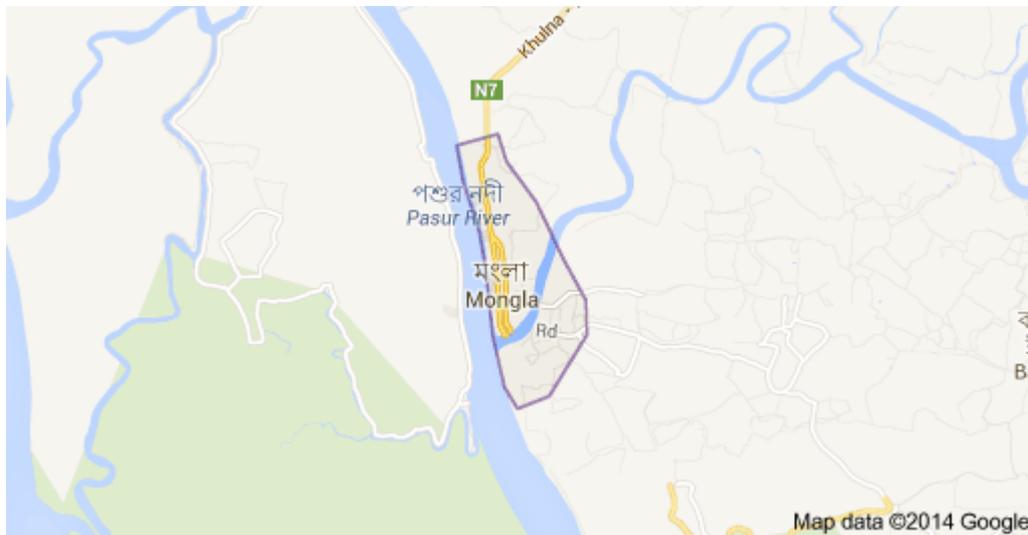


Environment Review Report (ERR)

Mongla Economic Zone.



Introduction :

The Bangladesh Economic Zone Authority (BEZA) is an agency of the Government of Bangladesh (GoB) and is administered out of the Prime Minister's Office. The GoB is in the process of creation of Economic Zones (EZ) across the country for both export and local market oriented industries based on the cluster principle of the collection of industries, brought together geographically for the purpose of promoting economic development. Mongla Economic Zone in Bagerhat is one of them.

Drawing from numerous successful examples from around the world as well as Bangladesh's own positive experience with the EPZ model, GoB has launched an effort to develop a new EZ paradigm for Bangladesh based on good economic and social practices in their operation and commercial principles in their development and management. In doing so, the GoB is seeking to leverage its own resources through public-private partnership in the financing, developing, management and servicing of EZs.

A key objective of EZs is to stimulate efficient use of skilled labor, land, infrastructure, energy and other resources as well as to facilitate backward, horizontal and forward linkage with local industries. It is expected that the EZs will trigger a significant flow of foreign and domestic investment leading to generation of an additional economic activity and creation of employment opportunities.

The overall objective of the project is to develop BEZA into a fully functional organization equipped with the rules and regulations needed to develop zones that will facilitate growth in investment in the emerging manufacturing and services sectors of the economy with the aim of generating employment.

The specific objectives of the project are to (i) select and design zones according to well-planned and specified criteria, (ii) ensure private sector involvement and participation in the development and management for the zones, (iii) establish adequate operational guide lines to monitor performance of the master developer under the concession agreement for zones development, (iv) provide a conducive business environment by developing a dispute resolution mechanism to monitor disagreements for registration, permitting etc, and (v) build better linkage between firms within zones and related suppliers by providing training and supporting collaboration in applied research and improved standards.

The Government provides numerous incentives for investors for opening factories in EZs. For example, new factories enjoy tax holidays for 5 years. Also, labor unions and other activities that are often viewed detrimental to productivity are banned inside the EZs.

However to minimize environmental impacts an “Environmental Review” has been carried out to make the project environmentally sound and sustainable. This has been done, following the steps as given below : (i) Review of relevant documents, (ii) Environmental requirements of WB and GOB (iii) Collection and analysis of baseline information on environment (iv) Public consultations and (v) Identification/screening of potential environmental impacts using a checklist.

Objectives of the Project

The objective of the Project is to attract and leverage private investment in the development of the Economic Zones, and they will act as the Zone developers or operators and in the provision of tailored infrastructure services, such as private provision of power, effluent treatment, etc. selected on a Public-Private Partnership (PPP) basis.

Location and Description of Project area :

Description of the Project

The initiative of the GoB for establishing economic zones in all potential areas including backward and underdeveloped regions, and development, operation, management and control there of including the matters ancillary thereto with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and export. The government has adopted an 'Open Door Policy' to attract local and foreign investment to Bangladesh. The BEPZA is the official organ of the GoB to promote, attract and facilitate foreign investment in the Export Processing Zones. Similarly, the primary objectives of an EZ are to provide special areas where potential investors would find a congenial investment climate, free from cumbersome procedures. Industrial agglomeration suggested in the EZ includes a coal power plant, jetty and stockyard, electric furnace, cement manufacturing, steel mill, etc.

Topography

The area is flat and poorly drained with elevations ranging from 4-9 masl. Soil consists of peat and gray floodplain soils. It is subjected to seasonal flooding. Channelized drainage covers most of the land, in which slowly draining streams will transport surface runoff to local rivers. Conversely, those rivers are part of the regional network that, once flooded, will cause flooding locally and prevent drainage. The ground level of the EZ is around 1.50 m above the HFL (highest flood level). The ground has been raised by dredged material (fine sand) from the adjacent Pashurriver. Now the total area is full of fine sand.

Location of the Project

The proposed “Mongla Economic Zone” will be on 205 acre (83 hectare) of land. It is located near Mongla EPZ, under Bagerhat district. Its geographical coordinators are 22° 28' 0" north and 89° 37' 0" east. It is 105 kms from Jessore airport, 397 kms from Dhaka city and 664 kms from Chittagong port.

It is bounded by upazila Rampaul in the north, Mongla EPZ on the south, the Mongla river in the east and the Pashur & Gona river/Mongla Port Authority on the west.

Mongla Upazila with an area of 1461.22 km², is bounded by Rampal Upazila on the north, the Bay of Bengal on the south, Morrelganj and Sarankhola Upazilas on the east, Dacope Upazila on the west. Main rivers are Pasur and Mongla.

Mongla EZ stands on the river Mongla. Mongla port is the second biggest seaport of the country. Mongla municipality was established in 1991. The area of the town is 17.79 km². Mongla thana was established in 1976 and was turned into an Upazila in 1983. It consists of 1 municipality 7 union parishads, 37 mouzas and 77 villages.

The estimated cost of sub-project is BDT12,474.25 million, where the cost of land is BDT 474.25million and the estimated investment is BDT 12,000.00 million. The tentative start date is January 2015 and will be completed in 15 years time. There are 11 unions in Mongla Upazila. The proposed EZ is under Burir Danga union.

Present Position of the “Economic Zone” site

The proposed “Economic Zone” in Mongla will be based on 205 acres (83 hectare) of land. It is under Kamardanga Mouza (JL # 20) in Mongla Upazila, Bagerhat district. The total area is now a barren land. There is no vegetation, no plantation and no flora/fauna in this area. Through dredging from the adjacent Pashur river, the site has been raised by almost 1.50 meter. The GL (ground level) is now around 1.50 m above the highest flood level (HFL). The river Mongla passed by the side of the proposed EZ. Another river Sola also passed by the other side of the EZ, which has narrowed down to a canal now. The width of this river is around 10.00 m. There is almost no current in this river Sola. Wide road is available around 300.00 m from the site. The top soil of the proposed EZ will be required to slope down towards the river Mongla, for storm water drainage.

The ecosystem of the proposed EZ is principally driven by seasonal hydraulics. It is still a fallow land. Cyclonic surges hits the locality from June to November, but it has very little effect on this proposed “Economic Zone”, as it is at a higher elevation. There is no bank erosion in this region.

Methodology

This IEE report prepared, was based on the data collected, from the following disciplines:

(a) Topography, (b) Surface and groundwater, (c) Aquatic and terrestrial ecology and (d) Public participation. Additionally, this IEE is based on field visit, field reconnaissance, coordination with BEZA, BEPZA, consultations with concerned agencies, public/public representative and reviewing reports.

Social and Cultural Resources :

Demography :

The present population of Mongla Port Paurasava is around 60,560 of which 57% is male. Religious affiliation is :Muslim 71%, Hindu 25% and the balance is made up of other religions.

Health and Education Facilities

There is only one health complex, one hospital (Mongla Port hospital), six family planning centers and three private hospitals within the upazila. There are 03 primary schools, 07 secondary schools, 05 colleges and 09 madrasas.

History, Culture and Tourism

Archaeological heritage and relics are generally of local interest only. None of these will be adversely affected by the proposed Economic Zone.

Identification and Assessment of Potential Impacts

The primary function of this environmental assessment study is to predict and quantify the magnitude of impacts, evaluate and assess the importance of the identified changes, and formulate plans to monitor and mitigate the actual changes caused due to the execution of the project. Environmental impacts could be positive or negative, direct or indirect, short term, long term, reversible or irreversible. Impacts Identification: The potential impacts of the project on the environment can be in different phases of project cycle, viz. pre-construction, construction and operation. The type and magnitude of the impacts however depend on the specific attributes of the given environment. Key identified potential impacts and their significance is summarized in the table below.

Issue Potential Environmental Impacts Construction Stage

Air and dust pollution : Construction vehicular traffic: Air quality can be affected from vehicle exhaust emissions and combustion of fuels. Construction machinery: Air quality can be adversely affected from emissions of machinery and combustion of fuels. Construction activities: Dust generation from construction sites, material stockpiles and access roads polluting the environment and can be a health hazard.

Noise pollution : (construction vehicular traffic): Noise quality will be deteriorated due to increased vehicular traffic and operation of construction machinery. Noise and vibration may have an adverse impact on people, property, fauna, livestock and natural environment.

Sewage pollution/sanitation hazard : Lack of proper sanitation facilities will increase pressure on health hazards. Soil and water pollution due to improper management of wastes and excess material from the construction sites will deteriorate environmental safety and the landscape. Construction activities especially earthworks will change topography and disturb the natural rainwater drainage as well as will change the local landscape.

Access road facilities/traffic congestion/ construction vehicular traffic : Increased traffic use of narrow access road by construction vehicles will affect the movement of normal road traffic and the safety of the road-users.

Liquid/ hazardous waste management / fuels and hazardous goods : Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills may harm the environment or health of construction workers.

Construction camp management : Siting and location of construction camps: impacts such as health and safety hazards on local resources and infrastructure of nearby communities.

Construction camp facilities: Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living conditions and health hazards.

Disposal of waste : Improper management of waste can become health hazards to the workers and the surrounding communities;

Health and hygiene : There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted diseases such as HIV/AIDS.

Safety: Inadequate safety facilities to the construction camps may create security problems and fire hazards.

Potential Environmental Impacts

Occupational health and safety : Issues related to the use of Child and pregnant labour.

Accidents: Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims.

Construction Camps: 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.

Water and sanitation facilities at the construction sites: Lack of water sanitation facilities at construction sites causing inconvenience to the construction workers and affect their personal hygiene.

Trainings: lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.

Environmental Management Plan

Possible Mitigation Measures

To avoid and minimize the impacts resulting from the activities of the project, measures and management plans, which are essential to mitigate the impacts discussed above, have been proposed. These are based upon appropriate technical design, improvements or adjustments, and policy initiatives including good site operational practices etc. The overall strategy has the following aspects:

Impact avoidance: Changing project design and construction methods to avoid impacts;

Impact minimization: Where impacts cannot be avoided, implementing mitigation measures to reduce the impact to acceptable levels; and

Enhancements: Measures, which at insignificant cost to the project, give appreciable environmental, social or developmental benefits.

Environmental Monitoring Plan

In accordance with the EMP, an environmental monitoring plan has been developed and presented. The contract documents will contain a listing of all required monitoring measures and a time frame for the compliance monitoring of these activities. The monitoring will comprise surveillance to check whether the contractor is meeting the provisions of the contract during construction and operation of the Project including the responsible agencies for implementation and supervision.

Environmental Clearance Requirements

To minimize environmental impacts and as per requirement of the WB, Environmental Review Report (ERR) is needed to be carried to make the project environmentally sound and sustainable. The ERR has been carried out for the project following the steps as given below :

- Review of relevant documents;
- Environmental requirements of WB and GOB;
- Collection and analysis of baseline information on environment;
- Public consultations ; and
- Identification/screening of potential environmental impacts using a checklist.

The baseline data/information on physical biological and socio-economical has been gathered through secondary and primary sources including extensive public consultations.

Legislative Considerations :

Environmental policy, legal and administrative framework

Regulatory requirements toward protection and conservation of environment and various environmental resources and also toward protection of social environment from adverse impact of projects and activities associated with them have been enunciated by the GoB as well as the WB and pertinent policies and regulations among these requirements are summarized as given below :

GoB Environmental Policy, Regulations, and Guidelines

National Environmental Policy, 1992

Bangladesh has adopted a national environmental policy in 1992 aimed at sustainable development. The policy sets out the basic framework for environmental action together with a set of broad sectoral guidelines to ensure environmental sustainability during development. Key elements of the policy are to : (i) maintain the ecological balance for ensuring sustainable development, (ii) protect the country against natural disasters (iii) identify and control activities which are polluting and destroying the environment, (iv) ensure environment-friendly development in all sectors, (v) promote sustainable and sound management of natural resources and (vi) active collaboration with international initiatives related to the environment.

The policy mentions that Environmental Review should be conducted before projects are undertaken.

National Environment Management Action Plan, 1995

The National Environmental Management Action Plan (NEMAP) builds on the National Environmental Policy and was developed to address specific issues and management requirements for the period 1995-2005. The plan includes a framework within which the recommendations of a National Conservation Strategy are to be implemented. NEMAP has been developed with the objectives to: (i) identify key environmental issues affecting Bangladesh, (ii) identify actions to halt or reduce the rate of environmental degradation, (iii) improve management of the natural environment, (iv) conserve and protect habitats and bio-diversity, (v) to promote sustainable development and (vi) improve the quality of life.

Environment Conservation Act, 1995

This Act authorizes the DoE to undertake any activity to conserve and enhance the quality of environment and to control, prevent and mitigate pollution. The DoE is the regulatory body and enforcement agency of all environmental related activities. The act includes amongst others the following: (i) Declaration of Ecologically Critical Areas, (ii) Procedure for obtaining Environmental Clearance Certificates, (iii) Regulation with respect to vehicles emitting smoke harmful for the environment, (iv) Environmental regulations for development activities, (v) Standards for quality of air, water, noise, and soils for different areas and for different purposes, (vi) Acceptable limits for discharging and emitting waste and (vii) Formulation of environmental guidelines to control and mitigate environmental pollution, conservation and improvement of environment.

Environment Conservation Rules, 1997

The Environment Conservation Rules provides a first set of rules under the Environment Conservation Act, 1995. These provide amongst others standards and guidelines for : (i) Categorization of industries and development projects on the basis of actual and anticipated pollution load, (ii) Requirements for undertaking Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA), as well as formulating an Environmental Management Plan (EMP) according to categories of industries/development projects/activities, (iii) Procedure for obtaining environmental clearance and (iv) Environmental quality standards for air, surface water, groundwater, drinking water, industrial effluents, emissions, noise and vehicular exhausts. Depending upon location, size and severity of pollution loads, projects/activities have been classified in ECR, 1997 into four categories: Green, Orange A, Orange B and Red covering no impacts, minor, medium and severe impacts on important environmental components (IECs) respectively. Corresponding categories of building projects are based on: (i) Orange B Category and (ii) Item 08: include construction of hotel/multi story commercial and apartment building.

The EIA Guidelines for Industry, 1997

The EIA Guidelines is a handbook for procedures for preparing the EIA and for reviewing them for the benefit of the development partners, EIA Consultants, reviewers, and academics. While preparing these guidelines, the present environmental status as well as the need for rapid economic development of Bangladesh has been kept

in view. These considerations have essentially resulted in simpler procedures to be followed for preparing the EIA and their review.

Relevant Other National Polices :

National Legal Instruments : (i) Environment Court Act, 2000 and subsequent amendments in 2002 Ministry of Environment and Forest (ii) GOB has given highest priority to environment pollution and passed 'Environment Court Act, 2000 for completing environment related legal proceedings effectively (iii)The National Water Policy, 1999 Ministry of Water Resources, (iv) Protection, restoration and enhancement of water resources, (v) Protection of water quality, including strengthening regulations concerning agrochemicals and industrial effluent, (vi) Sanitation and potable water, (vii) Fish and fisheries and Participation of local communities in all water sector development, (viii) The Brick Burning (Control) Act, 1989, The Brick Burning (Control) Amendment Act, 1992 and 2001 Ministry of Environment and Forest, (ix) Control of brick burning, (x) Requires a license from the MoEF for operation and Restricts brick burning with fuel wood, (xi) Water Supply and Sanitation Act, 1996 Ministry of Local Government, Rural Development and Cooperatives, (xii) Management and Control of water supply and sanitation in urban areas, (xiii) Bangladesh Labour Law, 2006 Ministry of Labour, (xiv)This Act pertains to the occupational rights and safety of factory workers and the provision of a comfortable working environment and reasonable working conditions, (xv) National Land use Policy, 2001 Ministry of Land, The policy 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.

Environmental Health and Safety Guidelines

The Environmental Health and Safety (EHS) Guidelines of IFC are safeguard guidelines for environment, health and safety for development of industrial projects. They contain performance levels and measures that are considered to be achievable in new facilities at reasonable costs using existing technologies.

Government of Bangladesh Environmental Laws, Regulations and Guidelines

The Economic Zone with associated industrial development is subject to the environmental requirements of the GoB. Section 7 of the Environmental Conservation Rules of 1997 mandates that, an Environmental Clearance Certificate (ECC) shall be obtained for specific types of projects. The document to be submitted to the concerned Divisional Officer of the DoE for Orange B Category and Red Category are the following:

- (i) Accomplished Form-3: Application for Environmental Clearance Certificate
- (ii) Report on the feasibility of the project;
- (iii) For Orange B Category: a). an IEE Report of the project b). layout Plan and design of the EZ Project;
For Red Category: a). an IEE relating to the project, and also the terms of reference for the Environmental Impact Assessment (EIA) of the unit or the project b). It's Process Flow Diagram; c). EIA report prepared on the basis of terms of reference previously approved by the Department of Environment, along with the Layout Plan (showing location of Effluent Treatment Plant), Process Flow Diagram, design and time schedule of the Effluent Treatment Plant of the unit or project, (these are applicable only for a proposed project)
- (iv) Report on the Environmental Management Plan (EMP) for the project, and also the Process Flow Diagram, Layout Plan (showing location of Effluent Treatment Plant), design of the Effluent Treatment Plant and information about the effectiveness of the ETP of the unit or project, (these are applicable only for an existing project);
- (v) No objection certificate from the local authority;
- (vi) Emergency plan relating adverse environmental impact and plan for mitigation of the effect of pollution; and
- (vii) Outline of the relocation, rehabilitation plan (where applicable).The National laws, regulations, ordinances, and policies reviewed during the development of this IEE.

Strategies and International Treaties :

During recent years a number of national policy documents have been prepared which emphasize the protection of the environment and natural resources in order to achieve sustainable development. It is relevant to mention that GOB has also prepared a National Strategy for Accelerated Poverty Reduction showing its strong commitment to achieving the Millennium Development Goals as defined by the UN.

Bangladesh has signed most international treaties, conventions and protocols on environment:

Pollution control, biodiversity conservation and climate change, including the Ramsar Convention, the Bonn Convention on migratory birds, the Rio de Janeiro Convention on biodiversity conservation and the Kyoto protocol on climate change.

World Bank Safeguard Policies :

OP/BP/GP 4.01 – Environmental Assessment: The World Bank requires an Environmental Assessment (EA) for all projects proposed for Bank financing to ensure that these projects are environmentally sound and sustainable. The policy also requires that the EA should be made available to the public by disclosure at public libraries or other places accessible to project-affected groups, including a Summary EA in the local language.

OP 4.04 – Natural Habitats: There are no designated conservation areas or nature reserves in the project area. The policy indicates the requirements for conserving the natural habitat.

OP 4.11 – Physical and Cultural Resources: The policy requires a proper management plan for unexpected chance finds during implementation of the project.

OP/BP 4.12 - Involuntary Resettlement: This policy aims to minimize resettlement while offering adequate compensation or settlement alternatives in conformity with World Bank policies and Bangladesh law.

OP 4.10- Indigenous People: This policy aims to ensure that indigenous or tribal peoples are not adversely affected by, and are given opportunities to benefit from, World Bank financed projects in a culturally appropriate way.

Environmental Health and Safety (EHS) Guidelines: The EHS Guidelines contain performance levels and measures for development of projects that are considered to be achievable in new facilities at reasonable costs by existing technology. However, description of important laws and regulations which are mostly related to development projects especially for the studied project on its implementation are stated detail below in brief :

Background for the development of Environmental and Social Laws :

The severe floods of 1987 and 1988 and the resurgence of concern about environmental and social issues have heightened in improving environmental and social conditions of the country through promulgation of numbers of policies and legislation in the country. All of the policies or legislation aimed at the conservation and protection of the environment. The existing policies and legislation, which are relevant to the environment, are described in the following sections : (a) Bangladesh Policies, (b) Industrial Policy 1991, (c) The industrial policy of 1991 contains the following emergency clauses in respect of environmental protection :

(i) To conserve ecological balance and prevent pollution during industrialization, (ii) To take effective steps for pollution control and conservation of environment during industrialization., (iii) To ensure embodying or necessary pollution control and preventive measures by industrial investment project to overcome problem from endangering environment.

Environmental Policy 1992 : Bangladesh National Environmental Policy (GoB, 1992) was approved in May 1992 and sets out the basic framework for environmental action, together with a set of broad sectoral action guidelines. Key elements of the policy are: (a) Maintenance of the ecological balance and overall progress and development of the country through protection and improvement of the environment, (b) Protection of the country against natural disasters, (c) Identification and regulation of all types of activities, which pollute and degrade the environment, (d) Ensuring sustainable utilization of all natural resources, (f) Active association with all environmentally related international initiatives,

Environmental & social policy contains the following specific objectives in respect to the industrial sector :

(a) To adopt corrective measures in different phases of industries that might cause pollution, (b) To conduct Environmental & Social Impact Assessment (ESIA) for all new public and private industries, (c) To ban the establishment of any industry that produces goods and in the same time, it causes environmental pollution; do closure of such existing industries in phases and insist discouragement of the use of such goods through the development technologies and/or introduction of environmentally sound substitutes, (d) To ensure sustainable use of raw materials in industries and to prevent their wastage.

National Conservation Strategy : National Conservation Strategy (GOB / IUCN, 1992) was drafted in late 1991 and submitted to the Government in early 1992. This was approved in principle; however the final approval of the document is yet to be made by the cabinet. It underwent a number of modifications over the last five years, and is waiting to be placed before the cabinet. For sustainable development in industrial sector, the report offered various recommendations; some of those are as : (a) Industries based on non-renewable resources should be made to adopt technology which conserves raw materials and existing industries should be given incentives to install technical fixed to reduce wastage rate, (b) All industries, especially those based on imported raw materials, should be subjected to ESIA and adoption of pollution prevention/control technologies should be enforced, (c) No hazardous or toxic materials/wastes should be imported for use as raw material, (d) Import of appropriate and environmentally sound technology should be ensured, (e) Complete dependence on imported technology and machinery for industrial development should gradually be reduced, so that industrial development issue sustainable with local skills and resources.

National Environmental Management Action Plan (NEMAP) :

National Environmental Management Action Plan, also referred to as NEMAP (GOB, 1995) is a wide-ranging and multi-faceted plan, which builds on and extends the statements set out in the National Environmental Policy. NEMAP was developed to address issues and management requirements during the period 1995 to 2005, and sets out the framework within which the recommendations of the National Conservation Strategy are to be implemented. The NEMAP has the broad objectives of : (a) Identification of key environmental issues affecting Bangladesh, (b) Identification of actions necessary to halt or reduce the rate of environmental degradation, (c) Improvement of the natural and built environment, (d) Conservation of habitats and biodiversity, (e) Promotion of sustainable development, (f) Improvement in the quality of life of the people.

One of the key elements of NEMAP is that sectoral environmental concerns are identified. In outline, the environmental issues of the industrial sector include as:(a) Pollution arising from various industrial processes and plants throughout the country causing various degrees of degradation of the receiving environment (Air, Water and Land) is appeared, (b) There is a general absence of pollution abatement in terms of waste minimization and treatment, (c) Low level of environmental awareness amongst industrialists and entrepreneurs, (d) Lack of technology appropriate to efficient use of resources and waste minimization leading to unnecessary pollution loading in the environment, (e) Economic constraints on pollution abatement and waste minimization such as the cost of new technology, the competitiveness of labor, and intensive production methods as compared to more modern methods, (f) Concentration of industry and hence pollution in specific areas which exacerbate localized

environmental degradation and exceed the carrying capacity of the receiving bodies. (g) Unplanned industrial development has resulted in several industries located within or close to residential, which adversely affects human environment, (h) Establishment of industries at the cost of good agricultural and residential areas, (i) Lack of incentives to industrialists to incorporate emission/discharge treatment plant in their industries.

Legislation (Other than Environment)

Bangladesh legislation contains numerous laws, which are indirectly related to the environment. A compendium of these laws has been prepared recently. Other legislation, which is relevant, to various aspects of industrial project in general include: (a) The workman's Compensation Act of 1923, which provides legal basis for the payment by certain classes of employers to their workmen of compensation for injury by accident., (b) The Forest act of 1927 (amended in 1989), which provides legal protection for wild flora and forest, (c) The Factories Act of 1965, which insists to keep clean and hygienic environment within the factories.

Relevant Laws and Regulation on Economic Zone Project : Reference Description

Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009. The Government of Bangladesh prepared the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2008 and revised in 2009. This is a comprehensive strategy to address climate change challenges in Bangladesh. It is built around the following six themes Coastal Zone Policy, 2005 Coastal zone policy initiated as a harmonized policy that transcends beyond sectoral perspectives. The policy provides general guidance so that the coastal people can pursue their livelihoods under secured conditions in a sustainable manner without impairing the integrity of the natural environment. The policy framework under scores sustainable management of natural resources like inland fisheries & shrimp, marine fisheries, mangrove and other forests, land, livestock, salt, minerals, sources of renewable energy like tide, wind and solar energy.

National Agricultural Policy, 1999

The overall objective of the National Agriculture Policy is to make the nation self-sufficient in food through increasing production of all crops including cereals and ensure a dependable food security system for all.

Standing Orders on Disaster, 2010

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

Other Acts and Regulations of Bangladesh

Titles of the relevant literature, Acts and regulations were also reviewed and applied where applicable during the course of this process are listed below:

- ☐☐ Bangladesh Wildlife (Preservation) Order 1973 (Amended in 1994);
- ☐☐ The Environmental Court Act 2000 (Amendment 2002);
- ☐☐ The Forest Act, 1927 and the Forest (Amendment) Act 2000;
- ☐☐ Bangladesh Electricity Act 1910 and Regulations;
- ☐☐ Fifth Five Years Plan;
- ☐☐ National Energy Policy, 1995;
- ☐☐ River Dredging Conditions of BIWTA; and

International Conventions, Treaties and Protocols

- ☐☐ The Convention on Biological Diversity, 1992;

□□The Convention on the Conservation of Migratory Species of Wild Animals, 1979. World Bank Environmental Requirements :The Bank requires environmental assessment (EA) of projects proposed for Bank 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 Bank's environmental "safeguard policies" which among others include: Natural Habitats (OP4.04), Pest Management (OP 4.09), Physical Cultural Resources (OP 4.11), Forests (OP 4.36), 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 Bank, whereas Bank Procedures (BP) are the mandatory procedures to be followed by the Borrower and the Bank.

OP/BP 4.01 Environmental Assessment

The Bank requires environmental assessment (EA) of projects proposed for Bank support to ensure that they are environmentally sound and sustainable, and thus to improve decision making. EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The borrower is responsible for carrying out the EA and the Bank advises the borrower on the Bank's EA requirements. The Bank classifies the proposed project into three major categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts. Projects with multiple components or with multiple subprojects (other than projects using FIs) are categorized according to the component with the most serious potential adverse effects. Dual categories may not be used. However, the depth and breadth of EA and choice of EA instrument(s) for each component or each subproject is decided on the basis of its respective potential impacts and risks.

Category A: The proposed 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.

Category B: The proposed project's potential adverse environmental impacts on human population or environmentally important areas-including wetlands, forests, grasslands, or 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 Category A projects.

Category C: The proposed project is likely to have minimal or no adverse environmental impacts.

OP/BP 4.04 Natural Habitats

The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The Bank promotes and supports natural habitat conservation and improved land use by financing projects designed to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, the Bank promotes the rehabilitation of degraded natural habitats. The Bank does not support projects that involve the significant conversion or degradation of critical natural habitats.

OP/BP 4.36 Forests

Forest is defined as an as an area of land of not less than 1.0 hectare with tree crown cover (or equivalent stocking level) of more than 10% that have trees with the potential to reach a minimum height of 2 meters at

maturity *in situ*. A forest may consist of either closed forest formations, where trees of various stories and undergrowth cover a high proportion of the ground, or open forest. However, the Bank's forests policy aims to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank also assists borrowers with the establishment and sustainable management of environmentally appropriate, socially beneficial, and economically viable forest plantations to help meet growing demands for forest goods and services.

OP/BP 4.11 Physical Cultural Resources

Physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Their cultural interest may be at the local, provincial or national level, or within the international community. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigating measures, may not contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements. The borrower addresses impacts on physical cultural resources in projects proposed for Bank financing, as an integral part of the environmental assessment (EA) process. The following projects are classified during the environmental screening process as Category A or B, and are subject to the provisions of this policy: (a) any project involving significant excavations, demolition, movement of earth, flooding, or other environmental changes; and (b) any project located in, or in the vicinity of, a physical cultural resources site recognized by the borrower. Projects specifically designed to support the management or conservation of physical cultural resources are individually reviewed, and are normally classified as Category A or B. When the project is likely to have adverse impacts on physical cultural resources, the borrower identifies appropriate measures for avoiding or mitigating these impacts as part of the EA process. These measures may range from full site protection to selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost. The above WB safeguard documents were reviewed in preparing this IEE for the proposed Mongla Economic Zone Project.

Secondary Baseline Data Collection Literature Review

During this stage, further review was conducted of the physical, ecological and legal issues relevant to the Project. The review of secondary sources and field reconnaissance was used to prepare a qualitative assessment of the physical environment, biodiversity and conservation significance of the Project site. This preliminary literature review assists in identifying the baseline situation, which ultimately forms the basis for the impact assessment component of the Rapid Environmental Assessment (REA). The following activities have been undertaken:

Data were collected from secondary sources comprising ecological information, including habitats, ecosystems, flora, fauna, vertebrates, fish and invertebrates for the prospective site's terrestrial and fresh water environments;

An appraisal was made of all legislation having direct and indirect relevance to the environmental conditions and biodiversity within the study areas; and information was collected on current local conservation management practices;

Description of the Environment :

Environmental Awareness :

The proponent will be responsive to the needs of the environment so as not to degrade (or remedy any degradation) the existing environmental settings. It is the proponent's primary responsibility to ensure that all parties directly involved in the construction and operation phases of the project, including managers and employees are informed on the need to prevent or minimize environmental impacts. The awareness activities should be guided at least to the following issues:

- Prevention of pollution of surface water and groundwater;
- Prevention of decreased air quality;
- Prevention of increased noise levels;
- Prevention/reduction of social and economic disruption;
- Prevention of risks to health and safety of workers and the public.

Power Supply :

Uninterrupted Power Supply may be obtained from the 11 KV (11 kv, 3 phase, 50 cycles/sec) line, which is located close to the site. This will be stepped down to 380 V through temporary construction transformers located next to the lay down area. Potable distribution boards, as required, will provide power for the construction. The step down transformer will be positioned in a safe location and surrounded by a fence and lockable gates. Only authorized personnel will have access to the transformer itself and the master power distribution board. A diesel generator will be positioned next to the temporary construction transformers to supply power in case of outages.

Telephone Connection : The telephone connection will be available from the Exchange of BTCL Mongla.

Gas Supply : No natural gas supply is available in Mongla.

Occupational Health/Sanitation and Safety Management Plan :

An Occupational Health and Safety Management Plan (OHSMP) shall be established, operated and maintained for overall project. It is the responsibility and duty of the employer to ensure healthy and safe working conditions. A fully transparent OHSMP is a powerful tool towards fulfilling the objectives. Meaningful participation by trainers and employees is required for optimum results and these could be obtainable through efficient awareness building and training program among the trainers and employees.

It involves the safety problems of the construction workers and the provisions for sanitation and drinking water facilities at the work sites. The lack of latter facilities might severely affect the construction workers health condition and working efficiency. It may be mitigated by providing (a) separate toilet for male and female, (b) providing first aid box and (c) ensuring wearing safety helmet, gloves etc.

Ecological Resources :

The area immediately around Mongla port is a mix of flooded low lands and cultivated fields used primarily for the cultivation of paddy. Further south from the proposed Economic Zone, some 10 km begins the Sunderbans, a maze of meandering streams interspersed with mangrove forest. The Sunderbans is a vast ecological resources stretching from the Meghna river west to the Hoogly in India and beyond. Significant amount of biodiversity can be found in the Sunderbans. The immediate project area is a barren land filled with dredged sand.

Economic Development

Land Use :

The total cultivable land in Mongla Upazila is 12,566 hectares, nearly all of which is under single cropping pattern. Total land of this Upazila is 1,461 sq km, of which cultivable land represents only a fraction (11.00 %); most of the land is found to the south in the flooded forests of the Sunderbans. The market value of the land of the first grade is Tk 2,000.00 per 0.01 hectare.

Industry and Agriculture :

There is an Export Processing Zone in Mongla, that is home to Pace Tobacco industries and recently planned joint venture plant with ownership by Bangladesh, China and Pakistan to set up a tooth brush and ball pen industry. Land is selling in Mongla for use as ship yard, ship breaking yard, tank farm, LPG storage and other industrial applications. In addition there are numerous cottage industries viz ice factory, rice mills, blacksmiths and wood-working shops. The main agricultural product of this area is paddy.

Infrastructure, Transport and Communications :

Mongla is connected to Khulna, the divisional town and the district headquarter Bagerhat via a two lane roadway. Mongla is the second largest port in Bangladesh, accepting ships up to 255 m in length. The port's main exports include jute, lather, tobacco, frozen fish and shrimp. The major imports include grain, cement clinker, fertilizer, coal and pulp. The port is connected to Khulna via a rail link and thence to no other parts of Bangladesh. Wide road is available around 300.00 m from the proposed EZ site.

Potential benefit from sub-project :

Development of the "Economic Zone", development of industries and multi product manufacturing/services, employment generation, poverty reduction, creation of self-employment opportunity, decrease child mortality, lower maternal mortality, progress in school enrollment and these leads to a stronger growth of national/rural economy.

Climate :

It has a tropical climate. The average annual temperature is 26.1° C. The average annual rainfall is 1910 mm. The warmest month of the year is May with an average temperature of 29.90 ° C. The lowest average temperature of the whole year is in January and it is 19.2 ° C. The humidity is 31% and the normal wind speed varies from 3.70 km/h to 5.00 km/h.

Air Quality :

The air quality depends on its substances. If it is present in atmosphere in higher concentrations than standard, they produce undesirable effects on human beings, animal and as well as plant life. These substances include gases (SO₂, NO₂, CO, CO₂ etc.), Suspended Particulate Matter (smoke, dust, fumes, etc.) and many others. Concentration of different pollutants above allowable level can have adverse impacts on plant, animal and human life. At present, In Mongla Economic Zone area, there is nothing like this.

During construction, air quality is likely to be degraded by initial earth work for excavation of soils and subsequent dumping to raise the EZ site, exhaust emissions from the operation of construction machinery, fugitive emissions from aggregate, and dust generated from earth works, approach roads, exposed soils and material stock piles. Air quality is expected to be less impacted by any activity during operations by the industrial operators subject to compliance of DoE Environmental Regulations.

In order to mitigate these, the following shall be implemented: (i) Construction equipment will be maintained to a good standard and idling of engines discouraged. Machinery causing excessive pollution (e.g., visible smoke) will be banned from construction sites. (iii) Spraying of water on the soil excavation and dumping site and access roads if dust is being generated and the covering of loads with tarpaulins.

Surface Water :

Mongla is located at the confluence of the Mongla river with the Pashur river, which flows south from Khulna passed Mongla for an additional 70 km before reaching Bay of Bengal. In wet season the amount of Chloride in the river water is 101 mg/L, where as the allowable limit (Bangladesh standard) is 150-600 mg/L. No

remarkable source of water pollution has found. The quality of water may deteriorate, if construction material including borrow/fill material, sand, construction waste, effluent from work site, food waste etc are dumped in the water bodies. This may be averted by proper construction management and training of operators/other workers.

Ground Water :

Ground water in Mongla is saline. NGOs active in this area report that following the cyclone " AILA" in 2009 as much as 99% of shallow wells in some areas became saline and few fresh water ponds remaining after a year were typically out-stripped by demand. Now the Chloride level in impounding reservoir has noted as 727 mg/L, where the acceptable limit is 1000 mg/L, in the coastal belt. The Chloride level in the adjacent river water was noted as 101 mg/L. These water quality test was performed in the zonal laboratory of DPHE in Khulna on 20/11/2011.

For drinking, DPHE supplies water from "Foilar Hat" under Rampal Upazila, about 20 Km from the proposed Mongla EZ. This water is extracted from a depth of 274.39 m from GL. A twin PVC transmission line of 200 mm ϕ carries the water. In a physical/chemical/bacteriological analysis of water sample shows the presence of pH of this water as 8.3, chloride is 428 mg/l, hardness is 196 mg/l, iron (Fe) 1.87 mg/l, total dissolved solid (TDS) 750 mg/l, turbidity 5.00 NTU and the arsenic is 0.006 mg/l. The presence of coliform (Feacal) in the water noted as nil All these results are within the permissible limit of "Bangladesh Standard".

Water Treatment Plant (WTP) :

The water may be obtained from the ground. The EZ authority may depend on surface water, as an alternate source of water. The water treatment plant is a facility to treat the raw water generated from the deep tube well (ground water). This raw water may also be extracted from the adjacent river. After that, the collected raw water should be treated by aeration for oxidation and by dosing system of sulfuric acid / Alum for pH adjustment (if required) using feed pump will pass through Multimedia Pressure Filter (MPF) for filtration using different types of stone chips in column of the chamber. For cleaning of MPF, back wash is needed. This backwash water will be disposed into retention basin and finally released in to EZ drain. However, treated water in the water reservoir coming from MPF will be supplied to distribution network through booster pump.

The proposed WTP will comprise of different units to provide pre-treatment which are:

(a) Deep Tube wells (in case of ground water), (b) Submersible pump motor sets (in case of ground water), (c) Electrical sub-stations with control system, (d) Raw water collection networks, (e) Raw water reservoir, (f) Filter feed pump motor set, (g) Oxidation chamber with air compressor, (h) Multimedia pressure filter, (i) Treated water reservoir, (j) Booster pump, (k) Distribution networks, (l) Electrical sub-stations.

Ecological Resources :

The area immediately around Mongla port is a mix of flooded low lands and cultivated fields used primarily for the cultivation of paddy. Further south from the proposed Economic Zone, some 10 km begins the Sunderbans, a maze of meandering streams interspersed with mangrove forest. The Sunderbans is a vast ecological resources stretching from the Meghna river west to the Hoogly in India and beyond. Significant amount of biodiversity can be found in the Sunderbans. The immediate project area is a barren land filled with dredged sand.

Soils and Geology :

During the operational period, it is possible that contamination of soil could occur from spillage of hazardous materials and wastes from the different industrial operations in the EZ premises. However the impact of such an event would be much localized. In order to mitigate against such an event, the following measures will be implemented: all hazardous wastes and hazardous materials, like lubricating oil, solvents and fuels, shall be stored within concrete or brick buildings properly designed for such storage facilities, and oil spill clean-up

materials (sorberent pads, loose sorberent material, etc.)will be made available. It will be ensured that the industrial operators are trained in repair and maintenance of machines and equipment and also on how to clean up the spill and dispose of contaminated materials using treatment technologies.

Likewise, the potential impacts associated with geology may include the loss of and damage to geological, paleontological and physiographic features of the geological environment. Seismicity related potential impacts would include any change to the frequency or severity of earthquakes or impacts to earthquake preparedness and response capabilities. Considering the Project features, there are no specific potential impacts related to geology and seismicity that have been identified as having the potential to result from the site establishment stage of the Project and subsequent EZ Industrial set up in Mongla.

Health risks to labors :

There is always a health risk to labors affected by the workplace environment. Their safety, health and welfare is to be protected. This safety is important for moral, legal, and financial reasons.

Bacterial infections can be spread by the airborne route and may jeopardize the health and safety of workers and employees by releasing harmful pollutants into the air. As a result of the confined/crowded and unsanitary conditions found on factory, health disorders may take place, which dramatically reduces the quality of life. Hydrogen Sulfide (H₂S) is a colorless, highly toxic pollutant gas emitted by factory. Its high level exposure may cause rapid loss of consciousness, shock, pulmonary edema, coma and death. Particulate matter is composed of large and small particles of various solids or liquids suspended in the air. Long-term exposure to dust particles from factory can lead to persistent respiratory symptoms and a decline in lung function. The most obvious air pollutant emitted by factory is odor, which may cause respiratory ailments.

Noise and Vibration

The noise and vibration sources will exist for the EZ Site construction phase only as operation of heavy machinery (bulldozer, excavator, dump truck, loader, roller, asphalt paver, water tanker, concrete mixer, car/passenger vehicle movement, etc.) generates high noise levels. To prevent noise and vibration, work will be restricted to between 6 am and 9pm. Additional management and mitigation measures should be considered as: (a) Noise generated during the construction should aim to comply with the noise standards of the GoB; (b) Establish a code of conduct for field personnel to reduce the potential for impacts to nearby communities, such as avoidable noise generation; (c) Undertake noise monitoring at the nearest sensitive receivers if complaints about noise are received, etc.

Surface Water and Hydrology

Water is an essential resource which sustains all life on earth. Surface water is made up of standing water such as ponds, lakes and dams, and watercourses such as streams, rivers, and wetlands. Hydrology is the study of precipitation, evapo-transpiration and the interaction between surface water, soil water and ground water. Potential impacts to surface water and hydrologic systems due to EZ developments are usually centered on changes to the water quality and water quantity of the Mongla and Sola River and associated networks in the project area of influence. Potential water quality impacts may result from changes to the physical and chemical composition, while potential water quantity impacts may result from changes to the storage and flow of water. This section identifies the potential impacts from the Project on surface water and hydrology.

Site Establishment

There is potential that the following impacts related to surface water could result from the site establishment stage of the project : (i) The site development with dredged material (fine sand) is now going on in the EZ site. As the dredged material is fine sand, it is not contributing any turbidity nor any changes in bathymetry of the adjacent Mongla and Sola river, (ii) There is the potential that vehicle movement and land development could lead to erosion and Sedimentation, (iii) Accidental spillage, mismanagement or leaks of hazardous materials (such as fuels, oils and solvents) may pollute surface waters, (iv) Waste generated by the accommodation of

personnel living and working on EZ site could pollute surface waters if improperly managed, (v) Drainage preferred flow paths may be modified by the construction of a gradient/slope on the raised EZ land/site towards the river Sola, (vi) Construction of the raised EZ pad may impact flooding and ponding conditions in the local area. Existing roadside vegetation may be lost if new or existing roads need to be constructed and widened or improved.

Management and mitigation measures include the following:

(i) Major earthworks should be planned within the dry season to reduce the potential for run off and sedimentation of adjacent waterways, (ii) A progressive sediment and erosion control plan should be developed prior to construction (or prior to disturbance of soils), and subsequently implemented and maintained through out construction, (iii) Storage stockpiles and dewatering stockpiles should only be placed in designated areas, (iv) Regularly check and maintain erosion and sediment controls and during the Project construction phase.

Flora

Forests, pasture lands, rivers, surface water and other water bodies etc. are the most important natural elements of ecosystems. They are the foundation on which conservation of biological diversity depends. Biological diversity, which refers to genetic variation as well as to the diversity of human populations and ecosystems, is a resource that belongs not only to regions and to nations but also to all of humankind. Both extensive and local use of natural flora and fauna can be regarded as normal occurrences in natural ecosystems.

This flora relates to all aquatic and terrestrial based plants. This plants are vital for ecosystem function and are used as resources for human food, shelter, clothing and other products. Developments in general have the potential to impact flora. But in the case of Mongla EZ, there is no possibility like this, as the land is absolutely barren and there is no plantation and vegetation.

Fauna

The life and survival of fishes, wildlife, amphibians, mammals, birds etc comes under this heading. At the time of construction, potential impacts are destruction of habitat takes place from the trimming or cutting of the trees, where birds losses their nest. Fish losses their habitat, when water bodies are filled. In the proposed Mongla EZ site, there is nothing like this.

**Institutional Requirement for Environmental Management
Institutional Framework**

Project Management Office (PMO): The Project's management will comprise an executive committee, an inter-agency working group, a Project Management Organization in the BEZA (BEZA-Project Director) and PIU in Mongla or Bagerhat.

Executing Agency (EA): The PMO in association with Prime Minister's Office will be responsible for the overall technical supervision and execution of the project; The staffing of PMO will include expertise in project management, civil engineering, institution and finance, environment and socioeconomic aspects. The mitigation measures that are incorporated into the design will be verified by the PMO before providing technical approvals. The mitigation measures that form part of the Contract Documents.

The mitigation measures identified in the IEE will be incorporated into the project cycle. Environmental controls pertaining to design and location will be incorporated into the detailed design by the project construction supervision consultant (CSC). Mitigation measures during construction stage shall form part of the Contract Documents and will be implemented by the contractor. Project Implementation Unit (BEZA-PIU): In Mongla or Bagerhat, a PIU will be established as soon as the Executing Agency (EA) enters into a project agreement with the funding agency (GoB, WB). The PIU will be headed by a Chief Engineer and will comprise the following sections: (i) Construction Section, (ii) Environment and Social Development Section, (iii) Operations and

Maintenance Section and (iv) the Project Accounts Section. The PIU will be located within the Bagerhat District office and with the assistance of CSC, will be responsible for construction supervision, local level procurement activities, contracting local contractors and implement the engineering and environmental control.

The responsibilities of the PIU with support from project supervision consultants, shall include (i) construction supervision and management; (ii) assessment of works carried out by the contractor; and (iii) preparation of quarterly reports on the implementation of environmental mitigation measures and monitoring plan at the construction stage.

The contractor will provide BEZA (PIU) with monthly reports on the implementation of mitigation measures. The reports prepared by the contractor along with quarterly monitoring reports to be prepared by the Project Consultant will be consolidated and submitted to PIU for review. During the operation stage of the Project, the responsibility of monitoring environmental performance of Project components should be delegated to either the external monitoring consultant or BEZA in association with O&M Contractor, and Consultants will undertake routine and random monitoring of specific environmental plans addressed in this IEE.

Environmental Management and Monitoring Plan

Environmental Management

The Executing Agency of the Project is BEZA-PMO and the Prime Minister's Office, and thus has overall responsibility for ensuring that all standards and procedures are followed during construction activities. BEZA also has responsibility for ensuring that all monitoring requirements, including progress reporting are fulfilled. The Construction Contractor under Special Conditions of Contract of GoB will be responsible for construction of EZ site and associated civil works. On completion of construction, the O&M Contractor will be responsible jointly with the BEZA for maintenance of the EZ establishment and all project management aspects, including oversight of environmental pollution, mitigation and monitoring (subject to approval of additional O&M Contract).

Environmental Monitoring Program

Environmental monitoring is a very important aspect of environmental management during construction and operation stages of the project to safeguard the protection of environment. An environmental monitoring program for the construction and operation stage of the Project will be undertaken to monitor environmental impacts of the Project, to determine conditions requiring remedial measures and to assess compliance with national and WB environmental safeguard policies. The contractor will be responsible in implementing the monitoring program and preparation of monthly progress reports regarding implementation. The Project Consultant will undertake the environmental monitoring program during the construction stage and will also monitor compliance of the contractor with the implementation of required mitigation measures and contract provisions pertaining to environmental aspects.

The following activities will also be carried out and cross-checked in association with the implementation of monitoring program: (i) Pre-construction: updating of EMP during detailed design phase and inclusion of environmental clauses in bid and contract documents, (ii) Construction: environmental performance of contractors with regard to control measures pertaining to erosion, material storage, location of work site, noise, waste disposal, traffic management, workers' safety etc, (iii) Operation: O&M practices and environmental effects including soil erosion, soil contamination, surface water and groundwater quality.

Disaster Management Plan :

Fire and Earthquake are major disaster for the buildings occupants causing injury and even death due to insufficient or lack of disaster management plan. In this regard, the following should be taken into consideration to protect the properties and property users such as :

☐ There should be automatic fire/heat detecting system in each room in each floor of DTC buildings, as well as water sprinklers.

☐ There should be sufficient fire extinguishers in each floor which should be checked by the Fire Service Officials twice in a year.

Cyclone Management Plan:

The area of the proposed Mongla EZ has risk of cyclone and tidal surges. The following measure need to be taken :

- ☐ Regular communication with Bangladesh meteorological department.
- ☐ Awareness for cyclone and tidal preparedness.
- ☐ Preparedness for after cyclone disaster management.
- ☐ Listen always radio news and act accordingly.

Environment Mitigation Plan

One of the component of EMP is Environment Mitigation Plan. The environmental activities and management measures for this sub project are addressed and shown below.

Off Site Work

Sub-Project Activity	Potential Environmental Impact/s	Mitigation Measure/s	Responsibility	
			Implementation	Supervision
Construction of Labor Camp	Nil	Not Applicable	Contractor	BEZA
Earth Work	Nil	Not applicable	Contractor	BEZA
Dust	Cause air pollution	Water should be spread to control the dust	Contractor	BEZA
Noise	Noise level of the construction site increase	Proper scheduling of transportation of material. All vehicles and equipment used at the construction site shall be fitted with proper exhaust silencers, which should be maintained regularly.	Contractor	BEZA
Surface water	Nil	Not applicable	Contractor	BEZA
Water logging	Nil	Not applicable	Contractor	BEZA
Traffic Movement	Road accident may increase due to higher number of vehicular movement.	Construction of "Speed Breaker" and road sign showing "Drive Slow"	Contractor	BEZA

On Site Work

Environmental Indicator	Parameters/Units	Means of Monitoring	Frequency/Duration Standards	Responsibility	
				Implementation	Supervision
Air Quality	Measurement PM	Inspection	Once	Contractor	BEZA

Dust Control	Spraying of water	Visual	Daily	Contract or	BEZA
Noise Control	Measurement db	Inspection	Once	Contract or	BEZA
Waste Management	Monitoring the collection, transportation and disposal of solid waste.	Inspection	Daily	Contract or	BEZA
Health and Safety	Monitor the health and safety of workers.	Inspection	Daily	Contract or	BEZA

Environmental Monitoring Plan

Environmental Monitoring Plan for this sub-project will help to evaluate the extent and severity of environmental impacts against the predicted impact and the performance of environmental protect measures. The following table has been made to monitor the operation and maintenance phase activities of the sub-project.

Impact Location, Means of Monitoring and Frequency of Monitoring Construction Phase

- (a) Pollution of water courses and flow obstruction due to improper stockpiling of excavation spoils and construction materials should be monitored every week.
- (b) Throughout the project raised area (and its influence area) site inspection and quarterly flooding (if any) or accumulation of construction run-off due to inadequate drainage and improper stockpiling of excavation spoils and construction materials, should be monitored per week.
- (c) Throughout project area, excessive dust emission to be monitored, per quarter.
- (d) Throughout project area, interviews/consultation with adjacent households/occupants of nearby schools and other structures, should be made per quarter.
- (e) For excessive noise emission, interviews/consultation with the adjacent households/occupants of nearby schools and other structures should be made quarterly.
- (f) Health and safety hazards(workers and community) associated with construction activities should be monitored quarterly.
- (g) Site inspection, inter views with workers and communities, for pollution due to improper disposal of wastes and excavation spoils should be monitored on every quarter.
- (h) In treated water, the measurement of pH, iron, manganese etc, should be done every week.

In the Operational Phase

- (a) Health hazards due to distribution of unsafe water, should be monitored.
- (b) The measurement of pH, iron, manganese etc, should be done in the treated water quarterly.
- (c) Pollution due to improper disposal of sludge from industrial establishments should be made monitored in every quarter.
- (d) Sludge tank/pit should be monitored every month.
- (e) Inter views with pump operator, staff and communities should be made per month.
- (f) Measurement of total suspended solids, odor emission and fly/vermin proliferation should be monitored every quarter.
- (g) Pollution due to sewage overflows from filled-up septic tanks/pit latrines and bypassing of soak pits and other sanitation facilities(e.g., public and community latrines) throughout the EZ area site should be inspected, in a monthly basis.

The Construction Supervision Consultant (CSC) in cooperation with the PIU during project implementation will be required to develop an environmental auditing protocol for the construction period, formulate a detailed monitoring and management plan, supervise the environmental monitoring regularly and submit quarterly reports based on the monitoring data and laboratory analysis. The PIU shall submit the following environmental reporting documentation to the GoB and the funding agency (World Bank):

- a) Baseline Monitoring Report
- b) Bi-annual Environmental Monitoring Reports
- c) Project Completion Environmental Monitoring Report.

Stakeholders' Engagement

Participation of local people and other stakeholders has now been recognized as a key element in ensuring sustainable results of both environment and development projects. Participation enables different socioeconomic interest groups in an area to develop their capabilities and to play a dynamic role in developing initiatives. It enables project planners to make use of local knowledge of the environment, of specific land and water regimes and land and water use by different socio-economic groups.

World Bank and Department of Environments' Environmental Considerations for Category A and Category B projects require the conduct of public consultation during the project preparation stage. Initial public Consultations were conducted involving stakeholders according to WB Environmental Guidelines. The consultation also involved with participants representing local people, farmers, and rickshaw-van pullers.

Environmental & Social awareness

The proponent will be sensitive to the need to comply with the World Bank environmental & social safeguard requirements, so as not to degrade (or degrade to a minimum) the existing environmental & social settings. It is the proponent's primary responsibility to ensure that all parties directly involved in the construction and operation phases of the project, including managers and employees are informed about the need to prevent or minimize environmental & social degradation. The awareness activities should be guided at least to the following issues:

- Prevention of pollution of surface water and groundwater;
- Prevention of decreased air quality;
- Prevention of increased noise levels;
- Prevention/reduction of social and economic disruption;
- Prevention of risks to health and safety of workers and the public.

Public Consultation :

Public consultation is one of the key regulatory tools employed to improve transparency, accountability, efficiency and effectiveness. It is a process of communication in which the public plays a passive consumer role. It involves actively seeking the opinions of interested and affected groups. It is a two-way flow of information, which may occur at any stage of development work, for problem identification. It is the active involvement of interest groups in the formulation of regulatory objectives, policies and approaches. Participation is usually meant to facilitate implementation and improve compliance, consensus, and political support.

Regulation and its reforms affect all the participants in civil society, and therefore, in order to better assess the impacts and minimize costs, all the parts involved should be able to participate somehow in the regulatory processes. That is why public consultation has become one of the best tools to improve planning and quality of works. It is a requirements of World Bank guidelines too.

Venue : Village Burirdanga, Union : Burirdanga, Upazila : Mongla, Dist : Bagerhat.

Date : 08th February 2014, Time ; 1430 hrs to 1600 hrs.

A public consultation meeting was held from 1430 to 1600 hrs on 08/02/2014 in the house of Mr. DinishSarker at village Burirdanga, adjacent to the Economic Zone site. Twenty people attended the meeting, who are the permanent resident of the village. Mr. Abdur Razzak Fakir , the ward commissioner was selected by the participants to chair the meeting. Mr. Anirvan Halder, the union parishad chairman, Ms. Lily Begum, paurasava councilor were nominated by the participant to speak on behalf of the participants.

The participants were spontaneous and appreciated the proposed "Economic Zone" project. The project gained the full support of the communities. According to them this project will provide better employment opportunity and as such their standard of living will come up. Various potential environmental hazards viz water/air/sound pollution were discussed in the meeting. Their queries were answered by the environment specialist of BEZA, to the satisfaction of the participants. Proper mitigation measure would avert there hazards, the local elites opined.

The significant suggestions made during the meeting are as follows :

- (i) Water will be spread at regular interval to stop dust pollution.
- (ii) Speed breakers will be made to control the speed of the vehicles.
- (iii) Proper silencer pipe will be fitted with all the vehicles to reduce noise emission.
- (iv) Vehicular movement will be restricted to a certain time span.

Description of Environment :

The baseline data/information has been gathered for the following environmental components:

* Physical, * Biological, * Socio-economical and * Environmental risks.

Primary data related to the environmental attributes like air, noise level, soil and water quality have been collected through field sources. Other environmental data/information has been gathered from secondary/field sources.

• Physical Environment:

Mongla EZ is in # 02 Burirdanga Union, Mongla Upazila under Bagerhat District. Land use in the immediate vicinity is mainly semi-urban. The land in this EZ is filled with dredged sand from nearby Pashur river.

To determine the presence and level of heavy metals, i.e. Chromium, Cadmium, Copper, Nickel, Zinc, Mercury, Lead, Arsenic and Electrical Conductivity in the filled sand, sample has been collected from the site on 07/03/2014 and has already been sent to BRTC/BUET Dhaka on 13/03/2014. The result is awaited. The temperature range is mild in the project area. The concentration levels of pH, Arsenic (As), Chloride, Iron (Fe), Hardness, Fecal Coliform (FC), Total dissolved solid (TDS) and Turbidity in the deep tube well in Foiler Hat (Upazila Rampal) from where DPHE supplies water, were found within the acceptable limits set by the DoE, GoB for drinking water. Like most other rural areas in Bangladesh, there is no structured drainage system in the project area. During monsoon sewage and domestic waste water of the project areas are drained out to the adjacent Mongla river. At present there is no access road to the site.

Conclusions :

The present Environment Review Report (ERR) studied the environmental baseline conditions for the proposed Mongla Economic Zone site to assess potential impacts.

This project is not adjacent to any environmentally sensitive areas. There is no forest, no wetland/beel/haor etc in the vicinity of the project. There is no park, no wild life habitat/sanctuary, no buffer zone of protection, special area for protecting biodiversity. No agriculture land will be affected. There will be no negative impact on local ecosystems/vegetations. No destruction of trees will be required and there will be zero impact on fish migration

and navigation. There will be no negative effect on surface water quality and negative effects on groundwater quality. There will be no loss of existing buildings, property and economic livelihood.

The ERR reveals that there will be both negative (mainly temporary and construction related) and positive environmental impacts due to the construction activities and normal operations of Mongla Economic Zone. The potential impacts of the Mongla Economic Zone site include:

During Construction, Negative impacts :

- Air pollution, • Noise Pollution, • Sewage, • Solid waste, • Landscape, • Access road facilities/traffic congestion, • Road accident, • Occupational Health and safety, • Nearby public housing and settlement.

During Construction, Positive Impacts :

- Job Opportunities, • Business opportunities,

During Operation, Negative Impacts :

- Solid waste, • Sewage, • Occupational H&S

During Operation, Positive Impacts :

- Tree plantation, • Transport Linkage, • Job Opportunities, • Business opportunities

Taking all the aforementioned findings of the ERR in to consideration, it reveal that no major negative environmental impacts are likely to occur due to construction and operation of the Economic Zone Project in Mongla. The potential negative environmental impacts associated with the construction activities are relatively minor in comparison to the significant environmental and economic benefits resulting from project operation. The implementation of the EMP which deals with mitigation measures, implementation responsibilities and monitoring plan as defined in the ERR will result in minimal adverse impacts.

During construction, the contractor will implement the mitigation measures identified in the ERR while project consultants will conduct regular monitoring to ensure contractor's compliance with applicable provisions of the EMP. The project consultant will also assist the PIU in preparing contractual documents so that bidding documents, bills of quantity and other contractual obligations of the contractor clearly identify environmental responsibilities and describe penalties for non compliance.

In conclusion, the Project will have overall beneficial impacts and will have minor negative impacts, which will be carefully monitored and adequately mitigated. As such, the completion of this ERR fully meets the GoB and World Bank standards at this stage.

However, no further/subsequent EIA is recommended.

Photograph of the proposed Mongla Economic Zone site.



Gona river is on the west of the project.



River Gona, at the west side of the project.



Dredging (ongoing) from the adjacent Pashur river to the site



A probable approach road to the site.



The same probable approach road to the site, Photograph taken from different angle.



Mongla port hospital (boundary wall), by the side of the same approach road to the site



Government of the People's Republic of Bangladesh
Office of the Senior Chemist
Department of Public Health Engineering
Khulna Zonal Lab, Khanjahan Ali Road, Rupsha, Khulna
Phone: 041-721348, Fax: , Email: wqmsc_khulnazonalab@yahoo.com



Lab Memo: 281 / PHE, Zonal Lab, Khulna

Date: 28/03/2013

Physical /Chemical/ Bacteriological Analysis of Water Sample

Sample ID: KHU20130302-H	Sample Receiving date: 11/03/2013
Ref. Memo No: 675 & Dated: 11/03/2013	Sample Source: Pipe water system
Sent by: Dipok Chandra Talukder, DPHE, EE, Mongla Division, Mongla, Bagarhat.	Dist: Bagarhat, Upa: Mongla
Care Taker: Reservoir of Chairman's Building	Union: Mongla Port Paurasava, VII, Ward No-04
Sample Collection date: 11/03/2013	Date of Testing: 11/03/2013 to 27/03/2013

LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Arsenic (As)	0.05	0.006	mg/L	AAS	0.001
2	Chloride	150-300	428	mg/L	Titrimetic	-
3	Coliform (Faecal)	0	0	N/100ml	MFM	-
4	Hardness	200-500	196	mg/L	Titrimetic	-
5	Iron (Fe)	0.3-1	1.07	mg/L	AAS	0.01
6	pH	6.5-8.5	8.3	-	pH Meter	-
7	Total Dissolved Solids (TDS)	1000	750	mg/L	Multimeter	-
8	Turbidity	10	5	NTU	Turbidity Meter	0.0

Comments:

Test Performed by:	Signature:	Countersigned/Approved by:	Signature:
1.) Name: Md. Masrul Islam Designation: Sample Analyzer	<i>[Signature]</i> 28/03/13	1.) Name: Md. Shirazul Haque Designation: Senior Chemist	<i>[Signature]</i> 28/3/13
2.) Name: Designation:		2.) Name: Designation:	

Water originates from Hojar Hat

Sample collected from Mongla Paur. Chairman's Office

Laboratory test result of water sample, collected from Mongla and tested in DPHE laboratory in Khulna.

Government of the People's Republic of Bangladesh
Prime Minister's Office
Bangladesh Economic Zones Authority (BEZA)
Support to Capacity Building of Bangladesh Economic Zones Authority Project
BDBL Bhaban, Level-15
12 Kawran Bazar, Dhaka

Memo no. 03.761.018.00.00.56.2013-53

Date: 17. February 2014

To
The Director,
BRTC, BUET,
Dhaka.

Sub: Heavy Metal Content and Electrical Conductivity test.

Dear sir,

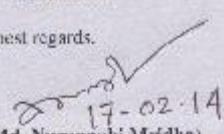
Government of Bangladesh with a financial assistant from IDA is going to establish an "Economic Zone" on 205 acres of land, at Kamardanga Mouza in Mongla Upazila under Bagerhat district.

This area raised by 1.50 m with fine sand filling and the GI. is now 1.00 m above the highest flood level (HFL). This fine sand is a dredged material from the adjacent Pashur river.

Under the above circumstance, we are in need to know the presence and amount of (i) Chromium, (ii) Cadmium, (iii) Copper, (iv) Nickel, (v) Zinc, (vi) Mercury, (vii) Lead, (viii) Arsenic and (ix) Electrical Conductivity etc of the sand filled. We will collect the sample, at our own, as suggested by you and will place it in your laboratory for testing.

Therefore, you are requested to let us know the number and amount of samples to be collected (including mode of collection) from the site and the amount to be paid for the said tests, including the mode of payment.

With best regards.


17-02-14
(Dr. Md. Nurunnabi Mridha)
Project Director (Additional Secretary)
Phone: 8180170, Fax: 8180172
E-mail: bezaprojectgov@gmail.com

Emr. Sp
16-3-14
PD

Government of the People's Republic of Bangladesh
Prime Minister's Office
Bangladesh Economic Zones Authority (BEZA)
Support to Capacity Building of Bangladesh Economic Zones Authority Project
BDBL Bhaban, Level-15
12 Kawran Bazar, Dhaka

Memo no. 03.761.018.00.00.66.2013-

Date: 13, March 2014

To
The Director,
BRTC, BUET,
Dhaka.

Sub: Heavy Metal Content and Electrical Conductivity test.

Dear sir,

Government of Bangladesh with a financial assistant from IDA is going to establish an "Economic Zone" on 205 acres of land, at Kamardanga Mouza in Mongla Upazila under Bagerhat district.

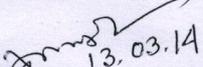
This area raised by 1.50 m with fine sand filling and the GL is now 1.00 m above the highest flood level (HFL). This fine sand is a dredged material from the adjacent Pashur river.

Under the above circumstance, we are in need to know the presence and amount of (i) Chromium, (ii) Cadmium, (iii) Copper, (iv) Nickel, (v) Zinc, (vi) Mercury, (vii) Lead, (viii) Arsenic and any other materials to be identified, (ix) Electrical Conductivity etc of the sand filled.

Soil Samples (four samples from two sites) have already been collected from the sites on 07/03/2014 and we are placing those samples to your laboratory for the aforementioned tests.

The amount required for the tests will be paid to you in due course of time.

With best regards.


13.03.14
(Dr. Md. Nurannabi Mridha)
Project Director (Additional Secretary)
Phone: 8180170, Fax: 8180172
E-mail: bezaprojectgov@gmail.com

Received


Department of Civil Engineering
Bangladesh University of Engineering & Technology
Dhaka -1000, Bangladesh



Tel: PBX 8614640-4, Ext: 7224; 9665639, Fax: 9665639

ENV. EP/EM-82
23.3.14
PD

March 18, 2014

By Fax : 8180172

Dr. Md. Nurannabi Mridha
Project Director (Additional Secretary)
Support to Capacity Building of Bangladesh Economic Zones Authority Project
Bangladesh Economic Zones Authority (BEZA), BDBL Bhaban, Level-15
12 Kawran Bazar, Dhaka

Ref: Memo no 03.761.018.00.00.66.2013-

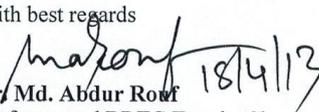
Dear Dr. M.N. Mridha

We have received the soil samples collected from the sites at Kamardanga Mouza in Mongla Upazila under Bagerhat District. The testing fee, including the VAT (@ 15%) for the four soil samples (with breakdown) is given below. You are requested to please arrange for payment of the fee in cash or by payorder or cheque (payable to "Director, BRTC, BUET").

Parameters for soil samples	No of samples	Fees (Taka)
Chromium (1500/= per sample)	4	6000/=
Cadmium (1500/= per sample)	4	6000/=
Copper (1500/= per sample)	4	6000/=
Nickel (2500/= per sample)	4	10000/=
Zinc (1500/= per sample)	4	6000/=
Mercury (4300/= per sample)	4	17200/=
Lead (1500/= per sample)	4	6000/=
Arsenic (1500/= per sample)	4	6000/=
Electrical Conductivity (500/= per sample)	4	2000/=
Sample processing charges (acid digestion) (1800/= per sample)	4	7200/=
Total (Seventy Two Thousand and Four Hundred Taka only)	4	72400/=

Thank you

With best regards


Dr. Md. Abdur Rouf
Professor and BRTC Test-in-Charge
Department of Civil Engineering,
BUET, Dhaka-1000 (Cell:01673621895)