and work specific document mentioning detailed action plan to mitigate the environmental and social impacts by proper planning, implementation, appropriate documentation, checking of construction related activities through regular monitoring and evaluation and performing necessary preview and modification of management system if needed in order to mitigate impending environmental and social hazards. The C-ESMP will necessarily provide a standard guideline of activities as well as responsibility to both authority and service providers to address the health security, to give assurance of environmental and social safety and to ensure quality management system etc. that will be a safeguard for preservation of key environmental and social issues in accordance with relevant national and international rules and regulations and policies.

Relevant Environmental Laws and Policies

At present, there are environmental standards in operation in Bangladesh based on the followings: National Environmental Policy 2018; National Environment Policy, 1992; National Environment Management Action Plan, 1995; Environment Conservation Rules, 1997 & Subsequent Amendments National Land-Use Policy, 2001; Bangladesh National Building Code (BNBC), 2017 (Draft); The Noise Pollution (Control) Rules, 2006; World Bank Environmental and Social Safeguard Policies;

Environmental Policies; Social Policies; WBG Environmental, Health and Safety Guidelines Social Policies; WBG Environmental, Health and Safety Guidelines.

Description of the Project

The project envisages Construction of Sheola Land Port at Biani Bazar upazila in Sylhet district. The work of the project consists of land development with huge quantity of filling sand, construction of RCC pavement & piles, combined and isolated footing foundation, retaining walls and superstructure of the building including RCC columns, beams and slabs, reinforcing works, masonry works etc. Necessary electrical and plumbing embedded works, including plumbing and sanitary, deep tube well, landscaping etc. works as per the schedule of items and in accordance with contract, drawings and specifications, as well as working drawings and instructions issued by the Engineer.

Potential Impacts and Mitigation Program

The mitigation measures for reducing/controlling/minimizing of the potential environmental impacts have been formulated and presented in this C-ESMP Report. The overall impacts are presented below:

- Ground/drinking water quality;
- Dust and Air pollution;
- Noise pollution;

- Waste pollutions (General, Hazardous and Construction Wastes);
- Surface Water Pollution; Soil Pollution;

A bunch of management guideline has been formulated in details in related Chapter for mitigating the environmental impacts due to construction of different components of land port development.

Monitoring Program

The Monitoring Program (qualitative and quantitative) is to be as a part of the C-ESMP to monitor the implementation of the mitigation measures for the potential environmental impacts of the building. The objectives of the Monitoring Program are to:

- Monitor the actual impact of the works on physical, biological and socioeconomic receptors within the project corridor for indicating the adequacy of the ESIA.
- Recommend mitigation measures for any unexpected impact or where the impact level exceeds that anticipated in the ESIA.
- Ensure compliance with legal and community obligations including safety on construction sites.
- Monitor the rehabilitation of borrow areas and the restoration of construction campsites as described in the ESIA.
- Ensure the safe disposal of excess construction materials;
- Appraise the adequacy of the ESIA with respect to the project's predicted long-term impacts on the corridor's physical, biological and socio-economic environment.
- Evaluate the effectiveness of the mitigation measures proposed in the ESMP and recommend improvements, if and when necessary;
- Compile periodic accident data to support analyses that will help minimize future risks; and
- Monitor the survival rate of avenue plantations.

Implementation of the C-ESMP

The successful implementation of the C-ESMP is dependent upon clearly defining and documenting responsibilities and procedures. The C-ESMP, its implementation and management will be subject to the same quality assurance and audit procedures that apply to the total project as specified in the Project Management Plan. The “monitoring and auditing” of the environmental performance of a project during construction will occur generally as follows:

- Monitoring, reporting and auditing by the contractor during the construction period as specified in the C-ESMP.
- Monitoring, reporting and auditing by Supervising Engineer during the construction period.

In addition, complaints by members of the public, either directly or via the Department of Environment (DoE), Govt. of Bangladesh, may require a non-conformance report.

Environmental Management System of Contractor

One of the main tasks of the contractor for this project is to develop an Environmental Management System (EMS). The objective of the EMS is to identify, monitor, evaluate, audit, and report on the potential environmental impacts due to implementation of the building under Bangladesh Regional Connectivity Project-1. Environmental Management System of the Contractor has been given in detail in this report.

Conclusion

This C-ESMP provides a comprehensive list of mitigation measures and monitoring procedures for the construction phase of the under construction Sheola land port development. At this stage it includes mitigation measures committed to as a result of the environmental monitoring; however, it is a 'live' document. This C-ESMP is intended to inform more detailed ESMP for site-specific activities, such as noise, water and dust control as appropriate. As part of the monitoring process, designated environmental/health safety personnel will be presented on-site during the construction activities.

CHAPTER 1

1.1 INTRODUCTION

The C-ESMP is a site and work specific document mentioning detailed action plan to mitigate the environmental impacts by proper planning, implementation, appropriate documentation checking of construction related activities through regular monitoring and evaluation and performing necessary preview and modification of management system if needed in order to mitigate impending environmental hazards.

The C-ESMP includes the environmental and social mitigation program, developed by the contractor, and also a monitoring program to continuously evaluate the environmental and social impacts during construction stage. The C-ESMP will form a part of the supplementary contract documents and will be used as monitoring tool for compliance. Furthermore, the C-ESMP includes an overview of the roles and responsibilities of parties involved in the “C-ESMP of the Development of Sheola land port under Bangladesh Land Port Authority (BLPA) “Bangladesh Regional Connectivity Project-1 (BRCP-1)”. The Contractor’s Environmental and Social Management Plan (C-ESMP) in this report shows the division of roles and responsibilities during construction within the contractor, with respect to environmental and social monitoring, evaluation of monitoring results, reporting etc.

1.2 Objective of C-ESMP

The main objective of the C-ESMP is to provide a standard guideline and approach to preserve key environmental aspects by preventing and controlling environmental pollution and the management of nuisance, resulting from the Construction of Sheola Land Port Package No. W-2; under the Bangladesh Land Port Authority, Ministry of Shipping, Bangladesh Regional Connectivity Project-1 in accordance with the conditions of contract and employer’s requirements. The C-EMP applies to Contractor Organization, their sub-contractors and employees while carrying out any form of construction activity of the Construction of Sheola Land Port.

The objectives of C-ESMP are listed below:

- To detect any disruption of environment according to national/project standard;
- Provide a standard guideline for management and control of the construction related mitigation measures identified in the environmental and social management plan (ESMP);
- Provide a direction to comply with all relevant national and international policies and legislations;
- Promote best environmental on-site practices during the construction phase.

1.3 Scope of C-ESMP

The key approaches of the C-ESMP are to ensure environmental safety and security in accordance with environmental laws and regulations during the construction phase. The C-ESMP provides the scope for environmental monitoring determines the parameters to be measured the frequency of monitoring and the actions to be taken in the event of environmental parameters being exceeded, checking of activities through environmental monitoring and evaluation and finally review and modification of activities/system if required. The Contractors organization, sub-contractors, their employees and all other responsible persons obligatory need to comply with the practice and adhered to the C-ESMP during construction phase of the project.

The main scope of works of the C-ESMP includes:

- Identify the Environmental concerns due to construction;
- Implementation of the mitigation measures to eliminate or reduce negative impacts;
- Implementation of the mitigation and enhancement measures to offset or compensate irreversible or residual impacts;
- Monitoring of the enhancement measures;
- Implementation schedule of the project and ESMP.

CHAPTER 2

2 RELEVANT ENVIRONMENTAL LAWS AND POLICIES

2.1 Environmental Related Policies in Bangladesh

- National Environmental Policy 2018
- National Environment Policy, 1992
- National Environment Management Action Plan, 1995
- Environmental Conservation Act, 1995 & Subsequent Amendments
- Environment Conservation Rules, 1997 & Subsequent Amendments
- National Land-Use Policy, 2001
- Bangladesh National Building Code (BNBC), 2017 (Draft)
- The Noise Pollution (Control) Rules, 2006
- World Bank Environmental and Social Safeguard Policies
- WBG Environmental, Health and Safety Guidelines

2.2 Other Related National Policies

The Government of Bangladesh has framed various laws and regulations for protection and conservation of natural environment. These legislations with applicability to this project are summarized below in Table 2-1.

Table 2-1: Applicability of Key Environmental Legislation

Sl. No.	Act/Rule/Law/ Ordinance	Responsible Agency-Ministry/ Authority	Key Features-Potential Applicability
1.	Water Pollution Control Ordinance 1970	Ministry of Water Resources	The Ordinance adopt measures for the prevention, control and abatement of existing or potential pollution of any waters, including construction, modification, extension or alteration of disposal systems; provide information to the Board regarding wastes, sewerage or treatment works; and permit any officer to inspect and search land and buildings.
2.	Bangladesh Labor Law, 2006	Ministry of Labor	This Act pertains to the occupational rights and safety of factory workers and the provision of a comfortable working environment and reasonable working conditions
3.	National Land use Policy, 2001	Ministry of Land	The plan deals with land uses for several purposes including agriculture (crop production, fishery and livestock), housing, forestry, industrialization, railways and roads, tea and rubber. The plan basically identifies land use constraints in all these sectors.
4.	National Forest Policy and Forest Sector Review (1994, 2005)	Forest Department, MOEF	<ul style="list-style-type: none"> • Afforestation of 20% land. • Bio-diversity of the existing degraded forests • Strengthening of agricultural sector • Control of global warming, desertification, control of trade in wild birds and animals • Prevention illegal occupation of the forestlands, tree felling and hunting of wild animals.
5.	National Biodiversity Strategy and Action Plan (2004)	Ministry of Environment and Forest	<p>Conserve, and restore the biodiversity of the country;</p> <ul style="list-style-type: none"> • Maintain and improve environmental stability of ecosystems; • Ensure preservation of the unique biological heritage of the nation for the

CHAPTER 3

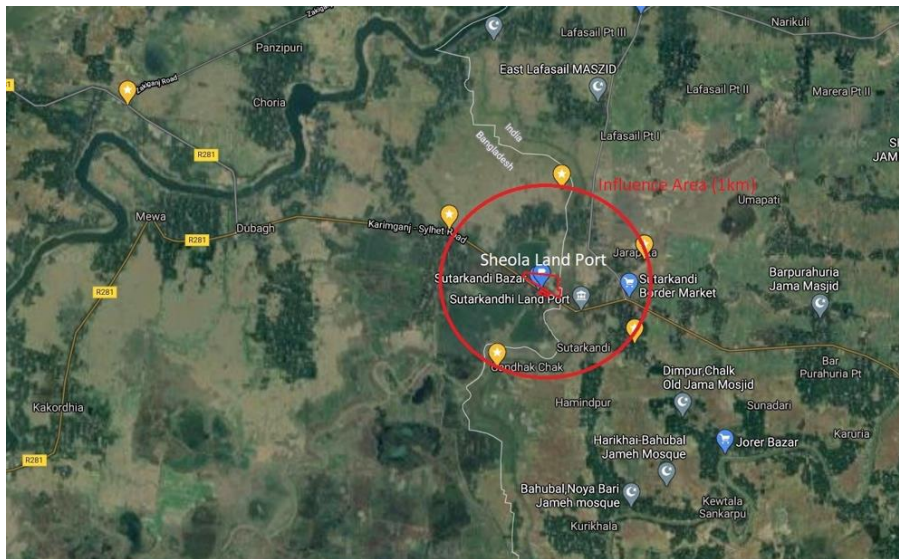
3.1 PROJECT DESCRIPTION

Description of the Project:

The proposed facilities to be built are:

- **Port facilities:** Administrative building, Ware houses, Transshipment Sheds, Open stack yards, and Bangladesh and India Truck Terminals;
- **Service Areas:** Barrack, Dormitory, Restaurant, Substation/Generator and Fuel house, and Mosque;
- **Infrastructure:** Land Development, Fencing/Boundary wall with RCC piling or Footing, Internal road network, Drains, Footpath, Parking, and Landscaping, Tree plantation along the Boundary wall and Walkway;
- **Electrification Works:** Area lighting, Boundary wall lighting, Footpath lighting, Road lighting, Substation equipment and Diesel generators, and Solar power;
- **Water Supply and Sanitation Works:** Water supply and Sanitation facilities
- **Safety and Security:** Fire protection and detection, First aid facilities, CCTV system, Intruder alarm system, Car park management, Access control system, Physical security, and Watch towers.

Other facilities like as separate toilet facilities for women, women-only waiting rooms and differently abled users, and address safety-related issues for all users. All terminals will be provided with separate women counters, waiting rooms and toilets for women passengers, and ramps for movement of differently abled people and need to be provided with drinking water facilities.



Project Location Map

3.2 Project Data Sheet

Table 3-1: Project Summary

Sl. No	Item	Description
1	Name of The Project	Bangladesh Regional Connectivity Project-1, (BRCP-1)
2	Name of The Client	Bangladesh Land Port Authority (BLPA)
3	Name of The Contractor	MM Builders & Engineers Ltd.- M/S Anik Trading Corporation JV
4	Lender	World Bank Group
5	Date of Commencement	11/10/2020
6	Date of Completion	24 Month
7	Location	Village-Konagram, UP-3No Dubag, Upazila- Beanibazar, District- Sylhet.
8	Total Site Area	89,144.164 m ²

Sources: Project Document

3.3 Technical Activities of the Project

The major activities carried out during construction phase of the proposed project include the following:

- Mobilization of personnel, material and equipment (including establishment of project office and labor shed, etc.);
- Conducting topographical survey to identify the dips, notches and undulations etc.;
- Providing layout of each buildings, ancillary facilities and others based on the topographical survey;
- Ground preparation according to the topographical survey;
- Dismantle and demolishing of existing semi-pucca sheds and one and two story building within the project site;
- Earth excavation works with shore protection measures for the footing of column foundation construction;
- Construction of ground floor and fix the plinth level above the HFL;
- Construction of the building starting with the construction of the foundation followed by steel-framed superstructure;
- Installation of the electro-mechanical equipment including, generators, transformers and air-conditioning system;
- Internal road and drain construction;
- Security system, traffic and pedestrian management system;
- Landscaping/tree plantation.

CHAPTER 4

4. Sample Monitoring of Testing, Result and Analysis

4.1 Sampling and analysis

Sampling and analysis is carried out for air, noise and water quality. The coordinates of sampling locations are shown in Figure 4.1 while the photographs from sampling locations are shown below. Field test for air and noise was done on October 8, 2020 and sample of water and soil was collected on same date. Further noise quality was tested during day and night on 22nd February 2021. Details analysis is given in the paragraphs below:

Figure 4.1: Locations of the Sampling Sites



4.2 Ambient Air Quality

Ambient air quality in the project area is within the DoE standards. Maximum concentrations of PM_{10} is about $23 \mu\text{g}/\text{m}^3$ and suspended particulate matter is about $82 \mu\text{g}/\text{m}^3$ both from the west side of project near to Sutarkandi Bridge. The ambient air quality and the DoE standards are given in Table 4.1.

Table 4.1: Ambient Air Quality

SN	Location	Ambient Air Quality in $\mu\text{g}/\text{m}^3$				
		SPM ($\mu\text{g}/\text{m}^3$)	PM ₁₀	PM _{2.5}	SO _x	NO _x
01	Sheola Immigration Check Post BGB Camp	77.00	21	8.5	6.3	4.7
Duration (hrs)		8	8	8	8	8
02	West side of project near to Sutarkandi Bridge	82.00	23	9.0	5.9	5.1
DoE (Bangladesh) Standard (Schedule – 2)		200 (8h)	150 (24h)	65	365 (24h)	100 (Y)
Method of Analysis		Gravimetric	Gravimetric		West-Geake	Jacob & Hochheiser

SPM	Suspended Particulate Matter
PM ₁₀	Particulate Matter of a diameter of 10 micron or less
PM _{2.5}	Particulate Matter of a diameter of 2.5 micron or less
NO _x	Oxides of Nitrogen
SO ₂	Sulphur Di-Oxide

ESIA Ambient Air Quality

SN	Location	Ambient Air Quality in $\mu\text{g}/\text{m}^3$					CO
		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	
01	Sheola Immigration Check Post	79.33	50.66	38.85	0.0	66.39	Nil
Duration (hrs)		8	8		8	8	1
DoE (Bangladesh) Standard (Schedule – 2)		200	150		365	100	10
Method of Analysis		Gravimetric	Gravimetric		West-Geake	Jacob & Hochheiser	CO Meter

Comparison: The present baseline data shows some changes in the value of PM₁₀, SO₂ and NO_x compare to ESIA data. The PM₁₀ value of ESIA was about 51 but the present baseline shows only 21, on the other hand ESIA baseline did not find any presence of SO₂ but the present baseline study finds 6.3 $\mu\text{g}/\text{m}^3$. The NO_x value of ESIA was 66.39 but the present Baseline value shows about 5.0. During the time of Baseline survey on March 2016, Huge quantity of coal was imported to our country but presently that function is temporarily stopped. For this reason, quality of air is better from the previous situation.

4.3 Noise Quality

Noise quality results are given in Table 4.2. The day time & night time noise level is maximum 54 and 48 dBA which did not exceed the national and World Bank standards (National and WBG standards for mixed area is 60 and 50 dBA).

Table 4.2: Noise Quality

Sl. No.	Sampling Location	Date	Time	Sound Level (dBA)		Time
				Day	Night	
01	West side of the project near to BGB Camp	22.02.2021	04.49pm	54	48	9.12pm
02	East side of BGB Camp the project near to Sutarkandi Bridge	22.02.2021	04.54pm	49	41	9.18pm
Bangladesh Standard at Day Time for Mixed Area as per Noise (Pollution Control) rules, 2006		-	6.00am to 9.00pm	60.0	50	(9am-6pm)

ESIA Noise Quality

SN	Location	Results in dB-A (Leq)		DoE (Bangladesh) Noise Standard for Mixed Area (Schedule-1)	
		Day (6 AM-9 PM)	Night (9 PM-6 PM)	Day Time (6 AM-9 PM)	Night Time (9 PM- 6 AM)
01	Place No 1	58.5	42.4	60	50
02	Place no 2	64.4	44.3	60	50
Method/Instrument				Sound Level Meter Model: SL - 4033SD	



Noise Quality Sampling from (from left) Close to BGB Camp & adjacent to Sutakandi Bridge

Comparison: The present baseline data shows some changes in the value of noise quality compare to ESIA data. The day time value of ESIA was higher than that of present value (ESIA 58.4 and 64.4, present baseline) shows 54 and 49 respectively. On the other hand, night time value was lower than that of present value (ESIA: 44.3, present baseline is 48).

4.4 Ground water

In general, the groundwater is suitable for drinking purposes with a higher limit TDS of 1000mg/l. In our site the value of Concentration is 107.4. Iron concentration is found 0.11 which is below the lower limit of standard. The detailed results of groundwater quality are given in Table 4.3.

Table 4.3 Ground water Quality

SN	Parameter	Unit	Concentration of Ground Water	Bangladesh (DoE) Standard for Ground Water (Schedule-3-B)
01	pH		6.7	6.5 – 8.5
02	DO	mg/l	0.0	6
03	COD	mg/l	3.5	4
04	EC	μS/cm	223	-
05	TDS	mg/l	107.4	1000
06	Iron	mg/l	0.11	0.3-1.0
07	SO4	mg/l		400

ESIA Groundwater Quality

SN	Parameter	Unit	Concentration of Ground Water	Bangladesh (DoE) Standard for Ground Water (Schedule-3-B)
01	pH		7.4	6.5 – 8.5
02	DO	mg/l	6.2	6
03	COD	mg/l	0.0	4
04	EC	μS/cm	268	
05	TDS	mg/l	135	1000
06	Iron	mg/l	1.1	0.3-1.0
07	Arsenic	mg/l	< BDL	0.05

Comparison: The present baseline data shows some changes in the value of ground water quality compare to ESIA data. The present pH value shows slightly lower than that of ESIA data (ESIA: 7.4, present baseline: 6.7 but within the recommended range). The dissolved oxygen from ESIA value was 6.2 but present study did not find and dissolved oxygen in tube well water, but the recommended value of the same is 6mg/l. The EC value of ESIA was 268 μS/cm but the present data shows 223 μS/cm, lower than that of previous one, which shows appearance of metallic substance is relatively low. The ESIA value of TDS was 135 mg/l but present value shows 107.4mg/l, relatively low that within the recommended range. The concentration of Iron of ESIA study was 10 times higher than that of present study (present study: 0.11mg/l, ESIA: 1.1mg/l). The value of COD within the recommended range of DoE, however, the earlier study did not found any COD.

4.5 Surface Water

The surface water quality is analyzed on the sample collected from the existing drain near BGB camp and under the Sutarkandi Bridge. The test result shows that dissolved oxygen, biochemical oxygen demand and total dissolved and suspended solid is within the DoE standards. The results are shown in Table 4.4.

Table 4.4: Surface Water Quality

SN	Parameter	Unit	Concentration of Surface Water	Bangladesh (DoE) Standard for Surface Water (Schedule- 3-A)
Close to BGB Camp				
01	pH		7.13	6.5 – 8.5
02	DO	mg/l	9.37	≥5
03	BOD5	mg/l	5.21	≤6
04	COD	mg/l	12.00	
05	EC	μS/cm	46.9	2250
06	TDS	mg/l	18.52	
07	TSS	mg/l	14.31	
Adjacent to Sutarkandi Bridge				
01	pH		6.4	
02	DO	mg/l	6.21	

03	BOD5	mg/l	6.08	
04	COD	mg/l	14.00	
05	EC	μS/cm	17.69	
06	TDS	mg/l	11.99	
07	TSS	mg/l	42.40	



Surface Water Collection from Close to BGB Camp and adjacent to Sutarkandi Bridge
Sampling Date: 08.10.2020

ESIA Surface Water Quality

SN	Parameter	Unit	Concentration of Surface Water	Bangladesh (DoE) Standard for Surface Water (Schedule- 3-A)
01	pH		7.6	6.5 – 8.5
02	DO	mg/l	6.5	≥5
03	BOD5	mg/l	6.1	≤10
04	COD	mg/l	26.66	
05	EC	μS/cm	55	2250
06	TDS	mg/l	29	
07	TSS	mg/l	50.6	

Comparison: The present baseline data shows little changes in the value of surface water quality compare to ESIA data. The present pH value shows insignificant change. The ESIA COD value was 26.66 mg/l but the present value shows only 17-18 mg/l. The TDS value of ESIA was 29 mg/l but the present study shows 12-18.52 mg/l, no significant change in other parameters.



Groundwater Collection from Adjacent to Custom Office site Tube well



Air Quality Water Sampling from (from left) Close to BGB Camp and adjacent to Sutarkandi Bridge

4.6 Soil Quality

The surface soil quality is analyzed for the nearby area. The results are shown in Table 4.5

Table 4.5: Surface Soil quality estimation (5 locations)

Sl. No.	Parameters							
	pH	OM	N	Ca	S	Fe	Zn	Pb
		%		Meq/100g soil	Mg/kg (ppm)			
1	6.0	0.14	0.008	0.95	8.2	3.12	2.95	4.2
2	6.0	0.41	0.023	0.76	15.7	2.11	0.11	5.0
3	6.0	0.34	0.019	0.81	6.5	1.24	0.02	3.1
4	6.0	0.74	0.0429	0.98	8.0	32.67	0.37	2.1
5	6.0	0.74	0.0418	0.93	10.5	27.84	0.36	0.08

The value of surface soil quality did not exceed the recommended value of DoE, however, the ESIA study did not address any surface soil quality parameters.



Soil sampling from adjacent to the project sites

CHAPTER 5

5 IMPACT IDENTIFICATION AND RISK ASSESSMENT

The proposed impact will be rise up during the construction stage. The following Table 5-1 are described about prospective impact, risk density and mitigation measures for reducing negative environmental impacts during construction stage of the project.

Table 5-1: Impact Identification, Risk Density and its Mitigations Measures

Sl. No.	Environmental Issues	Severity	Potential Environmental Impacts	Mitigation Measures	Implementing Organization	Monitoring Organization
1.	Dust/Air Pollution	B-	Air pollution from dust at construction sites, trucks transporting materials and operation of plant and equipment, and from disposal of wastes	<ul style="list-style-type: none"> • Contractors will conduct daily routine equipment and machinery check-ups to ensure that these are in the optimum working condition. • Regular preventive maintenance service of construction equipment and machineries will be strictly complying with. • To reduce the dust, periodical water spray will be conducted. Any kind of construction materials carrying by truck in the project site will be covered. 	Contractor	CSC
2.	Noise Pollution	A-	Noise pollution mainly due to pile driving activities, earth filling activities, operation of vehicles, crushing plant and equipment.	<ul style="list-style-type: none"> • Noise suppressors such as mufflers will be installed whenever deemed necessary to maintain the noise generated by the various heavy equipment and other construction machinery within permissible limits. • Contractors will use low-noise equipped machinery whenever it is necessary. • Measurement of noise level and techniques to reduce will be taken (where noisy works are going on) as and when required. 	Contractor	CSC

3.	Surface water Pollution	C-	Surface water Pollution (including increased sedimentation) from construction, movement of construction vessels, run-off from work sites and labor camps, plant and equipment, vehicles etc.	Temporary sanitation facilities such as portable toilets and garbage bins will be provided by the contractors to ensure that the domestic wastes to be generated by the construction personals are probably handled and not thrown into the drainage to prevent further pollution.	Contractor	CSC
4.	Ground water Pollution	B-	Drinking water pollution due to accidental spillage of hazardous liquid waste, oils, fuels, paints, chemicals etc.	<ul style="list-style-type: none"> • Refueling for project vehicles and equipment will be done on the concrete floor to avoid ground water pollution. • Oil and fuel will be stored at concrete floor tank and surrounded with fence. • Liquid hazardous chemicals will be stored without leaking before disposal process. • Vehicles and equipment will be maintained properly to avoid accidental spillage on the ground surface. • Batteries containing liquid must be kept on impervious place to prevent battery liquid into sub-ground. • Testing of drinking water quality in the construction camps during construction will be done. 	Contractor	CSC

5.	Soil Pollution/ Erosion		<ul style="list-style-type: none"> • The construction of the building may cause soil contamination around the areas of construction camps, workshop, and equipment washing yards, asphalt plants, fuel and chemical storage. • Dumping of construction debris on fields adjoining the acquired areas, may lead to impairment of soil. • Soil in the project areas may also get contaminated particularly from the wastes, spillage of oil and grease, mixing with construction materials, at the construction sites. 	<ul style="list-style-type: none"> • The operator of heavy equipment should pay attention to prevent fuel leakage when he feeds. • Accidental spillage of hazardous chemicals should not be occurred on soil. 	Contractor	CSC
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6.	<p>Waste Pollution</p> <ul style="list-style-type: none"> • General Wastes • Construction Wastes • Hazardous Wastes • Liquide Wastes 	B-	<ul style="list-style-type: none"> • Minor amounts of solid waste will be generated and temporary construction site during construction like packaging, empty drums, solid waste from site occupancy by workers, and broken and unused materials. • Minor amounts of hazardous materials could be generated consisting of rags, empty drums, containing residues and packaging materials for parts and machinery with grease and oil adhered to the surface. 	<ul style="list-style-type: none"> • Contractors are required to facilitate proper disposal plan and manage the construction waste. • Any waste cannot be disposed into the water bodies and burnt. 	Contractor	CSC
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Note: A-: Significant Impact; B-: Medium Impact; C-: Low Impact and D-: No Impact

CHAPTER 6

ENVIRONMENTAL AND SOCIAL MONITORING PLAN

6.1 General

Environmental monitoring is an essential tool for environmental management as it provides the basic information for rational management decisions. The purpose of the monitoring program is to ensure that the envisaged purposes of the project are achieved and result in desired benefits to the target population. To ensure the effective implementation of the mitigation measures, it is essential that an effective monitoring program be designed and carried out. Compliance monitoring will be conducted in accordance with the environmental mitigation measures and monitoring plan provided with this report.

6.2 Objectives

The objective of environmental monitoring during the construction phases is to compare the monitored data against the baseline condition collected during the study period to assess the effectiveness of the mitigation measures and the protection of the ambient environment based on national standards. The main objectives of the construction phase monitoring plans will be to:

- Monitor the actual impact of the works on physical, biological and socioeconomic receptors within the project corridor for indicating the adequacy of the ESIA;
- Recommend mitigation measures for any unexpected impact or where the impact level exceeds that anticipated in the ESIA;
- Ensure compliance with legal and community obligations including safety on construction sites;
- Monitor the rehabilitation of borrow areas and the restoration of construction campsites as described in the ESIA;
- Ensure the safe disposal of excess construction materials;
- Appraise the adequacy of the ESIA with respect to the project's predicted long-term impacts on the corridor's physical, biological and socio-economic environment;
- Evaluate the effectiveness of the mitigation measures proposed in the ESMP and recommend improvements, if and when necessary;
- Compile periodic accident data to support analyses that will help minimize future risks; and
- Monitor the survival rate of avenue plantations.

6.3 Components to be monitored

Monitoring has two components:

- Compliance monitoring, which checks whether prescribed actions have been carried out, usually by visual observation and by the use of checklists.;
- Effects monitoring which records the beneficial and adverse consequences of activities on the biophysical and social environment. This is often by repeat measurements of a set of objectively verifiable indicators.

Monitoring for this project will concentrate on compliance monitoring to ensure that measures are being implemented on time and according to sound environmental principles.

6.4 Construction Stage Compliance Monitoring

Compliance monitoring during the construction stage comprises:

- ESMP which addresses the environmental and social issues in details to provide environmental and social protection;
- Contractors' compliance to the environmental clauses in their day-to-day activities;
- Implementation of tree planting and site clearance activities after completion of work.

The environmental impacts during construction are highly dependent on:

- (i) the contractors' work practices, especially those related to the storage of construction materials and cleanliness of the work sites;
- (ii) cooperation by the local authorities with the contractor in terms of traffic management and use of public space and utilities;
- (iii) project management's strict enforcement of the correct construction practices and standards; and
- (iv) the incorporation of the mitigating measures identified in the EIA into bid documents and specifications.

Direct monitoring during the construction phase will involve the following activities:

- Site-specific review of contractors' temporary facilities; involving the inspection of contractor's worksites and work camps to ensure that the contractor's arrangements regarding temporary facilities are satisfactory.
- Regular site inspection during the construction period, involving scheduled and unannounced inspections to ensure that the stipulated procedures as defined in the ESMP are being followed by the contractor(s). This monitoring will require the completion of systematic observations of site activities using checklists to be developed by BLPA or its supervising consultants.

6.5 Monitoring Program

Monitoring points have been selected based on the sensitivity of the location with respect to sensitive receptors. The program has been developed based on the possible occurrence of adverse impacts and required mitigation actions. However, this program is subject to change depending on the analysis results obtained. The protocol for changing the monitoring program is given below.

Table 6.1 Environmental Monitoring Plan during Construction

Sl. No.	Environmental Issues/Impacts	Means of Monitoring	Location	Observation	Implementing Organization	Monitoring Organization
1.	Dust/Air Pollution	<ul style="list-style-type: none"> •Check if proper maintenance of vehicles and equipment is ensured to reduce smoke. •Check availability of equipment for watering in case of dust generation areas. 	Construction Area, Base Camps and Relative Roads	Daily	Contractor	CSC
2.	Noise	<ul style="list-style-type: none"> •Check if proper maintenance of vehicles and equipment is ensured. •Check if location of noise generating activities has been modified. 	Construction Camp and Construction Area	Daily/As and When Required	Contractor	CSC
3.	Surface Water Pollution	Turbidity, Color, Odor	Construction site	Daily	Contractor	CSC
4.	Drinking Water	Check if drinking water is available at work place.	Construction Camp and Construction Site	Daily	Contractor	CSC
5.	Soil Pollution	Loose of top soil	Construction site	Daily	Contractor	CSC
6.	General Waste	<ul style="list-style-type: none"> •Check collection and storage of waste. •Check proper disposal of waste. 	Work Site, Contractor Office and Construction Camp	Daily	Contractor	CSC
7.	Construction waste	<ul style="list-style-type: none"> •Check collection and storage of waste. ▪ Check proper disposal of waste. 	Construction Site, Construction Camp.	Daily	Contractor	CSC
8.	Hazardous waste	Check if any chemical spill of chemicals from storage capacity.	Construction Site, Construction Camp.	Daily	Contractor	CSC
9.	Sanitation	Check if sanitation facilities (Connection to septic tank and soak pits).	Work Site, and Worker Camp	Daily	Contractor	CSC
10.	Working Conditions	PPE, Scaffolding, Traffic Safety.	Construction site	Daily	Contractor	CSC

Table 6.2 Monitoring during Construction

Sl. No.	Environmental Issues	Test Parameters	Method of Monitoring	Location	Frequency of Monitoring	Responsible Organization	Supervision Organization
1.	Ground water Quality	Arsenic (As) Chloride (Cl) Electrical Conductivity (EC) Iron (Fe) pH Manganese (Mn) Free Chlorine (Cl) Total Dissolved Solid (TDS) Temperature (T) Total Hardness (CaCO ₃ -) Turbidity Total Coliform (TC) Fecal Coliform (FC)	Depth of tube well should be more than 300m. Test water for arsenic, iron and manganese before installing of casing. If the quality is found not suitable further deepening will be done.	Construction Camp and Site.	During drilling of Wells and Monthly	Contractor	CSC
2.	Surface Water Quality	pH TSS BOD DO Turbidity	The samples were analyzed as per standard procedure/ method given in Standard Method for Examination of Water and Waste Water Edition 20, published by APHA as well as using on site field test kit.	Surrounding the existing canal.	Monthly and As and When required	Contractor	CSC
3.	Air Quality	CO Ppm PM ₁₀ PM _{2.5} SPM NO _x SO ₂	Respirable Dust Sampler (Model-Lata Envirotech APM 250 combined PM ₁₀ and PM _{2.5} sampler) and Haz - Scanner (HIM 6000) will be used to collect the air sample. The particulate and gaseous samples	Sensitive Area/ Residential Area	Monthly & As and When Required	Contractor	CSC

			collected during the monitoring have been analyzed as per the procedures.				
4.	Noise Level	dB(A)	Noise Meter	Construction Camp/ Construction Sites	Monthly & As and When Required	Contractor	CSC
5.	Soil Quality	EC pH Chloride Sulphate Chromium Cadmium Mercury Organic Matter	The samples were analyzed as per standard procedure/method given in Standard Method for Examination of Soil Experiment Edition, published by USGS.	Construction Camp/ Construction Sites	Monthly & As and When Required	Contractor	CSC

CHAPTER 7

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The Contractor will take all necessary mitigation measures for the protection of the air, water quality, noise and vibration, waste and the existing environment to comply with all the legislation, the ESIA and contract requirements. The relevant equipment, permission and cost for all mitigation measures will be the Contractor's responsibility. The Contractor will undertake the environmental monitoring. The contractor has mentioned the monitoring plan including the monitoring methods. In this part, we will see the details of managing different environmental issues apart from the mitigation measures detailed. Environmental Management Officer, Site Safety Officer of Contractor will be responsible for implementing such guidelines. The engineer, Consultant will be in charge for the supervision. The management part of different environmental issues has given in the following chapter.

7.1 Air Quality

Air quality management refers to all the activities which help a regulatory authority undertakes to help protect human health and the environment from the harmful effects of air pollution. So, the air pollution sources and management guidelines for the air quality management based on the ESIA report will be implemented.

Impact Sources

The main impact sources on the air quality will be:

- Smoke from construction vehicles
- Emission from construction equipment
- Dusts from the construction activities in the area
- Dust from sand transportation and unloading

Management Guideline and Control the movement of construction traffic.

Washing facilities will be provided at points of entry and egress from the site as necessary to remove mud from wheels and undercarriages.

- Mud and windblown dust deposited on haul roads by the movement of transport vehicles will be removed by sweeping, scraping and washing, as appropriate.
- Material stockpiles that could generate windblown dust will be covered or kept wet with spray of water.
- Service all vehicles regularly to minimize emissions. 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.
- Focus special attention on containing the emissions from generators.
- Machinery causing excess pollution (e.g., visible smoke) will be banned from construction sites.

- For vehicles, fitness certificate will be issues from the BRTA and will submit to the engineer.
- Covers haul vehicles carrying dusty materials moving outside the construction site.
- Impose speed limits on all vehicle movement at the worksite to reduce dust emissions.
- Control the movement of construction traffic;
- Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations.
- 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., high winds). Stored materials such as gravel and sand will be covered and confined to avoid their being wind-drifted.
- Minimize the extent and period of exposure of the bare surfaces.
- Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations.
- For reducing the dust pollution near the construction area, a designated concrete mixing plant has been chosen far from the site and the location.

7.2 Noise Level

This chapter includes the possible sources of noise in the construction area and with their impact on environment. In later part, possible management guidelines have included for the allowable limit of noise.

Impact Sources

- Construction vehicles
- Construction equipment and machineries
- Construction activities

Management Guidelines

For controlling the noise in the construction area, the Contractor will:

- Maintain all vehicles in order to keep it in good working order in accordance with manufacturers maintenance procedures;
- Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc.;
- Organize the loading and unloading of trucks and handling operations for the purpose of minimizing construction noise on the work site;
- Install acoustic enclosures around generators to reduce noise levels;
- Establish adequate locations for storage, mixing and loading of construction materials in a way that noise generator is prevented because of such operations;
- Fence around the construction area will be implemented for noise reduction to the local residence;
- Temporary caching will be installed for reducing noise and vibration during piling;
- If any hazardous situation will have occurred, then contractor will take necessary steps to manage the noise and vibration pollution.

7.3 Water Quality

The possible impact sources with their management guidelines are given in following section.

Impact Sources

The possible impact sources will be:

- Construction works can increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology.
- Discharge of silt and clay from construction sites may contaminate the water bodies by increasing TSS and TDS.

Management Guideline

- Monitor the water quality in the runoff from the site or areas affected by excavation work and improve work practices as necessary;
- Protect water bodies from sediment loads by silt screen or bubble curtains or other barriers.
- Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes) to the waterways, storm water systems or underground water tables.
- Ensure that roads used by construction vehicles are swept regularly to remove sediment.
- Use environment friendly and nontoxic slurry during construction of piles to discharge.
- Reduce infiltration of contaminated drainage through storm water management design.
- Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals and wastewaters from brick and concrete cutting where possible and transport to an approved waste disposal site;
- Do not discharge cement and water curing used for cement concrete directly into watercourses and drainage inlets. These will be kept in an area, dried up and then finally will be disposed in a specified area. In case of emergency or if the place is congested to store, then the materials will be carried away by truck immediately for the disposal;
- In house monitoring of the surface water body will be done when it is needed.

7.4 Wastes Generation

Responsible management of waste is an essential aspect of construction work. In this context, managing waste means eliminating waste where possible; minimizing waste where feasible; and reusing materials which might otherwise become waste. In this part, we will discuss about how we will manage the waste.

Impact Sources

Main impact will come from the excess and discarded materials in the form of solid wastes like off-cuts from timber and broken concrete blocks, tiles etc. There will be some hazardous wastes also from the first aid corners, hazardous materials storage site etc. which also need to handle and dispose carefully.

Management Guidelines

Based on the ESIA report and also the part of C-ESMP, the contractor will take the following steps to control the wastes at specific areas.

Solid Wastes

- Contractor will be responsible for the segregation of solid wastes and put it in specified areas.
- Domestic or other organic solid wastes will be dumped in an earth hole in contractors own land for decomposing and further the decomposed soil will be used as fertilizer for contractors' own purposes.
- Organize disposal of all solid wastes (inorganic) generated during construction in an environmentally acceptable manner. It will be used for the temporary construction work of the inter road where and whenever needed.
- Besides, other construction wastes such as piece of rod, rocks, gravels, sand, concrete will be reused for internal construction work or gathered on a concrete based floor in the base camp for transporting to another project side due to inter construction purposes.
- Solid waste will not to be burnt.
- No private property or other sensitive area will be used to dump the solid wastes.
- Collect and transport non-hazardous solid wastes to the approved disposal sites. Vehicles transporting solid waste will be covered with nets to prevent spilling waste along the route.
- Clinical wastes will be bagged separately and then disposed with the wastes by marking.
- Provide refuse containers at each worksite.
- Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all the solid wastes before transportation and final disposal.
- A designated and municipal approved solid wastes disposal site has been selected to avoid solid waste contamination in the construction site.

Liquid Waste

- Bentonite slurry waste from pilling works will be carefully settled in steel container for drying. After completely dried out, whole slurry will be buried in the contractor's own land.
- Waste water from the batching plants will be settled down in a slurry pond (Settlement pond or Waste water treatment pond). After completely settling down the slurry, treated water will be passed through the drainage system which have no environmental effect.
- Sanitary semi liquid wastes will be managed by septic tank and liquid wastes will be treated by following the Settlement pond or wastes water treatment pond system.
- A certain place will be chosen near the settlement pond (Waste water treatment pond) for washing the concrete mixer trucks and the washout water will be settled down in the waste water treatment pond.
- Besides, depending on the situation silt screen or any other feasible method will be followed to manage the liquid wastes.
- Chemical wastes will be collected in a specific drums or similar sealed container and appropriately labeled for safe disposal.
- All hazardous liquid wastes will be stored appropriately in bounded areas and also on a container to keep away from surface body and water courses to avoid soil and water pollution.
- Drainage from fuel storage tank locations, refueling areas, and equipment service areas should be segregated from other runoff; discharge should be routed through an oil/water separator.
- Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction.

7.5 Health and Safety

Impact Sources

The impact sources for the working condition are given below:

- Construction Work/Place
- Drinking Water
- Construction Camp Facilities.
- Disposal of Waste

Management Guidelines

- Personal Protective Equipment (PPE) have to provide among all of the workers and staffs and also ensure the 100% effectiveness of these equipment by daily monitoring.
- Safe and reliable water supply. Water supply from tube wells that meets the national standards.
- Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Septic tank or decentralized waste water treatment system may be used before discharging it into natural water body.
- Provide separate latrines and bathing places for males and females with total isolation by wall or by location. The minimum number of toilet facilities required is one toilet for every ten persons. Until permanent toilet facilities have set up in the area, the mobile toilet facility will be established for temporary use.
- Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible. Ensure proper collection and disposal of solid wastes within the construction camps.
- Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level.
- Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector.
- Locate the garbage pit/waste disposal site at a minimum distance from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places.
- Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in waste disposal sites for decomposing which was explained in waste management section.
- Provide adequate health care facilities within construction sites.
- Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse;
- Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals;
- Initial health screening of the laborers coming from outside areas.

- Clinical services consisting of medical services delivered by qualified and registered surgical nurses and paramedics will provide periodic health checkup and report monthly.
- Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellent sprays during monsoon.
- Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices.

7.6 Soil Erosion/Pollution

Impact Sources

- Earth Excavation
- Piling Activities
- Construction Materials
- Hazardous Wastes
- Water Overflow
- Sand Excavation

Management Guidelines

- Locate stockpiles or spoil heaps so there is no blocking of drainage lines. If stockpile locations are not level, the base shall be levelled and contained.
- If a spoil heap or stockpile containing fine sediments is to remain bare during rainfall periods, it shall be covered to prevent erosion and sediment run-off.
- Contractor is required to pay all costs associated with cleaning up any pollution caused by his activities and to pay full compensation to those affected.
- Refueling for project vehicles and equipment must be done on the concrete floor to avoid soil pollution.
- Oil and fuel should be stored at concrete floor tank and surrounded with fence.
- Liquid hazardous chemicals should be stored without leaking before disposal process.
- Vehicles and equipment should be maintained properly to avoid accidental spillage on the ground surface. Inspection sheet on maintenance should be filled and submitted regularly.
- Batteries containing liquid must be kept on impervious place to prevent battery liquid into sub-ground.
- Tree will be planted after completing the construction work around the project area.

7.7 Drainage Management

Management of drainage will be a big issue as the project area is located in the middle of the road and also most of the area is located in a high vicinity area. So, proper guidelines and monitoring will be needed for the management of drainage. In the following part, we have mentioned the possible sources of impact with management guidelines.

Impact Sources

The possible impact sources will be:

- Excavation and earth work, and construction yards
- Ponding of water

Management Guidelines

- For controlling mud and from preventing the road by getting muddy, the uplifting mud from excavation will take away from the site by vehicle and deposited in a specified area or will be used for land filling;
- Make arrangement for prevent/avoid standing waters;
- Provide alternative drainage for rainwater if the construction works/earth-filling cut the established drainage line;
- Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there;
- Rehabilitate road drainage structures immediately if damaged by Contractor's road transports;
- Provide appropriate silt collector and silt screen at the inlet, manholes and periodically clean the drainage system with the support of sweeper to avoid drainage congestion;
- Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem;
- Reduce infiltration of contaminated drainage through storm water management design. Do not allow ponding of water especially near the waste storage areas and construction camps;
- Discard all the storage containers that are capable of storing of water, after use or store them in inverted position.

CHAPTER 8

IMPLEMENTATION OF THE C-ESMP

8.1 General

The successful implementation of the C-ESMP is dependent upon clearly defining and documenting responsibilities and procedures.

The Process of Implementation

The C-ESMP, its implementation and management will be subject to the same quality assurance and audit procedures that apply to the total project as specified in the Project Management Plan.

The “monitoring and auditing” of the environmental performance of a project during construction will occur generally as follows:

- Monitoring, reporting and auditing by the contractor during the construction period as specified in the C-ESMP;
- Monitoring, reporting and auditing by Supervising Engineer during the construction period.

In addition, complaints by members of the public, either directly or via the Department of Environment (DoE), Govt. of Bangladesh, may require a non-conformance report.

In the event of detecting a non-conformance with the C-ESMP, the following activities will be undertaken:

- Inspection of the non-conformance on site;
- Investigation of the reasons for non-conformance;
- Development of appropriate measures to correct the non-conformance;
- Implementation of corrective action to prevent recurrence;
- Submission of non-conformance report to BLPA; and
- Adjustment of the C-ESMP, required, to reflect the approved corrective action requirements.

The Project ESMP outlines the proposed non-conformance and corrective action requirements and their relationship. It also highlights the contractor’s responsibilities and role in monitoring construction activities and taking appropriate corrective action to minimize environmental impacts.

8.2 Monthly Reporting

Reports are to include details of all environmental aspects of the project including:

- Construction update summary;
- Environmental issues;

- Mitigation measures implemented;
- Effectiveness of control measures;
- Maintenance controls;
- Result of environmental monitoring;
- Audit results and corrective action;
- Environmental induction and training;
- Complaints summary; and
- Other relevant information in relation to environmental management of the project.

Monthly environmental report will include following things:

- All environmental tasks (for air, water, noise and soil) will be taken care by the contractor during execution of construction work including in-house monitoring.
- Monthly monitoring (sampling and testing) by Contractor.

8.3 Training for the Project Site Staff

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 impact. Prior to commencing site works, employees and subcontractors will attend an environmental briefing. The briefing will be conducted by the Contractor 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, suitably qualified and experienced individuals or organizations 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.

8.4 Corrective Action (Non-Compliance Report)

Any no-compliances identified on the Project during monitoring and auditing will be immediately reported to the contractor through a corrective action request. For serious non-compliance issues such as pollution, reckless treatment of nature, hazardous working conditions, etc., the Project Director from BLPA, (the engineer of the project) has authority to give stop-orders to the contractor and address those issues immediately.

8.5 C-ESMP Auditing

The Contractor shall conduct internal audits to ensure the C-ESMP is implemented effectively and that the environmental objectives of the project are being met.

The BLPA through the Consultant will audit the Contractor's performance in accordance with the requirements of the C-ESMP. Audits will be conducted as detailed in the C-ESMP. Prior notice will be provided to the Contractor's representative of the audit plan and schedule. The Contractor must facilitate the audit by providing all necessary assistance. Two types of audit will be done:

- Internal Audit which will be done by the contractor's Environmental Specialist/inspector in quarter; and
- External audit by the Engineer or the Employer.

8.6 Role & Responsibilities of the Concerned Organizations of the Project

The successful implementation of the C-ESMP is dependent on the roles and responsibilities of the concerned organizations.

The organizations involved to implement the C-ESMP are as follows:

8.7 The Contractor (MM Builders & Engineers Ltd.- M/S Anik Trading Corporation JV)

Responsibilities of the contractor in relation to the environmental management have been incorporated into the construction tender documents and ESMP and include the following:

- The Contractor shall take all reasonable steps to protect the environment and avoid damage and nuisance arising because of his operations.
- The Contractor shall be responsible for the costs of cleaning up any environmental pollution resulting from his activities.
- The Contractor shall take adequate preventive measures against water, air, and soil pollution.
- The Contractor shall, at all times, maintain all sites under his control in a clean and tidy condition and shall provide appropriate and adequate facilities for the temporary storage of all wastes before disposal.
- The Contractor shall be responsible for the safe transportation and disposal of all wastes.
- The Contractor shall be responsible for the provision of adequate sanitary facilities for the construction workforce.
- The Contractor shall make every reasonable effort to reduce noise nuisance caused by construction activities, plant and equipment.

8.8 Project Manager

- Designating the person primarily responsible for managing construction environmental management planned activities;
- Communicating the requirements of the construction environmental management plan to the senior members of the project management team;
- Requiring all relevant persons to follow the construction environmental management plan;
- Providing appropriate resources for effective implementation of the construction environmental management plan.

8.9 Environmental Specialist

- Monitoring progress of the project as per planned schedule of activities
- Exercising oversight over the implementation of environmental mitigation measures by the contractors

- Assisting the Site Engineers by providing appropriate environmental advice and solutions
- Documenting the experience in the implementation of the environmental process
- Preparing training materials and implementing programs in collaboration with the consultant
- Maintaining interfaces with the other line departments/stakeholders
- Preparing budget and maintaining records of expenditure

The following table shows the organogram of the implanting organization of the C-ESMP of the project.

Project Organogram with Contact Information (Top level management/Director)

Sl. No.	Name	Position	Contact Number	Email ID
1.	Md. Jahangir Aalam	Chairman	01716107727	aniktradingcorporation22@gmail.com
2.	Md. Ali Azam	Managing Director	01713020821	aniktradingcorporation22@gmail.com
3.	Md.Maruf Raihan Siddique	Accountant	01708750788	mr Raihan06@gmail.com

Sources: Contractors' office

Emergency Response Team Members Contact Information (Project engineer/other important person related with this project)

Sl. No.	Name	Position	Contact Number	Email ID
1.	Md. Jamal Uddin	P.D		
2.	Md. Mokdum Ali	Project Engineer	01712-937897	engrmokdom75@gmail.com

Sources: Contractors' office

8.10 Construction Supervision Consultants (The Engineer)

Description of the Project:

Construction of Ware House, Trans-Shipments Shed, Track Terminal, Barak Building, Utility Building, Fire Station, Driver Waiting Shed, Shed for Coal Stacking, Open Stack Yard, Terminal Building, Internal Road and Drainage network, gardening and plantation, etc. under this project.

Responsibilities of the construction supervision consultant (The Engineer) in relation to the environmental management have been incorporated into the ESMP and include the following:

The Construction supervision consultant will be responsible for the following:

- Engage environment specialists to ensure proper implementation of ESMP provisions;

- Undertake regular monitoring of the contractor's environmental performance, as scheduled in the ESMP;
- Conduct periodical environmental audits;
- Prior to construction, review and approve method statements prepared by the contractors;
- Supervise site environmental management system of the contractors, and provide corrective instructions;
- Monitor the implementation of the C-ESMP and review the environmental management and monitoring reports;
- Review and report on C-ESMP implementation by the contractor.

8.11 Bangladesh Land Port Authority (BLPA) (The Employer)

The Bangladesh Land Port Authority (BLPA), as the main project implementing agency, is responsible for the effective execution of the environmental safeguards. Although not directly involved in the day-to-day monitoring activities, BLAP will have oversight on the monitoring activities carried out by the Supervision Consultant (The Engineer) and contractor.

8.12 World Bank Group

World Bank Group (WBG) is giving the loan for the construction of this building which is named as the Bangladesh Regional Connectivity Project-1. They will monitor all over the construction activity and also the environmental management issue. They will visit often in the construction site to see the management issue as it is described in the contract document and also in the C-ESMP.

8.13 Department of Environment (DoE)

The Department of the Environment (DoE) as the main monitoring and implementing governmental agency of the country. They will be mainly responsible for the effective execution of the environmental safeguards as per the EIA document and also as per the ECC. Every year, they will give the renewal of the ECC as per the proper execution of the related document. Beside they can visit anytime to the construction area to see the real situation of the environmental management by the contractor

CHAPTER 9

ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM OF CONTRACTOR

9.1 General

A preliminary design of the building components through the Preparatory Survey (Feasibility Study) which was funded through World Bank Group (WBG). Based on the review of the EIA report coupled with site visits, the common potential impacts of the buildings during the pre-construction/construction/operation stages of the project are summarized as below:

- Noise (noise of construction equipment during construction and noise of passing vehicles during operation).
- Waste (Illegal dumping of construction solid waste during construction).
- Water pollution (discharge of construction turbid water into the water body without treatment).
- Air pollution (emission of air pollutant from construction equipment & increase of air pollution emission from vehicles' movement).
- Soil pollution (leakage of concrete and gasoline during construction).
- Working conditions (insufficient safety management will cause accidents during construction).

To mitigate and manage the above mentioned identified potential environmental impacts properly in schedule time, the EMP has been formulated which is presented below.

9.2 Environmental and Social Management Plan

The ESMP is a standalone document which addresses mitigation measures, monitoring and institutional arrangements for the environmental management of the project. The environmental monitoring program provides information on which management decisions may be taken during construction and operational phases. It provides the basis for evaluating the efficiency of mitigation and enhancement measures and suggests further actions that need to be taken to achieve the desired project outcomes. The ESMP is based on the ESIA report prepared for the project and should be read in conjunction with those reports.

The ESMP also forms the basis from which the Construction Contractor will prepare Construction Environmental Management Plan (C-ESMP). The C-ESMP addresses specific environmental requirements which the Contractor must follow in undertaking all construction activities and includes environmental aspects.

The objectives of the ESMP are to:

- Describe in detail mitigation measures to be carried out, including costing, scheduling and assigning responsibility for such measures.

- Provide a detailed monitoring process and schedule and a description of any training support that may be required.

The EMP is based on;

- Detailed Project design-based on the feasibility study, the Design and Construction Supervision Consultant are preparing a detailed design for project implementation.
- ESIA and C-ESMP
- DoE, Environmental Clearance certificates special requirements.
- National (Bangladesh) Environmental requirements
- WBG environmental requirements as outlined in “Environmental and Social Safeguard Policy.”

The following section describe the proposed environmental mitigation measures, monitoring program and implementation framework for the ESMP.

9.3 Environmental and Social Mitigation Plan

This section outlines the proposed mitigation measures required during the various stages of the project and includes the timing and responsibility for implementation of the mitigation measures.

- **Filling Materials:** Considerable quantities of filling materials-are required for the filling of the new building approaches.
- **Disruption of Utilities:** Assessment of the potential impacts and mitigation measures for the disruption of the utilities such as electricity, gas, telephone, water supply and sewerage lines due to the project activities.
- **Generation of Vibration:** Due to pile driving activities adjacent to the existing vibration will be generated which will affect the existing buildings.

9.4 Environmental and Social Monitoring Plan

This section addresses the proposed environmental and social monitoring programs for the project. Environmental and social monitoring is an essential component of project implementation. It facilitates and ensures the follow-up of the implementation of the proposed mitigation measure, as they are required. It helps to anticipate possible environmental hazards and/or detect unpredicted impacts over time.

The objectives of the environmental and social monitoring program are:

- Evaluation of the efficiency of mitigation and enhancement measures;
- Updating of the actions and impacts of baseline data;
- Adoption of additional mitigation measures if the present measures are insufficient;
- Generating the data, which may be incorporated in an environmental and social management plan in future projects.

CHAPTER 10

CONCLUSIONS AND RECOMMENDATION

This C-ESMP provides a comprehensive list of mitigation measures and monitoring procedures for the construction phase of the proposed land port development. At this stage it includes mitigation measures committed to as a result of the environmental and social monitoring; however, it is a 'live' document. This C-ESMP is intended to inform more detailed ESMP for site-specific activities, such as noise, water and dust control as appropriate. As part of the monitoring process, designated environmental/health safety personnel will be presented on-site during the construction activities. The environmental/health safety personnel will observe site activities and update this C-ESMP as and where necessary. A brief report will be produced and submitted to the WB at the end of each month during the construction phase. This can take the form of a report and shall summaries the monitoring process, observed deviations from the C-ESMP and the corrective actions taken. Contractor will responsible for undertaking frequent environmental and social inspection, verification/checking, monitoring and internal auditing.