GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

**Bangladesh Municipal Development Fund (BMDF)**

# ENVIRONMENTAL ASSESSMENT REPORT

**Name of the Subproject:** Construction of 01 (One) Basement+03 Storied & provision of 10 Storied Super Market cum-Multipurpose Building

## Municipal Governance and Services Project (MGSP)

**FINAL REPORT**
**May 2018**

***Submitted by:***

**SREEPUR POURSHAVA**

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**ABBREVIATIONS**

| | |
|---|---|
| AP | Affected Person |
| BDT | Bangladeshi Taka |
| BMD | Bangladesh Meteorological Department |
| BMDF | Bangladesh Municipal Development Fund |
| BNBC | Bangladesh National Building Code |
| BOQ | Bill of Quantity |
| CC | Cement Concrete |
| CP | Contingency Planning |
| ECR | Environmental Conservation Rules |
| EMF | Environmental Management Framework |
| EMP | Environmental Management Plan |
| EPP | Emergency Preparedness Planning |
| ES | Environmental Screening |
| GoB | Government of Bangladesh |
| GRC | Grievance Redress Committee |
| GRM | Grievance Redress Mechanism |
| GRP | Grievance Redress Procedure |
| GSB | Geological Survey of Bangladesh |
| MGSP | Municipal Governance and Services Project |
| NE | North East |
| NW | North West |
| PIU | Project Implementation Unit |
| PMU | Project Management Unit |
| PMU | Project Management Unit |
| PPE | Personal Protective Equipments |
| RCC | Reinforcement Cement Concrete |
| SE | South East |
| SW | South West |

## 1.0 INTRODUCTION

### 1.1 Sub-Project Background

Sreepur Pourashava has been established in 28 February 2000 and now it is upgraded into 'A' class on 31 May 2016. It consists of 9 wards. Sreepur Pourashava is situated in Sreepur Upazilla under the District of Gazipur Zilla of Dhaka Division. It has potentiality of development as a major trading center in the region. The area of Sreepur Pourashava is 47.25 Sqm. and bounded by Telehati, Barmi Union in the north, Gosinga Union in the east, Mawna Union in the west and Gazipur Upazilla in the south. Sreepur Pourashava is located at a distance about 25km from the Zilla Head Quarter and north part of the Gazipur Zilla. The geographical coordinates of Sreepur Upazilla are 24.198801 N, 90.4667 E (Longitude and Latitude)

Sreeper Pourashava is a self-governing organization which governs the municipal areas of Sreepur. Infrastructures and physical development are not yet attained significantly in the Sreepur Pourashava. Hence, this multi-purpose complex with various facilities will significantly contribute infrastructural and physical development of the Sreepur Pourashava which will enhance revenue generation.

**The significant features of the subproject are stated below:**

| | |
|---|---|
| **Name of the Subproject:** | Construction of 01 (One) Basement+03 Storied & provision of 10 Storied Super Market cum-Multipurpose Building ward No-01 under Sreepur Pourashava. |
| **ULB Name:** | Sreepur Pourashava |
| **District Name** | Gazipur |
| **Tribal People** | No Tribal People in Sub project area |
| **Package No** | |
| **Jurisdiction Area:** | Ward No-1 |
| **Structural Design Option:** | 10 (ten)Storied Market cum Multipurpose Building with 1(one) Basement |
| **Land Acquisition:** | Owned by Sreepur Pourashava |
| **Estimated Cost:** | 40.00 Million |
| **Subproject Duration:** | 24 Months |
| **Tentative Start Date:** | 01 June 2018 |
| **Tentative Completion Date:** | 31 December 2019 |

## 1.2 OBJECTIVE OF THE STUDY

The aim of the study is to examine the environmental impacts due to construction and operation of the subproject and formulate the environmental management plan to minimize the negative impacts and enhance the positive impacts.

The specific objectives include:

a. To assess the existing environmental situation during implementation of the subproject at site and its nearby areas in order to establish a baseline status against potential environmental impacts.
b. Identify and assess impacts resulting from the subproject during its construction phase and operation phase;
c. To develop a rational environmental management plan with recommendations for mitigating adverse impacts and enhancing positive impacts and outlining environmental monitoring requirements both during construction and operational phase of the subproject.
d. To assess the public acceptances of the proposed sub-project.

## 1.3 METHODOLOGY OF THE STUDY

According to screening, environmental assessment has been done for the construction of super market. The study followed the sequences:

- Identified the interventions are to be done under Super Market Subproject, with the associated ancillary works,
- Explored the present environment condition of the subproject area,
- Found the probable socio-economic and environmental impacts associated in and around the subproject influence area,
- Investigated the future benefits of the people of subproject area and probable grievances during the subproject activities along with the solutions.
- Categorized the pollutions, may come out during pre-construction, construction and operation phases, in the influence area of subproject.
- Determined the optimum solutions to every probable impact during implementation and operation phases in and around the subproject site.
- Assessed the institutional aspects and developed the Environmental Management and Monitoring Plan for the proposed subproject.

- Estimated the environmental safeguard costs to be incorporated with the construction cost of this subproject.

The tasks of preparing the EA report followed the sequences, in addition:

- Identification and screening of the environmental parameters relevant to the proposed sub project through a scoping process;
    - Assessment of the magnitude of the potential adverse impacts for relevant environmental parameters/ sub-parameters;
    - Formulation of avoidance/mitigation measures to address the potential adverse impacts, and preparation of a monitoring program during the period of subproject implementation;

**1.4 Location of the Sub-project**

The subproject site is situated within the jurisdiction area under Ward no. 1 of Sreepur Pourashava

The location map and lay-out plan of the subproject are shown in ***Figure 1.4.1 and Figure 1.4.2***

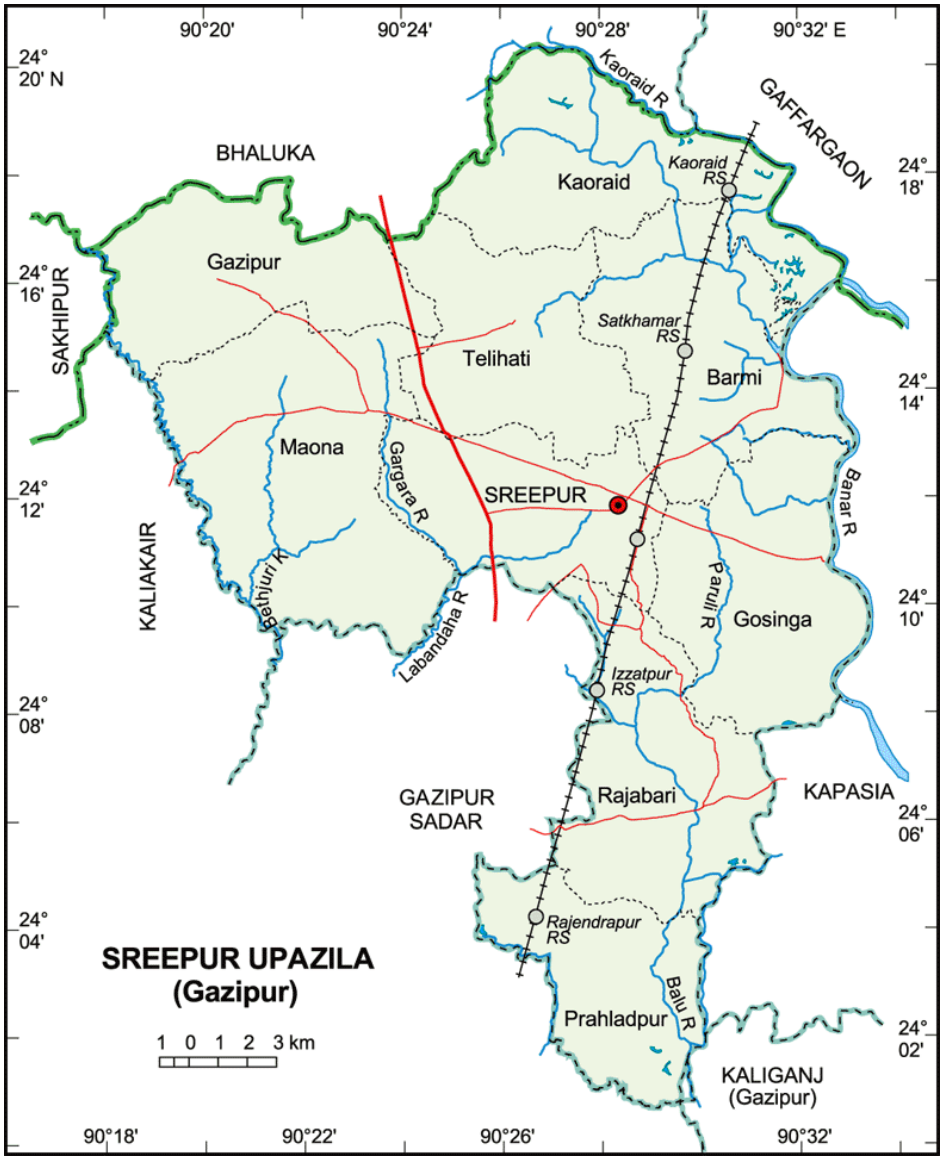



***Fig: 1.4.1 Map of Sreepur***

- ***Layout Plan***

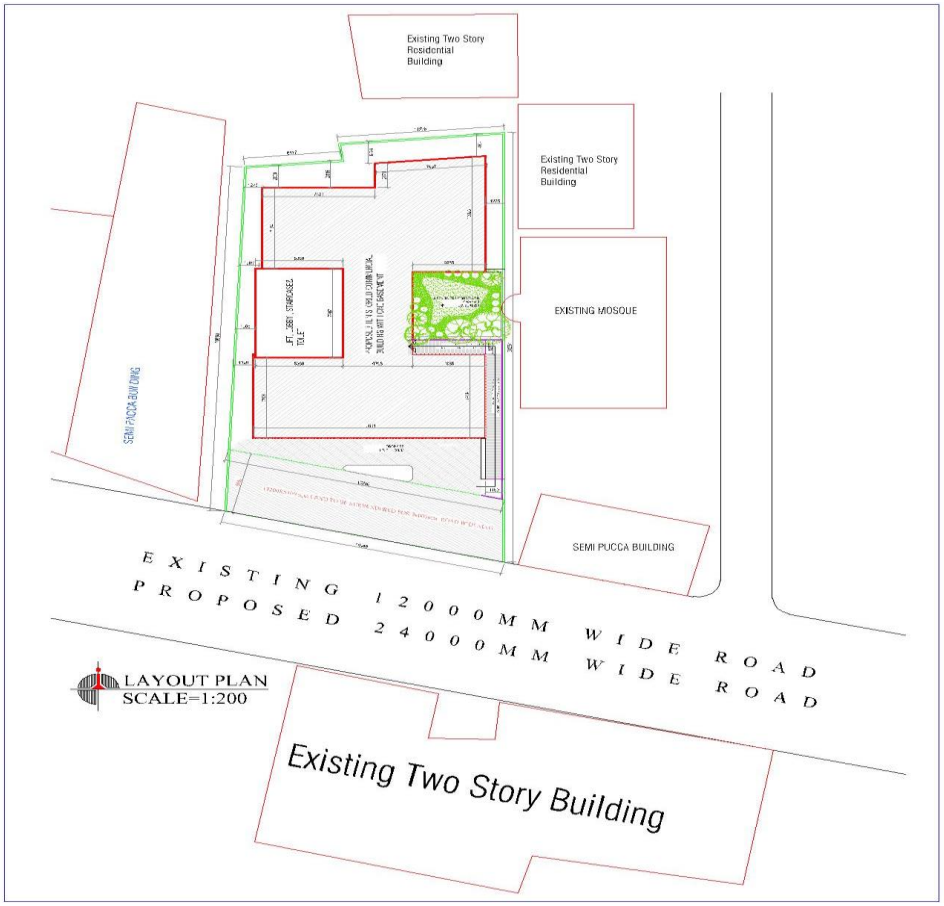



***Fig: 1.4.2 Layout Plan of Subproject***

The subproject site is situated in the developed urban area (residential area with commercial activities). The influence area of the subproject covers built-up semi-pucca and pucca houses and shops etc. There are residential houses and few road side shops surrounding the subproject site. There is also a mosque near to subproject but the subproject activities will not affect the religious activities. Educational Institutions, hospitals, nursing home etc. are far from the proposed subproject site. Hence, the subproject does not have any likely direct impacts on the surrounding environment.

**1.5 Floor Occupancy of the proposed sub-project**

Basement of the sub project will be used as car parking and drivers waiting purpose, Ground Floor for electro mechanical room and shops, First floor for shops, 2nd & 3rd floors for Banks, Bimas and offices, 4th to 7th floors for offices/ commercial spaces and 8th floor for kids zone and roof top restaurant.

**1.6 Present status of the Sub-project Site**

At present the area of sub project is vacant except there are 2 (two) numbers of coconut tree. There is no dispute as the sub-project site is owned by Sreepur Pourashava. This sub-project is well connected by Sreepur to Goshinga Road. This road is wide enough for private cars, autos, rickshaws and mini bus movements by which the residents of all wards as well as external visitors can come to the sub-project site easily.

**Fig: 1.6.1 Present status of the Sub-project Site**

**1.7 Objectives and justification of selecting of this Sub-project**

The Capital Investment Plan (CIP) of Sreepur Pourashava lists a number of sub-projects and placed this proposed super market as the priority one considering the requirements of the Pourashava.

The current infrastructure development especially super market building with various facilities of the Pourashava is not yet reaches its target. In addition, increasing population demands new facilities. More essentially, better living standard, hectic urban life and economic ability of the residents demand multipurpose commercial building to meet their requirement.

Hence, this super market with different facilities will definitely enhance quality of living standard of the residents. The subproject site is very suitable in position for a super market as it is connected from all sides by internal roads and placed center point of the urban areas.

There is no water body like pond, ditch and wet-land around the site. Hence, the subproject activities will not impacts on the surrounding ecological environment. There is no cultural and historical place in the subproject area except the adjacent mosque. The existing condition of the proposed site is further elaborated in the following.

Total land area of the proposed subproject is 652.72 sqm. Maximum ground coverage is 338 sq.m and total built-up area is 4046.03 sq.m. Basement of the sub project will be used as car parking and drivers waiting purpose, Ground Floor for electro mechanical room and shops, First floor for shops, 2nd & 3rd floors for Banks, Bimas and offices, 4th to 7th floors for offices/ commercial spaces and 8th floor for kids zone and roof top restaurant.

After construction, this super market will be gathering place for community people (expected number of visitors are approximately 3000 to 3500 per day and it will gradually increase). The economic benefit of the proposed development work includes opportunity for local businesses and partnership, job creation, increased property values and municipal revenues. The whole community will be benefited directly and indirectly from this super market.

This income will enhance the revenue of the Pourashava that will be used in the other development activities. Moreover, this super market will be one of the permanent source of revenue generation which will increase the amount of revenue for the Sreepur Pourashava. In all of these necessities, a well-designed super market with necessary features and services is highly justified and necessary for the Pourashava.

**1.8. Key Sub-project activities and implementation process**

The general activities for the subproject includes: construction of the site office and construction of the labor shed with water supply, sanitation and other facilities. The major specific activities include:

- Site clearing work
- Providing lay-out
- Earthwork in excavation of foundation trenches
- Foundation work
- Earth filling work as per requirement

- Compaction of earth
- Fabrication, binding, bending of the ribbed or deformed bar
- Mass reinforcement cements concrete work in grade beam, beam, and column and slab construction
- Single layer brick flat soling in ground floor
- Brick work in facing super structure
- Fancy and ornamental screen work
- Preparation of the door and window frames with seasoned wood
- Fitting and fixing of the window and door with accessories
- Fitting and fixing of the tiles
- Plastering work
- Distempering work
- Painting work
- Fixing of the railing
- Construction of the toilets and rest room
- Construction of the septic tank and soak well
- Construction of the water tank
- Beautification work
- Fitting and fixing of the plumbing ,electrical accessories, installation of the lift etc
- Tree plantation work.

The materials and resources to be used for the key activities: soil in earth work, sand, stone chips, brick chips, glass, cement, bricks, concrete, tiles, reinforcement, sanitary and electrical accessories. The major equipment to be used for the implementation of the subproject: wooden drag, roof hoist, ladder, hammer, steel/ concrete hammer, excavator, concrete mixer machine, mechanical vibrator machine, MS sheet, steel cutter, steel shutter and dump truck.

***1.9 Subproject Schedule***

The tentative schedule of construction of the subproject is:

(a) Subproject duration (months): 19 months

(b) Tentative start date **:** June 2018

(c) Tentative completion date **:** December 2019

The daily construction hours will normally include regular working time. However, daily working hours may vary based on the on-site condition. The detailed work program will be prepared by the

contractor with the assistance of the PIU, Sreepur Pourashova, then it will be shared with the PMU, BMDF.

**1.10 Category of the Sub-project**

A) According to ECR 1997 : Green/ Orange A/ √**Orange B**/ Red/ Not Listed

B) According to WB Classification : √**Category B**/Category C

In view of the Environmental Conservation Rules (ECR 1997), the proposed sub project falls under the category **'Orange B'**, assumed to have moderately significant adverse environmental impacts may observed due to the implementation of the proposed project activities. On the other hand, in consideration of the proposed sub-project nature i.e. potential adverse impact on human and environment includes natural habitats it has been categorized as **'Category B'** according to the World Bank classification.

## 2.0. DETAILED ENVIRONMENTAL AND LANDUSE FEATURES

Environmental Assessment Report prepared based on the field observation of key environmental features of approximately 100 meters surroundings of the proposed sub-project. Detail observation and assessment made on existing environmental features like road communication and connectivity, rush-hour traffic flow, local vehicle movement, accidental risks, drainage congestion, waste water discharge, solid waste disposal, dust spreading, soil degradation, erosion, odor spread around, increased traffic movement includes social conflict etc. in and around the catchment or influenced areas (100 meters around) of the sub-project. Various infrastructures around 100m of the sub project have been listed in the following Table:

**Table 2.1: Land use pattern/environmental features around the proposed Sub-project**

| Sides/Direction | Major Land use/Environmental Features |
|---|---|
| North | Residential And Dwelling Houses |
| South | Sreepur to Goshinga Road, Road side Shops, DBBL Fast Track |
| East | Kalu Mandol Jame Mosque, Road side Shops, Residential and dwelling houses , Temporary Poura Office |
| West | Semi Pacca Residential Buildings |

## 3.0 BASELINE ANALYSIS OF ENVIRONMENTAL CONDITION

### 3.1 Physical Environment

Sreepur Pourashava is located in the North East part of Gazipur district. It is situated at 24.198801 N, 90.4667 E. As a commercial center within the Readymade Garments producing zone, it has good accessibility both by road and rail. Road transport takes about 2-3 hours to reach in the town by bus from Dhaka. Physical environment of Sreepur Pourashava have denoted below:

#### 3.1.1. Geology, Topography, and Soils

Sreepur Pourashava under Gazipur District, in the vicinity of Dhaka, is situated in the Madhupur tract. Two characteristic geological units cover the Pourashava and surroundings, including Madhupur Clay of the Pleistocene age and alluvial deposits of recent age. The Madhupur Clay is the oldest sediment exposed in and around the Pourashava area having characteristic topography and drainage. The major geomorphic units of the Pourashava are: the high land or the Dhaka terrace, the low lands or floodplains and depressions and abandoned channels. Low lying swamps and marshes located in and around the Urban area are other major topographic features. The height of the land gradually increases from the east to the west. The southern part of the project area is composed of the alluvium soil of the Bangshi and Dhalashwari rivers. The land feature of the project area bears uneven elevation. Once, the area was covered with green vegetation. Now, due to rapid growth of population and industrialization, land has been converted to urban uses.

### 3.1.2. Climate and Meteorology

The climate of the Sreepur area, is average tropical monsoon with alternating dry/wet seasons. Including the pre-rainy season, there are three marked seasons: (i) November to February. The dry (winter) season is the coolest and driest period. Monthly average temperatures are below 290C with a minimum at 130C. Rainfall is very rare during this period (below 30 mm/month). Winds are predominantly blowing from the Northwest but with a high frequency of calm wind situations. (ii) March and April. In the pre-rainy season (summer) and the early months of the west seasons, the highest temperatures are reached. The monthly average temperature can rise up to 340C. During this period, air becomes more humid, rainfall increases, and heavy rains with thunderstorm occur. This period is locally called as ―Kalbaaishakhi‖. Sometimes the rain falls with hail. (iii) May to October. In the west season (―monsoon period‖) more than 85% of the total annual rainfall occurs. Monthly average temperatures remain high with a maximum of 330C. The period of periodic heavy thunderstorms lasts until June. June to mid-September to early November is the transitional period with decreasing rainfall, often thunder. During the wet season, the winds are predominantly blowing from the South. Monsoon rains are generally not stormy, but downpours of 50 mm to 75 mm per day are not uncommon and rainfall with more than 250mm per day is occasionally experienced.

Total mean annual rainfall occurring in the area is about 2,102 mm. About 75% of the total annual rainfall occurs during the monsoon period.

### 3.1.3 Wind Speed and Direction

Wind direction from October to February is the calm condition followed by wind speed of 1 to 2.5 m/sec. In the rest of the months, the predominant wind speed is 2.5-5 m/s. This indicates the weather conditions are favourable for the dispersion of the pollutants released in the air.

## 3.2 Hydrology (surface water, ground water and rainwater)

Information on ground water quality of the nearest tube-wells along the road has been collected on spot discussion and consultation with the villagers. The depth of ground water level varies from 5m to 8m. Potable ground water is available at an average depth of 60m to 70m. Ground water quality of HTWs for drinking purposes are provided in the following table:

| Drinking water quality parameters | Contents of HTW water (mg/L) | Contents of HTW water (mg/L) | Comments |
|---|---|---|---|
| Arsenic | 0.008 | Up to 0.05 | Within permissible limit |
| Iron | 1.13 | Up to 1.00 | Exceed permissible limit |
| Chloride | 21 | 150-600 | Below the standard |

Source: DPHE, Gazipur HTW Testing results

There is no surface water source (pond, canal, river etc.) near the proposed sub-project. But there are few garments dying and Ceramic industries polluting the surface water at fringe area of the Pourashava.

### 3.3 Seismicity

Bangladesh has long been one of the seismically active regions of the world and has experienced numerous large earthquakes during the past 200 years. A seismicity map of Bangladesh and its adjoining areas has also been prepared by BMD and GSB. Bangladesh has been classified into three seismic zones with zone- 3 the most and zone-1 the least vulnerable to seismic risks as indicated in ***Figure 3.3.1***. Sreepur lies in Zone-2 which shows intermediate level of seismic activity.

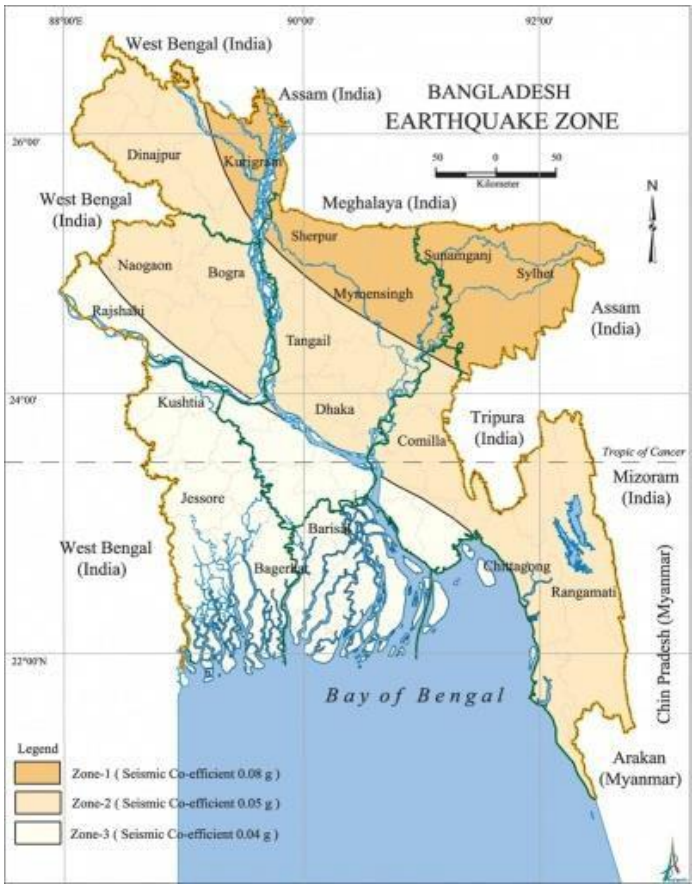



**Figure 3.3.1: Seismicity Map of Bangladesh (Source: BMD)**

### 3.4 Drainage Congestion, Water Logging and Floods

Only minor water logging occurs during the rainy season that does not stay for long time, it occurs mainly due to inadequate maintenance of drainage network within the Pourashava area. No water congestion or any logging noticed by adjacent dwellers during the physical observation in assessment period as well.

### 3.5 Air Quality and Dust

There is no major air polluting industries within the Sreepur urban area, there are small and medium industries including various textile dyeing, Garments, Ceramic and other industries which are polluting sources outside the Pourashava's boundaries. In addition to the industries, the brick kilns located in the banks and flood plains are a major source of air pollution.

### 3.6 Noise Level

Noise is not a major obstruction for the quality of the environment in the subproject area. Vehicles such as rickshaws, trolleys, pick-up, trucks, motor cycles, mini trucks and private cars generally move on the road during day and night. These vehicles generate noise in the subproject area. However, they are within the tolerable limits in most cases. There are no other noticeable sources of noise generation such as heavy factories or industries were found near the subproject area.

The subproject activities have impacts on the noise level due to hydraulic horn from the subproject vehicles used for transportation of the materials & equipment, using of the concrete mixer machine, vibrator machine, steel cutter machine etc.

### 3.6 Biological Environment

#### 3.6.1. Flora and Fauna

As observed no remarkable fruit, fire wood or timber trees found inside or neighboring or adjacent areas of the proposed Sub-project. A few trees over the dwelling houses in the north as well as east have seen on which native birds take breaks prior to reaching their shelters. Except those natives no other endangered or critical species of both flora and fauna observed.

#### 3.6.2. Biodiversity Status

Within Sreepur Pourashava, there are little or no natural terrestrial habitats, because in most cases vegetation was cleared many years ago to provide land for development, and for agriculture in the suburbs. Terrestrial plants are now mainly limited to trees, shrubs and flowers grown along side roads and in fruit trees planted in agricultural areas. The composition of plant community includes low growing grasses and herbaceous vegetation as well as other flora. No wild animals inhabit and endangered species are present in this area. The common birds like crow, sparrow, mayna, etc and some domestic cattle, no other wild animals inhabit the area.

### 3.7. Socio- Economic Environment

#### 3.7.1. Land Use Pattern

The proposed subproject consists of mixed land use patterns. There are low to medium densely populated residential houses (tin-shed, semi-pucca and pucca), varieties shops, educational institutes, religious places. It is noted that proposed subproject itself a vacant land now. There is no industrial activity adjacent to the subproject area.

#### 3.7.2. Beneficiary Population

This proposed Sub-project is situated in Ward no.-1 but peoples living all over the Pourashava and others from surroundings will have the benefit of the proposed Sub-project.

#### 3.7.3. Educational Status

In Sreepur Pourashava, there are a numbers of primary, kindergarten and secondary schools, Madrasas, vocational institutes and colleges. About 61 percent of the total population is literate according to the socio-economic survey finding.

#### 3.7.4. Tribal Communities

There is no tribal community as noticed living around the proposed Sub-project site.

#### 3.7.5. Land Acquisition and Resettlement

There is no land acquisition and any resettlement for the implementation of this sub-project is required.

## 4.0 ENVIRONMENTAL SCREENING

The Sub-project has been selected through a careful Environmental Screening (ES) process following the guidance and the checklists in line with the requirements of DoE and WB. Environmental Screening ensures that environmental issues are properly identified in terms of extent of negative and positive impacts.

The screening data and information for this subproject have been analyzed and are shown in below.

### 4.1. Potential environmental impact during construction phase:

**(A) Ecological Impacts:**

- Felling of Trees : Significant □ Moderate □**Minor**√ **2 nos** □ NO
- Clearing of Vegetation : Significant□ Moderate □Minor □**NO**√
- Potential Impact on Aquatic Species : Significant □ Moderate □**Minor** □√

**(B) Physico-Chemical Impacts:**

- Noise pollution : Significant □**Moderate**□√Insignificant □
- Air pollution : Significant □Moderate□ **Insignificant**□√

- Drainage congestion : Very likely □**Likely**□ Unlikely □√
- Water pollution : Significant □ Moderate□ **Insignificant** □√
- Solid waste pollution : Significant□ Moderate□ **Insignificant** □√
- Construction wastes : Significant□ **Moderate**□√ Insignificant □
- Water logging : Significant □ Moderate□ **Insignificant** □√

**(C) Socio-Economic Impacts:**

- Traffic congestion : **Likely** □√ Unlikely □
- Health and safety : Significant □ Moderate □**Insignificant** □√
- Impact on archaeological : Significant □ Moderate □**Insignificant** □√
- Impact on historical : Significant □ Moderate □**Insignificant** □√
- Employment generation : Significant □ **Moderate** □√Insignificant □

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

**(A) Ecological Impacts:**

- Potential impact on species of aquatic : Significant □ Moderate □ Minor □**NO** □√

**(B) Physico-Chemical Impacts:**

- Potential air quality & noise level : Improvement □**No-improvement**□√ Deterioration □
- Drainage congestion Improvement □ Minor Improvement □**No Impact** □√
- Risk of Water pollution Significant □ Moderate□ **Minor** □√
- Pollution from solid waste Improvement □**No-improvement** □√ Deterioration □

**C) Socio-Economic Impacts:**

- Traffic : Improvement □ No-improvement □ **Adverse** □√
- Safety : **Improvement** □√ No-improvement□ Adverse □
- Employment generation : Significant □ **Moderate**√ □ Minor □

**4.3. Summary of possible Environmental Impacts of the Sub-project**

The environmental assessment of this Sub-project have been conducted and observed that there will be no significant adverse environmental impacts with the establishment of this proposed super market in present location. During the assessment period, it has closely observed and shared all potential environmental features with local communities of different strata based on which adopted the screening process. Through the review and analysis of all observations and findings it has been assumed that the project, if implement, will not incur any negative impact neither on ecological nor on Physico chemical or any of the ingredients of those components. Moreover, the project will be helpful to enhance positive socio-economic impact through the increasing of opportunity for citizens for shopping as well as generating the income and employment of local people both in construction and operational phases. The screening process indicate that a few negative impacts may arise categorized as local in nature and low in magnitude, very minimal possibilities of adverse impacts on

some of the parameters of the physical, biological or socio-economic environment of the sub-project area. The sub-project as stated is also expected to produce a large number of positive benefits on the overall community in respect of social and economic strengthening of the area.

However, as assumed those insignificant or moderate or minor adverse environmental impacts are subject to mitigation and would be addressed through proper mitigation and enhancement measures as will be appropriate earliest during the implementation as well as in operational period. The limiting of noise levels during construction and operation of the project, proper disposal of solid and other waste materials through sewage connectivity development, preservation of air quality by limiting dust spreading and gas emissions from equipment to be used during construction and vehicle exhaust as well as ensuring community and workers health safety measures have been prescribed for the mitigation of likely impacts. Similarly, construction activities in close and active participation of local communities and capacity development initiative of concerned staff of the Pourashava and workers as well will be undertaken to implement appropriately all recommended mitigation measures.

## 5.0 SPECIFIC IMPACT AND MITIGATION & ENHANCEMENT MEASURES TO SAFEGUARD ENVIRONMENT DURING CONSTRUCTION PERIOD

The impacts of the subproject are mainly caused by the activities required for the implementation of the subproject. Some specific impacts due to the subproject activities and their mitigation measures are describes below

### 5.1 Labor Shed Construction

Two separate labor camps, one for male and another for female will be constructed at the site before starting the construction activities. If the labor camps are not constructed with minimum raised platform and not cleaned properly, that will create health hazard to the laborers. Improper sanitary facilities may cause health hazards to the laborers and that may reduce the work efficiency. Following measures should be taken to avoid or minimize the health hazard:

- Two labor camps with raised platform should be constructed at the separate sides of the site with separate toilet facilities to ensure the safety and security of female workers.
- The contractor will install separate sanitary latrines for male and female workers. The latrines should have washing facilities (availability of water and soap).
- The labor shed shall be with the facilities like; mosquito nets, cooking arrangement, water supply, waste bins, lighting etc.
- A temporary drain for the kitchen waste water is to be provided and rain water drainage around the camp site is to be provided for easy surface runoff.

### 5.2 Transportation of Materials and Storage and Pollution from the Construction Materials

The construction materials transportation, handling and storage should follow standard guidelines to minimize any risks associated to the occupational health and safety. Improper stockpiles of the construction materials also may degrade the surrounding environment. On the other hand, dumping of the construction spoils, including accidental leakage of the oil, grease, and fuel in equipment yards is a significant hazard. These substances can be washed-out by the storm water and can be discharged in the surface water. Even the people to be engaged for the construction activities and local communities might endanger the physical and human habitats of the area.

***Mitigation Measures***

- Safe transport, storage, and disposal of the construction materials, and the equipment have to be carried out in order to avoid the accidental spillage and loss and to minimize any health risk
- Fuels, lubricants, and other hazardous materials should store over raised platforms and not directly on the ground
- Maintain adequate moisture content of sand during transportation, compaction and handling
- Carry the materials especially loose soil and sand with adequate cover
- Avoid head loads for carrying soil, construction materials and construction equipment

### 5.3 Site Preparation and Earth Work (Excavation Work and Filling Work)

The substructure includes excavation work, filling work and compaction work and clearing of the un-used materials. These works may lead dust blowing, improper disposal of the wastes, noise and vibration which may disturb the surrounding environment.

**Mitigation Measures**

- Proper care will be taken by the contractor during excavation work, filling work, compaction work and disposal work to avoid any unwarranted disturbances to the environment
- In case of filling work, no loss of agricultural top soil and any production land
- Use personal protective equipments where applicable
- Cover the exposed earth works with fabric

### 5.4 Rainwater Harvesting Reservoir

Provision of roof top rainwater harvesting (RWH) system and rainwater harvesting reservoir at the ground should be included in the design of the building as a part of the water supply system.

### 5.5 Basement and Foundation Work

Construction of the basements requires deep depth excavation work. Though, there is no structure adjacent to the site which could be affected due to the basement work. However, if proper measures are not taken the soil stability could fail, which could cause injury, or even death, to the individuals and delaying the construction works.

**Safeguard Measures:**

- Fencing of the construction site and restrict unauthorized entrance;
- Using sheet pile to protect land Sliding
- Availability of the adequate lighting facilities for basement work;
- Check availability of the adequate ventilation for basement work;
- Provide sump pit inside the lowest level of the basement to collect water and remove by pump. Ground water can be kept out either permanently such as for long term waterproofing for a basement, or temporarily such as to ease work during excavation
- Generated waste should be properly handled, transport, re-sue if possible and disposed-off immediately;
- Use ladder for the workers safe movement from the ground to the basement and basement to the ground;
- Design and construction of the basement should follow BNBC, ACI and other standard code.

Structural design is not yet finalized. Hence, foundation type is not yet finalized. Since this is high rise building, the possible foundation will be either pile and or mat depending on the soil condition. The anticipated impacts due to the foundation works are:

- Noise pollution due to use of the equipments
- Potential occupational health and safety risks and accidents
- Air and dust pollution due to black smoke emission from diesel based equipments.

The key activities associated to the cast-in-situ pile work-boring work, cutting and welding of the reinforcement, placing of the pile reinforcement ring into the bore hole and RCC work for Pile casting and demolition of the pile head etc. have environmental impacts on the physicochemical components. The anticipated impacts due to cast-in-situ Pile works are:

- Noise pollution due to use of rig machine, winch machine, concrete mixer machine, vibrator machine, steel cutter and welding machine;
- Muddy water and clay generation due to boring work;
- Potential occupational health and safety risks and accidents from steel cutter, welding machine, rig machine, and winch machine;
- Air pollution due to black smoke emission from diesel based rig machine, concrete mixer machine and vibrator machine.

**Mitigation Measures**

- Boring work and RCC should avoid at schooling time and at night time and should follow normal working hour;
- Reservoir tank should constructed for collecting mud and water during Constructions.
- Disposal of the mud at dumping site and re-use of the mud and clay for filling work if applicable
- Avoid using of steel cutter, wielding machine, concrete mixer machine, vibrator machine, rig machine and winch machine at night
- Avoid prolonged exposure to noise (produced by equipment) by workers
- Ensure use of the personal protective equipment's (helmet, goggles, gloves, safety boot)
- Availability and access to first-aid equipment and medical supplies in case of any accidents
- Carefully operation of the steel cutter, rig machine and winch machine
- Ensure proper joint between two reinforcement rings to avoid any possible damage
- Avoid operation of the concrete mixer and vibrator machine at night
- Regular maintenance of the concrete mixer and vibrator machine to avoid any black smoke emission.

### 5.6 Air Quality and Dust

During construction phase, air pollutants will be emitted from the equipment, subproject activities and construction vehicles are expected to remain low. Local residents in the vicinity of the work sites will be temporarily disturbed by the limited dust pollution. The overall impacts, however, are expected to remain low.

**Mitigation Measures**

- Water should be sprayed at the work site and camp site area for dust control
- Ensure sprinkle and cover stockpiles of the loose materials (e.g., fine aggregates)
- Maintain adequate moisture content of sand for transportation, compaction and handling
- Avoid use of dust generating equipment (which produce significant amount of particulate matter) far from the local residents
- Regular maintenance of the concrete mixer and vibrator machine to avoid any black smoke emission
- Ensure that all subproject vehicles are in good operating condition.

### 5.7 Noise and Vibration

Noise and vibration caused by the equipment, subproject activities and movement of the construction vehicles may temporarily disturb nearby environment though the impacts are anticipated to be limited and within the subproject boundary.

**Mitigation Measures**

- Transportation of the construction materials have to be carried during the scheduled times, and mainly during the day in off-peak time
- Avoid prolonged exposure to noise (produced by equipment) by workers
- Avoid operation of the concrete mixer and vibrator machine at night.

### 5.8 Solar Energy and Glass Wall

As a part of the electricity demand, roof top solar energy system should be included in the design of the building. Using of the glass wall at the external parts of the building will provide adequate access for natural lighting facilities that will partially reduce the consumption of the electricity.

### 5.9 Occupational Health and Safety

The most important risks associated with the construction activities are listed below:

- Risks of using of the machineries in motion such as steel cutter, glass cutter etc
- Risk of falling from the height during chipping, plastering work, painting work 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

### 5.10 Requirements for the Workers' Health and Safety

The key salient features of the general requirements for the workers' health and safety stated are presented in ***Table 5.10.1***

**Table 5.10.1: General Requirements for the Workers Health and Safety**

| Issues | Requirements |
|---|---|
| Site fencing, ladder, scaffolding and pulley | • Site should be fenced and screened to protect site from strong winds and to contain dust;<br>• Ladder should be placed and scaffolding should be provided for the site protection work and for chipping, plastering, painting etc;<br>• Provide jute netting for avoiding any drop down of the materials to the ground;<br>• Use mechanical equipments such as pulley for the lifting of the materials to the roof and other floors. |
| Health and Hygiene | • Cleanliness at the site premises and workers living places and at the Labor Shed;<br>• Arrangement of the proper ventilation and temperature at the Labor Shed;<br>• Protection against dust and furnace by using of the nose masks and covering of the head and body;<br>• Proper disposal of the wastes and effluents;<br>• Provision of the adequate latrines and separate toilet for the women;<br>• Sufficient dustbins for the solid waste management system. |
| Safety and First Aid Box | • Using of the personal protective equipment (helmet, gloves, goggles, nose mask, safety boots);<br>• Precautions during work on or near machineries in motion;<br>• Head loads are prohibited;<br>• Ensure first aid box;<br>• First aid facilities should be provided and maintained;<br>• The first aid kit should include adhesive bandages, regular strength pain medication, gauze, and low grade disinfectant. |
| Compensation for Accidents at Work | • Contractors will bear medical treatment costs. If any severe accidents such as loss of hands, legs or loss of working ability or any case of death needs compensation-(the amount of the compensation should be fixed considering the type of accidents). |
| Dust and Fumes | • For any dust, fumes, or other impurities likely to be injurious to the workers, effective measures shall be taken to prevent their accumulation and its inhalation by the workers. |
| Overcrowding | • No labor room should be overcrowded. |
| Latrines and Urinals | • Sufficient latrines shall be provided;<br>• Latrines shall be maintained in clean and sanitary condition;<br>• Latrines shall be adequately lighted and ventilated. |
| Disposal of Wastes and Effluents | • Proper disposal system for the solid waste and effluent is required. |

**5.11 Impacts on Social Environment and Common Property Resources**

Through comprehensive study, it is revealed that impacts are expected not to be severe and to be largely manageable. The following Table 7.11.1 presents impacts on socio-economic environment and common property resources.

**Table 5.11.1: Impacts on Social Environment and Common Property Resources**

| Social Components | Impacts on IECs | Impact Significance |
|---|---|---|
| Community Perception | The local community people welcome this subproject and there is no visible objection from them. | Significant (+ve) |
| Employment and Business Opportunity | Community feels happy because generally the local contractor will be engaged for the construction works which will create work opportunity for the skilled and non-skilled labor. The subproject will create business opportunity for the equipment and materials suppliers. | Significant (+ve) |
| Possible damage to existing infrastructure and facilities | Possible damage of the existing road infrastructure by the construction equipment and vehicles used in this subproject. | Minor (-ve) |
| New infrastructure and facilities | Construction of the super marketwill provide new infrastructure facilities. | Moderate (+ve) |
| Landscape and Aesthetics | This subproject activity temporarily will degrade landscape and aesthetics values of the subproject area to a limited extent. | Minor (-ve) |
| Labor Habitat | It is anticipated that the outsider workers will stay at the Labor shed which will have impacts on the environment relates to the generation of the solid wastes, effluent, and water consumption. | Moderate (-ve) |
| Health Care | Workers may suffer from the dehydration problems, respiratory problem, and other health hazards. | Minor (-ve) |
| Accident | In case of road accidents by the vehicles to be used for the transportation and possible accidents from subproject activities may have serious negative impact. | Significant (-ve) |

**Mitigation Measures**

- Conduct dissemination with the local community about the subproject details;
- Continue liaison with the community leaders in order to maintain the community support;
- Engage local contractor and local people as much as possible for positive perception of the local community;
- Follow traffic rules to avoid any accidents;
- Transportation and mobilization of the equipments and construction materials avoiding peak hours and scheduled time;
- Ensure first aid facilities and effective use of personal protective equipments where applicable.

## 5.12 Labor Influx and Anticipated Impacts

The labor force and associated goods and services required for construction of infrastructure civil works under this subproject cannot be fully supplied locally. The migration to and temporary settlement of laborers in the subproject, referred to as labor influx, carries an array of potentially positive and negative impacts in terms of demands on public infrastructure, utilities, housing and sustainable resource management and the strain on social dynamics.

Labor influx effects on host communities include positive impacts such as:

- The subproject activities will generate work opportunities for the local people and supplying of the construction materials, equipments, food and other necessary stuffs to the campsite;
- Improved infrastructure and public service access and availability whereby subproject investment catalyzes larger allocation of resources to a region, stimulating the development or expansion of infrastructure and public services.

Critical negative social risks include:

- Increase in criminal activity and alcohol and drug abuse, domestic violence, political attachmentand violence, smuggling and robbery etc;
- Increase in gender-based violence, including eve teasing, sexual harassment etc;
- Increases in communicable diseases, including respiratory problems, diarrheal diseases, vector-borne diseases (e.g., malaria), and sexually transmitted infections (e.g., HIV/AIDS, syphilis, gonorrhea, hepatitis B);
- Conflicts arising from increased demand on existing infrastructure, services, and utilities, including transportation, health, education, water and sanitation, waste management, public utilities and community, religious, and recreational facilities and loss of land for access routes.

The general environmental impacts of labor influx include pressure on the natural resources such as using of the water, electricity, other fuel for cooking, loss of land for the labor establishment, depletion of the water supply, sewage and waste water generation, degradation of the air quality, waste generation, increased demands on the local energy and resources and noise pollution effects. The number of local and migrated people involved in the subproject activities can be only identified in the construction phase. Hence, these specific impacts will be quantified during construction work and environmental assessment report will be modified accordingly. However, the following safeguard measures are recommended to avoid any risk of labor influx:

- Inform local people about the subproject activities
- Liaison with the community leaders in order to get community support
- Engage local people as much as possible to minimize workers from outsiders
- Monitor workers attitude and behavioral matter
- Monitor the workers movement for avoiding any unexpected social activities (robbery, crime, political attachment and conflicts, drugs abuse)
- Inform and use local administration to get support if needed
- Inform local utilities service providers
- Ensure effective use of natural resources such as water, electricity, fuel, wood etc.

### 5.13 Impacts on Traffic Movement and Safeguard Measures

The access road and internal road network in the subproject area is adequate to cope with the situation. If there is no material storage as well as any work on the road and road side area, the impact on the local traffic system will be minimal.

During construction phase, interruption of the traffic movement and impact on the local traffic system due to the subproject activities will be monitored closely. Then separate traffic management plan will be provided if required. However, the following safeguard measures are recommended to minimize the impacts associated to the traffic movement:

- Inform local people about the subproject activities
- Avoid any materials storage and any work on the road;
- Ensure schedule deliveries of material/ equipment during off-peak hours;
- Place traffic sign/cautionary sign to avoid undue traffic congestion and associated traffic control measures to limit possible disruption;

The place of construction works should be fenced off with fences if required and should be isolated from general public access and marked with signs to ensure safe movement.

**Mitigation Measures**

- Conduct dissemination with the local community about the subproject details
- Continue liaison with the community leaders in order to maintain the community support

- Engage local contractor and local people as much as possible for positive perception of the local community
- Follow traffic rules to avoid any accidents
- Transportation and mobilization of the equipments and construction materials avoiding peak hours and scheduled time
- Ensure first aid facilities and effective use of personal protective equipments where applicable.

### 5.14 Impacts on Traffic Movement and Safeguard Measures

- Avoid any materials storage and any work on the road;
- Ensure schedule deliveries of material/ equipment during off-peak hours;
- Place traffic sign/cautionary sign to avoid undue traffic congestion and associated traffic control measures to limit possible disruption;
- The place of construction works should be fenced off with fences if required and should be isolated from general public access and marked with signs to ensure safe movement.

### 5.15 Drainage Congestion

Construction of the proposed multi-storied building could create adverse impact on the existing drainage system through impedance to natural flow conditions. Temporary drainage congestion could occur especially during monsoon period due to excavation of earth from the basement and foundation trench. In addition, drainage congestion resulting in to stagnant water or local flooding also may be occurred in the places such as construction yard and labor's camp. In fact, the drainage system on the surrounding of the proposed building area can be affected by construction activities.

**Mitigation Measures**

- Temporary storm water drainage congestion in the proposed building area due to rainwater should be removed by pumping from the basement and foundation trench;
- Drainage congestion at the labor camp and construction yard should be removed by temporary earth or brick drain;
- Alternative temporary surface drain close and inside the boundary should be provided to connect with the existing drain;
- In the detailed design, surface drainage system should be included.

## 6.0 SPECIFIC IMPACT AND MITIGATION & ENHANCEMENT MEASURES TO SAFEGUARD ENVIRONMENT DURING OPERATION PERIOD

### 6.1 Solid Waste Disposal

Considering the nature of the sub- project, it is expected that a considerable volume of solid and organic waste materials will be generated regular at the Sub-project area. Cleaning,

collecting, and proper disposal of those waste materials will lead to the developed and healthy environment in the subproject area.

**Common Mitigation Measures:** To make the super market floors clean, required number of small bins are to be placed at different corners of the all floors where the customers and visitors can put the solid waste easily within short distance and time. The waste materials collector of the Super market will collect solid waste carefully and fill garbage bins at the outside of the Market regularly. Primarily waste collector from Bins will collect solid waste and will dispose to nearby secondary dumping garbage. From secondary dumping garbage, rickshaw van /Poura garbage covered dumping truck will carry the solid waste from the secondary bins to the Pourashava designated landfill areas. An efficient and effective solid waste management and disposal mechanism will have to be established and implemented. Moreover, the super market will keep clean with regular sweeping by assigned cleaners.

### 6.2 Waste Water Disposal

Waste water will generate from the proposed market and toilets will pollute adjacent environment if not properly cleaned, drained or discharge and managed.

**Common Mitigation Measures:** Integration of waste disposal system by discharging waste water into soak pit and then to existing Pourashava drainage system. Sewage water will discharge to septic tank to be constructed for the proposed sub-project. Periodic monitoring and measures will be taken to control over flow of waste water from septic tank.

### 6.3 Traffic Congestion

Traffic volume is supposed to increase around the complex area due to increased number of vehicles of customers, vendors and shop owners. Especially during various festivals like Eid, New Year, Puja etc. this traffic volume may jump to a very high level.

**Common Mitigation Measures**: There will be a basement area where Car will be parked. Other than there will be entry and exit system in front of the super market which will be controlled by community police to be assigned by the Sreepur Municipal Authority. The motorized and non-motorized vehicle such as bicycle, rickshaw and slow moving traffic etc. will be controlled by community police deployed by market committee to reduce traffic congestion.

### 6.4 Accident Due to Fire Hazard and Electric Short Circuit

Fire hazards is a common threat to establishments, it may occur due to negligence and poor understanding of safety systems. Fire hazard may come from short circuit or open burning of waste material in the market area.

**Mitigation:**

- Use of fire extinguisher and ensure emergency exit;

- The fire extinguisher is to be placed at the stair-case site in every floor.
- Do not touch electrical appliances with wet hands, marking will be displayed.
- Do not use faulty or malfunctioning electrical products.
- Stop the open burning in the market area.
- Training should be provided to use firefighting equipment when necessary.
- Regularly check and maintenance the electrical line of the market area

### .6.6 Toilet for Male and Female

Expected number of visitors will visit the market for shopping, selling and other related purposes which will be comprised of male, female, children, and disabled peoples.

**Mitigation Measures:** There would be separate toilets in every floor for male and female separately. Special arrangement would be ensured for the handicapped people.

## 7.0. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

### 7.1 Access to Information

The environmental assessment report should be translated into Bengali and disseminated locally. The copies of the report (both in English and Bengali) will be sent to all the concerned personnel responsible for subproject implementation. It will also be made available to the public. The final assessment report would also be uploaded in the BMDF website and the World Bank website after approval.

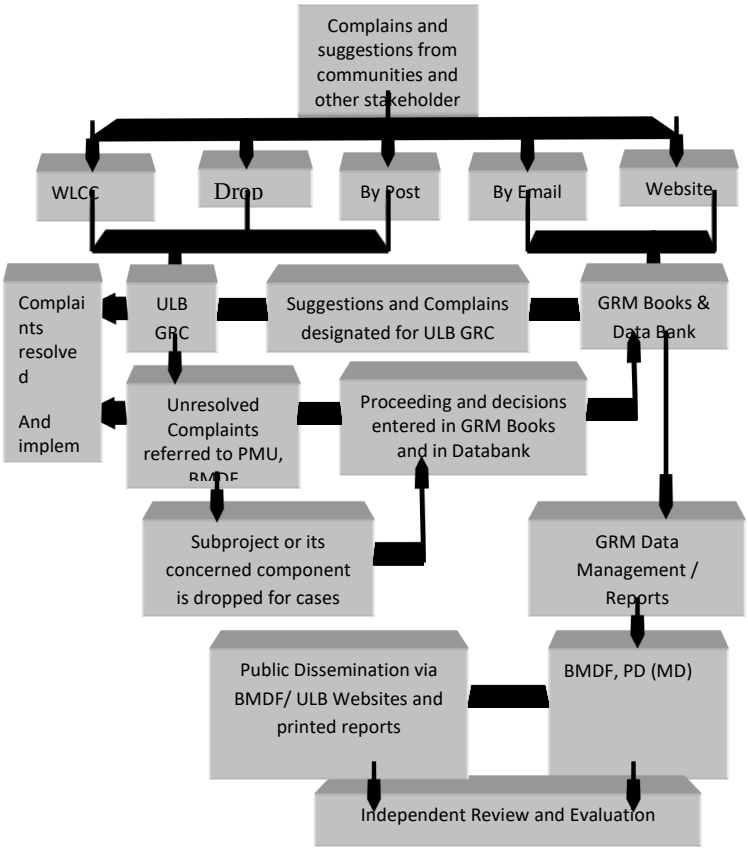
### 7.2. Grievance Redress Mechanism

The project-specific Grievance Redress Mechanism (GRM) has been established at Sreepur Pourashava to receive, evaluate, and facilitate the solution of affected peoples concerns, complaints, and grievances concerning the social and environmental performance of the subproject. The GRM aimed to provide a time- bound and transparent mechanism to voice and resolve social and environmental concerns linked to the subproject.The grievance mechanism is related to resolve the risks and adverse impacts of the subproject. It addresses affected peoples concerns and complaints promptly, using an understandable and transparent process that is also gender responsive, and culturally appropriate. It is readily accessible to all the segments of the affected people at no costs and without retribution. The mechanism should not impede access to the country's judicial or administrative remedies. The affected people will be appropriately informed about the mechanism.

BMDF also should have its own Grievance Redress Procedure (GRP), which should operate to address any dissatisfaction and complaints by the local people regarding its activities. This Grievance Redress Procedure is being applied to address any complaints or grievances through negotiations with the community leaders and representatives of affected during implementation of the MGSP.

**7.2.1. Grievance Redresses Committee (GRC)**

Given flow chart will be followed for grievance resolution process of this subproject.



**Note:** If the appellant is still not satisfied, he or she has the right to take the case to the public courts. Sreepur Pourashava should also publish the outcome of the cases on the public notice boards. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by the Sreepur Pourashava. The Pourashava authority will try to resolve the issues (in most of the cases, in amicable settlement) within shortest possible time. However, the public court system is always open to resolve the issues.

Note: If the appellant is still not satisfied, he or she has the right to take the case to the public courts. Sreepur Pourashava should also publish the outcome of the cases on the public notice boards. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by the Sreepur Pourashava. The Sreepur Pourashava authority will try to resolve the issues (in most of the cases, in amicable settlement) within shortest possible time. However, the public court system is always open to resolve the issues.

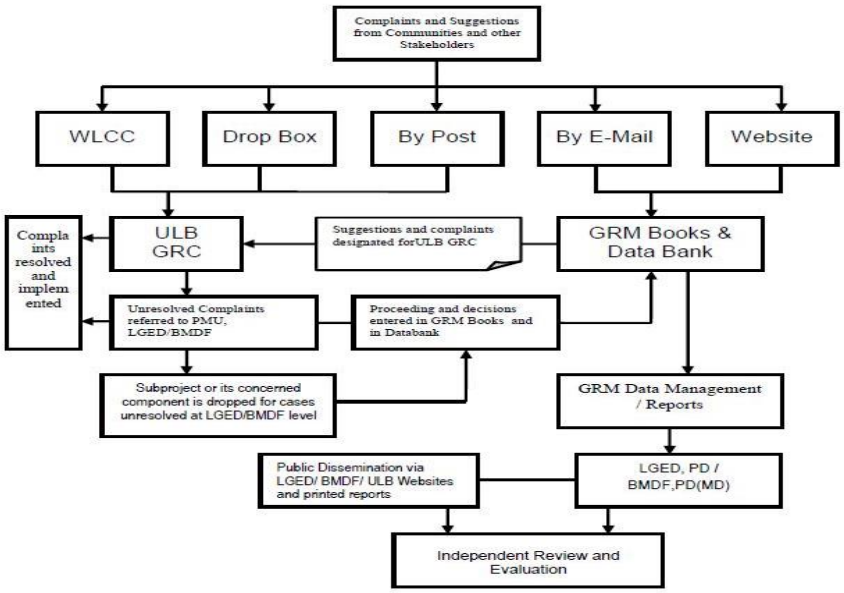
WLCC Drop Box By Post By Email Website
Complains and suggestions from communities and other stakeholder
ULB GRC
Suggestions and The Grievance Redress Committee of Sreepur Pourashava for the proposed subproject is given below:

| **Sl. No.** | **GRC Member's Name** | **GRC Designation** | **Position** |
|---|---|---|---|
| 1 | Md. Anisur Rahman | Mayor | Mayor, Sreepur Pourashava, Gazipur |
| 2 | Representative of the DC | Member | |
| 3 | Md. Afzal Hossain | Member | Co-ordinator, Plan Bangladesh, Sreepur Branch |
| 4 | Md. Anowar Fakir | Member | Principal, Mizanur Rahman Khan Mohila College |
| 5 | Md. Mahbubur Rahman | Member | Reporter, Bangladesh Pratidin, Sreepur, Gazipur |

| | | | |
|---|---|---|---|
| 6 | Md. Habibullah | Member | Councilor, Sreepur Pourashava, Gazipur |
| 7 | Md. Billal Hossain | Member | Councilor, Sreepur Pourashava, Gazipur |
| 8 | Md. Liakat Ali Mollah | Member | Executive Engineer, Sreepur Pourashava |

### 7.2.2. Grievance resolution process

Flow chart of Grievance resolution process for this proposed subproject is shown below:




### 7.2.3 Institutional arrangement for safeguard compliance

In the institutional arrangement procedure, Managing Director and Project Manager will directly involve. The Managing Director and Project Manager will be supported by an environmental safeguard specialist and social management specialist. The Poura Officials, especially members of PIU, would be responsible for supporting the construction supervision as well as environment and social management with the facilitation of the PMU, BMDF consultants. The civil works contractors will implement these environmental mitigation measures. The PMU (BMDF), with the facilitation of environment and social management specialist, will submit the monthly and quarterly

progress reports on environmental and social compliances to the World Bank. A tentative Environmental and Social Management Team with specific roles (shown in ***Figure 7.2.3.1 and Table 7.2.3.2*** has been formed for ensuring environmental safeguard in the overall subproject implementation.

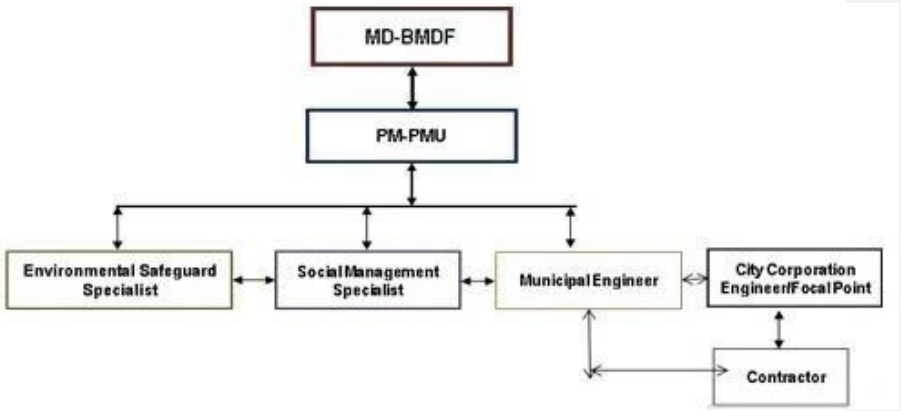



***Figure 7.2.3.1: Environmental and Social Management Team***

***(Tentative)***

### 7.3 Capacity Building

A training program has been organized by the PMU to build the capability of PIU of Sreepur Pourashava. This has been conducted by the PMU-BMDF. The training based on a) Environmental screening, b) EMP implementation, including environmental monitoring requirements related to mitigation measures and c) taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of the implementation. The contractor will be required to conduct environmental awareness and orientation of the workers and other support staff before deploying to the work sites in order to achieve the expected standards.

### 7.4. Environmental Management Plan (EMP) Matrix

| Sub-project Activity | Potential Impact | Activity/ Issues | Proposed Mitigation & Enhancement Measures | Estimated Mitigation Cost | Frequency of monitoring | Responsible for monitoring | |
|---|---|---|---|---|---|---|---|
| | | | | | | Implement | Supervision |
| **A. Pre-Construction Phase** | | | | | | | |
| Labor Shed Construction (Construction camp ) | Improper waste disposal may affect the environment.<br><br>Solid waste, waste water generation.<br><br>Environment-al pollution;<br><br>Workers health affect | Identify proper location of construction camps/labor shed so that the camps shall not be located near settlements or near water supply source/or in close to the road side. | Gender friendly labor sheds (2) will be constructed at the South- west side of the Sub-project separately for male and female workers.<br><br>Construction of sanitary/Pit latrine with septic tank/ Ring slab system - Erection of "no litter" sign;<br>Install brevet ware fencing as security measures.<br><br>Camp place will be kept clean strictly to ensure good sanitary condition. | BDT 200000 (Approx.) | Ongoing (During Construction)<br><br>Post Construction | Selected Contractor | Environmental Specialist-PMU, MGSP, PIU/ULB<br><br>PS Engineer |
| **B. Construction Phase** | | | | | | | |
| Construction material sourcing | Environment-al degradation in case of procuring non licensed / | Identify the licensed supplier of Construction materials specially Sand, Bricks at the local level. | Construction materials to be obtain from officially licensed and approved quarries and brick fields. | N/A | During Construction | Contractor | PS Engineer |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | local contractor/ local sources. | | | | | | |
| Air, Water Quality and Dust | Air pollution, health and hygiene | Water should be sprayed to control the dust.<br>Construction period and Operation period air and ground water quality should be measured for assessing SPM, Arsenic, Iron, and Salinity. | Water should be sprayed at certain interval to control the dust especially in day time. | BDT 60000 (Approx.)<br><br>(Actual Cost will be added in the BOQ of tender documents) | During pre-construction & construction period | Contractor | Environmental Specialist- PMU, MGSP, PIU/ULB<br><br>PS Engineer |
| Noise and Vibration | Increase noise level.<br><br>Increase vibration (construction site) | Noise level should keep within tolerance level of Bangladesh Standard (70dBA).<br><br>Construction period status of noise level of the sub-project site should be measured. | Maintain proper material transportation schedule.<br><br>Maintain off time for material transportation and offloading.<br><br>All vehicles and equipment used in construction shall be fitted by exhaust silencers, maintain regularly to minimize noise level. | - | During pre-construction, construction and operation period | Contractor | Environmental Specialist- PMU, MGSP, PIU/ULB<br><br>PS Engineer |
| Water Logging | Due to excessive rainfall and construction waste materials | Construction of drain and connecting outlet to poura drainage system to discharge excess water. | Identify the area of water logging at sub-project area | BDT: 50000 (Approx.)<br><br>(Actual Cost will be added in the BOQ of the | During Construction and operation period | Contractor | Environmental Specialist- PMU, MGSP, PIU/ULB<br><br>PS Engineer |

**Commented [H1]:** Cost??

| | | | | | | | |
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| | | Proper cleaning and maintenance of drains. | Connect out let to ongoing drainage network system. | tender documents) | | | |
| Noise and Vibration | Increase noise level.<br><br>Increase vibration (construction site) | Noise level should keep within tolerance level of Bangladesh Standard (70dBA).<br><br>Noise level of subproject area have to measure on a regular basis during construction phase. | Maintain proper material transportation schedule.<br><br>Materials unloading have to carried out during off peak hours.<br><br>All vehicles which will be used for the subproject have to be fitted with exhaust silencers with regular maintenance. | | During pre-construction, construction and operation period.<br><br>During Construction<br><br>During pre-construction, construction and operation period. | Contractor<br><br>Contractor<br><br>Contractor PMU, MGSP, PIU/ULB | Environmental Specialist-PMU, MGSP, PIU/ULB<br>PS Engineer<br><br>PS Engineer<br><br>PMU, MGSP, PIU/ULB |
| Workers safety | Environment-al degradation<br><br>Health hazard.<br><br>Occupational Risks at work place/with equipment operation. | Construct required workers shed at the west side of the site with the ensuring of all environmental, health and safety measures. | Ensure labor shed for both male and female separately.<br><br>Separate toilets for Male and Female.<br><br>Procure personal protective equipment (PPE) (Hard Helmet, P Cap, hand gloves, eye protecting glass, gum boot, jacket etc.) | BDT: 200000 (Approx.)<br><br>(Actual Cost will be added in the BOQ of the tender documents) | During Construction | Contractor | Environmental Specialist-PMU, MGSP, PIU/ULB<br><br>PS Engineer |

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| Rain water harvesting | Pathogenic contaminati-on of workers. | Construction of rain water reservoir at the roof of the proposed construction sheds of the community center. | Ensure the size and number of reservoirs with cover and outlet.<br><br>Ensure maintenance and cleaning of reservoirs and pipes to avoid unhygienic condition and protect pathogen/germ/ bacteria generation | (Actual Cost will be added in the BOQ of the tender documents) | During Construction | Contractor | Environmental Specialist-PMU, MGSP, PIU/ULB<br>PS Engineer |
| | | | | | | | |

**Commented [H2]:** Where Solar Panel, Glass Wall???

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **C. Operation Phase** | | | | | | | |
| Solid and all Organic Waste Disposal. | Environment-al degradation<br><br>Odor spreading | Required number of small bin to dispose solid waste generated from storage and cooking commodities<br><br>Waste discharge by the host and guests<br><br>Ensuring dumping of collected solid waste to secondary dumping station by the waste collectors in a shorter time and on regular basis. | Construction or placement of waste /garbage bins in a distant corner inside the community center.<br><br>Establishment of an active Monitoring Committee with the involvement of PS representatives.<br><br>Developed and ensure proper solid waste management system. | Maintenance cost will be carried out by the Pourashava which will be collected from earning revenue of the community center | During Operation phase | Contractor,<br><br>Municipali-ty | Environmental Specialist-PMU, MGSP, PIU/ULB<br><br>PS Engineer |
| Waste Water, other watery Disposals. | Cause of Environment-al degradation of Commercial Complex premises | Require number of drains to drain out wastewater generated from the cooking.<br><br>Ensure the outlet of drain connected to the ULBs existing drainage system. | Construct drain around and make connectivity with Pourashava sewerage system<br><br>Establish Monitoring Committee and ensure proper waste water management system. | Maintenance cost will be carried out by the Pourashava which will be collected from earning revenue of the community center | During Operation phase | Contractor,<br><br>Municipali-ty | Environmental Specialist-PMU, MGSP, PIU/ULB<br><br>PS Engineer |
| Traffic Congestion | Create traffic congestion by market users (seller and buyers) | Identify the traffic congestion areas, causes and remedial measures. | Make functional the market committee by the Pourashava and ensure effective traffic management.<br><br>Ensure usual traffic and other vehicle movement. | Maintenance cost will be carried out by the Market Committee community | During Operation phase | Contractor,<br><br>Municipali-ty | Environmental Specialist-PMU, MGSP, PIU/ULB<br><br>PS Engineer |

| | | | | | | | |
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| | | | Controlling in and out going motorized and non-motorized vehicles.<br><br>Pourashava can manage by deploying community polices and keep the rush clear around the subproject areas. | | | | |

### 7.5 Cost of Environmental Mitigation and Enhancement Works in BOQ

**Table 7.5.1: Cost of Environmental Mitigation and Enhancement Works**.

| Item No. | Description of Activities | Unit | Approximate Costs (BDT in Million) |
|---|---|---|---|
| 1 | Construction of Labor shed, latrine, safe water supply | (break down cost and frequency) | .30 |
| 2 | Labor safety equipment procurement and operation | | .20 |
| 3 | Dust suppression measures like water spraying in and around the site | | .02 |
| 4 | Air, Water, Noise Quality test | Test no, unit cost | .06 |
| 5 | Water logging eradication – Drainage and cleaning | LS | .05 |
| | Total Cost (BDT) | | 0.63 |

## 8.0 PUBLIC CONSULTATION AND PARTICIPATION

### 8.1 Methodology

Public consultation and participation ensured through organizing a Focus Group Discussion (FGD) with locally available peoples. Besides, a semi structures questionnaire survey also conducted and obtained necessary information, identified environmental and other problems, issues, concern and suggestions from the local people about the proposed subproject. This construction of Super market has been selected from the CIP where all stakeholders - ULB, Mayor, Counselors, NGO representatives, and Community people were spontaneously participated. In the CIP, some subproject was selected and this subproject was taken as priority action to implement in the proposed location during the FY 2018.

***Fig: Community Consultation***

Stakeholders at the subproject were identified under three main groups: (i) beneficiaries in the subproject area; (ii) community leaders and government officials and (iii) NGOs working at the local and regional levels. Stakeholder participation was completed in two steps: (i) firstly to collect and disseminate information through briefing and discussion meetings; and (ii) secondly to receive feedback for formulating appropriate mitigation measures against all potential adverse impacts.

In order to ensure the implementation of all appropriate feedback a range of information sharing techniques was used. Techniques used for different stakeholder groups included (i) Discussion with stakeholders (ii) Semi-structured interviews; (iii) Small group meetings with concerned officials in presence of stakeholders Site visits- stakeholder discussion in the field level .

Special efforts were made to include the elderly, women, and vulnerable groups and to allow them to express their views regarding the subproject implementation. In all cases, the impression of stakeholders & general mass regarding sub-project implementation was positive.

Commented [H3]: Include picture of FGD, Women, Signature and Name of Women participants. There is no evidence of women participation except one , the picture does not mean FGD session. Should be careful in providing elaboration.

### 8.2 Issues raised by the participants

The participants raised the issues related to the infrastructure development of Sreepur Pourashava. The anticipated environmental and social impacts due to construction works have also been raised and discussed. The participants also discussed about the potential benefit from the subproject.

### 8.3 Feedback, suggestions, and recommendations of the participants

Local people are very much interested about the Super market establishment and they are absolutely hopeful that the subproject will be visible within the time frame. They are encouraged and ready to provide necessary social responsibilities in establishing the Super market at the selected site. They suggested making the Super market environment friendly considering and addressing all assumed adverse effects with the implementation of potential mitigation and enhancement measures. Participants requested the PIU-Sreepur to maintain the quality of the construction work of the building. Neighboring peoples of the proposed site requested PIU-Sreepur to keep the noise level low, using quality construction materials.

## 9.0 CONCLUSION AND RECOMMENDATIONS

Overall environmental impacts of all the fundamentals of the subproject have been assessed and were identified in different phases such as subproject site, during construction phases and operation phases. The main objective of this study to identify the probable impacts, assessing them and recommending possible mitigating and enhancing measure for negative and positive impacts, respectively.

The ecological impact due to the subproject intervention is insignificant. The adverse impacts on the physicochemical components such as air quality, noise level, traffic congestion, solid waste generation etc will be localized and limited during construction period. It is also anticipated that the overall adverse impacts due to the subproject activities is manageable through mitigation measures. In fact, the anticipated impacts due to the subproject activities are relatively minor in comparison to the significant benefits that will derive due to the implementation of the subproject. Thus, it can be concluded that the proposed subproject is environmentally satisfactory and will bring economic, social and environmental benefits to the local community and income source of Pourashava. Finally, it can say that for constructing the proposed Super market no land acquisition as well as resettlement will be required. The proposed works in no way will affect any community facilities like school, college, Madrasa, mosque, temple or others that are of religious, cultural and historical significance.

**A few key recommendations are given below:**

- All mitigation and enhancement measures proposed in this report need to be followed
- The ULB should inform the local people about the subproject intervention prior to the construction works to be started
- The construction work should be followed planned work program
- The ULB will ensure availability of the EMP at subproject site during construction phase

Office of Mayor

# Sreepur Pourashava

Sreepur, Gazipur

Easted : 2000

Memo No. SPS/Engr. Dept./2018/ Date: 17/04/18

**Name of Sub Project :** Construction of 01 (One) Basement + 03 (Three) Storied & Provision of 10 (Ten) Storied Super Market Cum Multipurpose Building ward No. 01 under the Sreepur Pourashava.

**Name of the ULB : Sreepur Pourashava, Upzila : Sreepur, District: Gazipur.**

**Mauza :** Sreepur. **Ward/Mahalla :** 01 ,

**Attendance of Local Participants in the screening Exercise**

**Local Stakeholders, Community Member and WC/CBO**

| SL. NO | Name | Gender (M/F) | Social Status | Contract Number | Signature |
|---|---|---|---|---|---|
| 01 | Md. Billal Hossain | M | Councilor. | | |
| 02 | Md. Momina Begum | F | " | | |
| 03 | Md. Monir Uddin | M | Business | 01717963653 | |
| 04 | Md. Belayet Hossain | M | " | 01992758686 | |
| 05 | Md Kamruzzaman | M | " | 01710830643 | |
| 06 | Md. Aminuddin Sheikh | M | " | 01784708109 | |
| 07 | Md. Kobil Uddin | M | " | 01920733332 | |
| 08 | Md. Sabur Khan | M | " | 01715303091 | |
| 09 | Md. Akram Hossain Dulal | M | " | 01729511700 | |
| 10 | Md. Mamun | M | " | 01771748610 | |
| 11 | Md. Liakot Ali Hollah | M | Service. | 01911042670 | |
| 12 | Md Harun-or-Rashed | M | Engineer | 01712927937 | |