



**REPORT  
ON  
ENVIRONMENTAL ASSESSMENT  
FOR  
Multipurpose Super Market**



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JHENAIDAH**



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## **1. Background**

The Government of Bangladesh has received financial assistance from the World Bank under Municipal Governance and Services Project (MGSP). Under this project different urban physical infrastructure will be developed in different municipalities and city corporations, here termed combined as Urban Local Bodies (ULBs) through Bangladesh Municipal Development Fund (BMDF).

The eligible ULBs (Municipalities and City Corporations) select their required physical infrastructure development through a process- Capital Invest Plan (CIP) preparation workshop. The selected sub-project, then appraised based on environmental safeguard issues for implementation.

In order to ensure environmental safeguard, there is Environmental Management Framework (EMF) prepared for MGSP. This EMF provides details guidelines to ensure environmental safeguards. This is the report on environmental assessment (EA) for a sub-project Multipurpose Paura Super Market as proposed by Jhenaidah Paurashava, which was done following guidelines as stated in that EMF. Different parameters, guidelines, considerations proposed in EMF were followed in doing EA.

## **2. Scope and methodology of the assignment**

The main objective of this assignment is to conduct environmental assessment (EA) of a multipurpose paura super market. This EA was conducted to fulfill following objectives:

- Revision of relevant laws, act, documents including Environmental Management Framework (EMF) of MGSP, Bangladesh Environmental Conservation Act (ECA) 1995, ECR-1997 amended in 2002 and World Bank operational policies and the Municipal Act 2009;
- Working closely with the municipality for environmental screening and assessment, preparation of subproject EMP and appraise the sub-project;
- Analyze different environmental aspects of different construction as well as operational activities of the proposed sub-project based on different parameters as stated in the EMF for detailed initial environmental examination (IEE);
- Prepare report on environmental safeguard compliance with recommendations for any modification and revision of subproject proposals for acceptance for funding by BMDF.



The EA was conducted based on data collected from quick field survey, secondary sources. Due to immediate requirement for the ULB and the BMDF, this EA was prepared in short period. Therefore, minor adjustments may be needed at a later stage when the sub-projects will be implemented and in operational stages. Selected parameters related to the proposed sub-project were based on EMF prepared for MGSP and thus EA was conducted following the EMF guidelines including tentative environmental impact and potential mitigation measures.

### **3. Review of related environment policy**

The Municipal Services and Governance Project (MGSP) is being implemented in compliance with applicable environmental laws and regulations. Bangladesh has an environmental legal framework that is conducive to both environmental protection and natural resource conservations. The major national environmental law relevant to the MGSP is Bangladesh Environmental Conservation Act (ECA), ECR-1997, 1995 amended 2002 and World Bank operational policies.

#### **3.1 Bangladesh Environment Conservation Act (1995) amended 2002, 2003**

This umbrella act includes laws for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. It is currently the main legislative framework document relating to environmental protection in Bangladesh. The main provisions are summarized as:

- Declaration of ecologically critical areas, and restrictions on the operations and processes, which can be carried or cannot be initiated in the ecologically critical areas;
- Regulation in respect of vehicles emitting smoke harmful for the environment;
- Environmental Clearance;
- Regulation of industries and other development activities with regards to discharge permits;
- Promulgation of standards for quality of air, water, noise and soils for different areas for different purposes;
- Promulgation of standard limits for discharging and emitting waste; and
- Formulation and declaration of environmental guidelines.



### **3.2 The Building Construction (Amendment) Act 1990 and Building Construction Rules' 96**

Accordingly the "Building Construction Act, 1952" was conceived to enforce the activities towards streamlining planned development and beautification programs of the government. The Rules are more comprehensive for taking care of the present day circumstances and issues of building construction and other related development activities

Hence according to the Bangladesh National Building Code (BNBC), following basic planning norms are adopted for the development of any building units:

- Adequate distance among the buildings and side open space must have minimum 3m space to ensure proper lighting and ventilation;
- Ensure adequate quantity and quality drinking water;
- Hygienic sanitation facilities for all buildings in the complex area;
- Ensure power facilities for all buildings in the complex area.
- Ensure adequate drainage facilities.
- Ensure well managed waste collection and disposal system.

### **3.3 World Bank safe guard policy (Operation policy of World Bank)**

To prevent and mitigate undue harm to people and their environment in the development process is the objective of this policy. It provides a platform for the participation of stakeholders in project design and act as an important instrument for building ownership among the local residents. The World Bank has as many as ten environmental, social, and legal safeguard policies. The relevant policies for environmental protection are as follows:

- OP/BP 4.01 Environmental Assessment;
- OP/BP 4.04 Natural Habitats;
- OP/BP 4.09 Pest Management;
- OP/BP 4.11 Physical Cultural Resources;
- OP/BP 4.36 Forests;
- OP/BP 4.37 Safety of Dams.



#### **4. Environmental safeguards stated in EMF for MGSP**

In order to Environmental Assessment of this sub-project, different environmental safeguards issues stated in Environmental Management Framework (EMF) prepared and applicable for MGSP were considered. In this connection, following issues recommended in EMF for consideration while EA related to proposed sub-project were discussed:

- Classification of Sub-project
- Sub-project Influence area
- Environmental Considerations in Design
- Environmental assessment (need for further EA)
- Identification of major activities
- Environmental baselines
- Natural Environment covered
- Ecological Environment
- Environmental Impact (Negative Impact)
- Environmental Management plan (EMP)
- Screening
- Allocation of budget for EMP

#### **5. Environmental assessment of subproject of Jhenaidah Paurashava**

##### **5.1 Description of Jhenaidah Paurashava**

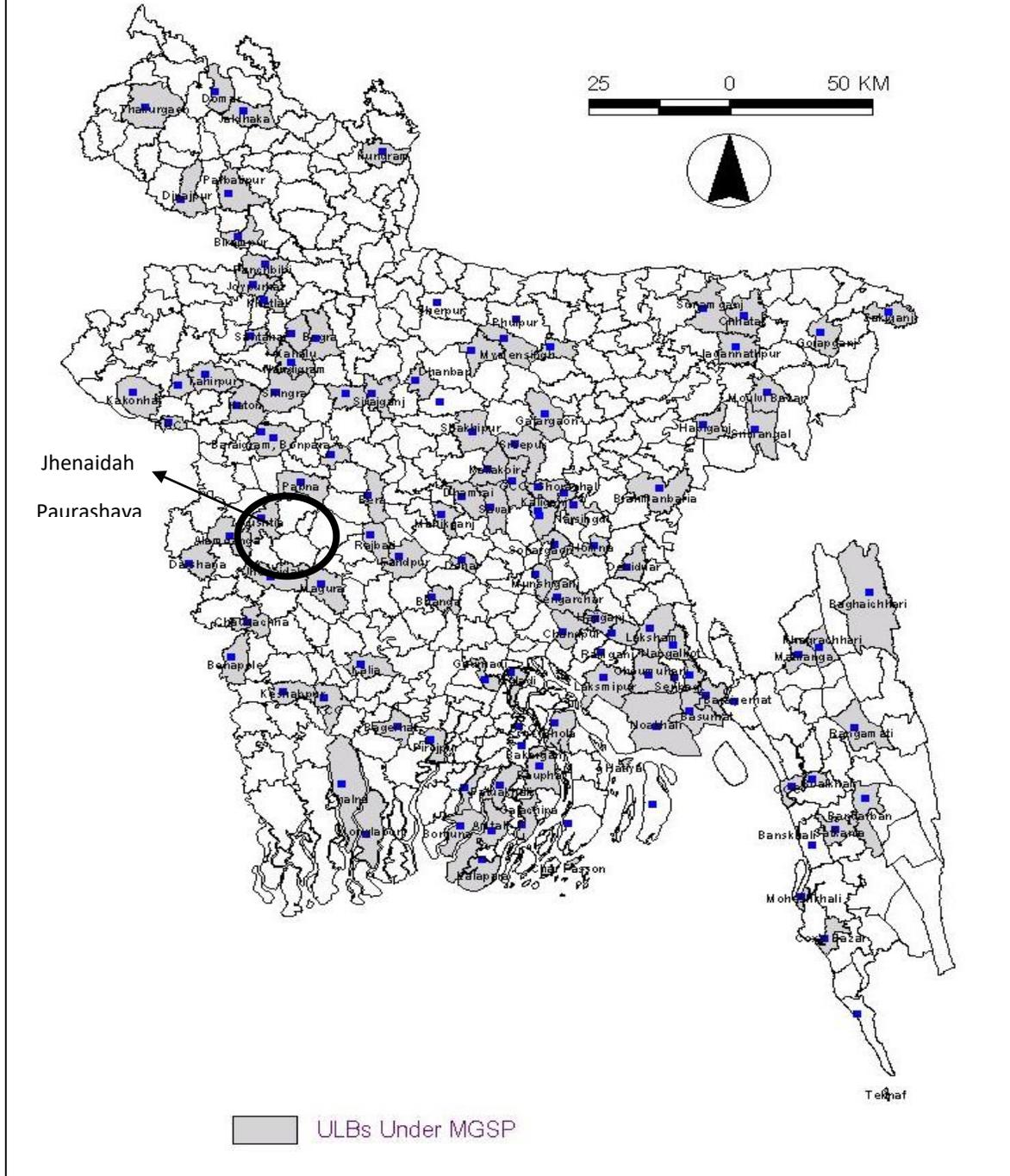
Jhenaidah district is under Khulna division and also gate way of north Bengal of Bangladesh. Jhenaidah Town is situated on the bank of the River Nabaganga.

Jhenaidah Municipality was established in 1958. This is a class “A” Paurashava consisting of 9 wards and 33 mahallas. The area of the Paurashava is 44.33 sq km. The City of Jhenaidah Paurashava is located in the South-Western part of Bangladesh. It is 210 Km away from the capital city Dhaka and 50 km away from the nearest Airport, Jessore and also located 107 km away from Khulna divisional city. Jhenaidah Paurashava is situated in Jhenaidah Sadar Upazila under the district - Jhenaidah of Khulna division.

### **Fig 01: Location of Jhenaidah Paurashava**

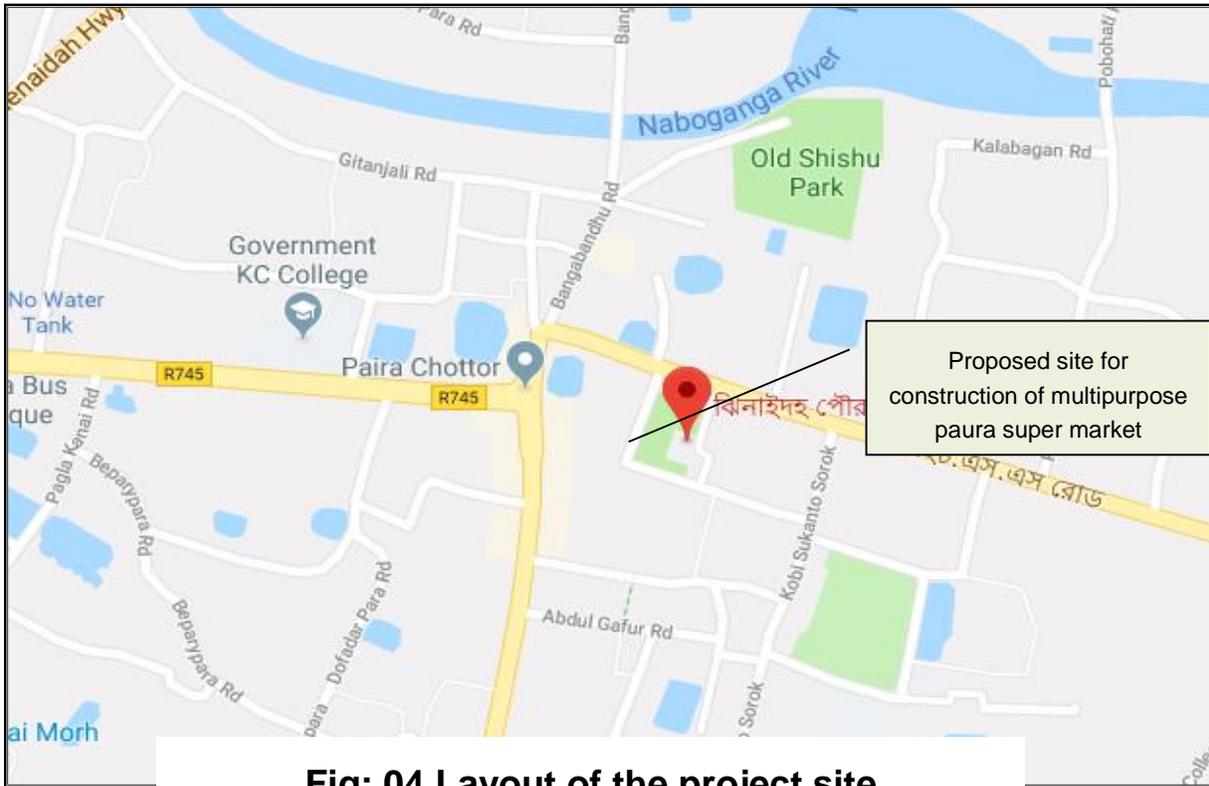


## MGSP Funded ULBs in Bangladesh

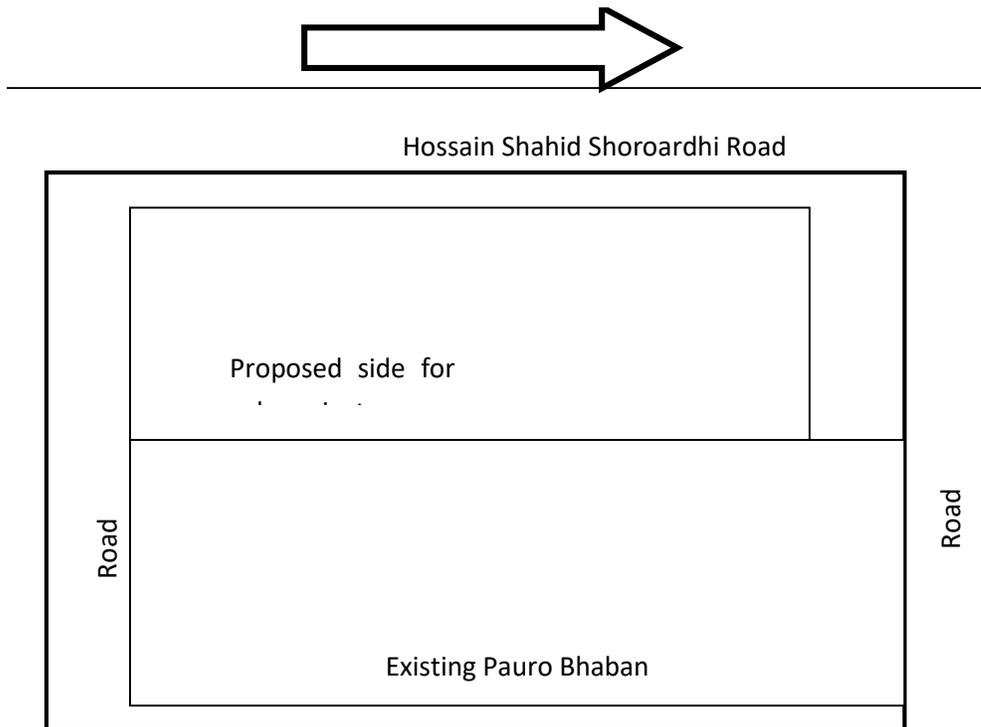




**Fig 03: Location of the Project site**



**Fig: 04 Layout of the project site**

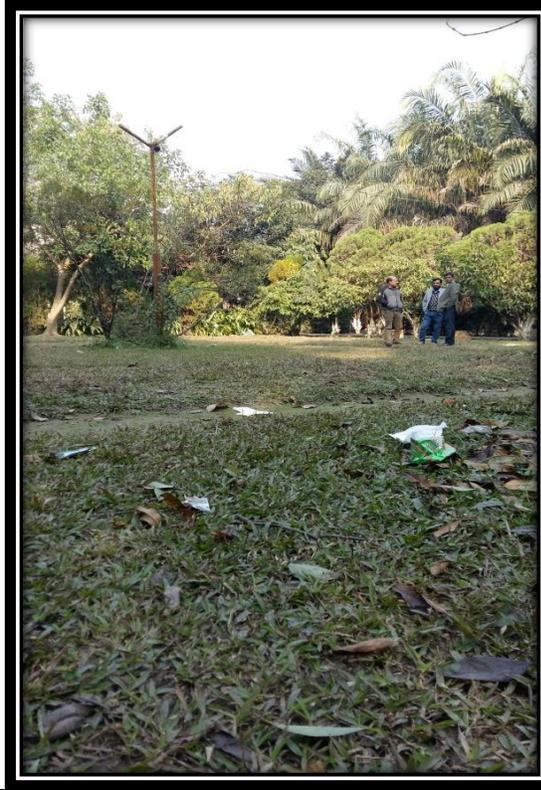


**Fig 05 : Proposed project site**





## Environmental Appraisal Report of Jhenaidah Paurashava





**Table-01 : Jhenaidah Paurashava – A brief Profile**



## Environmental Appraisal Report of Jhenaidah Paurashava

Administrative land area (sq.m.)	44.33 sq.km
Total population (year)	107834, of which 55047 are males and 52787 are females ( 2011 Census)
No. of Total House Hold	25286
Population density	2432 Nos Per Sq. km.
No. of Holding	Commercial: 2763 Residential : 12050 Industry : 28 Govt. : 427 Mixed : 2503 Others : 280 Total : 18023 (December 2016)
Average population growth rate	2.6
Literacy rate	68.10 %
% of households with access to piped water	35.33 %
Number of Wards	09 (Nine) nos.
Road	Constructed:- 72.30 k.m., Earth Road:- 74.61 k.m.
Drain	Pipe : 7 k.m Brick : 35 k.m RCC : 10 k.m Primary : 10 k.m Earth Drain : 40 k.m
Sanitation	Pit Latrine : 9061 (62.10) Safety Tank : 5452 (37.40%) No Latrine : 69 (0.05) <i>Note : Sanitary coverage 99.55% (Survey result done under FSM program funded by Bill and Milinda Gates Foundation, Technical support by SNV Netherland Organization)</i>
Solid West and Dustbin	Daily produced Waste :13 ton No. of Dustbin : 35 Drum : 40 Dumping Station : 01
Distribution of Drinking Water	No. of Pump House: 15



	House Connection : 8032 Tube Well : 978 Over Hade Tank : 3 Total Water Line : 132 k.m Daily Water Supply : 70 Lac Liter (6.5 Hour) Water Supply Area : 25 sq. k.m (At Present)
Historical Place	Jhenaidah Cadet Collage, Mazar of Paglakanai, Mia Bari of Muraidah, TV Relay Station, Paira Chottor, Vashkarza of BangaBondhu, Shahid Minar
Major economic activities (percentage)	
a) Primary (agriculture, fishery, forestry)	09 %
b) Secondary (manufacturing, processing)	37 %
c) Tertiary (services, banking, wholesale and retail)	44 %
Average annual budget of the ULB	2337.01 Lakh
Average revenue income of the ULB	1774.80 Lakh

But this ULB is lacking a modern and well-facilitated service. Infrastructure and urban services of the municipality did not keep pace with the development of this area. This Paurashava is being facilitated by 147.0 km of road and 102.0 km of drain, the urban road network is inadequate and drainage facilities are insufficient to meet the growing demand of the community. There is no well-organized commercial facilities kitchen market facility in this Paurashava. These municipal facilities are inadequate to meet the demand of city dwellers. Thus, it becomes urgent to improve urban services and facilities in order to improve the quality of urban life of municipal residence.

So, this Paurashava is proposing to construct Multipurpose Super Market building for BMDf financing under the IDA supported Municipal Governance and Services Project (MGSP) at the cost of BDT 500.00 million.

## **5.2 Proposed Sub-project**

Jhenaidah Paurashava proposed to construction of 7 storied (01 Basement + 06 stories) Multipurpose Super Market.

### **Brief description of the sub-project**



<b>Name of the Subproject</b>	<b>07 storied (01 Basement + 06 stories) Multipurpose Super Market Building</b>
<b>Package No. :</b>	MGSP_BMDF_01
<b>District Name :</b>	Jhenaidah
<b>ULB Name :</b>	Jhenaidah
<b>Jurisdiction Area :</b>	44.33 Sq.km.
<b>Beneficiary Population :</b>	Direct 51126, indirectly rest of the population of Jhenaidah Paurashava.
<b>Tribal People :</b>	No tribal people living here
<b>Land Acquisition :</b>	No land needs to be acquired. The proposed sub-project will developed in the Paurashava owned land.
<b>Estimated Cost :</b>	BDT 390.00 million
<b>Total floor area</b>	21866 sq m
<b>Subproject Duration :</b>	24 months
<b>Tentative Start Date :</b>	April, 2018
<b>Tentative Completion Date :</b>	March, 2020

Structural intervention of the sub-project

**a) Basement Floor:**

Earth Work, R.C. C. Pile Foundation, C.C. & R.C.C. Pile Cap, R.C.C. Foundation Beam, Brick Work & etc.

**b) Ground Floor:**

R.C.C. Column, R.C.C. Floor, R.C.C. Beam, R.C.C. Slab, Partition Brick Work, Plaster Work, Tiles Work, Paint Work, Glass, Grill, Sutter, Stair Railing & etc.

**c) First Floor:**

R.C.C. Column, R.C.C. Floor, R.C.C. Beam, R.C.C. Slab, Partition Brick Work, Plaster Work, Tiles Work, Paint Work, Glass, Grill, Sutter, Stair Railing & etc.

**d) Second Floor:**



R.C.C. Column, R.C.C. Floor, R.C.C. Beam, R.C.C. Slab, Partition Brick Work, Plaster Work, Tiles Work, Paint Work, Glass, Grill, Sutter, Stair Railing & etc.

**e) Third Floor:**

R.C.C. Column, R.C.C. Floor, R.C.C. Beam, R.C.C. Slab, Partition Brick Work, Plaster Work, Tiles Work, Paint Work, Glass, Grill, Sutter, Stair Railing & etc.

**f) Fourth Floor:**

R.C.C. Column, R.C.C. Floor, R.C.C. Beam, R.C.C. Slab, Partition Brick Work, Plaster Work, Tiles Work, Paint Work, Glass, Grill, Sutter, Stair Railing & etc.

**g) Fifth Floor:**

R.C.C. Column, R.C.C. Floor, R.C.C. Beam, R.C.C. Slab, Partition Brick Work, Plaster Work, Tiles Work, Paint Work, Glass, Grill, Sutter, Stair Railing & etc.

**5.3 Objectives & justification of the proposed**

The overall objective is to increase municipal revenue, ensure effective services to the citizens, and create the job opportunities and to establish a good relationship both citizens and different stakeholders. So, the specific objective is:

- To increase revenue of the Municipality;
- To improve Paurashava service delivery process;
- To increase employment opportunities;
- To establish good linkage with different stakeholders and institutions.

In this region, there is none of this type of market. Development of this Paura Super Market will play an important role in revenue generation, focusing ever increasing demand and growth in providing such types of services. The project will increase the social and economic morals of the city. In fact, after completion of the subproject, it will provide a structural, customer and environment friendly easy shopping facilities for both male and female buyers and sellers in all seasons and it will help to create employment opportunities for the local people. It will create an attractive place for different types of social gathering where social and cultural occasion will be held. Not only was that, considering the following matters; the sub-project of multipurpose super market proposed:

- Existing private markets and their poor condition;



- Type of commodities being transacted in the area;
- Availability of land for the market, land position & its value;
- Existing demand for modern market;
- Types of structure to be developed;
- Loading and unloading provision;
- Traffic mobility and parking provision;
- Number of population;
- Construction cost & recovery loan payment & earning.

#### **5.4 Key subproject activities and implementation process**

For municipalities, financial sustainability is an essence and prerequisite to render its function and effective, efficient delivery of public services to the community. The Construction of 01 (One) Basement + 06 Storied Multipurpose Super Market Building at near the Poura Bhaban, in ward No-02 under Jhenaidah Paurashava, Jhenaidah has come up with potential scope and sources of continuous revenue generation to support municipality's financial sustainability stunningly.

Major components of the proposed building to be accomplished can be mentioned as follows:

- construction of a basement,
- car parking,
- well-designed two wide stairs
- one two way escalator
- eight large sized lift (6 passenger, 1 service & 1 for goods)
- children's play and entertaining corner
- construction of gender friendly hygienic wash rooms, latrines, urinals and ventilation facilities convenient at each floor of the market
- roof top garden
- food courts
- market management office cum guest room at the top floor



- construction of environmentally sound and effective drainage, outlets and garbage bins through a well thought land use plan of the market premises including other nearby areas

Major potential activities of the proposed sub-project during construction and operation phase are as follows:

- Mobilization of material and equipment, establishment of labor camp earth work, excavation, sand filling, piling, CC and RCC works, reinforcement work; tiles work, plastering work, grill work, glass work, electrical work, installation of electric fittings, plumbing works, distemper, installation of lift and escalator.
- The materials to be used for the key activities are soil in earth work, sand, bricks, brick chips, stone chips and reinforcement.
- Diesel used vibrator machine, pilling machine for construction work and electricity for reinforcement, fabrication and domestic purposes will be used during construction period. Water will be used for construction purpose, as well as safe drinking water will be used for the construction workers as well as building user during operation phase. A deep tube well will be installed in project site during construction phase. From the existing water supply network, safe water will be supplied to the building for building user. Electricity will be used for reinforcement fabrication during construction period and also used in operation phase. Fire wood will be used for cooking purpose by the workers at the labor sheds.
- Moreover, all other essentials equipment and machines like brick breaking or stone breaking machine, steel cutter, dump truck, water tanker, excavator and trucks for carrying construction materials and other essential uses during the construction period.
- The work will be continued following a work schedule under the workman ship modality.
- During operational phase; maintenance of market, discharge of waste water, generation and disposal of solid waste, users safety from fire hazard, crowd maintenance, rain water harvesting etc.
- Commercial (official & shopping) activities, amusement during operation phase.

### **5.5 Classification of Sub-project**

According to ECR 1997 the type of proposed sub-project was not listed and hence not categorized. But based on similar sub-project characteristics, the proposed sub-project



was categorized based on the sup-project description (Screening Form-1), Environmental screening (Form-2) and analysis of alternatives (Form-3). The sub-projects to be implemented proposed by the ULB and assessment of the nature, scale and extent, it appears that the sub-project would fall under Orange B category. But as per the World Bank operational policy 4.01, the sub-projects under MGSP fall in B category.

### **5.6 Analysis of Alternatives**

The objective of the analysis of alternatives is to identify the suitable location for this proposed subproject for constructing of Multistoried Super Market at Jhenaidah Paurashava that would generate the least adverse impact and maximize the positive impact. According to capital investment plan (CIP) based on CIP workshop where people of different classes and as per Jhenaidah Paurashava Master Plan; ward no 2 is the core area of Paurashava and the area where the proposed sub-project will be located is commercially important. It is an open land owned by the Jhenaidah Paurashava since long decades. From the physical observation it was found that, the present location of the subproject is situated in the heart of the town mass and well connected with all parts of the town through existing road network. No alternative location was found like this considering communication, commercial importance, availability of land, ownership by the Paurashava and surrounding environment in the Paurashava area for the same purpose. As the land value is more in the heart of the city and there is more demand on commercial activating including shops, restaurant, office spaces as well as community services like community center, so multistoried building was proposed for this super market.

### **5.7 Floor occupancy of the proposed subproject**

#### **a) Basement Floor:**

- Under Ground Car Parking

#### **b) Ground Floor:**

- Shop
- Ramp for basement
- Load- Unload Area
- 8 Lift (6 passenger, one service, one goods)
- Two way escalator
- Stairs
- Toilets (Male, female & disable)



**c) First Floor:**

- Shops
- 8 Lift (6 passenger, one service, one goods)
- Two way escalator
- Stairs
- Toilets (Male, female & disable)

**d) Second Floor:**

- Shops
- 8 Lifts (6 passenger, one service, one goods)
- Two way escalator
- Stairs
- Toilets (Male, female & disable)

**e) Third Floor:**

- Shops
- 8 Lifts (6 passenger, one service, one goods)
- Toilets (Male, female & disable)

**f) Forth Floor:**

- Community center
- Prayer space
- 8 Lift (6 passenger, one service, one goods)
- Stairs
- Toilets (Male, female & disable)

**g) Fifth Floor:**

- Auditorium
- Office space
- Stairs
- 8 Lifts (6 passenger, one service, one goods)
- Toilets (Male, female & disable)

**g) Sixth Floor:**

- Restaurant
- Training center/Conference room



- Office space
- Stairs
- 8 Lifts (6 passenger, one service, one goods)
- Toilets (Male, female & disable)

**h) Roof Top Floor:**

- Children amusement
- Lift Machine Room
- Solar Panel Area
- Over Head Water Reservoir
- Roof Top Green Space & Gardening

**5.8 Sub-Project Location and Area Profile**

The location of the selected area is beside the Jhenaidah Paura Bhaban of Jhenaidah town. The selected land for the project is Plot No: 1876, Khatian No: 1702, land area 1.75 acre, Shit No: 09, Mouja: Jhenaidah J. L: 125, P.S: Jhenaidah, District: Jhenaidah, Bangladesh. It is recorded by the government as the land of Jhenaidah Paurashava. Actually it is a fallow land surrounded by the boundary wall.

**Table-02 : Surrounding Features of the project site**

<b>Site around the Sub-project</b>	<b>Area Features</b>
<b>North</b>	Jhenaidah-Magura road (Hossain Shahid Sharordi (HSS)) road and some shops adjacent with the road.
<b>South</b>	20 ft road Shahid Alamgir Sarak
<b>East</b>	Jhenaidah Paura Bhaban and approach to Paura Bhaban
<b>West</b>	20 ft road Shahid Alamgir Sarak

The site is within the commercially important area. In fact, it was remain vacant due to considering future development on it. There are 5 coconut trees at the peripheral areas of the land. In north and west side there is a big road and along the road, there are series of commercial units (shops) are located. In east, there is Paurashava building, a school and the approach road to Paurashava and the school. There is mixed landuse consisting residential and commercial prevails in south side of the site. Due to calm and quietness and covered by the boundary wall, some people usually use this place in morning and



evening for their recreation. It is not a low land and any time the project construction can be started. Public opinion is positive to construct a modern super market there. The proposed project site is well connected with every corners of the town. On the east it is connected through Kabi Sukanta Sarak, Upazila Sarak, Natun Hatkhola Sarak; on the west Shahid Alamgir Sarak, KB Basu Sarak, RN Sarak; on the south Natun Hatkhola Sarak and on the north Modern More Sarak, Terminal Sarak. So, visitors of each corners of the Paurashava may come to this super market easily.

## **6. Environmental assessment of sub-project of Jhenaidah Paurashava**

### **6.1 Delineation of influence area**

As per EMF the proposed sub-project multipurpose building will have influence within about one kilometre surrounding the proposed location for the construction of the multipurpose building. So, all environmental elements including human settlements within about one kilometre surrounding the proposed location will be influenced with this sub-project.

### **6.2 Environmental Considerations in Design**

In order to reduce adverse or eliminate some of the possible adverse environmental impacts during construction and operational phases of the proposed sub project, certain features in the engineering design of that sub-project will be incorporated.

**Table-03 : Considerations in Design of Sub-project**

<b>Sub-projects</b>	<b>Environmental Impacts</b>	<b>Design consideration/Actions to reduce/Eliminate impacts</b>
<b>Super market cum multipurpose building</b>	Traffic congestion resulting from increased public congregation and vehicular movement	Adequate provisions for traffic circulation
	Adverse impact from inadequate rain/ storm water management	Considering roof-top rain water harvesting system
	Contribution to carbon emission	Solar energy for a part of electricity supply
	Water logging during rain	Adequate provisions for storm water drainage; considering roof-top rain water harvesting system
	Pollution from inadequate wastewater disposal	Separate plumbing system for black water; provision for septic tank system; designing soakage pit considering depth of water table.



	Fire hazard	Keeping adequate provisions (including fire/emergency exits) for fire safety in accordance with National Building Code
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Identification of such features at the design stage of a sub-project, and incorporation of these in the sub-project design could greatly reduce adverse impacts and facilitate proper environmental management of a sub-project. Considering the potential environmental impacts, the possible design considerations based on EMF are listed in the table.

### 6.3 Environmental Screening

In order to get a preliminary idea about the degree and extent of potential environmental impacts of the proposed project, “environmental screening” was carried out by the ULB. The screening was carried out in three formats including analysis of alternative where possible alternative of the sub-project was stated. The screening formats were attached with this appraisal report.

#### 1. Potential Environmental Impact during Construction Phase:

##### a) Ecological impacts: (important sub-projects include storm drain, bridge, box culvert, and boat landing jetty)

• Felling of trees	Significant	Moderate	Minor ✓	Number of trees-05
• Clearing of vegetation	Significant	Moderate	Minor ✓	
• Potential impact on species of aquatic (i.e., water) environment	Significant	Moderate	Minor ✓	

##### b) Physicochemical impacts: (all sub-projects)

•Noise pollution	Significant	Moderate ✓	Insignificant
•Air pollution	Significant	Moderate	Insignificant ✓
•Drainage congestion	Very likely	Likely ✓	Unlikely
•Water pollution	Significant	Moderate	Insignificant ✓
•Pollution from solid construction waste	Significant	Moderate	Insignificant ✓
•water logging	Significant	Moderate	Insignificant ✓

##### c) Socio-economic impacts: (all sub-projects)

• Traffic congestion	Very likely	Likely ✓	Unlikely
• Health and safety	Significant	Moderate	Insignificant ✓
• Impact on archaeological and historical	Significant	Moderate	Insignificant ✓





## 7. Environmental baselines

Though the sub-project proposed by Jhenaidah Paurashava was categorized as Orange B which need not further environmental assessment (EIA), but it is very important to adequately define the “environmental baseline” against which environmental impacts of a sub-project would be subsequently evaluated.

The baseline environment of this Paurashava is described under three broad classifications namely Physicochemical, biological, and socio-economic environment.

### 7.1 Physical Environment

#### 7.1.1 Climate

The climate of this Paurashava is heavily influenced by Asiatic monsoon. The monsoonal influence results in three distinct seasons:

- Pre-monsoon hot season (from March to May);
- Rainy monsoon season (from June to September); and
- Cool dry winter season (from October to February).

Several climatic zones occur within Bangladesh. Jhenaidah Paurashava fall under the south-western zone.

#### 7.1.2 Temperature

According to Bangladesh Meteorological Department the monthly maximum and minimum temperature recorded in Faridpur which are the nearest to Jhenaidah Paurashava is given below:

**Table-04 : Monthly Maximum and minimum Temperature**

Status	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Maximum	23.0	28.5	32.5	33.7	33.6	32.9	32.4	31.2	32.4	33.4	30.0	24.2
Minimum	10.6	15.0	19.9	22.2	24.3	26.0	26.4	26.3	26.2	24.7	18.2	14.1

Source: Bangladesh Meteorological Department, cited in Statistical yearbook of Banglaesh-2011

The above tables and graphs show that from March to May the temperature in this ULB is more. From July to October the maximum temperature remains same around 31 degree Celsius.

#### 7.1.3 Rainfall

The rainfall data collected from the nearest weather stations Faridpur are given below:



**Table-05: Monthly Average rainfall (mm)**

Municipality	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Jhenaidah	0	0	17	109	163	383	253	469	113	2	0	0

Source: Bangladesh Meteorological Department, cited in Statistical yearbook of Banglaesh-2011

The above table and graph show that from May to September rainfall are more intense in project Paurashava.

#### 7.1.4 Humidity

Humidity is one of the climatic variables and interacts with other climatic variables like wind speed, temperature and rainfall. Humidity recorded in the nearest weather station Faridpur shows that there are more humidity occurred during Jun to October.

**Table-06 :Monthly Normal Humidity (%)**

Municipality	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Jhenaidah	78	68	67	72	79	85	83	86	83	78	77	82

Source: Bangladesh Meteorological Department, cited in Statistical yearbook of Banglaesh-2011

#### 7.1.5 Wind Speed

Wind speed is an another important climatic parameters that affects weather forecasting, aircraft and maritime operations, construction projects, growth and metabolism rate of many plant species. Wind speed data recorded at Faridpur weather stations represent that the wind speed fluctuates round the year. The highest wind speed remains in April-June.

**Table-07 : Normal Wind Speed (m/s)**

Municipality	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Jhenaidah	1.26	1.43	2.42	3.92	4.06	3.76	3.62	3.31	2.66	1.53	1.09	1.12

#### 7.1.6 Soil characteristic

The general soil type of greater Khulna region is either calcareous or non-calcareous. The color of the soil of this region is either dark grey or brown and it is flood plain soils. The soil type of Jhenaidah Paurashava falls within this category. The soil of this area is matial (clayey), stiff and hard loam. It is characterized by sandy loams to clay loams occurring in the old Himalayan piedmont plain. Soils are slightly to strongly acid in reaction.



### 7.1.7 Surface Water

Around project site in Jhenaidah there is few number of water bodies of which water is not so clean. These water bodies are mostly damaged. The Government, in April 1999, based on Bangladesh Environment Conservation Act, 1995 declared the Marjat Haor of Jhenaidah as ecologically sensitive water body.

### 7.1.8 Ground Water

The ground water level of this Paurashava is not so deep; it is from 5.3 to 7.6 meter deep. But water of 01-20% of tube well are arsenic contaminated.

**Table-08 : Test result of Ground Water quality**

SI no	Water Quality Parameter	Bangladesh standard	Concentration present	Analysis Procedure
01	pH	6.5-8.5	6.4	pH meter
02	Hardness	200-500 mg/L	101 mg/L	Titrimetric
03	Total dissolved solid (TDS)	1000.0 mg/L	87.0 mg/L	TDS meter
04	Total suspended solid (TSS)	10 mg/L	10 mg/L	USEP 160.2; SM 2540 B-D
05	Biochemical Oxygen Demand (BOD)	0.2 mg/L	0.17 mg/L	CRM
06	Faecal Coliform (FC)	0n/100 ml	0CFUn/100 ml	MFP

Source: Environmental Development and Survey Inspections Company, 9/C, Motijhell, Shanewaz Bhaban, 2<sup>nd</sup> floor, Room No. 302, Dhaka. Test was done for another project of Jhenaidah Paurashava (Package No W-035-BMDF-MGSP) under MGSP during June, 2015.

### 7.1.9 Air quality

The ambient air quality in and around this Paurashava is relatively clean. An air quality test shows that SPM is 119.0 SO<sub>x</sub> is 26.20, NO<sub>x</sub> is 28.12 (µg/m<sup>3</sup>) and CO PPM V/V is 0.8 which far below from Bangladesh standard.

**Table-09 : Test result of air quality**

SI No	Date	Code	SPM µg/m <sup>3</sup>	SO <sub>x</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	CO PPM V/V	Remarks
01	02/04/2015	333	119.0	24.5	26.22	0.8	All the results are with in limit
Bangladesh Standard			200	80	100	9 PPM	

(Source: Environmental Development and Survey Inspections Company, 9/C, Motijhell, Shanewaz Bhaban, 2<sup>nd</sup> floor, Room No. 302, Dhaka. Test was done for another project of Jhenaidah Paurashava (Package No W-035-BMDF-MGSP) under MGSP during June, 2015.

### 7.1.10 Noise



Noise is one of the important parameters to define environmental health in any area. Noise is usually referred to any form of unwanted sound created by humans, animals or machine that is annoying, distracting or physically harmful. In this Paurashava the noise level is 65 d<sub>Ba</sub> which is below from Bangladesh standard.

**Table-10 : Test result of Noise level**

SI No	Date	Cod	Time	Noise level d <sub>Ba</sub>	Remarks
01	02/04/2015	331	2.0 pm	65	All the results are with in limit
Bangladesh Standard				75	

(Source: Environmental Development and Survey Inspections Company, 9/C, Motijhell, Shanewaz Bhaban, 2<sup>nd</sup> floor, Room No. 302, Dhaka. Test was done for another project of Jhenaidah Paurashava (Package No W-035-BMDF-MGSP) under MGSP during June, 2015.

## **7.2 Ecological Environment**

### **7.2.1 Biodiversity**

The proposed site selected for the construction multipurpose building is enriched with biodiversity. Baseline environmental survey was conducted within the project site area and diverse biological resources were observed. Among the biological resources such as vegetation (5 coconut trees, grass etc.) and wildlife (mainly birds including charui, crow, bulbuli, babui) can be noted.

The proposed sites resemble rich diverse floral species. In this site, there found some small size trees having no timber value.

During the baseline environmental survey, some of the avian and wildlife species were found. A number of insects and worm's species (such as butterfly, bee, cockroach, dragonfly, mosquito etc.) were also found in the project area. These species are typical inhabitants of urban fringes and are considered common on both at local and regional levels. In addition to the avian species, the area is also habitat to a variety of reptiles, mammals and invertebrates.

There is no rare or endangered species in and around the proposed project sites under this municipality according to the IUCN red data Book (IUCN, 2000).

### **7.2.2 Environmentally Protected Areas**



There is no environmentally protected area in and around the proposed project site under this Paurashava (within about 10 km). The Government, in April 1999, based on Bangladesh Environment Conservation Act, 1995 declared the Marjat Haor of Jhenaidah as ecologically sensitive water body but this big water body is outside of Jhenaidah Paurashava.

### **7.3 Socio-economic environment**

The socio-economic baseline of this Paurashava was carried out following the Social Management Framework (SMF) of MGSP. It is important to have a clear understanding of socio-economic condition of people living within the sub-project influence areas which will be covered by the Social Appraisal following SMF.

#### **7.3.1 Population of Jhenaidah Paurashava**

According to the census of 2011, the total population of Jhenaidah Paurashava is 107834. These are the permanent citizen of this Paurashava. The proposed market area is situated in ward no-2 of the Paurashava and in the heart of the town. This ward is surrounded by Ward no-4, 5, and 6. The population residing in these four Wards, according to population census 2011 is 51126 which will be 70737 in 2021, 97870 in 2031 considering the growth rate 3.3 per annum. These people are direct beneficiaries of the proposed sub-project. The rest of the population of this Paurashava is indirect beneficiaries. As this will be an important commercial facility, so it will serve other population residing outside of this Paurashava. Many important places are adjacent with it and nearest townships like Jessore, Magura are connected with it by road. So, the estimated direct and indirect beneficiaries are 180,000 and the whole will be benefited with this sub-project.

#### **7.3.2 Land use and built up area**

It has been ascertained that major land use goes to agricultural land and it is about 56.75% of the total land. The second major land use is residential and homestead and occupying about 30.34% of the project area. Beside these, water bodies occupy about 5.09% of the total land. Transport & Communication is also dominant criterion of the project area which covers about 2.47% of total land uses. Land use under commercial activity and education and research institutions purposes in the entire project area are about 0.93% and 1.78% respectively, while about 0.09% or 8.17 acres of land are under Industrial and Manufacturing purposes. (Report on Master plan of Jhenaidah Paurashava)

#### **7.3.3 Poverty**



Urban poverty is remarkably reduced in the last two decades in Bangladesh; where the citizens of Jhenaidah Paurashava are included with this. The main economic activities of the citizen of this Paurashava are nonagricultural trade and business entrepreneurs, services and other sorts of manual labor in nonagricultural areas. The highest percentage of people involved in business (30.95%) followed by 21.94% of employee, 10.71% of transport, 11.11% in cultivator/share croper and 4.32% in construction in the year 2011. (BBS, 2011, cited in Report on Master plan of Jhenaidah Paurashava). The average income of the households of Jhenaidah Paurashava is 12000-18000 Tk. per month. So, the poverty situation of Jhenaidah Paurashava is comparatively lesser than many other place of Bangladesh.

#### **7.3.4 Tribal Communities**

There are no permanent tribal people living around the proposed market area. Sometime a few of tribal people live in the Jhenaidah town temporary basis only for their occupation.

#### **7.3.5 Principal Livelihoods and Economic Activities**

Though the economy of Jhenaidah district is predominantly agricultural, but within the Paurashava, economy is based on services, banking and wholesaling. According to ULB, primary economic activities (agriculture, fishery, forestry etc) cover 09%, secondary (manufacturing, processing) cover 37% and tertiary (services, banking, wholesale and retail) cover 44%.

#### **7.3.6 Land Acquisition and Resettlement**

The total proposed subproject market area is owned by the Jhenaidah Paurashava and presently it is vacant, hence there is no need of additional land acquisition and resettlement for the implementation of this subproject.

## **8. Environmental Impact**

### **8.1 Potential Significant Environmental Impacts pre-construction Phase**

#### **8.1.1 Labor Shed Construction**

For labor, who will be engaged in construction work, labor shed will be provided within the project site. Two (2) separate labor sheds, for both male and female (If any female workers) with separate accommodation and toilet facilities and one site office, will be constructed. These will be facilitated with safe water supply, light, ventilation, separate cooking places and opportunity of privacy for breast feeding to the child. From this labor, sewage and solid waste will be generated. Due to lack of awareness of the labor, their



health and safety will be in threatened. If they will not get labor shed facilities, they may reside in the permanent settlement creating social chaos.

**Common Mitigation Measures:** Two separate (15x20 feet for male, 15x25 feet for female) labors shed will be constructed in the open space at south side of the subproject area. The site will be surrounded by a security fence at least 1.5 m in height. Three separate sanitary latrines will be constructed for site office, male labor and female labor and one tubewell will be installed near the labor shed for safe drinking water. The generated solid waste will be kept in waste bins and be collected by the conservancy workers of Paurashava on regular basis. Health and safety of workers will be ensured through providing health and hygiene training to the workers by PIU.

## **8.2 Potential Significant Environmental Impacts during Construction Phase**

The potential environmental impacts during construction phase of this multi-purpose building could be categorized into: (a) ecological impacts; (b) physic-chemical impacts; and (c) socio-economic impacts and listed bellow:.

### **8.2.1 Ecological impacts**

As per EMF, the ecological impacts of the proposed sub-projects are insignificant. Based on primary assessment of the nature and scale of the proposed sub-projects and assessment of sub-project locations (based on field visits), it appears that ecological impacts are not significant in case of this type of sub-project.

### **8.2.2 Physicochemical impacts**

Due to implementation of this proposed sub-project in Jhenaidah Paurashava, there will some possible physicochemical impacts be appeared in and around the project site. The possible physicochemical impacts may be from earth work, construction material sourcing, air quality and dust, noise and vibration, drainage congestion, solid waste generation and water pollution.

#### **8.2.2.1 Earthwork**

The subproject of market construction work consists of earth cutting, earth filling and removal of unsuitable materials. These works lead dust blowing, noise and vibration which disturb the local adjacent people, pedestrians. Excavation and trenching are hazardous construction activities that involve soil removal.



**Common Mitigation Measures:** Heavy equipment like excavator, truck, tractors will be kept away from trench edges. Trenches will be inspected at the start time of each shift. Work under raised loads will be prohibited. Water will be spraying during day time to stop dust blowing. Adequate safety barriers with clearly visible signs will be given in appropriate place to alert both drivers and pedestrians. Adequate lighting will be provided to the barriers and signs to make them clearly visible at night from a distance sufficient to respond. Temporary arrangement will be facilitate for pedestrian and vehicular traffic. Excavated soil and unsuitable materials will be kept in safe places and will be reused for earth filling. Extra soil (if any) will be removed with other construction waste materials and dumped in Paurashavas' dumping sites.

### **8.2.2.2 Construction material sourcing**

The construction materials such as sand and bricks are normally obtained from the local vendors. Sand is collected from nearby Kustia and stones and coarse sands will be collected from Sylhet region. Bricks will be collected from licensed operators who are producing brick following environmentally low degradable and safe mechanism.

**Common Mitigation Measures:** Construction materials will be obtained from officially licensed and approved quarries and brick fields. The copies of the relevant licenses will be made available for inspection at the site by the contractor. Stones and course sands will be collected from other places (Sylhet/Sunamganj) of the country. All the materials will be carried, stored by cover and in a safe places and ensure safe transportation and handling by regular monitoring site engineer.

### **8.2.2.3 Air quality and dust**

During this stage, insignificant air pollution may be occurred with dust, smoke and other gaseous component like SO<sub>x</sub>, NO<sub>x</sub>, produced due to land preparation, operation of diesel engines, welding, burning of wood (in labor shed) etc. though this is likely to be limited to the areas surrounding the sub-project sites. Usually the construction site generates high levels of dust classified as PM<sub>10</sub> / PM<sub>2.5</sub> - particulate matter less than 10/2.5 microns in diameter, invisible to the naked eye. Oil spillage from engine causes soil pollution.

**Common Mitigation Measures:** It will be ensured that all project vehicles are in good operating condition. Dust suppression measures by water spraying throughout the construction period in and around the subproject site, uncovered aggregates and loose materials such as stockpiles of the sands, excavated earth etc.(2 times/day).

In order avoid stone crush/brick crush at site, stone/brick chips will be transported from outside. During carrying of construction materials like sand, soil, brick, cements will be covered by "terpal" and continually damp down with low levels of water except cement



sacks. Cover piles of building materials like cement, sand and other powders, should be regularly inspected for spillages, and located them where they will not be washed into drainage areas. Non-toxic paints, solvents and other non-hazardous materials should be used wherever possible. Spilled oil will be collected by using plastic container to control soil pollution by oil spillage. Air quality (SPM, PM10, and PM 2.5) will be measured by the recognized environmental survey company

#### **8.2.2.4 Noise and vibration**

Construction sites will produce a lot of noise, mainly from generator, pilling machine, iron cutting, brick breaking machines, equipment, and machinery, but also from workers shouting at the project site. Excessive noise is not only annoying and distracting, but can lead to hearing loss, high blood pressure, sleep disturbance, and extreme stress to nearest residential areas. Vibration also occurs during pilling works that is an issue for safety of nearby building and can causes landslides.

Significant noise is generated from operation of pile drivers, mixing machines, brick crusher, generators movement of vehicles, noise and vibration could results. It may create negative impact to adjacent residents, educational/religious institutions which is near to the propose site to some extent. The magnitude of impact is medium.

**Common Mitigation Measures:** Noise pollution will be reduced as possible through careful handling of materials; modern, quiet power tools, equipment and generators; low impact technologies; and wall structures as sound shields if possible. Brick and stone crusher will not be used at project site. Excessive noise creating construction equipment will not be used at night. In order to monitor the noise level created due to construction work, noise level will be measured by the recognized environmental survey company.

#### **8.2.2.5 Drainage congestion**

Due to the storage of materials, piled up excavated material/soil, and temporary embankments constructed to keep the work area dry, there may be drainage congestion in the construction site, but the magnitude of this will be minor. Not only that, water, sourced from this project site due to construction work and also from labor shed; may create drainage congestion in nearby drainage system. So, the identified potential impact is drainage congestion.

**Common Mitigation Measures:** In order to avoid clogging water inside the project site there will have provision of adequate diversion channel as well as provision for pumping of congested water, if needed. Jhenaidah Paurashava conservancy section will ensure normal flow in nearby drain by monitoring and maintenance.



#### **8.2.2.6 Water pollution**

There will be possibility of water pollution which may be caused due to waste water generation from construction work as well as labor sheds.

**Common Mitigation Measures:** This type of water pollution will be avoided by preventing discharge of waste water, wastes into adjacent water bodies/ drains. Paurashava authority will ensure that there will be no direct discharge of waste water from the project site to the nearby drainage system.

#### **8.2.2.7 Solid waste generation**

During the construction phase, solid waste will be generated from construction work and also from labor sheds.

**Common Mitigation Measures:** The construction waste will be dumped in safe space of the project site. At least 2 bins (400 litre size) will be placed within close proximity of the labor shed. Conservancy workers of the Paurashava will collect these waste and dumped in Paurashavas' dumping site located in Nagar Bathan, 6 km away from the Paurashava on west side beside the Jhenaidah-Chuadanga Road.

### **8.2.3 Socio-economic impacts**

Due to intervention of this sub-project, under socio-economic category, traffic congestion, threat to workers health and safety and temporary labor residence in permanent settlement will be occurred during construction phase.

#### **8.2.3.1 Workers safety**

There will be general risk of accidental injury of workers during construction work. Most of the cases accident is happened due to unconsciousness and for not using personal protective equipment. There is also a potential health risk from contamination at work sites.

**Common Mitigation Measures:** Health safety training will be given to the workers. Personal protective equipment such as helmet, hand gloves, musk, goggles and gumboot will be provided to the workers and it will make sure that they will used it properly. A first aid box would be kept at work site and some of them will be trained about first aid. Health and safety of workers and work site would be monitored regularly to reduce health risk and negative impacts on workers' health and life.



### **8.2.3.2 Traffic congestion**

Probable stock piling beside the road and excessive movement of construction materials carrying vehicles on the nearby Jhenaidah-Magura Highway (Hossain Shahid Shoroardhi Road) will create traffic congestion and hinder pedestrian movement.

**Common Mitigation Measures:** Construction materials carrying vehicle will move during off-peak hours especially at night. Stock piling will be done inside the project side.

### **8.2.3.3 Temporary labor residence in permanent settlement**

There will be a possibility of temporary labor residence in adjacent permanent settlement which will create social chaos.

**Common Mitigation Measures:** Contractor will construct labor shed in the project site which will ensure labor residence within defined protected area. Not only that, it will protect their health and safety.

## **8.3 Potential Significant Environmental Impacts during Operational Phase**

### **8.3.1 Ecological impacts**

#### **8.3.1.1 Water pollution by waste water**

There will be possibility of water pollution which may be caused due to waste water generation from the toilet, floor cleaning activities, restaurants of the building.

**Common Mitigation Measures:** In the building there will be septic tank and soak well with adequate capacity for human excreta. If the tanks will full, the untreated fecal sludge will be transfer to the fecal sludge treatment plant, located in Nagar Bathan beside Jhenaidah-Chuadanga road, 6km away from the Paurashava by dumping truck. Other waste water from toilet, restaurant, floor cleaning activities as well as storm water will be drained out to the nearby drain which is secondary drain and connected after 330 meter with the primary drain. The waste water and storm water then with drain to safe outfall.

### **8.3.2 Physicochemical impacts**

#### **8.3.2.1 Drainage congestion**



There will be possibility of drainage congestion in the internal drainage system as well as nearby drains of existing municipal drainage system by solid waste disposal by the visitors, if the drain will not maintained regularly.

**Common Mitigation Measures:** Paurashava will ensure regular maintenance of the adjacent drain as well as the main drain.

#### **8.3.2.2 Solid waste**

Solid waste will be generated from the restaurants, food shops, shops and other offices of the proposed building.

**Common Mitigation Measures:** The Market Committee will have a cleaning mechanism by deploying waste collector who will collect waste periodically from each floor and dispose those of a secondary dumping station. Paurashavas' conservancy worker will collect solid waste from the secondary duming station/garbage and dumped it in specified dumping station located in Nagar Bathan, located in Jhenaidah-Chuadanga highway and 6km away from Paurashava.

#### **8.3.2.3 Rain water harvesting reservoir**

For this seven storied building, there will be more demand of water supply creating extra pressure on existing Pourashava water supply system.

**Common Mitigation Measures:** An effective rainwater harvesting system would be established in the proposed subproject. Required number of water reservoir would be placed on the roof top and basement of the market to harvest rain water in rainy season following rain water harvesting procedure. There is possibility of generating bacteria in the stored rain water in the long run. So, quality of reserved water would be monitored regularly and test in laboratory. The water reservoir would be cleaned regularly.

#### **8.3.2.4 Solar Energy**

In the proposed sub-project there will be huge electricity demand. In commercial activities, there will be the requirement of more lighting in shops to attract more customers. This demand can be reduced by using solar energy. This solar energy will be part of the regular electricity supply. This will be used for common space lighting.

**Common Mitigation Measures:** A quality full solar system would be established in the proposed market. Solar panel would be setup at roof top and it will be maintained regularly. Low energy consumed electric lights and appliances will be used during operation of the market.



### 8.3.3

#### **Occupational Health and Safety:**

Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction and decommissioning sites. Recommendations for their prevention and control include the most important risks associated with the construction activities are listed below:

- Training of workers in lifting and materials handling techniques in construction and decommissioning activities, including the placement of weight limits above which mechanical assists or two-person lifts are necessary
- Planning work site layout to minimize the need for manual transfer of heavy loads
- Implementing administrative controls into work processes, such as job rotations and rest or stretch breaks

To aware workers of about risk of falling from heights by providing temporary fall prevention device, personal fall arrest system, identifying proximity of fall hazard zones and monitoring. Risks of using of the machineries in motion such as steel cutter, glass cutter etc;

- Risk from drop down of the materials from the height during chipping, plastering work, painting work etc;
- Risk from mechanical failure of the equipment;
- Risk from the traffic collision or accidents during operation of the equipment such as hydraulic excavator, steel cutter, welding machine and vehicles movement for the transportation activities of the subproject;
- Risks from head loads for carrying soil, construction materials and construction equipment;
- Risk associated to the sudden bad weather working conditions such as storm, thunder storm and earth quake etc.
- Exposure to the sunlight- workers are being exposed to the sun for long hours;
- Exposure to the high temperature, and humidity for a long time resulting in dehydration;
- Contact with the hazardous substances and wastes pose risks of the infections and diseases



### **8.3.4 Socio-economic impacts**

#### **8.3.4.1 Traffic congestion**

Due to enhanced commercial activities, there will be more traffic movement adjacent the proposed super market, especially close to Jhenaidah Magura highway. This traffic congestion will affect the traffic in Shahid Alamgir Sarak in west, Jhenaidah Magura highway in north side, Kabi Sukanta Sarak, Upazila Sarak, Natun Hatkhola, RN Sarak in east side.

**Common Mitigation Measures:** In the proposed super market building there will have the provision of adequate parking space and adequate space for vehicular maneuvering within building premise. Not only that, there will have provision of passenger dropping within the building premises and avoiding on street dropping. Special staff will be recruited by the building user committee for controlling traffic movement in front of the market.

#### **8.3.4.2 Firefighting equipment**

This will be a public place where different kind of visitors will come. In the proposed market, there will be different types of shops including food shop, restaurant etc. In food shops and restaurant stoves will be used for cooking purpose. So, the firefighting items are very important at the proposed market.

**Common Mitigation Measures:** As per Fire Service and Civil Defense Ordinance –2003, in clause no-7, there is provision of having clearance from the concern Department. In every floor of this proposed market there will have adequate firefighting devices at strategic points. Provide training on device use to the staffs who will be on duties at the Market areas. Clear demarcation and instruction regarding availability of firefighting facilities as well as fire escape will be provided in every floor of this building.

#### **8.3.4.3 Toilet for Male and Female**

It is expected that 2000 (approx.) visitors including male, female, children, and disabled peoples will visit the market for shopping, selling and other related purposes.



**Common Mitigation Measures:** There would be separate toilets in every floor for male and female separately. Special arrangement would be ensured for the disabled people. The market committee with the help of Paurashava authority will maintain the toilets regularly.

## 9. Environmental Management Plan (EMP)

In order to mitigate environmental impacts occurred due to intervention of this proposed sub-project a comprehensive management plan will be implemented considering the nature of this sub-project, local context, base line environmental condition of the project site.

### 9.1 Mitigation and enhancement measures taken

Considering above stated potential environmental impact during construction as well as operational phase, some environmental mitigation measures will be taken and responsible agency for carrying out the jobs are being proposed. These actions are being proposed as per EMF.

### 9.2 Environmental Monitoring Plan

In order to monitor environmental impacts resulting from the sub-project activities and to ensure implementation of the proposed “mitigation measures”, an environmental monitoring plan is being proposed here based on EMF for MGSP. The environmental monitoring plan is presented in following table:

**Table-11: Monitoring plan during construction phase**

Sub-project	Monitoring Parameter and Scenario	Monitoring Frequency	Resource Required and Responsibility
Multipurpose super market	Noise level	As noise generating stone crush/brick crush machine, which will be used frequently is being proposed to use in other area, so there will be possibility of low noise level. For other noise generating machineries, once every month particularly during construction period.	Contractor, under the guidance of ULB/BMDF
	If significant air pollution is suspected:	Once in every two months during construction period.	



	Particulate Matter (SPM/ PM10/ PM2.5)		
	Water Quality Lab test	During pre-Construction and construction phase	
	Visual observation of drainage congestion, traffic within around sub-project location	Once a week; if drainage/ traffic congestion suspected	

**Table12: Monitoring plan during operational phase**

Monitoring Parameter and Scenario	Monitoring Frequency	Resource Required and Responsibility
Traffic congestion, accidents	As needed	ULB, with support from BMDF
Solid waste	Regular	
Firefighting equipment	Every six months	
Toilet	Regular	
Solar energy (panel cleaning of panel)	Every month	
Rain water harvesting (rain water reservoir cleaning)	Every month	
Water Quality test	Every six months	
Air quality test	Every six months	
Noise level test	Every six months	

### 9.3 Grievance Redress Mechanism

As a part of EMF and SMF, a grievance redress mechanism has been developed, including structure of a grievance redress committee. As per guideline of SMF, a grievance redress committee (GRC) has been formed in this Paurashava. This committee will look after all grievance related issues concerned to the intervention of proposed sub-project of Jhenaidah Paurashava.

**Table-13: Grievance Redress Committee (GRC) of Jhenaidah paurashava.**

SI No	Name & address	Designation
01	Mr.Md Abdul Motleb Mia Panel Major-01, Jhenaidah Paurashava.	Convenor



## Environmental Appraisal Report of Jhenaidah Paurashava

02	Male and Female Councillor of concerned Ward, Jhenaidah Paurashava.	Member
03	Mr. Md Kamal Uddin Ahmmad, Assistant Engineer and Safeguard Focal Person, Jhenaidah Paurashava	Member Secretary
04	Director, AIDE, Jhenaidah Paurashava (NGO, representative)	Member
05	Affected person/	Invited/Complainant

Through this GRC formed in Jhenaidah Paurashava will establish a procedure to answer sub-project-related queries and address complaints, disputes, and grievances about any aspect of the sub-project, including disagreements regarding the assessment and mitigation of environmental impact. The GRC will ensure proper presentation of complaints and grievances, as well as impartial hearings and transparent decisions.

The sub-project-affected persons (PAP) can register their grievances at the complaint cell. All cases will be registered, categorized and prioritized by the Paurashava level authority and by the Environmental Specialist of PMU/BMDF. The GRCs will meet periodically to discuss the merit of each case and fix a date for hearing and notify the PAP to submit necessary documents in proof of her/his claim/case; resolve grievances within one month of receipt of complaint.

Fig 06: Scanned copy of office order for GRC formation

Annex - 4 (iv)

**ঝিনাইদহ পৌরসভা কার্যালয়**  
(স্থাপিতঃ ১১-৩-১৯৫৮ ইং।  
E-mail-jhenaidahpourashava@gmail.com  
www.jhenaidah.pourashava.org

অফিসঃ  
মেম্বরঃ ১১৪১৩  
সচিবঃ ৬৩০০৮  
কোডঃ ৪০৪১

স্মারক নং: কিঃ পৌ/প্রশা/২০১৬/১১২৭ তারিখঃ ২২/১২/২০১৬ ইং।

**অফিস আদেশ**

ঝিনাইদহ পৌর এলাকার নাগরিকবৃন্দের বিভিন্ন অভিযোগ/ গ্রীভেন্স গ্রহণ ও নিষ্পত্তির জন্য নিম্নোক্ত অভিযোগ নিরসন সেল (গ্রীভেন্স রিড্রেস সেল) গঠন করা হলোঃ-

ক্রমিক নং	নাম	পদবী
ক)	জনাব মোঃ আব্দুল মতলেব মিয়া প্যানেল মেয়র- ১, ঝিনাইদহ পৌরসভা।	আহবায়ক
খ)	সংশ্লিষ্ট ওয়ার্ডের পুরুষ কাউন্সিলর, ঝিনাইদহ পৌরসভা। সংশ্লিষ্ট ওয়ার্ডের মহিলা কাউন্সিলর, সংরক্ষিত আসন, ঝিনাইদহ পৌরসভা।	সদস্য
গ)	জনাব মোঃ কামাল উদ্দীন, সহকারী প্রকৌশলী ও Safeguard Focal person, ঝিনাইদহ পৌরসভা।	সদস্য
ঘ)	পরিচালক এইড ঝিনাইদহ (এনজিও প্রতিনিধি)	সদস্য
ঙ)	ক্ষতিগ্রস্ত ব্যক্তি / অভিযোগকারী	বিশেষ আমন্ত্রিত ব্যক্তি

বিঃ দ্রঃ গ) নং সদস্য অভিযোগ নিরসন সেলের (গ্রীভেন্স রিড্রেস সেলের) সাচিবিক সহায়তা প্রদান করবেন। ক্ষতিগ্রস্ত ব্যক্তি/ অভিযোগকারীকে বিশেষভাবে আমন্ত্রিত ব্যক্তি হিসেবে অভিযোগ প্রতিকার সেলের সভায় উপস্থিত থাকার জন্য অনুরোধ জানানো হবে।

**কার্যপরিধিঃ**

ক) তৃতীয় নগর পরিচালন ও অবকাঠামো উন্নতিকরণ ( সেটর ) প্রকল্পের সফল বাস্তবায়নের ক্ষেত্রে শুধুমাত্র আপত্তি, অভিযোগ নয় যে কোন পরামর্শ, প্রশ্ন এবং মতামত গ্রহণ ও তা সমাধানের ব্যবস্থা করা;

খ) নগরবাসী বা যে কোন পরিদর্শনকারীর অভিযোগ এবং মতামত গ্রহণের জন্য পৌরসভা অফিসের সুবিধাজনক স্থানে অভিযোগ বাজ স্থাপন করা এবং সাব-প্রজেক্ট ও সাইনবোর্ডে Safeguard Focal Person এর ফোন নং উল্লেখ করা;

গ) ক্ষতিগ্রস্ত ব্যক্তিদের নিয়ে প্রতিমাসে এক বা একাধিক অভিযোগ নিরসন সেল ( GRC ) সভা অনুষ্ঠান করা;

ঘ) প্রতিটি অভিযোগ যথাযথ বিশ্লেষণ করা এবং সঠিকভাবে তা নিবন্ধন / রেজিস্টার করা (সংযুক্তি -২ অনুযায়ী)

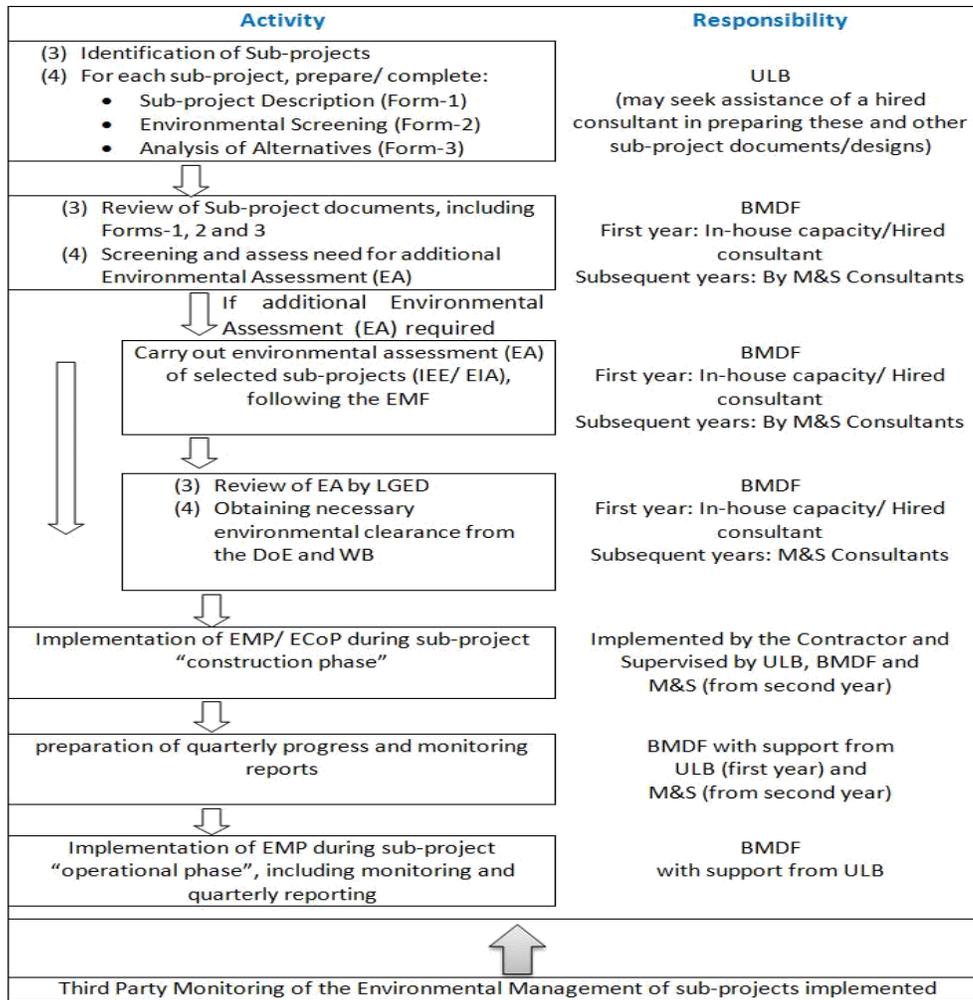
ঙ) Safeguard Focal Person অভিযোগ পাওয়ার ৭ দিনের মধ্যে গ্রীভেন্স এর সমাধান করা;

#### 9.4 Institutional Arrangement for Implementation of EMP

The Engineering Section of Jhenaidah Paurashava will be responsible for smooth implementation of the EMP. Project Management Unit, formed in BMDF will facilitate ULBs in this connection. Both ULB and PMU will guide the contractor to maintain the EMP including taking mitigation measures as per proposal stated in EMP and to ensure regular testing of air and noise quality.



**Fig 07: Flow diagram of EMP implementation institutional arrangement**



## 9.5 Environmental Code of Practice (ECoP)

Apart from defining potential environmental impact and proposing tentative mitigation measures under three categories of baseline environment of the site selected for the proposed sub-project implementation, there are some other potential environmental impacts as per Environmental Code of Practice (ECoP) as stated in EMF for MGSP. The ECoP is a guideline for reduce or eliminate environmental risk due to various activities associated with the implementation of the proposed multipurpose commercial building. Here are some mitigation measures including access to information, public health and safety, in order to reduce the environmental risk, are stated below:

### 9.5.1 Access to information

Environmental appraisal report of the proposed project including description of the project, its potential impacts, taken mitigation measures, responsible person or authority



will be well circulated both in Bengali and English. Copy of the report will be preserved in the Paurashava office, project site office, sent to BMDF office and also published BMDF web site.

### **9.5.2 Public Health and Safety**

In order to incorporate public health and safety concerns, the ULBs and the Contractor shall disseminate some safety information relating to location of first aid facilities, precaution measures and other safety information. Proper safety/warning signs will be installed by the contractor to inform the public of potential health and safety hazard situations during the construction phase in the vicinity of the project. The ULBs shall carry out periodic inspections in order to ensure that all the measures are being undertaken as per this ECoP.

### **9.5.3 Cost of environmental enhancement works in BOQ**

<b>Item No.</b>	<b>Description of Item</b>	<b>Costs (BDT in million)</b>
1	Construction of Labor shed, latrine, safe water supply	0.30
2	Labor safety equipment	0.05
3	Dust suppression measures like water spraying in and around the site	0.02
4	Air, Water, Noise Quality test	0.06
5	Water logging	0.01
	Total	0.44



**9.5.4 Summarized EMP with tentative cost**

Sub-project Activity.	Potential Impact	Proposed Mitigation & Enhancement Measures	Estimated Mitigation Cost	Frequency of monitoring	Responsible for monitoring	
					Implement	Supervision
<b>Pre-Construction Phase</b>						
Construction of labor shed.	Generation of sewage and solid waste; water/ environmental pollution	<ul style="list-style-type: none"> <li>• Construction of sanitary latrine/ septic tank system.</li> <li>• Provision of waste bins/cans, where appropriate</li> <li>• Proper disposal of solid waste</li> </ul>	100000.00	Before Construction	Contractor	Environmental Specialist-PMU, MGSP, BMD F, PIU/ULB
	Health of workers	<ul style="list-style-type: none"> <li>• Raising awareness about hygiene practices among workers.</li> <li>• Availability and access to first-aid equipment and medical supplies</li> </ul>				
	Possible development of labor camp	<ul style="list-style-type: none"> <li>• Two separate (15x20 feet for male, 15x25 feet for female) labors shed will be constructed in the open space at south side of the subproject area.</li> </ul>				
	Employing local labour as much as possible	<ul style="list-style-type: none"> <li>• Contractor to employ local work force, where appropriate; promote health, sanitation and road safety awareness</li> </ul>				
<b>Construction Phase</b>						
Construction work including earth work,	Drainage congestion	<ul style="list-style-type: none"> <li>• Provision of adequate diversion channel.</li> <li>• Provision for pumping of congested water, if needed</li> </ul>	10000.00	During Construction	Contractor	Environmental Specialist-PMU, MGSP, BMD F, PIU/ULB



Sub-project Activity.	Potential Impact	Proposed Mitigation & Enhancement Measures	Estimated Mitigation Cost	Frequency of monitoring	Responsible for monitoring	
					Implement	Supervision
carrying of construction materials		<ul style="list-style-type: none"> <li>• During the wet season, ensure adequate monitoring of drainage effects</li> </ul>				
	Noise pollution	<ul style="list-style-type: none"> <li>• Use of noise suppressors and mufflers in heavy construction equipment.</li> <li>• Brick and stone crusher will not be used at site.</li> <li>• Avoid using of construction equipment producing excessive noise at night.</li> <li>• Avoid prolonged exposure to noise (produced by equipment) by workers</li> <li>• Noise level will be measured by the recognized environmental survey company</li> </ul>	8000.00			
	Air pollution	<ul style="list-style-type: none"> <li>• Ensure that all project vehicles are in good operating condition.</li> <li>• Dust suppression measures by water spraying throughout the construction period in and around the subproject site, uncovered aggregates and loose materials such as stockpiles of the sands, excavated earth etc.(2 times/day) Spray water on dry surfaces regularly to reduce dust generation.</li> <li>• In order avoid stone crush/brick crush at site, stone/brick chips will be transported from outside.</li> </ul>	30000.00 (for Air quality Test) 10000.00 (For dust suppression measures)			



Sub-project Activity.	Potential Impact	Proposed Mitigation & Enhancement Measures	Estimated Mitigation Cost	Frequency of monitoring	Responsible for monitoring	
					Implement	Supervision
		<ul style="list-style-type: none"> <li>Air quality (SPM, PM10, and PM 2.5) will be measured by the recognized environmental survey company</li> </ul>				
	Water pollution	<ul style="list-style-type: none"> <li>Prevent discharge of waste water, wastes into adjacent water bodies/ drains.</li> <li>Water quality will be measured by the recognized environmental survey company</li> </ul>	20000.00			
	Traffic congestion	<ul style="list-style-type: none"> <li>Schedule deliveries of material/ equipment during off-peak hours especially at night.</li> <li>Cautionary signs will be installed as per requirement</li> </ul>	10000.00			
	Health, Safety and well being	<ul style="list-style-type: none"> <li>Raising awareness about hygiene practices among workers.</li> <li>Availability and access to first-aid equipment and medical supplies</li> <li>Providing PPE like hand gloves, spectacles for eye protection, helmets, masks, visible jacket, ear plug, safety boots for at least 30 person(25 for workers and 5 for visitor) and one first aid box with necessary medicine</li> <li>One tube well will be installed in the site for providing pure drinking water as well as supplying water to the work site.</li> <li>Three separate toilets will constructed.</li> </ul>	100000.00 (For PPE) 2500.00 (For First Aid box) 60000.00 (For tube-well) 30000.00 (For sanitary latrin) 4000.00 (For Cautionary signs)			



Sub-project Activity.	Potential Impact	Proposed Mitigation & Enhancement Measures	Estimated Mitigation Cost	Frequency of monitoring	Responsible for monitoring	
					Implement	Supervision
		<ul style="list-style-type: none"> <li>Cautionary signs will be installed as per requirement</li> </ul>				
	Solid waste	<ul style="list-style-type: none"> <li>Proper disposal of solid waste</li> <li>Provision of waste bins/cans, where appropriate, at least 6 bins (400 litre size) to be provided</li> </ul>	7500.00			
<b>Operation Phase</b>						
Operation of the sub-project	Fecal Sludge and Waste water generation	There will be septic tank and soak well with adequate capacity for human waste. If the tanks will full, the untreated fecal sludge will be transfer to the fecal sludge treatment plant, located in Nagar Bathan beside Jhenaidah-Chuadanga road, 6km away from the Paurashava. Other waste water from toilet and kitchen of the building will be dispose to the soak pit	Cost should be included in the regular maintenance cost	During Operation phase	PIU/ULB with the help of BMDF	BMDF
	Drainage congestion	Paurashava will ensure regular maintenance of the adjacent drain as well as the main drain.	Cost should be included in the regular maintenance cost	During Operation phase		
	Solid waste	roper disposal of solid waste	Cost should be included in the regular	During Operation phase		



Sub-project Activity.	Potential Impact	Proposed Mitigation & Enhancement Measures	Estimated Mitigation Cost	Frequency of monitoring	Responsible for monitoring	
					Implement	Supervision
		Provision of waste bins/cans, where appropriate, at least 6 bins (400 litre size) to be provided, then to secondary garbage bin for collection by Municipality.	maintenance cost			
	Rain water harvesting reservoir	An effective rainwater harvesting system would be established in the proposed subproject. Required number of water reservoir would be placed on the roof top and basement of the market to harvest rain water in rainy season following rain water harvesting procedure. There is possibility of generating bacteria in the stored rain water in the long run. So, quality of reserved water would be monitored regularly and test in laboratory. The water reservoir would be cleaned regularly.		During Operation phase		
	Solar Energy	A quality full solar system would be established in the proposed market. Solar panel would be setup at roof top and it will be maintained regularly.		During Operation phase		
	Traffic congestion	In the proposed super market building there will have the provision of adequate parking space and adequate space for vehicular manoeuvring within building	Cost should be included in the regular	During Operation phase		



Sub-project Activity.	Potential Impact	Proposed Mitigation & Enhancement Measures	Estimated Mitigation Cost	Frequency of monitoring	Responsible for monitoring	
					Implement	Supervision
		premise. Not only that, there will have provision of passenger dropping within the building premises and avoiding on street dropping. Special staff will be recruited by the building user committee for controlling traffic movement in front of the market.	maintenance cost			
\	Firefighting equipment	In every floor of this proposed market there will have adequate fire fighting devices at strategic points. Provide training on device use to the staffs who will be on duties at the Market areas. Clear demarcation and instruction regarding availability of firefighting facilities as well as fire escape will be provided in every floor of this building.	Cost should be included in the regular maintenance cost	During Operation phase		
	Toilet for Male and Female	There would be separate toilets in every floor for male and female separately. Special arrangement would be ensured for the disabled people. The market committee with the help of Paurashava authority will maintain the toilets regularly.	Cost should be included in the regular maintenance cost	During Operation phase		



## **10. Conclusion and Recommendation**

There is no significant negative impact identified of the proposed sub-project under Jhenaidah Paurashava during environmental assessment process. No significant vegetation extinction will take place during construction of this sub-project. During construction phase, there will be the possibility of insignificant noise level increase and air pollution due to dust blowing; those will be mitigated through necessary mitigation measures. Solid waste which may be generated from construction works as well as operational activities will be removed and dumped in Paurashavas' definite dumping station which is 6 km far from the Paurashava. Fecal sludge generated during operational phase will be cleaned by Paurashava's dumping truck managed Paurashavas own fecal treatment plant situated in same location. Waste water will be drained out through existing drainage channel. So, there will be no or minor water pollution under ecological environment. Emphasis will be given to make the market environment friendly during design and construction phase. Renewable resource, energy would be used in water supply, energy use. Uses of solar energy and rain water would be ensured during construction and operation time of the market. Environmental quality would be monitored and will make sure that natural environment would not be affected by the sub-project.

Based on environmental assessment considering baseline environmental condition and potential environmental impact due to intervention of the proposed sub-project, mitigation measures, monitoring and grievance redress mechanism and tentative cost involvement were recommended. Special emphasis should be given on the EMP as recommended here. In these regard, the proposed sub-project Multipurpose Super Market Building is recommended for implementation on environmental assessment (EA) ground.

## **Annex : Environmental Screen Format**



**Form 1: Sub-project Description  
(to be completed by ULBs)**

- Name of ULB : Jhenaidah Paurashava**
- 1. Name of sub-project : 07 storied (01 Basement + 06 stories) -Multipurpose Super Market Building**
  - 2. Brief description of sub-project : Construction of Super Market cum-Multipurpose Building.**
  - 3. Location of sub-project : Ward 2 beside the Municipal office, HSS road.**
  - 4. Layout of the sub-project : (attached a layout map)**
  - 5. Ownership of sub-project land :**
    - a) Government/ ULB owned : ULB owned
    - b) Private land (need acquisition) : No
  - 6. Brief description of sub-project site:** It is open place. Its position is 3 most important roads turning point and most busy area. It has a small benyon tree and 3 nos small much damaged building and some vegetation. There is no dispute.
  - 7. Brief information of environment within sub-project influence area:** Social elements of parameters on which the sub-project may have impact include human settlement, people demand on marketing, trading environment and facility, trading ability of people, trading wishes power, educational institutions, deferent commercial, religious establishment, major utility services, power plants, communication networks, etc are the social environment.

**Potential Negative Impacts and mitigation measures:** Possible environmental impacts of sub-project and corresponding mitigation and enhancement measures during construction phase. So there are no potential negative impacts.
  - 8. Key activities of sub-project: Trading.**
  - 9. Estimated cost of sub-project : BDT: 500.00 million**
  - 10. Schedule of implementation :**
    - a) Sub-project duration (months) : 24
    - b) Tentative start date : April, 2018
    - c) Tentative completion date : March, 2020
  - 11. Potential benefit from sub-project:** It is another income generating component of the ULB. Jhenaidah Municipality is a densely populated town. The existing private market (where on public facility) cannot fulfil the present public demand. Paura Super market is another income generating component of the ULB. So, it will be bring to different type of scope. These are a) improvement of urban living condition, b) increase property value, c) increase of trade and commerce, d) creation of employment opportunity, e) different social occasion celebrate with peaceful f) safe the agricultural land by arrangement and increase of residence facility, g) bring a modern living life of people h) after all ULB financial position will be stand on strong foundation.

**Form 2: Environmental Screening**



**Name of ULB : Jhenaidah Paurashava**

**Name of sub project: 07 storied (01 Basement + 06 stories) Multipurpose Super Market Building.**

**3. Potential Environmental Impact during Construction Phase:**

**g) Ecological impacts:** (important sub-projects include storm drain, bridge, box culvert, and boat landing jetty)

• Felling of trees	Significant	Moderate	Minor ✓	Number of trees-06
• Clearing of vegetation	Significant	Moderate	Minor ✓	
• Potential impact on species of aquatic (i.e., water) environment	Significant	Moderate	Minor ✓	

**h) Physicochemical impacts:** (all sub-projects)

•Noise pollution	Significant	Moderate ✓	Insignificant
•Air pollution	Significant	Moderate	Insignificant ✓
•Drainage congestion	Very likely	Likely ✓	Unlikely
•Water pollution	Significant	Moderate	Insignificant ✓
•Pollution from <i>solid</i> construction waste	Significant	Moderate	Insignificant ✓
•water logging	Significant	Moderate	Insignificant ✓

**i) Socio-economic impacts:** (all sub-projects)

• Traffic congestion	Very likely	Likely ✓	Unlikely
• Health and safety	Significant	Moderate	Insignificant ✓
• Impact on archaeological and historical	Significant	Moderate	Insignificant ✓
• Employment generation	Significant ✓	Moderate	Insignificant ✓

**4. Potential Environmental Impact during Operational Phase:**

**j) Ecological impacts:** (important sub-projects include storm drain and boat landing jetty)

• Potential impact on species of aquatic (i.e. water) environment	Significant	Moderate	.....Minor ✓
---	-------------	----------	--------------

**k) Physicochemical impacts:** (all sub-projects)

• Potential air quality and noise level(especially for road)	Improvement ✓	No-improvement	Deterioration
• Drainage congestion (especially for drain)	Improvement	Minor Improve ✓	No Impact
• Risk of Water pollution (especially for	Significant	Moderate	Minor ✓



storm drain and jetty)

- Pollution from solid waste (especially for SWM, and market) Improvement ✓ No-improvement Deterioration

**5. Socio-economic impacts:** (all sub-projects)

- Traffic (especially for road, bridge, box culvert, bus/truck terminal) Improvement No-improvement Adverse✓
- Safety Improvement ✓ Adverse
- Employment generation Significant ✓ Moderate Minor

**6. Summary of Possible environmental impacts of the subproject:** During the implementation there will be insignificant air, water, noise pollution but create some employment opportunities. It will not require cutting any trees. It will not create any traffic congestion, water logging. But after completion of the project it will improve the traffic mobility, safety, air quality and noise level and eradicate drainage congestion.

**7. Category of sub-project :** (follow Table 1 of EMF)

- a) According to ECR 1997 :Green / Orange A / **Orange B** ✓ / Red / Not Listed
- b) According to WB classification : **Category B** ✓/ Category C

**8. Proposed mitigation measure** (follow Appendix I or Table 9 of EMF as appropriate) :

**During construction phase:**

1. Construction of Sanitary latrine for construction labor
2. Proper disposal system for removal of solid waste.
3. Raising awareness about hygiene practices among workers.
4. Spray water on dry surface, construction materials.
5. Initiatives to reduce noise level,
6. Prevent direct waste water flow to nearby water bodies
7. Construction of wastewater/ sewage disposal system may create Groundwater pollution due to discharge of wastewater/effluent in deep soakage well and mitigation is proposed to restrict construction of deep soakage well

**During Operational Phase:**

Duet solid and liquid waste disposal, environmental/ water pollution, health risks and clogging of drainage lines may occur. Mitigation is proposed as Proper solid waste management and regular maintenance of septic tank, drains

**9. Overall Comments:** This sub-project has been selected considering public demand and for the demand and for the benefit of local people. If we can implement the sub-projects component the ULB would be stand on a well and strong financial foundation. Environmental, social trading, create opportunity of jobs, ULB will be able to enhance its revenue income, give to its people a modern life style etc.

**10. Prepared by :** Engineering division, Jhenaidal Paurashava

**11. Reviewed by:**

**(Md. Rashed Ali Khan)**  
Sub-Asstt. Engineer  
Jhenaidah Paurashava

**(Md. Kamal Uddin)**  
Assistant. Engineer  
Jhenaidah Paurashava

**(Md. Sirajul Hoque)**  
Executive Engineer  
Jhenaidah Paurashava