GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Bangladesh Municipal Development Fund (BMDF)

ENVIRONMENTAL ASSESSMENT REPORT

Name of the Sub-project:

Vertical Extention of Shakha Masa Bazar under Nilphamari Municipality (CIP-01)

Municipal Governance and Services Project (MGSP)

Submitted by

Nilphamari Municipality

EXECUTIVE SUMMARY

Introduction: The Nilphamari Municipality is "Category A" Municipality of Nilphamari district having a total land area of 373.09 sq. km. It is located in between 25'48' and 26'03' North latitudes and in between 88'44' and 88'59' East longitudes. The Municipality has been enhancing its infrastructural development for ensuring the necessary services to its inhabitants and meeting the growing demand of the people. Recently, the Municipality has prepared its Capital Investment Plan (CIP) for its infrastructural development following a participatory approach with the technical assistance from Bangladesh Municipal Development Fund (BMDF) and Vertical Extension of Shakha Masa Bazar Market (CIP-01) with installation for creating more income generating scope for the inhabitants as well as more revenue generation for the municipality using the single piece of land through multipurpose use.

Location of the sub-project: The proposed sub-project is located at the heart of the main town, under ward no. 02 of Nilphamari Municipality. The geographical co-ordinate of the sub-project is 25°56'25.9"N / 88°50'44.6"E.

Justification of selecting the sub-project:

Nilphamari Municipality is the main town as well as the key business center of the district. The citizens who are living in the municipality areas have some needs of space market. In one hand, the people of the municipality areas have been increasing day by day, thus increasing more demand for both essential and luxurious goods of household and a place like community center. On the other hand, adequate market facilities are required to meet the increasing demand of the citizens. Nilphamari Municipality is now a growing Municipal of our country. The Shakha Masa Bazar market is the largest center of business in Nilphamari. Municipal people gathered here for their daily households needs. Though the Shakha Masa bazar market is a grander market but to mitigate the demand, it needs to be extended. In order to overcome the barrier of limited land and to meet the increasing demand for municipal market, the construction of Vertical Extension of Shakha Masa Bazar Market becomes rational. After the completion of the project, it will ensure the opportunity of supplying all necessary and luxurious goods as well as commercial space.

In addition, the proposed sub-project site is owned by the municipality and no need to acquire additional land and there is no possibility of displacement of people as well as shop keepers. Moreover, it will create business opportunity for many traders and service providing organizations and create employment opportunities for workers and salesmen, thus helps to increase income and earnings for livelihood. It will also make the revenue generation area for the municipality and will help the municipality in attaining the sustainability of the institution. Hence, considering the overall social and economic benefits, the construction of the proposed Vertical Extension of Shakha Masa Bazar Market is justified and will be one of the key income generating establishments for Nilphamari Municipality.

Objective of the study: As per the environmental management framework of MGSP, BMDF, it is required to conduct an environmental assessment of the proposed Vertical Extension of Shakha Masa Bazar Market (CIP-01) in accordance with the legal regulatory framework of the Government of Bangladesh and World Bank policies. The general objective of the study is to determine the major environmental impacts that might be happened due to the implementation of the sub-project and to recommend possible mitigation measures to avoid or reduce identified adverse environmental impacts and to enhance positive impacts. The specific objectives include:

- Identifying existing environment condition at the sub-project areas for environmental components like air, noise, water, land, soil, biological and socio-economic aspects
- Prediction and evaluation of positive and negative impacts that may result from the proposed sub-project
- Undertaking public consultation and disclosure of project related information
- Formulation of an environmental management plan (EMP) to eliminate or minimize the adverse impacts of the project on the surrounding environment and affected communities
- Preparing occupational health and safety to minimize any accident or emergency situation
- Proposing plans for the post project monitoring, ongoing consultation and disclosure, EMP implementation, and institutional arrangement/organizational arrangement.
- Suggestion and recommendation for abatement/mitigation/management measures to ensure environmental, biological, health and social compatibilities and also to comply with the National Environmental legal requirements and national Environmental Quality standards.

Methodology of the study: This is a qualitative study. However, both quantitative and qualitative data are collected and analyzed to achieve the objective of the study and show the baseline information of the study areas. Quantitative data are collected from secondary sources and qualitative data are collected from primary sources using different qualitative approach and methods. The approach and methods applied during the assessment include following:

(i) Consultation with Stakeholders and Community people
(ii) Focus Group Discussion
(iii) Field visit and observation.

Findings of Environmental Impact Assessment:

The **Environmental Screening, Field Observation** and **Community Consultation** have identified that the proposed Vertical Extension of Shakha Masa Bazar Market (CIP-01) has insignificant ecological, physiochemical and biological impacts on the environment but has positive impact of social environment. There is no need to cut trees and clearing vegetation as the structure will be developed as the extension of an existing market. There is a well-constructed drainage system all around the market, hence insignificant impact on aquatic species. The market may have temporary and localized negative impact on physico-chemical environment during construction and operational phases due to movement of vehicles and using of different machines. It is anticipated that the air pollution and water logging will be insignificant due to taking necessary measures and existing drainage system. The noise pollution may have moderate level of impact due to use of mixture machine, drilling machine, vibrator, carrying of construction materials etc. which can be minimized by using proper silencer and mufflers in all categories of machineries. In addition, the physical, cultural and archeological impact will be insignificant. There is only one mosque in the area which is adjacent to the market. The sub-project might have negative socio-economic impact due to traffic congestion and health and safety issues of workers and laborers during construction phase. However, it has a positive impact on the local and regional economy due to generation of employment opportunity and will facilitate the trade and business of the people living in the different parts of the.

Conclusion and recommendations: On the basis of the findings of the environmental assessment, it could be concluded that, the sub-project is environmentally sound and sustainable. The potential environmental impact seems to be very minimum and manageable and it can be minimized by taking proposed mitigation measures. The Government of Bangladesh and World Bank have some legal and Social Safeguard compliances issues those are applicable during construction and operation of the proposed sub-project. Considering the issues and findings of the study, following key recommendations are made for smooth construction and successful operation of the market:

- Separate parking for private cars and goods carrying trucks should be established by the municipality maintaining a considerable distance from the market to avoid traffic congestion at the market area
- A well-defined solid waste collection and disposal system should be in place at the market.
- All waste water should be discharged to the Municipal sewer system. In the absence of such system in the vicinity of the market, the septic tanks should be constructed.
- Fire prevention and fighting equipment should be provided and maintained as well as market management committee should be trained in fire prevention and fighting's.

- The market should have facilities for washing, prayer, toilet, waiting, shopping, meals and snacks.
- Contractor will ensure availability of the PPEs and first-aid box, water supply and sanitation facilities to the workers.
- The surrounding people should be informed about the construction and operation of the bus terminal.
- Above all, the EMP should be followed and mitigation measures should be monitored as per EMP.

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ABBREVIATION

AP	Affected People
BBS	Bangladesh Bureau of Statistics
BDT	Bangladesh Taka
BMDF	Bangladesh Municipal Development Fund
BOQ	Bill of Quantity
CIP	Capital Investment Plan
DOE	Department of Environment
ECA	Environmental Conservation Act
ECOP	Environmental Code of Practice
ECR	Environmental Conservation Rules
EMF	Environmental Management Framework
EMP	Environmental Management Plan
ES	Environmental Screening
FGD	Focus Group Discussion
GOB	Government of Bangladesh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GW	Ground Water
IUCN	International Union for Conservation of Nature
MD	Managing Director
MGSP	Municipal Governance and Services Project
NGO	Non-Governmental Organization
OP	Operational Policy
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
RCC	Reinforced Concrete Cement
SPW	Supply Water
ULB	Urban Local Body
WB	World Bank

1. INTRODUCTION

1.1 Background of the Municipality and the Sub-project

Nilphamari Municipality, having land area 373.09 sq. km is located in between 25'48' and 26'03' North latitudes and in between 88'44' and 88'59' East longitudes. It is bounded by Domar and Jaldhaka Upazilas on the North, Saidpur upazila on the South, Kishoreganj (Nilphamari) and Jaldhaka upazilas on the East, khansama and Debiganj Upazilas on the West. Total population is 371,879 of which male 191,336 & female 180,543; Muslim 293,509, Hindu 77,740, Buddhist 344, Christian 15 and others 271. Water bodies Main rivers are Jamuneshwari, Chikli; Motiatura Beel, Dhuliar Beel, Choura Beel are notable. Nilphamari Thana was formed in 1870 and it was turned into an Upazila in 1984.

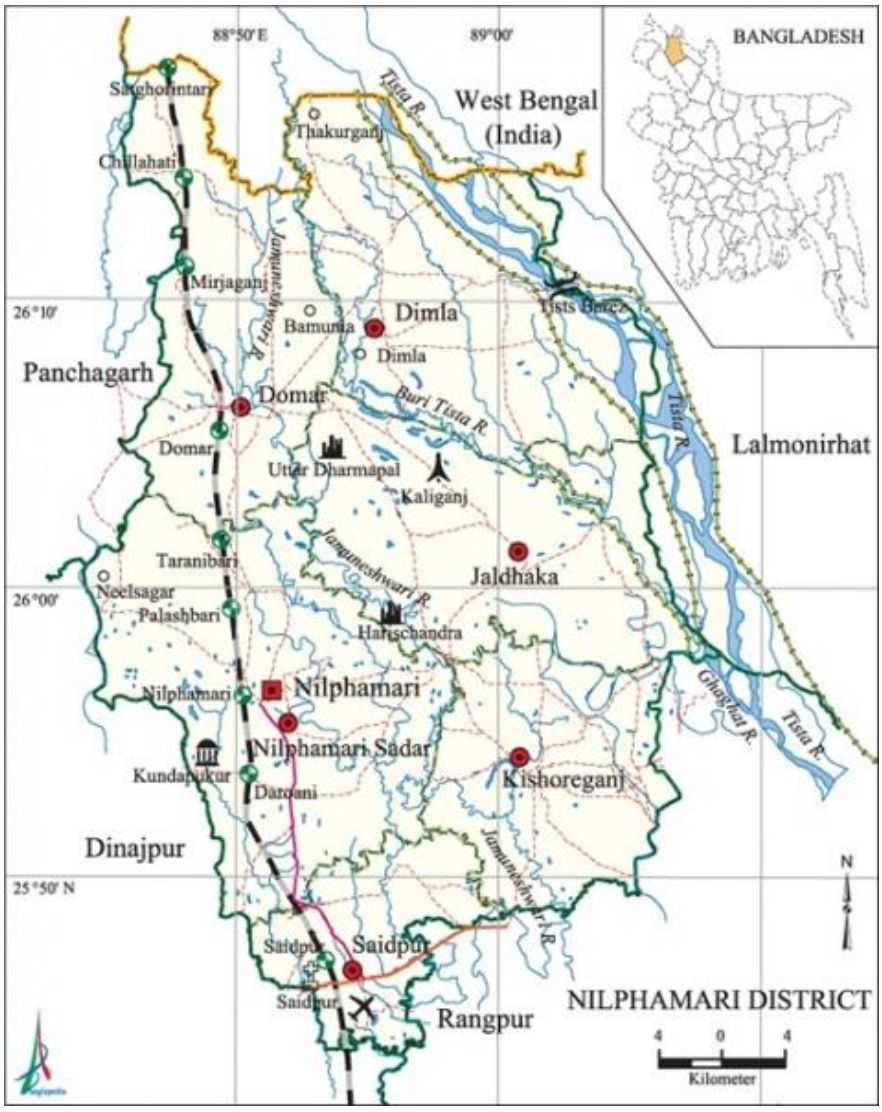


Fig: The Map of Nilphamari

Archaeological heritage and relics are: Nilsagar Dighi (former name Birat Dighi or Binni Dighi) at Gorgram, Tomb of Hazrat Pir Mohiuddin (Kunda Pukur), Bishnu Mandir (Palashbari). During Liberation War On 7 April 1971, the freedom fighters

captured 300 rifles and 10,000 ammunitions from the armoury. On 8 April the Pak army took control over Nilphamari town. The literacy rate is average 39.2%; male 45.6%, female 32.5%. Nilphamari Sadar has one Municipal, 15 Union, 109 Mouza & 108 Villages. The population in Urban is 40084 and Rural 331795. The density of population is 997 per sq.km. The Municipality area is 19.28 sq.km.. There are 9 Wards & 13 Mahallas. The Municipality literacy rate is 60.7%.

The Municipality has already submitted an application for sub-credit to BMDF seeking financial support in order to vertical extension of the municipal Market. The significant features of the sub-project are given in **Table 1-1** as below:

Table 1-1: The significant features of the proposed sub-project

Name of the Sub-Project	: Vertical Extension of Shakha Masa Bazar Market under Nilphamari Municipality (CIP-01)
Name of District	: Nilphamari
Name of ULB	: Nilphamari Municipality
Location of the Sub-project	: Nilphamari , Ward no. 02
Service Areas	: All the areas under the Municipality
Types of shops	: Show room of different branded companies and shops.
Total Land Area	: 1.65 Acres
Land Acquisition	: Municipality Owned Land
Estimated Cost	: BDT 100 million.
Sub-project Duration	: 19 months
Tentative Starting Date	: 31/08/2018
Tentative Completion Date	: 30/03/2020

1.2 Justification of Selecting the Sub-project

Nilphamari Municipality is the main town as well as the key business center of the district. The citizens who are living in the municipality areas have some essentials of space for market. People of the municipality areas have been increasing day by day, thus increasing more demand for both essential and luxurious goods of households and a place like community center. On the other hand, adequate market facilities are required to meet the increasing demand of the citizens. Hence to fulfill the demand, further commercial space is needed or vertical extension of market is required. Nilphamari Municipality is now growing city of our Nilphamari District. In order to overcome the barrier of limited land and to meet the increasing demand for municipal market, the Vertical Extension of Shakha Masa Bazar Market becomes rational. After the completion of the project, it will ensure the opportunity of supplying all necessary and luxury goods as well as commercial space.

In addition, the proposed sub-project site is owned by the municipality and no need to acquire additional land and there is no possibility of displacement of people as well as shop keepers. Moreover, it will create business opportunity for many traders and service providing organizations, and create employment opportunities for workers and salesmen, thus helps to increase income and earnings for livelihood. It will also make the revenue generation area for the municipality and will help the municipality in attaining the sustainability of the institution. Hence, considering the overall social and economic benefits, the construction of the proposed construction of Vertical Extension of Shakha Masa Bazar Market is justified and will be one of the key income generating establishments for Nilphamari Municipality.

1.3 Policy Legal and Administrative Framework

There are some environmental laws and regulations under the environmental legal framework of Bangladesh for environmental protection and natural resources conservation. In addition, there are also some safeguard policies of World Bank to prevent and mitigate undue harm to people and their environment in the development process. All the sub-projects to be prepared and implemented under the BMDF should be in compliance with these environmental laws and policies of Bangladesh and World Bank. The proposed sub-project will also be prepared and implemented in compliance with these laws and policies. The environmental laws and regulations of Bangladesh and the safeguard policies those are applicable to this sub-project are given as below:

National Environmental Laws and Regulations:

- National Environmental Policy 1992
- Bangladesh Environmental Conservation Act (ECA) 1995 amended 2002
- Environmental Conservation Rules (ECR) 1997 amended 2003
- National Land-use Policy 2001
- Bangladesh Labor Action 2006
- Bangladesh National Building Code

World Bank Safeguard Policies:

- OP/BP 4.01 Environmental Assessment
- OP/BP 4.04 Natural Habitats
- OP/BP 4.11 Physical Cultural Resources

Now, as per the environmental management framework of BMDF, it is required to conduct an environmental assessment of the proposed Nilphamari Municipal market in accordance with the legal regulatory framework of the Government of Bangladesh and World Bank policies. Therefore, the Nilphamari Municipality has deployed an individual consultant to carry out the environmental impact assessment of the proposed bus terminal as a sub-project.

2 OBJECTIVE AND METHODOLOGY

2.1. Objective of the study

The general objective of the study is to determine the major environmental impacts that might be happened due to the implementation of the sub-project and to recommend possible mitigation measures to avoid or reduce identified adverse environmental impacts and to enhance positive impacts. The specific objectives include:

- Existing environmental condition at the sub-project areas for environmental components like air, noise, water, land, soil, biological and socio-economic aspects
- Prediction and evaluation of positive and negative impacts that may result from the proposed sub-project
- Consideration of alternatives;
- Undertaking public consultation and disclosure of project related information
- Grievance Redress Mechanism
- Formulation of an Environmental Management Plan (EMP) to eliminate or minimize the adverse impacts of the project on the surrounding environment and affected communities
- Preparing occupational health and safety to minimize any accident or emergency situation
- Proposing plans for the post project monitoring, ongoing consultation and disclosure, EMP implementation, and institutional arrangement/organizational arrangement
- Suggestion and recommendation for abatement/mitigation/management measures to ensure environmental, biological, health and social compatibilities and also to comply with the National Environmental legal requirements and national Environmental Quality standards.

2.2. Scope and methodology of the study

2.2.1. Scope of the study

This study includes different dimensions of environmental issues those need to be considered at different stages of selecting, implementing, and operating the sub-project following the environmental policies of Government of Bangladesh and World Bank. Addressing the environmental issues in this sub-project includes a series of tasks to be carried out by the study. The scope and methods of this Environmental Assessment includes:

- Baseline Survey data acquisition of the baseline both environmental and social to carry out the Environmental Assessment
- Understanding the technical aspects of the proposed sub-project through gathering and analyzing primary and secondary data
- Explore the present environment condition of sub-project influence areas through reconnaissance survey and in consultation with community people
- Identification of potential environmental impacts and evaluating the consequences through using given environmental screening format
- Categorize the pollutions that may come out during pre-construction, construction and operation phases at sub-project site and surrounding areas through key informant interview and field observation
- Discuss with the people living in the sub-project area about the mitigation measures suggested to avert the negative environmental impacts and to enhance the positive environmental impacts through stakeholder's consultations and general public consultation
- Assess the institutional aspects, and develop Environmental Management and Monitoring Plan for the sub-project in consultation with Mayor and other PIU members and based on the findings of the study.

2.2.2. Methods of the study

The study is qualitative in nature and different qualitative methods were used to gather information. Both primary and secondary information were collected, analyzed and used to fulfill the requirements of the study. The primary information was collected following qualitative technique as given below:

- Consultation with stakeholders and community people
- Focus Group Discussion
- Field visit and observation

Consultation with stakeholders and community people: Consultative meeting with different stakeholders such as Ward Councilors, Market Management Committee, Shop keepers, Civil society members, representatives of business men, community leaders and representative of community people is done to exercise the environmental

screening using prescribed form of BMDF and filled in the screening form as per their information and opinion. Before starting the screening exercise, the participants are informed about the details of the project information and the way of implementing the sub-project.

Focus group discussion: Three Focus Group Discussion (FGD) sessions are organized separately with Male community participants, Female community participants and Stakeholder community participants who are residing adjacent to the proposed sub-project and coming to the market to know their attitudes towards the proposed sub-project, it's potential impact and their feedback and suggestions on mitigating the potential negative impacts and enhancing the positive impacts of the sub-project.

Field visit and observation: Field visit and observation of different environmental features are done by the consultant to understand the overall environmental situation of the sub-project areas and the potential impacts of the sub-project on it during pre-construction, construction and operational stages.

In addition, some quantitative information is collected from secondary sources to complement the qualitative information. The secondary information is collected by reviewing national, district and municipality level document and different websites.

3. SUB-PROJECT DESCRIPTION

3.1. Name of the sub-project

The name of the sub-project is "Vertical Extension of Shakha Masa Bazar Market Under Nilphamari Municipality (CIP-01)".

3.2. Brief description of the sub-project

The proposed sub-project is located at Nilphamari Bazar, the heart of the main town, under ward no. 02 of Nilphamari Municipality. The existing Shakha Masa Bazar Market is divided into two Unit. Unit-A is located in the South side of the Saidpur-Nilphamari road and Unit-B is on the North side of Saidpur-Nilphamari road. Janata Bank & Islamic Bank are arin the South-East side, Bazar Road, Kacha Bazar (Kitchen Market) is in the South-West side and Central Durga Temple and residential area at North-West side of Unit-A. There is residential area in the north side of Shakha Masa Bazar Road, Boro Jam-e-Mosque and Janata Bank at South-East, Saidpur-Nilphamari road at West side of Unit-B. The proposed Vertical Extension of Shakha Masa Bazar Market (CIP-01) has already one-storied building and it will further be extended vertically to another one floor for creating more space for business and marketing facilities of the citizens of the municipality. At present, the market is consisting of 300 shops in Unit-A and Unit-B. Vertical extended area will contain 380 shops. The subproject will have the following facilities:

- Space for shops and other commercial activities
- Toilets, urinals and washing basins for male, female and disable people
- Canteen.

3.3. Location of the sub-project

The proposed sub-project is located at Nilphamari Bazar, the heart of the main town, under ward no. 02 of Nilphamari Municipality. The existing Shakha Masa Bazar Market is divided into two Unit. Unit-A is located in the South side of the Saidpur-Nilphamari road and Unit-B is on the North side of Saidpur-Nilphamari road. Janata Bank & Islamic Bank in the South-East side, Bazar Road, Kacha Bazar (Kitchen Market) is in the South-West side and Central Durga Temple and residential area at North-West side of Unit-A. There is residential area in the north side of Shakha Masa Bazar Road, Boro Jam-e-Mosque and Janata Bank at South-East, Saidpur-Nilphamari road at West side of Unit-B.

3.4. Layout of the sub-project.

The layout plan of each floor of the proposed Nilphamari Municipal market to be constructed at the top of the existing structure is given as below:

Figure 2: Location map of land for vertical Extension of Shakha Masa Bazar Market (CIP-01)

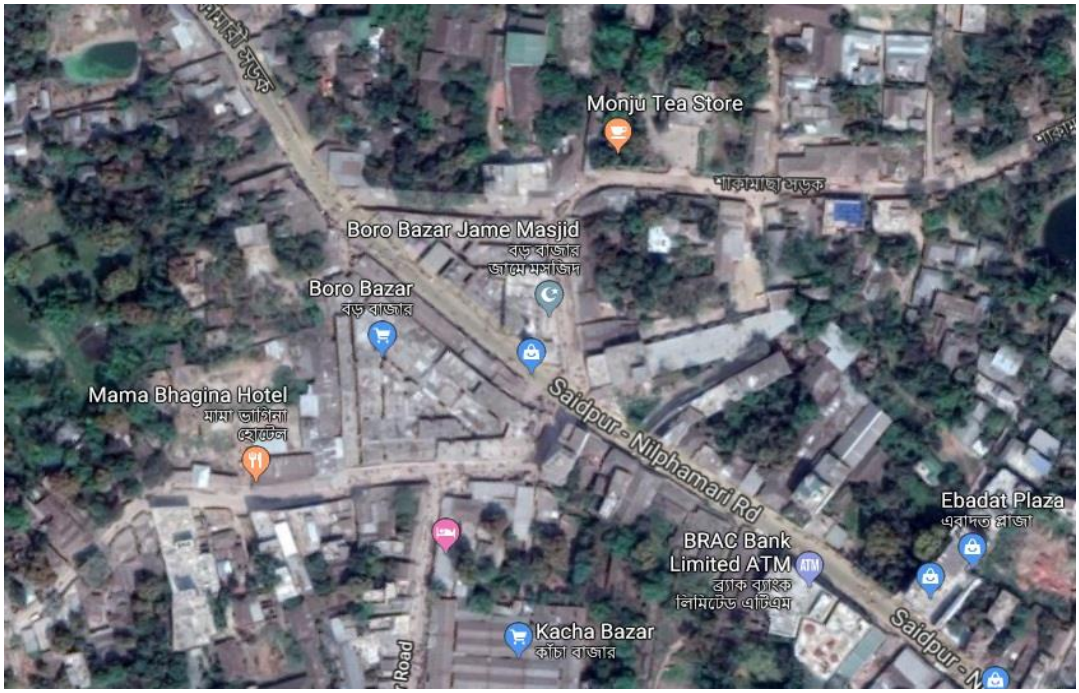


Figure 3: Geographical map of proposed sub-project for Vertical Extension of Shakha Masa Bazar Market (CIP-01)

3.5. Ownership of the sub-project land

Nilphamari Municipality is the legal owner of the proposed land where the Vertical Extension of Shakha Masa Bazar Market (CIP-01) will be extended vertically. No land acquisition is required.

3.6. Present condition of the proposed sub-project's site

The proposed sub-project will be constructed at the top of the existing well designed market building, extended for another one floors. In present the market has two Unit. Unit-A and Unit-B has total 300 shops now. Janata Bank bhaban is in the 1st floor of Unit-A at the market. Therefore, no people will be directly or indirectly affected by the proposed subproject. Further, there is no human settlement within the subproject area. Only in the North side of the market, there is a residential area and may face some impacts during construction and operation of the subproject. The existing market will face some problem during construction work.

The total land area of the market is owned by the municipality. At present in the ground floor there are 300 shops in Unit-A and Unit-B. Vertical extended 1st floor will contain 380 shops.

3.7.Key activities of the sub-project

The activities to be carried out during preconstruction include:

- Construction of semi-pucca separate labor sheds with toilet facilities for male & female workers
- Construction of platform for stocking construction materials
- Construction of temporary boundary wall around the labor shed and stockyard

As the proposed construction will be done at the top of the existing two-storied structure, there will not require any demolishing and cleaning work, layout and piling work, earthwork and excavation for pile cap and semi-basement work.

However, the major activities to be carried out during the construction phase include:

- Construction of the superstructure and associated civil works
- Electricity connection and other ancillary works
- Provision of other supporting/ancillary facilities
- Worker's health and safety issues.

The activities to be carried out and continued during operational phase include:

- Solid waste collection and disposal
- Waste water collection, treatment and disposal
- Traffic control
- Fire safety, natural disaster and risk management.

3.8. Category of the sub-project

Environmental Screening (ES) for the Nilphamari Municipal Market has been conducted with the purpose of fulfilling the requirements of Government of Bangladesh (GOB) and the World Bank (WB). Environmental Screening ensures that environmental issues are properly identified in terms of extent of negative and positive impacts. Environmental Screening Checklist, as adopted in Appendix C of the Environmental Management Framework (EMF) of the MGSP, was administered for identifying the impacts and their extents.

- According to ECR 1997: Green □ Orange A □ **Orange B** □ √ Red □ Not Listed □
- According to WB classification: **Category B** □ √ Category C □

Considering the potential environmental impacts, the vertical extension of the Nilphamari market can be considered as Orange B as per ECR-97*(Multistoried Commercial Building).* According to the WB classification, it is of Category B.

3.9. Analysis of alternatives

This is an extension type of sub-project, where the existing one-storied market will be vertically expanded to another one storied and the market as one stop shopping mall. As there are ongoing shops in the existing compound, so the issue of marketing daily commodities of the people should be a concern while construction work. Therefore, alternative route, alignment and location is apprehensive.

3.9.1 Analysis of the Alternative Routes/ Alignments/ Location

Analysis of the Alternative Location for Vertical Extension of Shakha Masa Bazar Market:

Though there are two Unit of market at the subproject the construction would be started one after another. There are stairs at different corner of the market. Construction materials and tools would be transport by any one of them by not disturbing ground floor activities. Unit-A is surrounded by bazar road, which would be good alternative route and construction material carrying truck would be parked at that road. In Unit-B Shakha Masa bazar road is in the North-West side which would be a good alternative. The roof of the market would be used for concreate mixing and storage of construction materials but might be concerned about the load capacity of the roof. Constructional tools and equipment should be transfer by Crane. Other safety should be taken as a part of alternative while construction work of the sub-project. Considering the minimal adverse impacts on the socio-ecological environment and physico-chemical environment, this site has been selected.

3.9.2 Analysis of the Alternative Routes/ Alignments/ Location for distribution

The following three alignments can primarily be considered for alternative analysis.

Route/Alignment	Advantages	Disadvantages
Alternative-1 (North-East side of Unit-A)	-Easier house connection -Ease of construction without much disruption to traffic	-
Alternative-2 (South side of the Unit-A)	-Alternative parking - Easier house connection	-
Alternative-3 (North-west side of Unit-B)	-Alternative parking -Less disruption of traffic	-It is not suitable for more than single lane road

3.9.3 Analysis of the Alternative Technologies/ Methods of the Construction

Based on the available technologies in Bangladesh and with the assistance of the consultant, the Municipal Officials will examine the method of the construction. However, to minimize occupational health and safety risks and for effective use of the human labors, it is highly recommended to adapt mechanical system where possible for instance bore hole below the road by hydraulic drilling, concrete mixer machine for casting, rig machine for boring work, mechanical vibrator machine and other electro-mechanical equipment as per requirement.

3.10. Estimated cost of the sub-project

The estimated cost of the proposed vertical extension of the Shakha Masa bazar market under Nilphamari municipality is BDT 100 Million.

3.11. Schedule of implementation

Tentative starting date of the proposed sub-project is 31st Aug 2018 and tentative completion date is 31st March 2020 and approximately 19 months will be needed.

4. BASELINE ANALYSIS OF ENVIRONMENTAL CONDITION

4.1. Physicochemical environment

4.1.1.Important environmental features

Important environmental features in influence areas (1 km around the sub-project site) were observed through field observation. Detail observation and assessment were made on identified key environmental features like drainage congestion, waste water discharge, solid waste disposal and management, water contamination, air pollution, soil degradation, odor spreading and traffic movement etc. in and around the catchment or influenced areas of the sub-project. Moreover, land use pattern of the influence areas was also observed and found human settlement, offices, commercial establishments, health care facilities, educational institutions and a small water body. As an essential

ingredient an engineering and topographical survey was done that may need to be adjusted minor during the construction phase.

The proposed sub-project is located at Nilphamari Bazar, the heart of the main town, under ward no.02 of Nilphamari Municipality. There is no specific aquatic source and no trees will be cut during construction period.

4.1.2. Climate

The climate is tropical in Nilphamari. In winter, there is much less rainfall in Nilphamari than in summer. The climate here is classified as always by the Köppen-Geiger system. The average annual temperature in Nilphamari is 26.0 °C. The rainfall here averages 1934 mm. As we know Nilphamari is under Nilphamari district, climatic report of Nilphamari Municipal is same to Nilphamari.

4.1.2.1. Nilphamari climate table

Temperature	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	17.3	19.6	23.8	27.4	27.9	28.5	28.7	28.8	28.4	26.5	22.3	18.7
Min. Temperature (°C)	10.3	12.2	16.2	21	23.3	25	25.8	26	25.2	22.2	16.1	11.9
Max. Temperature (°C)	24.4	27.1	31.5	33.8	32.5	32	31.6	31.7	31.7	30.8	28.5	25.6
Avg. Temperature (°F)	63.1	67.3	74.8	81.3	82.2	83.3	83.7	83.8	83.1	79.7	72.1	65.7
Min. Temperature (°F)	0.5	54.0	61.2	69.8	73.9	77.0	78.4	78.8	77.4	72.0	61.0	53.4
Max. Temperature (°F)	75.9	80.8	88.7	92.8	90.5	89.6	88.9	89.1	89.1	87.4	83.3	78.1
Precipitation/Rainfall (mm)	8	12	21	57	224	399	425	370	310	134	9	2

Source:https://en.climatedata.org/location/56261/

Fig: Baseline data of Nilphamari of 2012

The variation in the precipitation between the driest and wettest months is 423 mm.
The variation in annual temperature is around 11.5 °C.

4.1.3. Topography of Nilphamari

Bangladesh is a riverine country crisscrossed by many rivers, rivulets and their tributaries. It is divided into five physical regions- the Ganges Delta proper to the South-

West, the Para delta to the North-East and the South-East undulating Chittagong region. Ganges total flood plains is the tidal landscape has a low ridge and a basin relief crossed by many tidal rivers and creeks. Local differences in height are generally less than 1 m compared with 2-3 m on the Ganges floodplain. Physiographic map of Bangladesh is given in Figure below.

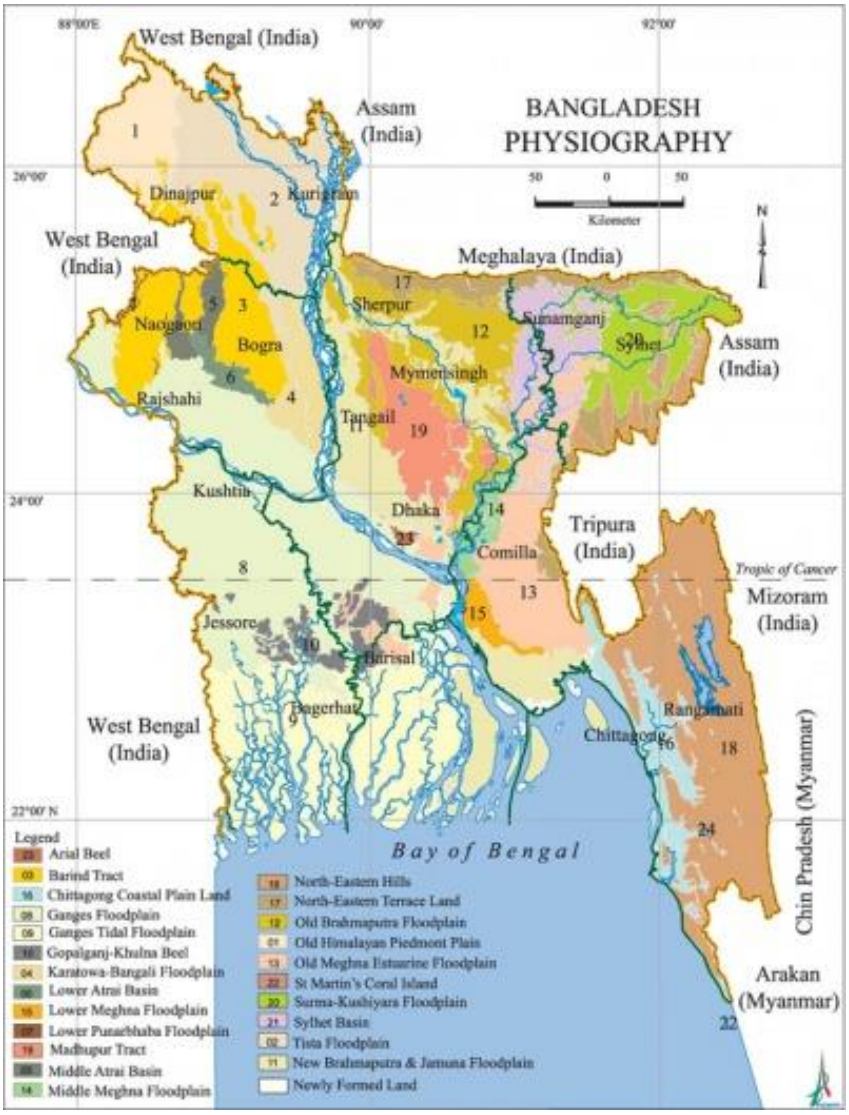


Figure 1: Physiographic map of Bangladesh

Tista floodplain, a big sub-region stretches between the Old Himalayan Piedmont Plain in the west and the right bank of the N-S flowing Brahmaputra in the east. An elongated outlier representing the floodplain of the ancient Tista extends up to Sherpur (Bogra district) in the south. Most of the land is shallowly flooded during monsoons. There is a shallow depression along the ghaghat river, where flooding is of medium depth. The big river courses of Tista, dharla and dudhkumar cut through the plain. The active floodplain of these rivers, with their sandbanks and diyaras, is usually less than six kilometres wide. The proposed project site is generally flat and poorly drained. Proposed project site is filled to the level of 6 ft. (1.8 m) w.r.t surrounding area by

Nilphamari Municipality Authority by dredged sand from Nilphamari river raising the ground level of the site.

Figure 2: Topographical map of Nilphamari

4.1.4. Geology and soil

Two Himalayan rivers, the Ganges and the Brahmaputra, drain to the Bay of Bengal as a combined river & carry the largest sediment load. These two rivers together with another non-Himalayan river, the Meghna, have built one of the largest delta in the world known as the Ganges-Brahmaputra Delta or the Bengal Delta. On its North-Eastward migration, the Ganges built several deltas and then abandoned them before finally occupying its present position. The Brahmaputra had an Eastward course as revealed by Renne's Atlas, building the early Brahmaputra delta near Mymensingh. At present the river has a straight southward course. However, while these two rivers previously debouched individually to the Bay of Bengal, at present they combine before finally emptying into the bay. These delta building activities of the rivers contributed to the formation of some 60% of the total Bangladesh coastline. Geology The tract of the Nilphamari is of recent origin, raised by the deposition of sediments formed due to soil erosion in the Himalayas. The process has been accelerated by tides from the sea face. The substratum consists mainly of Quaternary Era sediments, sand and silt mixed with marine salt deposits and clay. Geologists have detected a southeastern slope and tilting of the Bengal basin during the Tertiary. Because of neo-tectonic movements during the 10th-12th century AD, the Bengal Basin titled eastward. Evidence from borehole studies indicate that while the Western side of the Nilphamari is relatively stable, the South-East corner is an active sedimentary area and is subsiding.

4.1.5. Hydrology and Water resources

Tista floodplain covers most of Rangpur and adjoining regions that actually lies in the younger part of Tista alluvial fan that covers several different landscapes. Physically, the floodplain stretches between the Himalayan Piedmont Plain in the west and the right-bank of the north-south flowing Brahmaputra in the east. The diversity results from the fact that the tista has occupied and abandoned several different channels during the past few thousand years including the valleys now occupied by Mahananda, Punarbhaba, Atrai, little Jamuna, karatoya and Ghaghat rivers. The small floodplains of Dudhkumar and Gangadhar rivers are also included in this unit. The main geomorphic agent of this unit is river Tista. This river along with the others brings sediments of different sizes to the floodplain at different times. Monsoon climate dominates this region where rainfall is abundant. The average annual rainfall in this region is little over 1,900 mm. Tista is the prominent river of this region, which has a mean monthly discharge of about 2,430 cusecs. Tista rises in Chitamu Lake in Tibet that joins the Brahmaputra in the Rangpur district of the country. It flows through a magnificent gorge known as the Sivok Gola in Darjeeling district. It is a wild river in the Darjeeling Hills where its valley is clothed with dense forest, but its drainage area in the mountain is only 12,500 sq km. Up to the close of the 18th century it flowed into the ganges, but after the destructive floods of 1787 in which a large part of the Rangpur district was laid waste, it suddenly turned east and joined Brahmaputra. The monthly mean discharge of the dharla that borders the western boundary of the floodplain is about 1,440 cusecs. There are many old channels that used to be occupied by this river. Karatoya through which it joined the Ganges is still known as the Buri Tista or Old Tista.

4.1.6. Air quality and dust

The profile of the Municipality is mainly urban area, which has mix of semi-densely settlements and commercial areas. The major sources of air pollution noted within the study area include normal vehicular pollution in roads as well as commercial activities, and domestic emissions. No major industrial activity is reported in the study area. Only 0.68% of the total area is covered by industrial installation, which indicated less smoke emission in the sub-project area. Energy supplies are not good in the area, and therefore, diesel-fired small power generating sets are common in the urban areas of the study area.

Project site is surrounded by the small settlements, Industries and agriculture land. Major source of air pollution in this area is vehicular activities. Major polluting industries are cement, brick kilns and petroleum industries. Other activities which add to the air pollution are vehicular movement, movement of cargo/vessels (especially carrying coal) dredging and filling activities. Air quality monitoring has been carried out by CEGIS at various locations. Data for Nilphamari Municipality area and Shakha Masa bazar area is given below. Nilphamari Municipality is Southern to the project site, i.e. in down wind direction.

Location of Monitoring	Wind Direction	Pollutants	May, 2018 ($\mu g/cum$)	July, 2018 ($\mu g/cum$)	DOE Standards (ECR, 2005) ($\mu g/cum$)	IFC/WB Standards ($\mu g/cum$)
Nilphamari	Upwind direction	$PM_{2.5}$	36	41	65	75
		PM_{10}	71	82	150	150
		SPM	107	116	200	NF
		SO_2	21	33	365	125
		NO_X	21	19	100	200
		CO	170	195	1000	NF
		O_3	22	23	157	160

4.1.7. Noise level

The purpose of ambient noise level measurement is to determine sound intensity at the sub-project locations. As a part of the baseline study, noise level measurement was done at different locations inside and around the proposed sub-project site. Noise level measurement was performed during daytime with a calibrated noise level meter (MASTECH_MS6508). 2-minutes continuous noise level measurements were carried out at the selected locations in 'A' weighting and slow response mode with 1 sec interval, and the equivalent noise levels (L_{eq}) as well as the maximum noise levels (L_{max}) were determined. Table 4-2 shows the summary of noise level measurements carried out in different locations in and around the study area. It also shows the Bangladesh noise level standards for commercial areas.

Table 4-2: Noise level measurements Unit-A and Unit-B during day time at the selected locations in and around of the market

Noise level measurement locations	Day-time		Bangladesh standard for commercial place $(dBA), Lmax$
	Equivalent Noise level $(dBA), Leq$	Maximum Noise level $(dBA), Lmax$	
Outside of market(North)	78.866	84.2	70
Outside of market (South)	72.830	81.3	70
Outside of market(East)	58.243	69.8	70
Outside of market(West)	78.114	84.2	70
Inside the market	67.716	68.1	70

Source: Field Survey, April 2018, Unit-A

Noise level measurement locations	Day-time		Bangladesh standard for commercial place $(dBA), Lmax$
	Equivalent Noise level $(dBA), Leq$	Maximum Noise level $(dBA), Lmax$	
Outside of market(North)	56.446	61.6	70
Outside of market (South)	77.780	82.1	70
Outside of market(East)	61.323	65.3	70
Outside of market(West)	75.314	83.5	70
Inside the market	57.613	62.7	70

Source: Field Survey, April 2018, Unit-B

The purpose of lux measurement is to determine sound intensity at the sub-project locations. As a part of the baseline study, light intensity level measurement was done at different locations in the ground floor lobby and first floor lobby. Light intensity level measurement was performed during daytime and Noon time with a calibrated light intensity level meter (MASTECH_MS6612).

Table 4-3: Lux meter reading inside the one storied building locations for Unit-A and Unit-B

Lumen level measurement locations		Day time				Evening time			
		9.30 *am*	10.00 *am*	10.30 *am*	11.00 *am*	3.00 *am*	3.30 *am*	4.00 *am*	4.30 *am*
Unit-A	Ground floor lobby, *lux*	345	385	417	453	318	335	290	244
	Roof l, *lux*	511	573	604	637	534	521	461	404
Unit-B	Ground floor lobby, *lux*	451	550	654	710	451	431	389	267
	Roof l, *lux*	533	561	598	640	606	584	478	410

In addition, Nilphamari Shakhamacha Bazar market has good option for solar panel in their vertical extension roof top. This panel should be used to lighting stairs, corners and as security purpose.

4.1.8. Solid Waste Management

There are 305 dustbins (RCC 35 + Steel 270) in all over the municipal. 09 vans, 02 double cabin pickup van and 4 garbage trucks to transport the waste to specific area. Solid waste is first collected by conservancy unit and by vans they are carried out. Municipal garbage collecting truck collects all solid waste and carried it to temporary waste disposal site named Harua College Station. In present, Nilphamari Municipal has purchased land for final waste disposal site in Itakhola, Jaldhaka Road. Very soon this site will be launched as a modern waste disposal unit. Collected solid waste will be divided by their properties. Biodegradable wastage will be reused as fertilizer and non-biodegradable wastage will be dumped. Plastic bags and bottles are separated for reusing.

4.2. Biological Environment

4.2.1. Floral habitat and diversity (terrestrial and aquatic)

Reconnaissance field surveys were made to assess the various vegetation types/ecosystems present within the sub-project impact zone. Once established, the target areas were extensively surveyed and a species assessment was made. Standardized transects were laid in order to assess species composition and vegetation structure. To facilitate the identification of the maximum number of species, several visits were made. The study area (both directly and indirectly impacted area) occupies both terrestrial as well as aquatic ecosystems.

The project area has some flora of commercial importance. The major tree species found in the area are Mahogany, Betel nut, Rain-tree and (in Bengali and colloquial) Simul, Sishu, Arjun, Koroi, Minjiri, Eucalyptus, Jarul, Hizal, Sheora, Krishnachura, Siris, etc. No endangered floral species are reported. The dominant fruitbearing trees include Mango, Pineapple, Lemon, Satkora Jackfruit, Banana, Coconut, etc. Besides domestic animals, wild dogs, jungle cat, jackal, mongoose and rodents like ants and snakes of various species are reported, though having a decreasing trend.

4.2.2. Faunal habitat and diversity (terrestrial and aquatic)

In terms of faunal components, the study area does not large wild mammals due to its vegetation condition and lack of forested areas. The endangered animals like Wild Buffalo, Peafowl, Mugger Crocodile etc. are not reported. Some birds found in common Bengali name include Chorui, Doel, Ghugu, Shalik, Chil, Pecha, Tia, Bok, Crow, Tuntuni, Bulbuli, Kokil etc. Wild animals like Monkey, Fox, Wild cat, Mongoose, Porcupine etc. are available in the area. Wildlife that fully depends on the terrestrial land throughout their whole life for shelter, food, nesting, breeding and producing offspring is called terrestrial fauna. The main types of terrestrial fauna are amphibian, reptile, bird and mammal. Aquatic habitats are common in the project area due to the numerous freshwater lowlands, ponds, wetlands and rivers coursing through the area. Fish diversity in rivers and streams is decreasing due to heavy pollution in the aquatic bodies from industrial effluent.

4.3. Socioeconomic Environment

4.3.1. Beneficiary population

There is no possibility of any adverse impact in terms of losing income or livelihood of the people living and/or running their business within the market and at the surrounding areas. Eventually, the proposed market will create employment and business opportunities for the people living around the site or within the Municipality. No grievances are found that need to be mitigated.

Moreover, the municipality will earn a significant amount of revenue as rent from this market. The rent at different floors is different. At the prevailing market price of rent of commercial space, the municipality will earn and can use these earnings for the salary

of the officials. This earning will help to increase finance for development of municipality people.

4.3.2. Educational status

Average literacy rate is 39.2%. Genderwise, male 45.6%, female 32.5%. Educational institutions are: college 6, primary teachers training institute (PTI) 1, secondary school 87, primary school 217, madrasa 45, Maktab 460. Noted educational institutions are: Masiur Rahaman College (1958), Government Mohila College (1972), Nilphamari Government College (1986), Nilphamari Government High School (1882), Government Boys' High School (1914), Government Girls' High School (1945), Samir Uddin Boys' High School (1963), Natun Bazar Bilateral High School (1970), Rabeya Balika Bidya Niketon (1973)

(Source: Population and Housing Census 2011).

4.3.3. Livelihood and economic situation

Main sources of income are Agriculture 69.10%, non-agricultural laborer 3.41%, commerce 12.02%, transport and communication 3.39%, service 5.93%, construction 0.95%, religious service 0.21%, rent and remittance 0.12% and others 4.87%. Ownership of agricultural land Landowner 55.02%, landless 44.98%; agricultural landowner: urban 40.41% and rural 56.70%. Main crops Paddy, wheat, jute, potato, tobacco, cotton, ginger. Extinct or nearly extinct crops Linseed, sesame, kaun, mustard, Aus paddy. Main fruits Mango, jackfruit, blackberry, guava, banana. Noted manufactories Textile mill, saw mill, rice mill, ice cream factory. Cottage industries Goldsmith, blacksmith, weaving, potteries, bamboo work, wood work, tailoring, bidi factory. "Main exports ' Paddy, jute, cotton, ginger, tobacco.

(Source: Population and Housing Census, 2011)

4.3.4. Land acquisition and resettlement

The sub-project site is situated on the land which is owned by Municipality. Hence, land acquisition is not required. The proposed sub-project will be constructed at the top of the newly constructed market. Therefore, the issue of resettlement is absent here.

4.3.5. Tribal communities

There is no indigenous or tribal people settlement in the sub-project area. Therefore, there is no need to take any kind of protective measures for indigenous peoples' safeguard.

4.3.6. Cultural heritage and protected areas

During war of Liberation, the freedom fighters captured 300 rifles and 10,000 ammunitions from the armory On 7 April 1971 & the Pak army took control over Nilphamari town On 8 April. Marks of the War of Liberation Memorial monument 2 (Swadhinatar Smriti Amlan, Bashar Gate). Archaeological heritage and relics Nilsagar

Dighi (former name Birat Dighi or Binni Dighi) at Gorgram, Tomb of Hazrat Pir Mohiuddin (Kunda Pukur), Bishnu Mandir (Palashbari). Religious institutions Mosque 624, temple 371, church 1, tomb 2. Tomb of Hazrat Pir Mohiuddin (Kunda Pukur), tomb of Syed Pagla Pir (Darowani).

5. ENVIRONMENTAL SCREENING

5.1. Potential Environmental Impact during Construction Phase

(A) Ecological Impacts:

- Felling of trees : Significant □ Moderate □ **Minor** □√
- Number of trees: No trees.
- Clearing of vegetation : significant□ Moderate □**Minor** □√
- Potential impact on aquatic species environment : Significant □ Moderate □**Minor** □√

The proposed sub-project will be constructed at the top of the existing newly constructed Nilphamari market. Therefore, there is no need of felling trees as well as clearing of vegetation. In addition, there is no water body at the surrounding areas and there is a RCC drain around the existing market ensuring the proper drainage of water from the proposed site to nearby cannel. The cannel is connected with the river.

(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** □√

The sub-project will have temporary and localized negative impact on physico-chemical environment during construction and operational phases due to the construction of super structure, movement of vehicles for carrying construction materials and equipment, and using of welding and drilling machine, winch machine, concrete mixer and vibrator machine etc. Hence, the anticipated impact on noise is considered as moderate. Construction activities such as transportation of sand, stones, brick cheeps etc. may generate dust that may cause air pollution and anticipated impact of it is considered as minor. Construction activities need no demolishing work thus minimum chance to generate solid wastes and temporary impact on drainage system may cause if the raw materials of the construction work fall dawn into the existing drainage system. There is no chance of water pollution as there is no water body adjacent to the site as well as labor shed. A minimum amount of household level solid waste may generate at the labor shed. But, as the Municipality has solid waste

management system in place and it will have no impact on the surrounding environment. Further, no solid waste will be generated during the construction work and will have no impact due to construction waste. In addition, there is well constructed and functional drain around the proposed site which will ensure the removal of storm water and reduce the chance of water logging. Primarily, the sub-project will have no adverse impact on the other physicochemical components. Moreover, proper silencer and muffler are to be used in all categories of machineries to be used during construction period to avoid uneven sounds.

(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 □

As the sub-project is situated at the center of the main town, the sub-project will likely have temporary negative impact in traffic congestion due to transportation of the construction materials and equipment during construction phases. So, proper traffic management is required during construction phases. However, it is anticipated that the sub-project activities will have moderate impact on the local traffic system. Mixing and carrying construction materials etc. work will be performed with the conventional equipment and skilled laborers. Hence, anticipated impact on health and safety is considered as moderate. However, in case of any accident such as falling from the height during brick work, plastering work, painting work, glass fitting work etc. may cause severe impact on health and safety. So, the use of personal protection equipment will minimize the impact. There is no archaeological and historical site within the influence area. However, there is a temple adjacent to the proposed Nilphamari market that demands extra precaution to avoid any damage of the temple during construction phase. Further, it has moderate positive impact by generating employment opportunity for the local people as labors for construction of works will be hired locally.

5.2. Potential Environmental Impact during Operational Phase

(A) Ecological Impacts:

- Potential impact on species of aquatic: Significant □ Moderate □**Minor** □√

During operational phase, the sub-project activities will not have any likely impacts on the surrounding ecological environment. The existing market has a system to reserve black water in underground reserve tank and vacuum cleaner to remove this water. Moreover, there is a well-constructed drainage system surrounding the sub-project site and connected with a khal (Canal) through which the grey water to be generated at the market will be discharged into running river. It will reduce the impact on aquatic species.

(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** □

During operational phase, there is no possibility to deteriorate the air quality as no dust and emission of carbon-dioxide will be generated from the proposed sub-project but noise pollution due to construction work and public gathering at the market may create moderate noise nuisance. As there is a provision of managing solid waste to be generated at the market is in design and there is a well-constructed RCC drain around the market, so there may have no chance for drainage congestion. However, proper management of solid waste using waste bins, collecting waste from bins and disposal of waste at landfill, and maintenance of drainage system to be ensured during operational phase. If the waste bins are not used properly at different places of the market and wastes are thrown here and there may pollute the surrounding environment.

(C) Socio-Economic Impacts:

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

In addition, the market has a provision of proper security system with CCTV camera in and around the market premises and residential facilities for the shop keepers and traders at the top floor of the market which will improve the security and safety of shop keepers and traders. However, during operational phase, possible accidents and social risks due to causalities at the market, fire hazard, short-circuit and other vulnerability may also have negative socio-economic impacts. The Vertical Extension of Shakha Masa Bazar Market (CIP-01) will have significant positive impact by providing job and business facilities and resource mobility. There is a provision of establishing different types of shops at the market.

5.3. Summary of Possible Environmental Impacts of the Sub-project

The ecological impact is not significant due to the construction activities but there will be some impacts on the physio-chemical parameter of environment during construction period. Construction works may temporarily increase noise pollution at the surrounding environment and may create localized hazards. The anticipated impact on physicochemical components is mainly site specific and will be within the market boundary.

Dust generation from construction phase is significant issues that should be handled and disposed-off properly by floor management. This sub-project has positive impacts in terms of the generation of the employment opportunities due to construction

activities, supplying of the materials at construction phase and by providing business facilities at operation phase.

6. IDENTIFICATION OF MAJOR SUB-PROJECT ACTIVITIES

6.1. Major Activities during Pre-Construction Phase

As the proposed sub-project will be implemented at the top of existing market, so some pre-construction activities will be carried out for preparing the site ready for proposed construction activities. The major pre-construction activities to be carried out are as below:

- Construction of temporary separate labor sheds for men and women.
- Make a temporary barrier around the construction site.
- Construction of separate toilet facilities for men and women labors;
- Providing temporary electric and water supply lines at the labor shed;
- Construction of temporary office for supervision of construction activities.

6.2. Major Activities during Construction Phase

During the construction phase, following major sub-project activities to be carried out:

- Construction of multi storied building with civil works such as site preparation, excavation, foundation, plinth beam and slab, superstructure and indoor outdoor finishing.
- Electricity connection and other ancillary works;
- Provision for workers' health and safety.

6.3. Major Activities during Operational Phase

The major activities to be considered during operational phase are as below:

- Mass gathering in market.
- Lots of vehicle will come every day
- Traffic control
- Safety and Security mechanism
- Toilet (Mail, Female & disable) and Safe water
- Provision for disable visitor (Ramp, Toilet etc.)

7. ASSESSMENT OF ENVIORMENTAL IMPACTS AND ITS MITIGATION & ENHANCEMENT MEASURES

7.1. Potential Significant Environmental Impacts and Its Mitigation & Enhancement Measures during Pre-Construction Phase

7.1.1. Impact due to labor camp and it's sanitary latrine

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. Two temporary sanitary latrines, one for male and another for female will also be installed. The market has also facilities of toilet. Laborer would use these toilets. Improper sanitary facilities may cause health hazards to the laborers and that may reduce the work efficiency. There is functional storm water drainage system all around the proposed site for labor shed that will facilitate easy surface runoff. Following measures should be taken to avoid or minimize the health hazard:

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

7.2. Potential Significant Environmental Impacts during Construction Phase

7.2.1. Pollution from the construction materials and equipment

A wide variety of construction materials and equipment will be used during construction which required to be gathered at the site. Construction spoils such as accidental leakage of the oil, grease and fuel in equipment yards might have a significant hazard. Soil quality might be polluted from these contaminants. Gathering of construction material such as sand, brick chips, cement etc. might have a significant impact on air quality. The people to be engaged for the construction activities may also impede the physical and human habitats of the area.

The impacts to be caused by construction materials and equipment can be avoided or minimized by adopting the following mitigation and enhancement 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;

- Raised platform (brick soling with neat cement finishing to keep the oil and lubricant) will be constructed prior to start working (to be included with environmental safeguard items in the bidding document).
- Leakage fuel and lubricants from equipment will be collected by separate container for reuse or safe disposal. So that it cannot be spread and pollute adjacent areas.

7.2.2. Impact due to Solid Waste Disposal

Solid waste will be generated during construction works area. The improper solid waste management activities during construction period may pollute the sub-project area. The impacts to be caused due to solid waste generation can be avoided or minimized by adopting the following mitigation and enhancement measures:

- Within the construction site, a number of waste bins will have to be provided by the contractor
- The Conservancy unit of Nilphamari Municipal will carry the waste (from the primary transfer station) to the final disposal site
- The contractor will be concern about to make aware of the workers to use the dust bins

7.2.3. Impact due to Waste Water Disposal

Waste water will be generated during construction work in the construction area and kitchen. To minimize the negative impact due to waste water generation can be minimized by adopting following mitigation and enhancement measures:

- The total waste water will be drained through a central drainage line which includes a soak pit filter to separate solid waste from waste water.
- It will be monitored that the waste water doesn't contain any dissolved hazardous chemical particulate.

7.2.4. Impact due to labor camp and its sanitary latrine

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.

The impacts to be caused due to labor camps and its sanitary latrine can be avoided or minimized by adopting the following mitigation and enhancement measures:

- Two labour 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 labour shade shall be with the facilities like; mosquito nets, cooking arrangement, water supply, waste bins, lighting etc.

7.2.5. Impact due to inadequate drinking water supply

Safe drinking water supply is important for the construction workers such as labors, engineers, supervisors and Market stakeholders during construction work. If sufficient drinking water is not supplied during construction, it may cause health damage to them.

The impacts to be caused due to inadequate drinking water supply can be avoided or minimized by adopting the following mitigation and enhancement measures:

- The contractor will install tube well or ensure pipe line water supply as considered in the BOQ (environmental safeguard component) prior to starting the construction works;
- The water quality will have to be tested for its quality judgment in a regular interval.

7.2.6. Planning for transportation before starting works

As the site is adjacent to the Nilphamari-Saidpur highway, that's why traffic system has to maintain very strictly. Otherwise, traffic congestion may have occurred. During construction phase, some additional traffic will be accumulated for bringing the construction material and equipment. This traffic may cause temporary congestion on the roads nearby sub-project areas. It is anticipated that the sub-project activities will not create any severe impact on the local traffic system, because movement of the vehicles and equipment will be only for a short time and as per requirement. The on-site sub-project activities do not have any impact on the local traffic system during construction phase, because the works will be done in a confined area. However, during operational phase, improper and roadside parking may create localized traffic congestion.

The impacts to be caused due to transportation of vehicles to be used for construction works can be avoided or minimized by adopting following measures:

- Any materials required for construction should be transported at night time (within 10.00 pm – 6.00 am) to avoid local traffic congestion;
- Traffic control manpower will be deputed during construction and operation period;
- Proper vehicle movement schedule should be maintained in consultation with local people;
- Unloading of materials should be done inside project areas;
- Control sign should be provided to regulate traffic movement;
- Safety arrangement should be inserted in the safeguard cost in BOQ.

7.2.7. Clogging of local drain water

There is a possibility to clog the local drain with construction materials kept at the sub-project site as there is an open storm drain at the south side of the market.

The impacts to be caused due to clogging of local drain water can be avoided or minimized by adopting the following mitigation and enhancement measures:

- Construction materials should be kept within a corner of construction area;
- Contractor will ensure proper disposal of construction wastes and that should not be disposed to the local drains.

7.2.8. Impact on air quality due to dust and emission of carbon dioxide

Different construction activities such as handling of construction materials (stone/brick chips, sand, and cement), rod fabrication, movement of trucks with construction materials etc. may generate dust and damage the air quality. The air quality in the area can be affected by emission of carbon dioxide of the construction trucks and other equipment that uses gasoline, and the unpleasant smell of paint and thinners that will be used during painting. This might affect the health of the people passing by or living around and working within the area.

The impacts on air quality to be caused due to dust and emission of carbon dioxide can be avoided or minimized by adopting the following mitigation and enhancement measures:

- Water should be sprayed to control the dust at day time;
- The trimming activity using odorless paints should be minimized;
- The condition of combustion-engine powered machine should be maintained;
- Low-sulfur fuels should be employed;
- Construction material should be transported through truck covered by tarpaulin; and
- The construction period condition of Air quality should be tested in laboratory.

7.2.9. Impact on noise level

Different activities during construction work such as movement of vehicles, concrete mixer machine and crushing bricks at site may generate a significant level of noise. Concrete casting, cutting of steel for reinforcement etc. may also cause noise hazard.

The impacts on noise level can be avoided or minimized by adopting the following mitigation and enhancement measures:

- Construction materials should be transported with scheduled time;
- All powered mechanical equipment and machinery should be fitted with noise abating gear such as mufflers for effective sound reducing device;
- The use of personal protective equipment like helmet, goggles, ear plug, gloves, safety boot etc. should be ensured;

- The crushing of bricks/ stones should not be allowed at the project site. Broken brick or stone chips should be collected from distanced source to the sub-project site for construction purpose; and
- Separate batch plant might be used for concreting work (Ready Mix Concrete if available).

7.2.10. Solar Energy and Glass Wall

Market building has options to install more solar panel lighting pole in the sub-project area. As a part of the electricity demand, roof top solar energy system would 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.

7.2.11. Impact on surface water quality

Water will be consumed in the construction phase and as well as operation phase. In the construction phase, water will be consumed in the construction activities and as well as by the workers at the labor shed and work site. Hence rain water harvesting will partially meet the demand especially rain water can be used in the construction activities. Provision of roof top rain water harvesting (RWH) system.

7.2.12. Impact on surface water quality

There is only one water bodies (manmade) adjacent to the sub-project site. And this manmade pond will fill up. That's why no demolition work is required for the construction of the sub-project. However, improper storage of different construction supplies such as fine sand, considerable gravel and alike will affect the quality of the run-off water that will run down on drainage areas.

The impacts on surface water quality can be avoided or minimized by adopting the following mitigation and enhancement measures:

- Waste material in any form should not be thrown in storm drainage system
- Proper construction management including waste management, training of operators and workers will be provided to avoid pollution of water bodies or nearby habitants
- Waste bins are to be provided at different location of working and living places.

7.2.13. Contingency planning for any uneven situation

There are so many unwanted happenings may occur during construction periods. Proper contingency planning is required for overcoming any unwanted situation, otherwise, that will hamper the progress of works. As a precaution, proper contingency planning is essential for smooth progress.

In order to avoid or reduce the impact of any uneven situation, following contingency measures should be taken in advance as precaution:

- All the emergency telephone numbers of all the departments like Police station, fire service and civil defense, truck and bus stands, hospitals, clinics, etc. should be available at site
- There should be standby transport facilities to deal any accidental case
- There should be a provision for fast-aid box and emergency on-call physician.
- The storage of the construction materials should be done in such a way that it might not create obstacle for movement of vehicles and pedestrians.

7.2.14. Occupational health and safety

The occupational health and safety is an important issue for any construction activities. It primarily focuses on work equipment and protective gears to avoid or minimize the risks. The Contractor should give especial attention on workers' health and safety during construction work. 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 such as pile rig and winch machine
- Risk from the traffic collision or accidents during operation of the equipment such as hydraulic excavator, steel cutter, pile rig, winch machine, welding machine, and vehicles movement for the transportation activities of the sub-project
- 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.

The key salient features of the general requirements for the workers' health and safety stated are presented in **Table 7.1**.

Table 7-1: General requirements for the workers' health and safety

Issues	Requirements
Health and Hygiene	• Protection against dust and furnace by using of the nose masks and covering of the head and body; • Laborers will use proper safety belts during work at high altitude • Ensure availability and using proper PPE (helmet, gloves, safety glass, safety shoes etc.) of all workers during work. • Provide construction workers with basic information on infectious diseases including HIV/AIDS • Proper scaffolding should be made available during construction • Proper disposal of the wastes and effluents; • Introduce waste bins for the solid waste management system.
Safety and Fast Aid Box	• Using of the personal protective equipment (helmet, gloves, goggles, nose mask, safety boots); • Precautions during work on or near machineries in motion; • Head loads are prohibited; • First aid facilities should be provided and maintained; • 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 sever 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.
Over-crowding	• No labor room should be over-crowded, the labor camp should be provide $15\ ft\ x\ 30$ for male and $12\ ft\ x\ 15$ ft for female workers.

7.2.15. Impact on local community

The construction of sub-project can cause air pollution and noise pollution during construction phase due to blow of dust and emission of gases during vehicle movement, generation of high sound during using equipment for mixing etc. that may affect community people living surrounding the construction site. In addition, there might be a conflict with community people in any uncertain events.

Following measures should be taken to avoid or minimize the local community impacts:

- Community people should be oriented to use masks during their movement near construction site
- Construction equipment and machineries should not be used at night
- Orientation and training will be provided to the contractors, supervisors and workers, on health, safety and environment including sexual diseases control (as of BOQ)
- Liaison with the communities will be maintained throughout the construction phase
- Grievance redress mechanism has been established at the sub-project site.
- A detail disclosure on sub-project to be hanged at the visible side where community can see and read

7.2.16. Labor influx and anticipated impacts

The sub-project has a positive impact on labor engagement since it will attract employment of local laborers. The most of the works will be done by the local laborers and there is very limited chance of engagement of outside laborers. So, the labor influx will be minimum in the construction of sub-project. There is a chance to avoid female workers from poor households to be employed in construction activities.

Following measures should be taken to avoid or minimize the impact on labor influx:

- Laborers from the local community should be employed in construction activities;
- Female laborers from poor households should be given highest priority to employ in construction activities.

7.3. Potential Significant Environmental Impacts and Its Mitigation and Enhancement Measures during Operational Phase

7.3.1. Air quality degradation

The emission of carbon dioxide of the cars to be used by the customers will be insignificant market in the proposed sub-project site which will avert the air pollution. However, unpleasant smell of paints and thinners that will be used during painting and bad odor from the solid wastes materials to be generated from the Nilphamari market can affect the air quality. This might affect the health of the people customers or people living and working within the area.

The following mitigation and enhancement measures should be taken to minimize the air quality degradation:

- Odorless and lead free paints available in the market should be used;
- Control any likely bad odor generated from the waste materials;

7.3.2. Noise pollution

There will be trucks and other vehicles beside the market area. Therefore, there is chance of noise pollution due to hydraulic horns by truck. However, the use of hydraulic

horns by vehicles at the parking place may create noise pollution. In addition, overcrowded customers during peak-hours of marketing can create minimum level of noise nuisance at the market place as well as at the nearby residents.

The following mitigation and enhancement measures should be taken to minimize the noise pollution:

- The traffic control authority should control the use of hydraulic horn and minimize the traffic congestion at peak-hours at the parking place.

7.3.3. Solid wastes generation and disposal

Solid wastes such as leftover food, foils, bottle and plastic from food and drink can be generated at market premises by the customers. If these generated solid wastes are not disposed properly, it will create unhygienic environment at the market and customers will feel discomfort.

The following mitigation and enhancement measures should be taken to ensure proper solid waste disposal and minimize its impact on environment:

- Sufficient numbers of waste bins would be in place at project premises.
- Municipal solid waste collecting van will collect the waste and transport by waste carriage truck to final disposal site at just behind the Municipal building at ward 2.
- Wastage will be categorized by their properties like bio-degradable and non-biodegradable.
- Biodegradable wastage will be used to make fertilizer and non-biodegradable waste will be dumped. Wastage like plastic bottle and plastic bag would be recycled.

7.3.4. Waste Water Disposal

There is an existing waste water disposal system of the market and the nature of shops to be installed at the proposed floors of the sub-project will not generate waste water. Waste water can be linked with local drain and decrease the water quality of outfall.

Following measures should be taken to minimize the impacts:

- Proper rain water drainage should have built for market.
- Separate sewer lines should be in place for waste water to be generated at the market; or waste water tank should be constructed at the market and waste water should be collected by vacuum cleaner for proper disposal;
- Provision of soak pit is to be provided for disposal of waste water to be generated. On the bottom of soak pit 1.5 m depth filter bed (Sylhet Sand and brick chips, 1:1 proportion) is preferable;
- The waste water, after filtration through the soak pit, will not be harmful either to ground water or to the nearby drains/ surface water; and
- The soak pit will have to be cleaned in a regular interval (at least in every three months).

7.3.5. Traffic congestion

There is a possibility of traffic congestion at the front side of the parking lot. The proposed market will be the hub of all essential goods of a household and most of the citizens can prefer this market for its diversified nature. As a result, people will use car, auto-rickshaw, easy-bike, non-motorized rickshaw etc. for transportation from and to the market. It may cause traffic congestion at the parking lot. In addition, trucks those belongs to this terminal can cause traffic congestion.

The following mitigation and enhancement measures should be taken to minimize the impact of traffic congestions:

- Proper traffic control mechanism would be in place.
- There would be different parking place for motorized and non-motorized vehicles.
- Different lane for motorized and non-motorized vehicles would reduce traffic congestion.
- In vehicle management system entry and exit will be separate for the market.
- The community police will control and monitor vehicle management system for the market.

7.3.6. Accident due to fire hazard and electric short circuit

Fire hazard is a common threat to any establishments. Firing may occur due to negligence and poor understanding of safety systems. Fire hazard may come from short circuit or open burning of waste material at the market.

The following mitigation and enhancement measures should be taken to minimize the accident due to fire hazard and electric short circuit:

- Fire extinguisher should be used and be placed at the stair-case site in every floor.
- Touching electrical appliances with wet hands should be prohibited with properly visible danger sign.
- Faulty or malfunctioning electrical products should not be used.
- Training should be provided to use firefighting equipment when necessary.
- Regularly checking and maintenance the electrical line of the market should be done.

7.3.7. Fecal sludge management

Fecal sludge will be generated from toilets to be used by market stakeholder, customers and shop keepers of the proposed sub-project. It will be managed through on-site sanitation system i.e. by constructing septic tank and soak pit. If the septic tank is not cleaned in regular interval, it can be overflowed and cause environmental pollution.

The following mitigation and enhancement measures should be taken to ensure proper fecal sludge management and minimize its impacts on environment:

- The Municipality's conservancy unit will clean the septic tanks in regular interval;
- The collected fecal sludge will be transported to Municipal temporary fecal sludge treatment plant nearby the market by using a vacuum truck.
- Fecal sludge will be converted to fertilizer.

Nilphamari Municipal has the plan to build a central fecal sludge treatment plant in Itakhola, Jaldhaka road.

7.3.8. Impact on local community

The proposed sub-project has a positive impact on the community people by creating business and employment opportunity during operational phase. The shops of the market will be allocated among the eligible community people of the municipality thus creating business opportunity to generate income. It will also create employment opportunity for young people by engaging them in shops to be operated. Local people including both male and female should be given emphasis in case of allocating shops of the market.

8. ENVIRONMENTAL MANAGEMENT PLAN

The objective of the environmental management plan (EMP) is to record environmental impacts resulting from the sub-project activities and to ensure implementation of the identified "mitigation measures", in order to reduce adverse impacts and enhance positive impacts. Besides, it would also address any unexpected or unforeseen environmental impacts that may arise during construction and operational phases of the sub-projects. The identified environmental impacts and its mitigation and enhancement measures are given in Table 8-1 as below:

8.1. Environmental Management Plan (EMP) Matrix

The anticipated environmental impacts and corresponding mitigation and enhancement measures have been outlined in **Table 8-1.**

Table 8-1: EMP matrix of the proposed Nilphamari Market

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
Pre-construction phase					
Environmental clause in the contract	• Incorporate environmental clauses in bid and contract document	At the Nilphamari Municipality	Before bidding or contract	PIU of Nilphamari Municipality	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Construction vehicles and machinery	• Trial run of vehicles and machinery to be used to confirm that their conditions, level of emissions of pollutants and noise level will not cause serious damages to the surrounding environment.	At the construction site, or vehicle depot	Before the commencement of construction	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Air, water and noise quality laboratory test	• The base line condition of Air, Water and Noise quality of proposed Nilphamari market should be tested in laboratory	Proposed site	Pre-construction	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Construction phase					
Labor camp and its Sanitary latrine	• Two labour camps with raised platform would be constructed at the separate sides of the site	At the Labor camp and	During construction period	Contractor	PIU of Nilphamari Municipality

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
	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 labour 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.	construction site			and PMU of MGSP under BMDF
Pollution from the construction materials and equipment	• 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; • Raised platform (brick soling with neat cement finishing to keep the materials) shall be constructed prior to start working (to be included with environmental safeguard items in the bidding document). • Leakage fuel and lubricants from equipment will be collected by separate container for re-using or safe disposal. So that it cannot be spread and pollute adjacent areas.	At the Construction site	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
Solid waste disposal	• Within the construction site, a number of waste bins will have to be provided by the contractor at labor shed and construction sites. • The Contractor will be responsible to collect and dispose all generated waste in a safe place and that will be carried by conservancy unit of the Municipality to the Municipal landfill site.	At the Construction site	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Inadequate drinking water supply	• The contractor will install tube well or ensure pipe line water supply as considered in the BOQ (environmental safeguard component) prior to starting the construction works; • The water quality will have to be tested for its quality judgment in a regular interval.	At the Labor camp and construction site	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Transportation before starting works	• Any materials required for construction should be transported at night time (within 10.00 pm – 6.00 am) to avoid local traffic congestion; • Proper vehicle movement schedule should be maintained in consultation with local people; • Unloading of materials should be done inside project areas; • Traffic control manpower will be deputed during construction and operation period; • Control sign should be provided to regulate traffic movement;	At the Construction site	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
	• Safety arrangement should be inserted in the safeguard cost in BOQ.				
Clogging of local drain water	• Construction materials should be kept within a corner of construction area; • Contractor will ensure proper disposal of construction wastes and that should not be disposed to the local drains.	At the Construction site	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Air quality due to dust and emission of carbon dioxide	• Water should be sprayed to control the dust at day time; • The trimming activity using odorless paints should be minimized; • The condition of combustion-engine powered machine should be maintained. • Low-sulfur fuels should be employed; • Construction material should be transported through truck covered by tarpaulin. • The construction period condition of Air quality should be tested in laboratory.	At the Construction site and surrounding areas	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Noise level	• Construction materials should be transported with scheduled time; • All powered mechanical equipment and machinery should be fitted with noise	At the Construction site and	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
	abating gear such as mufflers for effective sound reducing device; • The use of personal protective equipment like helmet, goggles, ear plug, gloves, safety boot etc. should be ensured; • The crushing of bricks/ stones should not be allowed at the project site. Broken brick or stone chips should be collected from distanced source to the sub-project site for construction purpose. • Separate batch plant might be used for concreting work (Ready Mix Concrete if available).	surrounding areas			MGSP under BMDF
Surface water quality	• Waste material in any form should not be thrown in storm drainage system; • Proper construction management including waste management, training of operators and workers will be provided to avoid pollution of water bodies or nearby habitants. • Waste bins are to be provided at different location of working and living places.	At the Construction site and surrounding areas	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
Uneven situation	• All the emergency telephone numbers of all the departments like Police station, fire service and civil defense, truck and bus stands, hospitals, clinics, etc. should be available at site; • There should be standby transport facilities to deal any accidental case; • There should be a provision for fast-aid box and emergency on-call physician. • The storage of the construction materials should be done in such a way that it might not create obstacle for movement of vehicles and pedestrians.	At the Construction site and surrounding areas	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Occupational health and safety	• Protection against dust and furnace by using of the nose masks and covering of the head and body; • Labors will use proper safety belts during work at high altitude • Ensure availability and using proper PPE (helmet, gloves, safety glass, safety shoes etc.) of all workers during work. • Provide construction workers with basic information on infectious diseases including HIV/AIDS	At the Construction site and surrounding areas	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
	• Proper scaffolding should be made available during construction • Proper disposal of the wastes and effluents; • Introduce waste bins for the solid waste management system. • Using of the personal protective equipment (helmet, gloves, goggles, nose mask, safety boots); • Precautions during work on or near machineries in motion; • Head loads are prohibited; • First aid facilities should be provided and maintained; • The first aid kit should include adhesive bandages, regular strength pain medication, gauze, and low grade disinfectant. • Contractors will bear medical treatment costs. If any sever 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). • For any dust, fumes, or other impurities likely to be injurious to the workers,				

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
	effective measures shall be taken to prevent their accumulation and its inhalation by the workers. • No labor room should be over-crowded, the labor camp should be provide 15 ft. x 30 for male and $12\ ft\ x\ 15\ ft$ for female workers.				
Impact on local community	▪ Community people should be oriented to use masks during their movement near construction site; ▪ Construction equipment and machineries should not be used at night. ▪ Orientation and training will be provided to the contractors, supervisors and workers, on health, safety and environment including sexual diseases control (as of BOQ),	At the Construction site and surrounding areas	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Impact on truck parking during construction.	▪ During construction temporary truck stand will be near construction area.	At the Construction site and surrounding areas	During construction period	PIU of Nilphamari Municipality and PMU of MGSP under BMDF	PIU of Nilphamari Municipality and PMU of MGSP under BMDF

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
Impact on labor influx	• Laborers from the local community should be employed in construction activities. • Female laborers from poor households should be given highest priority to employ in construction activities.	At the Construction site	During construction period	Contractor	PIU of Nilphamari Municipality and PMU of MGSP under BMDF
Operation phase					
Air quality degradation	• Odorless paints available in the market should be used; • Avoid any likely bad odor generated from the waste materials; • Ensure effective solid waste management facilities. • The operational phase condition of Air quality should be tested in laboratory.	At the market	During operational period	Market management committee	PIU of Nilphamari Municipality
Noise pollution	• The traffic control authority should control the use of hydraulic horn in cars and minimize the traffic congestion at peak-hours at the parking place. • The operational phase condition of noise level should be tested in laboratory.	At the market	During operational period	Market management committee	PIU of Nilphamari Municipality

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
Solid wastes generation and disposal	• Sufficient numbers of waste bins should be in place at market premises. • Solid wastes to be generated at the market should be collected and disposed in selected landfill.	At the market	During operational period	Market management committee	PIU of Nilphamari Municipality
Traffic congestion	• Proper traffic control mechanism should be in place. • There would be different parking place for motorized and non-motorized vehicles. • Different lane for motorized and non-motorized vehicles would reduce traffic congestion. • In vehicle management system entry and exit will be separate for the market. • The community police will control and monitor vehicle management system for the market.	At the parking lot of market	During operational period	Market management committee	PIU of Nilphamari Municipality
Accident due to fire hazard and	• Fire extinguisher should be used and be placed at the stair-case site in every floor.	At the market	During operational period	Market authority	PIU of Nilphamari Municipality

Issues/ Environmental impact	Mitigation and enhancement measures to be taken	Location	Timing	Responsible organization	
				Implementation	Supervision/ Monitoring
Electric short circuit	• Touching electrical appliances with wet hands should be prohibited with properly visible danger sign. • Faulty or malfunctioning electrical products should not be used. • Training should be provided to use firefighting equipment when necessary. • Regularly checking and maintenance the electrical line of the bus terminal should be done.				
Fecal sludge management	• The Municipality's conservancy unit will clean the septic tanks in regular interval • The collected fecal sludge must be transported to fecal sludge treatment plant by using a vacuum truck. • Fecal sludge should be dumped and convert to fertilizer.	At the market	During operational period	Conservancy Unit of the Municipality	PIU of Nilphamari Municipality

8.2. Environmental Monitoring Plan

The Environmental Monitoring is important to record environmental impacts resulting from the sub-project activities and to ensure implementation of the mitigation measures identified earlier in order to reduce adverse impacts and enhance positive impacts from the sub-project activities. The environmental monitoring should be done at both constructional and operational phases.

Environmental monitoring requires a set of indicators that could be conveniently measured, assessed and evaluated periodically to observe the trends of change in base line environmental quality.

The following environmental monitoring plan should be adopted to monitor the activities of both construction and operational phases mentioned in the environmental management plan.

8.2.1. Monitoring during construction phase

The mitigation or enhancement measures outlines in EMP should be monitoring during construction period with regular interval in order to ensure its effective implementation to avoid the adverse effect of sub-project activities and to gain the positive impacts resulting for the activities. The environmental monitoring plan during the construction period is given in Table 8-2 as below:

Table 8-2: Environmental Monitoring Plan during construction phase (visual observation)

Monitored Parameter/ Issues	Monitoring Method/ Key Aspects	Location of Monitoring	Responsible persons/authority	Frequency of Monitoring
Safety orientation and training of workers	Frequency of training & orientation of workers for safety	Sub-project site	• Project Implementation Unit Nilphamari Municipal	• Once in a month • Reporting: Once in a month
Personal Protective Equipment	Ensure every single person involved in the activities wear and use safety equipment	Sub-project site	• Project Management Unit Nilphamari Municipal	• Daily • Reporting: Once in a month
Worker's health	Monitoring process of worker's health	Sub-project site	• Project Management Unit Nilphamari Municipal	• Daily • Reporting: Once in a month

Monitored Parameter/ Issues	Monitoring Method/ Key Aspects	Location of Monitoring	Responsible persons/authority	Frequency of Monitoring
Sanitation & drinking water facility to the workers	Availability of safe drinking water and sanitation to the workers	Sub-project site	• Project Implementation Unit Nilphamari, Municipal and Environmental Screening	• Daily • Reporting: Once in a month
Incident record and reporting	Documented record of all incident, accident, and its remedial process	Sub-project site	• Project Management Unit BMDF	• Daily • Reporting: Once in a month
Site security/ Fencing at the site	Isolation of site from general access by fencing, restriction of the un-authorized entry in the site.	Sub-project site	• Project Implementation Unit Nilphamari Municipal	• Daily • Reporting: Once in a month
Bulletin/ announcement boards/ prohibition signs	Visible in good condition or not	Sub-project site	• Project Implementation Unit Nilphamari Municipal	• Daily • Reporting: Once in a month
Equipment /vehicles	-Switched-off diesel engines when not in use; -Search any possible leakage; -Fueling.	Sub-project site	• Project Implementation Unit Nilphamari Municipal	• Daily • Reporting: Once in a month
Solid waste generation	Quantity of solid wastes and disposal	Sub-project site	• Environmental Screening Nilphamari Municipal	• Daily • Reporting: Once in a month
Gender equity	Direct survey in the field by interviews with the	Sub-project site	• Project Management Unit Nilphamari Municipal	• Daily

Monitored Parameter/ Issues	Monitoring Method/ Key Aspects	Location of Monitoring	Responsible persons/authority	Frequency of Monitoring
	women in order to ensure that there is no any gaps between man and women			• Reporting: Once in a month
Child labour	No child will be engaged in the activities	Sub-project site	• Project Management Unit Nilphamari and BMDF	• Daily • Reporting: Once in a month
Handling of hazardous materials	Fueling, storage, operation	Sub-project site	• Project Management Unit Nilphamari Municipal and Environment Screening Nilphamari Municipal	• Daily • Reporting: Once in a month

The environmental parameters to be monitored during construction phases are given in Table 8-3 as below:

Table 8-3: Environmental parameters to be monitored (during construction phase)

Monitored Parameter / Issues	Monitoring Method/Key Aspects	Location of Monitoring	Period & Monitoring Frequency
Air quality (SPM, PM_{10}, and $PM_{2.5}$)	• Visually-black smoke; • Sampling; • Analysis at laboratory; • analysis of merits determination by using quality standards; • Through digital instruments.	Sub-project site	• Two times during construction period; • Reporting: Immediately after analysis and once in a month as a regular basis
Noise level	• Through digital noise level meter	Sub-project site	• Two times during construction period; • Reporting: Immediately after measurement and once in a month as a regular basis.

Water Quality	• Sampling • Analysis at laboratory • Analysis of merits determination by using quality standards; • Through digital instruments	Sub-project site	• Two times during construction period • Reporting: Immediately after measurement and once in a month as a regular basis.

8.2.2. Monitoring during operational phase

Environmental monitoring during operational phase is limited to a number of impact parameters to see the actual performance of the sub-project. Monitoring of some issues might be necessary during the operational period of the sub-project those are given in Table 8-4 as below.

Table 8-4: Environmental Monitoring plan during operation phase (visual observation)

SL No	Issue	Key aspects	Monitoring frequency per year
1	Complaint from local people	Any significant complain from local people and it's remedial procedure	4
2	Local drainage system	Maintaining proper drainage	4
3	Market management	Proper management of Market	4

The environmental parameters to be monitored during operational phase are given in **Table 8-5** as below:

Table 8-5: Environmental parameters to be monitored (monitoring frequency)

Parameter	Location	Monitoring frequency per year
Air quality (SPM, PM_{10}, and $PM_{2.5}$)	At the market areas	2
Water quality (BOD, pH, DO, TDS, Turbidity, NH_3)	At the nearby, surface water, ground water and drain water	2
Noise and Vibration	At the market	2

8.3. Grievance Redress Mechanism

The project-specific Grievance Redress Mechanism (GRM) will be established by the PIU of Nilphamari Municipality to receive, evaluate, and facilitate the solution of affected people's (Aps) concerns, complaints and grievances concerning the social and environmental performance of the sub-project. The GRM is aimed to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the sub-project.

The grievance mechanism is related to resolve the risks and adverse impacts of the sub-project. It addresses APs' concerns and complaints promptly, using an understandable and transparent process that is also gender responsive, and culturally appropriate. It is readily accessible to all 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 has its own Grievance Redress Procedure (GRP) and they operate it to address any dissatisfaction and complaints by the local people regarding its activities. This procedure is being applied to address any complaints or grievances through negotiations with the community leaders and representatives of the APs during implementation of the MGSP.

8.3.1. Grievance redress committee (GRC)

Nilphamari Municipality has formed a Grievance Redress Committee (GRC) headed by the Mayor. With the facilitation of Consultant, the Mayor nominated the GRC members and included representative from the Government Agencies, local NGO, and Civil Society. The GRC will nominate a focal person. Complaints will be received through drop box, by post, email and website of Municipality. The grievance box will be set up at construction site to received complaints. The grievance response focal point will be available at the Municipality for recording the complaints and necessary response to an aggrieved person. It will receive complaints or suggestions, and produce them to the GRC for hearing and resolution. If any complaint is not resolved at Municipality level, then the complaint will be produced to MD-BMDF. If it is not resolved by the MD-BMDF, then the sub-project will be dropped.

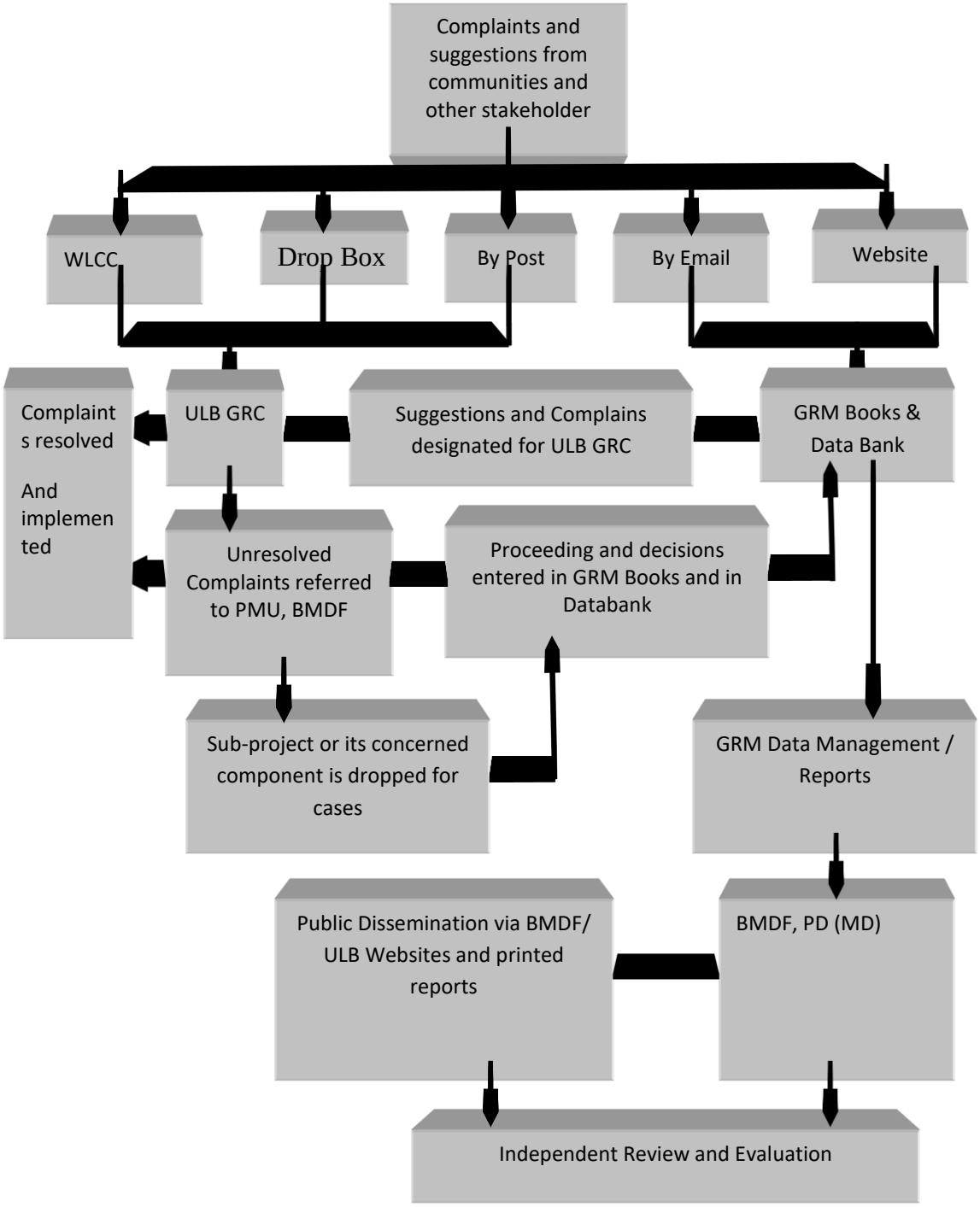
The structure of the GRC and membership are given as below:

Chairman	: ULB Mayor
Member-Secretary	: Head of the Engineering Section of ULB
Member	: Representative from local administration
	: Teacher from a local educational institution
	: Representative of a local NGO
	: Representative of civil society
	: Female ward councilor (of respective area)

The list of GRC members along with the notification from the Mayor is attached in **Annexure 5**.

8.3.2. Grievance resolution process

Given flow chart will be followed for grievance resolution process of this sub-project.



Flow diagram 8-1: Grievance resolution process

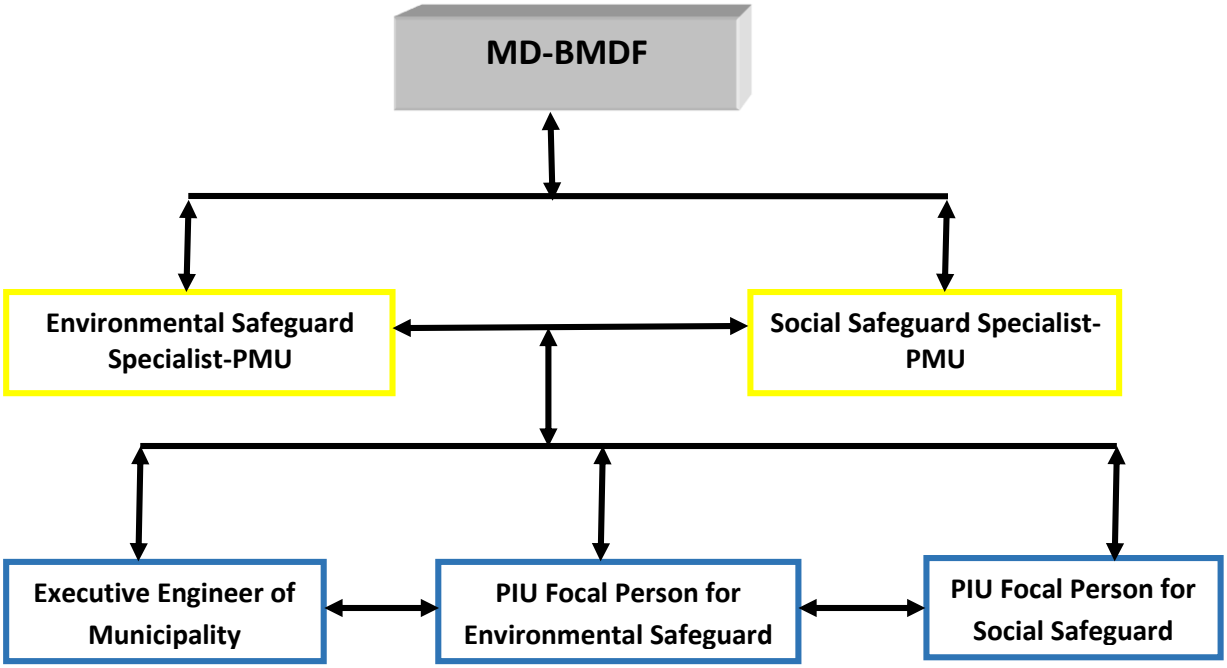
Note: If the appellant is still not satisfied, he or she has the right to take the case to the public courts. Nilphamari Municipality should also publish the outcome of the cases on the public notice boards. All costs involved in resolving the complaints (meetings, consultations, communication, and information dissemination) will be borne by the Nilphamari Municipality. The Municipality 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.

8.4. Institutional Arrangement for Implementation of EMP

The Environmental Safeguard Compliance issues are directly vested the Municipality Officials, especially the Executive Engineer will be responsible for supporting the construction supervision with the facilitation of BMDF. The civil works contractors will implement the environmental mitigation measures.

The BMDF, with the help of Environmental Safeguard Specialist will submit the monthly monitoring reports on Environmental Compliances to the World Bank.



Flow diagram 8-2: Institutional arrangement for implementation of EMP

8.5. Capacity Building

A two-day long training program in participation of PIU members of Nilphamari Municipality was organized by the PMU of BMDF to build the capability of PIU of Nilphamari Municipality. The Consultant, hired by the Nilphamari Municipality also participated in the training program. The PMU of BMDF organized this training program in order to enhance their capacity to conduct Environmental Assessment and Social Impact Assessment to be done for any proposed sub-project. A series of sessions were conducted by the Specialists of the PMU of BMDF. The major sessions include: (i) Environmental Screening, (ii) EMP Implementation, including environmental monitoring requirements related to mitigation measures; and (iii) taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of the implementation. The PIU of Nilphamari Municipality will

organized an orientation of contractor, workers and other support staff on environmental issues to be considered and mitigation measures to be taken during pre-construction, construction and operational phases before deploying to the work sites in order to achieve the expected standards.

8.6. Estimation of Environmental Safeguard Cost of EMP

Considering the environmental impacts and their mitigation measures for the sub-project, several items are included in the BOQ for the environmental management. **Table 8-6** presents the estimated cost during construction phase and **Table 8-7** presents the estimated cost during operation phase for the environmental management. Cost during construction phase will be included in BOQ but Cost during operation phase will be bearded by Nilphamari Municipality.

Table 8-6: Environmental Management Budget during construction phase

Item No.	Description of the Items	Frequency/ Unit	Costs (BDT)
1	Establishment of labor camp (male shed - $15\ ft\ x\ 30\ ft$ and female shed $12\ ft\ x\ 15\ ft$) with living arrangement, drinking water facilities, cooking arrangement, mosquito net, waste bin etc.	1	100,000.00
2	First Aid Box	1	2,500.00
3	Traffic Control measures (for a sub-project)	1	10,000.00
4	Masonry pucca platform (at least $100\ sft$ size), providing brick soling and net cement finishing for keeping fuel and lubricants for machineries.	1	15,000.00
5	Arrangement of temporary/ earthen drainage to drain out extra water logging due to rain and during construction works. All the temporary drains shall be filled up properly either at the end of event or at the end of works	1	50,000.00
6	Dust suppression measures by water spraying throughout the construction period in and around the sub-project site, uncovered aggregates and loose materials such as stockpiles of the sands, excavated earth etc.	1	10,000.00
7	Air quality (SPM, PM_{10}, and $PM_{2.5}$) measurement- it can be measured from the recognized environmental survey company, public institute/ university one time before	1	30,000.00

Item No.	Description of the Items	Frequency/ Unit	Costs (BDT)
	starting construction, three times during construction phase		
8	Noise level measurement- it can be measured from the recognized environmental survey company, public institute/ university three times during construction phase and one time after construction	1	8,000.00
9	Wastes disposal facility during the construction period; collection, transportation, and dumping of the wastes at landfill site and providing sufficient bins; at least 6 bins (500 *litre size*) to be provided.	1	7,500.00
10	Water supply facilities (for the labor shed and work site):1 no. of tube well (depending on the site condition the contractor will select the option)	1	60,000.00
11	Sanitation facilities (at the labor shed): 2 nos. of the toilets preferably portable toilets (1 no. for women and 1 no. for men)	1	25,000.00
12	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	1 Set	100,000.00
13	Tree Plantation for beautification work – preferably local fruits, flowers, medicinal and ornamental trees-(including protection and conservation during project defect liability period) – tree plantation detailed as per drawing.	1	500.00
14	Cautionary signs - 8 nos.	1	4,000.00
15	Water quality test (Ground Water)	1	3,000.00
16	Water quality test (Surface Water)	1	3,400.00
17	Water Logging (for a sub-project)	1	2,000.00
	Total		**430,900.00**

Table 8-7: Environmental Management Budget during operation phase (Annual)

Item No.	Description of the Items	Costs (BDT)
1	Air quality (SPM, PM_{10}, and PM $_{2.5}$) measurement- it can be measured from the recognized environmental survey company, public institute/ university two times per year at operation	60,000.00
2	Noise level measurement- it can be measured from the recognized environmental survey company, public institute/ university two times per year at operation	20000.00
3	Water quality (pH, DO, TDS, BOD, Turbidity, NH_3) measurement. It can be measured from the pre-approved public institute/ university during operation period for waste water at underground water, drain and outfall @Tk. 10,000.00 per sample (2*3*5,000.00 Tk.).	30000.00

Note: The environmental safeguard compliance issues and cost (like solid waste management, water supply, traffic management, drain cleaning, test of environment parameter etc.) are to be done by Market Management Committee and that is to be supervised by Nilphamari Municipality.

9. COMPLIANCE WITH ENVIRONMENTAL CODE OF PRACTICES

The environmental code of practices (ECOPs) provides guidelines for environment management of the sub-projects to be implemented in different urban local bodies (ULBs) under MGSP. The main objective of the ECOP is to manage construction operations in harmony with the environment in an effort to contribute to the well-being of the community and the environment by (i) minimizing pollution, (ii) sustaining eco-systems, (iii) conserving cultural heritage (iv) enhancing amenity. In compliance with ECOP, following issues associated with the proposed sub-project are addressed during environmental assessment:

- Planning and design of the sub-project
- Site preparation
- Construction camps
- Waste management
- Water bodies
- Water quality
- Drainage
- Public health and safety
- Material storage, transport and handling

In this assessment, it is found that some of the issues are not relevant to this sub-project. The issues those are found as relevant are addressed properly in this report.

10. PUBLIC CONSULTATION AND ACCESS TO INFORMATION

10.1. Introduction

Public Consultation is an effective tool for maintaining communication among the Municipality authority, BMDF as funding authority, different stakeholders of the sub-project and community people where the sub-project will be implemented. It helps to facilitate and streamline decision making as well as fosters an atmosphere of common understanding among individuals, group and organizations that could be affected or be affected by the sub-project. It also ensures the transparency of the sub-project at all levels of planning, design, construction and operation. It is a continuous process by which opinion from public is sought on matters affecting them. Hence, as a part of IEE/EIA, an effective public consultation and access to information is important.

10.2. Objectives

The main objectives of the public consultation and access to information under this sub-project are: (i) to generate public awareness by providing information about the sub-project to all stakeholders, particularly the sub-project affected persons (PAPs) in a timely manner, and (ii) to provide opportunity to the stakeholders to raise their opinions and concerns on different aspects of the sub-project.

10.3. Methodology

Public consultation about the planning, design, implementation and operation is done at different stages following different participatory methods. The methods followed in public consultation are: (1) consultative meeting with different stakeholders, (ii) Focus group discussion with community people through the participation of male participants, and (iii) Focus group discussion with community people through the participation of female participants, girls and boys, and disable people.

One consultative meeting was organized at community level through the participation of concern Councilor of Nilphamari Municipality, traders, shopkeepers, local leaders, community elites and representatives of business men surrounding the market area. The participants were informed about the detail design and activities of sub-project going to be implemented. Environmental screening of the sub-project was also done in this meeting using the prescribed form mentioned in EMF of BMDF. They were asked to share their opinion, feedback and suggestions on environmental and social impacts of the sub-projects as well as the mitigation measures to avoid or reduce the potential impacts.

Picture 1: Consultative meeting with stakeholders

Picture 2: FGD with community people (male)

One Focus Group Discussion was organized with male community participants from different professions residing surrounding the sub-project site. The participants were informed about the detail design and activities of sub-project going to be implemented and asked about their opinion, feedback and suggestions on environmental and social impacts of the sub-projects as well as the mitigation measures to avoid or reduce the potential impacts.

Another Focus Group Discussion was organized with female community participants came to the market and living around the sub-project site. The participants were also informed about the detail design and activities of sub-project going to be implemented and asked about their opinion, feedback and suggestions on environmental and social impacts of the sub-projects as well as the mitigation measures to avoid or reduce the potential impacts on women's point of view. In this session, boys and girls, and disable people were also present.

Picture 3: FGD with community people (male)

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

10.4. Issues Raised by the Participants

Following issues were raised during community consultation:

- Noise pollution due to the construction work
- Protect the spreading of construction materials during construction work
- Traffic congestion
- Social security
- Quality of construction work.

10.5. Feedback, Suggestions, and Recommendations of the Participants

Local people felt encouraged about the vertical extension of the municipal market where varieties types of commodities will be available. In addition, it will create more business opportunities and employment scope for the local people especially for young people. They suggested making the market environment friendly considering and addressing all predicted adverse effects related to abovementioned issues with the implementation of potential mitigation and enhancement measures during both construction and operational phases. Participants requested the Municipality authority to maintain the quality of the construction work of the building. Adjacent community peoples of the proposed site and the shopkeepers of the adjacent commercial areas requested the Municipality authority to keep the noise level low and keep the construction work stopped after 10:00 pm at night, restrict the workers to visit adjacent areas, use quality construction materials, ensure proper traffic management and restrict the vehicles to enter into the narrow road, ensure proper solid waste management to be produced by the grocery and vegetable businessmen and customers, and honor the communities' comfort and over tranquility of the environment.

10.6. Access to Information

The environmental assessment report would 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 sub-project implementation. It will also be made available to the public. The final assessment report (both English and Bangla) will also be uploaded in the Nilphamari Municipality website, BMDF website and the World Bank website after approval.

11. CONCLUSION AND RECOMMENDATIONS

11.1. Conclusion

On the basis of the findings of the environmental impact, it could be concluded that the sub-project is environmentally sound and sustainable. The potential environmental

impact seems to be very minimum and manageable and it would be minimized by taking proposed mitigation measures. The adverse environmental impacts from the sub-project will mostly take place during the construction stage. No endangered or protected species of flora or fauna are reported at the sub-project site. The benefits of the sub-project will be significant by creating employment and business opportunities during the construction and operational phases. There is no significant cumulative adverse impact during operation that is identifiable at this stage. The proposed sub-project activities have no significant adverse environmental impact so far as a time bound execution program with application of advanced construction technology is ensured. The mitigation measures are well within such codes and practices of construction and operation of the proposed sub-project.

11.2. Recommendations

The attitude of the community people towards the vertical extension of municipal market with more facilities is positive as well as they have some recommendations to minimize some impacts of the environmental and social environment during its construction and operation. The Government of Bangladesh and World Bank have some legal and social safeguard compliances issues those are applicable during constructing and operating the proposed sub-project. Considering the above-mentioned issues and findings of the study, following key recommendations are made for smooth construction and successful operation of the bus terminal:

- Separate parking area for private cars and goods carrying trucks should be established by the municipality maintaining a considerable distance from the market to avoid traffic congestion at the market area.
- A well-defined solid waste collection and disposal system should be in place at the market.
- All waste water should be discharged to the Municipal sewer system. In the absence of such system in the vicinity of the market, the septic tanks should be constructed.
- Fire prevention and fighting equipment should be provided and maintained as well as market management committee should be trained in fire prevention and fighting.
- Any kind of crime inside the market should be strictly controlled with the help of local police authority.
- The market should have facilities for washing, prayer, toilet, waiting, shopping, meals and snacks.
- Market authority should ensure availability of the PPEs and first-aid box, water supply and sanitation facilities.
- The surrounding people should be informed about the construction and operation of the bus terminal.
- Above all, the EMP should be followed and mitigation measures should be monitored as per EMP.

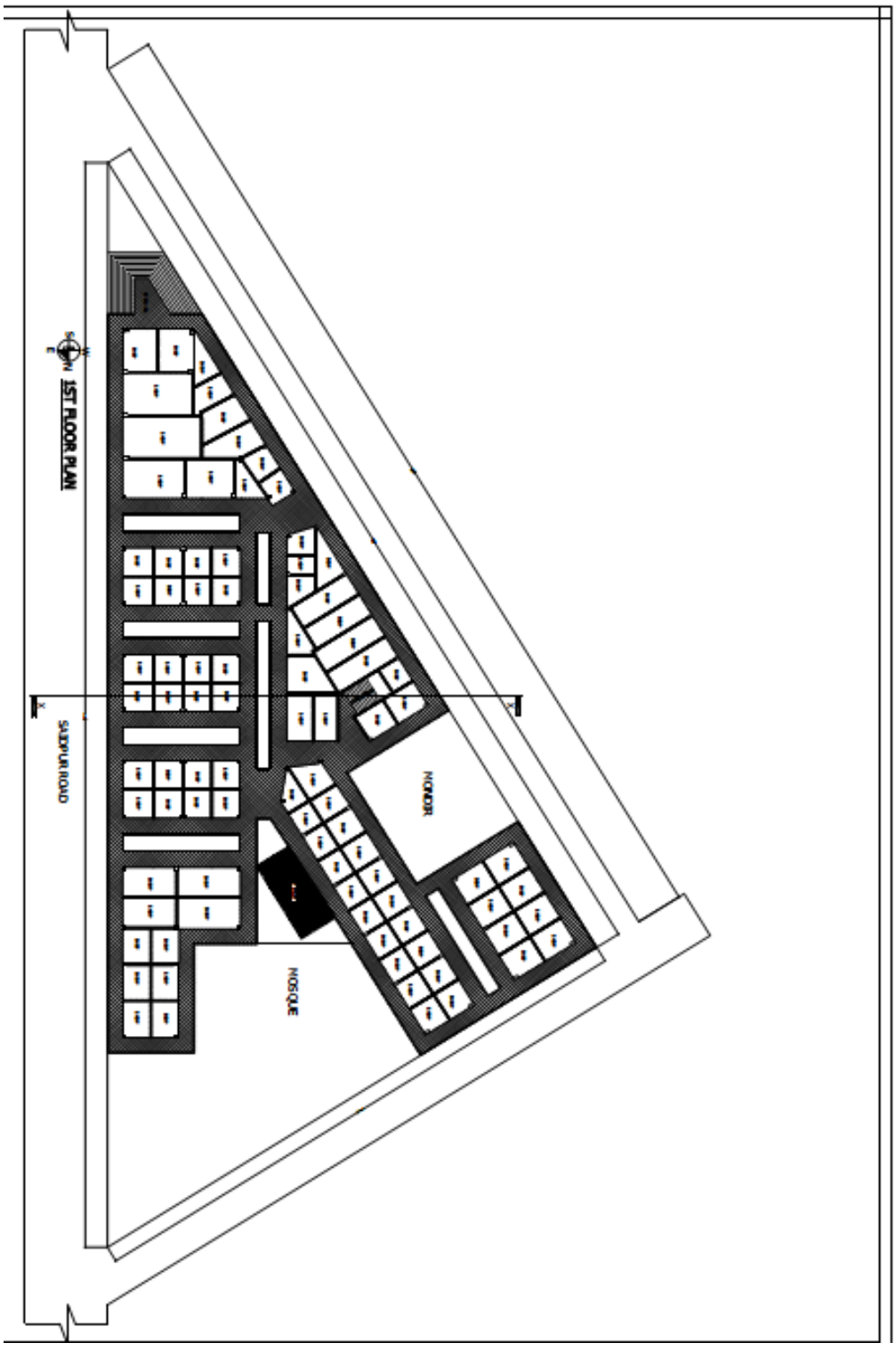
REFERENCES

1. Bangladesh Bureau of Statistics. Bangladesh Population Census 2001.
2. Bangladesh Bureau of Statistics. Bangladesh Population and Housing Census 2011.
3. Bangladesh Municipal Development Fund. Environmental Management Framework, 2017.
4. Nilphamari Municipality Data, 2018.
5. Nilphamari Municipality. Municipality Development Plan, 2017.
6. http://en.banglapedia.org/index.php?title=Nilphamari_Sadar_Upazila dated on March 03, 2018

ANNEXURES

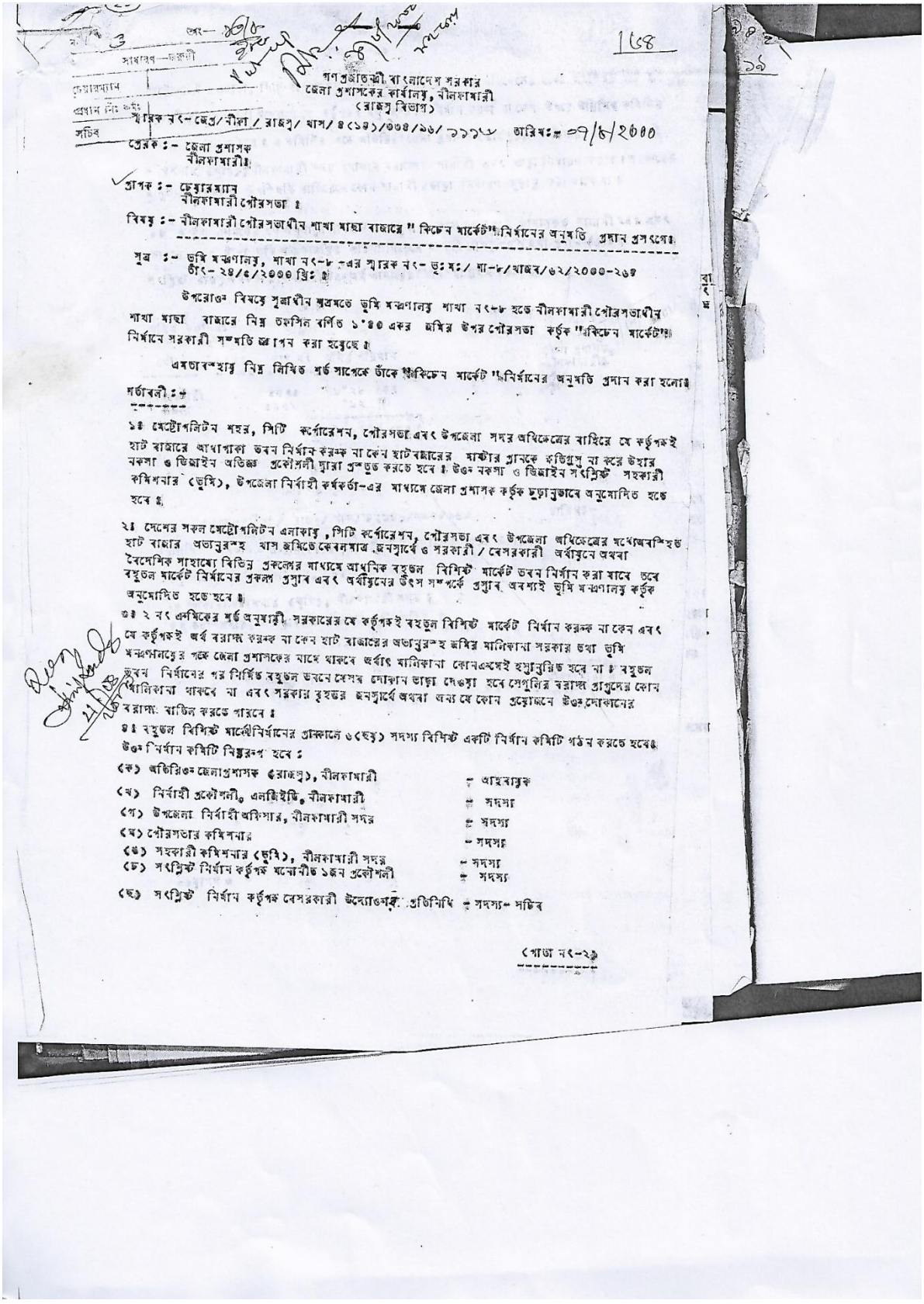
Annexure 1: Layout of Project Area

Building: A



Building: B

Annexure 2: Legal document of the land



গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
জেলা প্রশাসকের কার্যালয়, নীলফামারী
(রাজস্ব বিভাগ)

স্মারক নং- জেপ্র/নীলা / রাজস্ব/ খাস/ ৪৫১৯/৩৩৪/১৬/ ১১১৬ তারিখঃ ০৭/৮/২০০০

প্রেরক :- জেলা প্রশাসক
নীলফামারী।

প্রাপক :- চেয়ারম্যান
নীলফামারী পৌরসভা।

বিষয় :- নীলফামারী পৌরসভাধীন শাখা মাছা বাজারে " কিচেন মার্কেট" নির্মাণের অনুমতি প্রদান প্রসংগে।

সূত্র :- ভূমি মন্ত্রণালয়, শাখা নং-৮ -এর স্মারক নং- ভূঃ মঃ/ শা-৮/খাজব/৬২/২০০০-২৬৭ তাং- ২৪/৫/২০০০ খ্রিঃ।

উপরোক্ত বিষয়ে সূত্রাধীন পত্রমতে ভূমি মন্ত্রণালয় শাখা নং-৮ হতে নীলফামারী পৌরসভাধীন শাখা মাছা বাজারে মিন্ন তফসিল বর্ণিত ১'৪০ একর জমির উপর পৌরসভা কর্তৃক "কিচেন মার্কেট" নির্মাণে সরকারী সম্মতি জ্ঞাপন করা হয়েছে।

এমতাবস্থায় মিন্ন লিখিত শর্ত সাপেক্ষে তাঁকে "কিচেন মার্কেট" নির্মাণের অনুমতি প্রদান করা হলো।

শর্তাবলী :-

১। মেট্রোপলিটন শহর, সিটি কর্পোরেশন, পৌরসভা এবং উপজেলা সদর অফিসের বাহিরে যে কর্তৃপক্ষই হাট বাজারে আধাপাকা ভবন নির্মাণ করুক না কেন হাটবাজারের মাষ্টার প্লানকে কডিগ্রস্থ না করে উহার নকসা ও ডিজাইন অতিরিক্ত প্রকৌশলী দ্বারা প্রস্তুত করতে হবে। উক্ত নকসা ও ডিজাইন সংশ্লিষ্ট সহকারী কমিশনার (ভূমি), উপজেলা নির্বাহী কর্মকর্তা-এর মাধ্যমে জেলা প্রশাসক কর্তৃক চূড়ান্তভাবে অনুমোদিত হতে হবে।

২। দেশের সকল মেট্রোপলিটন এলাকায়, সিটি কর্পোরেশন, পৌরসভা এবং উপজেলা অফিসের সংযোজনশিষ্ট হাট বাজার প্রভানুরূপ খাস জমিতে কেবলমাত্র জনস্বার্থে ও সরকারী / বেসরকারী অর্থায়নে অথবা বৈদেশিক সাহায্যে বিভিন্ন প্রকল্পের মাধ্যমে আধুনিক বহুতল বিশিষ্ট মার্কেট ভবন নির্মান করা যাবে তবে বহুতল মার্কেট নির্মাণের প্রকল্প প্রস্তাব এবং অর্থায়নের উৎস সম্পর্কে প্রস্তাব অবশ্যই ভূমি মন্ত্রণালয় কর্তৃক অনুমোদিত হতে হবে।

৩। ২ নং প্রশিক্ষের শর্ত অনুযায়ী, সরকারের যে কর্তৃপক্ষই বহুতল বিশিষ্ট মার্কেট নির্মান করুক না কেন এবং যে কর্তৃপক্ষই অর্থ বরাদ্দ করুক না কেন হাট বাজারের অভানুরূপ জমির মালিকানা সরকার তথা ভূমি মন্ত্রণালয়ের পক্ষে জেলা প্রশাসকের হাতে থাকবে অর্থাৎ মালিকানা কোনএকেই হস্তান্তরিত হবে না। বহুতল ভবন নির্মাণের পর নির্দিষ্ট বহুতল ভবনে যেসব দোকান ভাড়া দেওয়া হবে সেগুলির বরাদ্দ প্রাপ্তদের কোন মালিকানা থাকবে না এবং সরকার বৃহত্তর জনস্বার্থে অথবা অন্য যে কোন প্রয়োজনে উক্ত দোকানের বরাদ্দ বাতিল করতে পারবে।

৪। বহুতল বিশিষ্ট মার্কেটনির্মাণের প্রাক্কালে ৬(ছয়) সদস্য বিশিষ্ট একটি নির্মান কমিটি গঠন করতে হবে। উক্ত নির্মান কমিটি নিম্নরূপ হবে :

(ক) অতিরিক্ত জেলাপ্রশাসক (রাজস্ব), নীলফামারী - আহ্বায়ক
(খ) নির্বাহী প্রকৌশলী, এলজিইডি, নীলফামারী - সদস্য
(গ) উপজেলা নির্বাহী অফিসার, নীলফামারী সদর - সদস্য
(ঘ) পৌরসভার কমিশনার - সদস্য
(ঙ) সহকারী কমিশনার (ভূমি), নীলফামারী সদর - সদস্য
(চ) সংশ্লিষ্ট নির্মান কর্তৃপক্ষ মনোনীত ১জন প্রকৌশলী - সদস্য
(ছ) সংশ্লিষ্ট নির্মান কর্তৃপক্ষ বেসরকারী উদ্যোক্তার প্রতিনিধি - সদস্য-সচিব

(খোজা নং-২)

1105

মেট্রোপলিটন এলাকা, সিটি কর্পোরেশন, পৌরসভা এবং উপজেলা অধিক্ষেত্রের মধ্যে অবস্থিত হাট বাজারে সরকারী / বেসরকারী উদ্যোগে যে কর্তৃপক্ষই বহুতল ভবন নির্মান করুক না কেন উপরে উল্লিখিত কমিটির মাধ্যমে তা করতে হবে। এ কমিটির পক্ষে অতিরিক্ত জেলা প্রশাসক (রাজস্ব), নীলফামারী এবং সহকারী কমিশনার (ভূমি), নীলফামারী সদর দোকান বরাদ্দের সালামী এবং ভাড়া নির্ধারণ করবে। সরকারের এ দুজন কর্মকর্তার উপস্থিতি ব্যতিরেকে কোন সালামী / ভাড়া নির্ধারণ চূড়ান্ত করা যাবে না।

৫। ৩ নং এন্ট্রিকের শর্ত অনুযায়ী বর্ণিত বরাদ্দকৃত দোকান সমূহ হতে আদায়কৃত সালামী ২৫% এবং ভাড়ার ৩৪% টাকা ভূমি মন্ত্রণালয়ের শিরোনামে ৭-ভূমি রাজস্ব খাতে জমা প্রদান করতে হবে। সংশ্লিষ্ট রাজস্ব কর্মকর্তা / কর্মচারী উক্ত অর্থ আদায়ের ব্যবস্থা গ্রহন করবে।

জমির তফসিল:-

মৌজা	খতিয়ান	দাগ নং	জমির পরিমান
নীলফামারী বাজার	১	৫৩৭৫	১.২৮ একর
		৫৩৭২	.১২ "
			মোট- ১.৪০ একর।

জেলা প্রশাসক,
নীলফামারী।

স্মারক নং- জেপ্র/বাকা / রাজস্ব/ খাস/ ৪(১৪১)/০৩৪/১৬/ তারিখ:-

অনুলিপি অবগতি ও প্রয়োজনীয় ব্যবস্থা গ্রহনের জন্য প্রেরণ করা হলো:-

১। উপজেলা নির্বাহী অফিসার, নীলফামারী সদর।
২। সহকারী কমিশনার (ভূমি), নীলফামারী সদর।
৩। তহশিলদার, নীলফামারী পৌরসভা ভূমি অফিস।

জেলা প্রশাসক,
নীলফামারী।

=ওয়াদুদ=

Annexure 3: Attendance of community people in FGD (female)

Name of Sub-project: Vertical Extension of Shakha Masa Bazar

Package number:

Name of ULB: Nilphamari Municipality **Name of District:** Nilphamari

Name of Place: ShaKha ~~Bazar~~ Masa Bazar, Ward-2, Nilphamari **Date:** 29/07/2018

Level of participant community people (Female group)

Attendance of community people in FGD

Nos.	Name	Gender	Social status	Contact no.	Signature
1	Asifa Sultana Lovely	Female	Vice Chairman Sadar Upazila	01711223202	[signature]
২	নূরজাহান বেগম	Female	Councilor	01939503188	নূরজাহান
৩।	সেলিনা বেগম	Female	Councilor	01751279673	সেলিনা
৪।	হাজেরা খাতুন	Female	HouseWife	01707423824	হাজেরা
৫।	শিউলী কৌশিক	Female	House wife	01911042655	শিউলী
৬	এলিনা বেগম	Female	শিক্ষক প্রতিনিধি	01787921002	[signature]
৭।	মাজিদা আক্তার	Female	চাকুরী	0176149	[signature]
৮	নার্গিস সারহানা	Female	চাকুরী	01742241486	[signature]
০৯	শামছুন নাহার	Female	গৃহিনী	01782972545	[signature]
১০	রাবেয়া	Female	গৃহিনী	01755439117	Rabeya
১১	অমলা রায়	Female	সমাজসেবী	01759326919	Shoy
১২	লুৎফুন্নাহার	Female	সমাজসেবী	01734075716	[signature]
১৩	সেলিনা চৌধুরী	Female	সমাজসেবি	01762311644	Salena

Annexure 4: Attendance of community people in FGD (male)

Name of Sub-project: Vertical Extension of Shakha Masa Bazar

Package number:

Name of ULB: Nilphamari Municipality **Name of District:** Nilphamari

Name of Place: Shakha Masa Bazar, Nilphamari, Ward-02 **Date:** 29/07/2018

Level of participant community people (Male group)

Attendance of community people in FGD

Nos.	Name	Gender	Social status	Contact no.	Signature
1	মোঃ আব্দুল জলিল	Male	কাউন্সিলর	[illegible]	[illegible]
2	মো: আফতাব হোসেন	Male	সদস্য, টিএলসিসি	01752755522	[illegible]
3	মোঃ তালেব	Male	সদস্য, টিএলসিসি	01719749054	[illegible]
4	নুর আলম	Male	সাংবাদিক	01713866528	[illegible]
5	মোঃ হাফিজুর রহমান (চৌধুরী)	Male	সেক্রেটারি T.L.C.C	01773994770	[illegible]
6	মো: মীর রহমান	Male	সাংবাদিক	01671966777	[illegible]
7	মো: হাসান আলী	Male	চাকুরী	01718863919	[illegible]
8	ডাঃ মো: শরিফ উদ্দিন	Male	প্রধান শিক্ষক	01725449835	[illegible]
9	মোঃ হাবিবুর রহমান	Male	চাকুরী	01816728428	[illegible]
10	মোঃ দুদু মিয়া	Male	ব্যবসায়ী	01825327772	[illegible]
11	মোঃ খলিল উদ্দিন	Male	কাউন্সিলর	[illegible]	[illegible]
12	" জিয়াউর রহমান	Male	চাকুরী ব্যবস্থাপক	01757981908	[illegible]
13		Male			
14		Male			

Annexure 5: Attendance of local participants in screening exercise

Name of Sub-project: Vertical Extension of ShaKha Masa Bazar

Package number:

Name of ULB: Nilphamari Municipality **Name of District:** Nilphamari

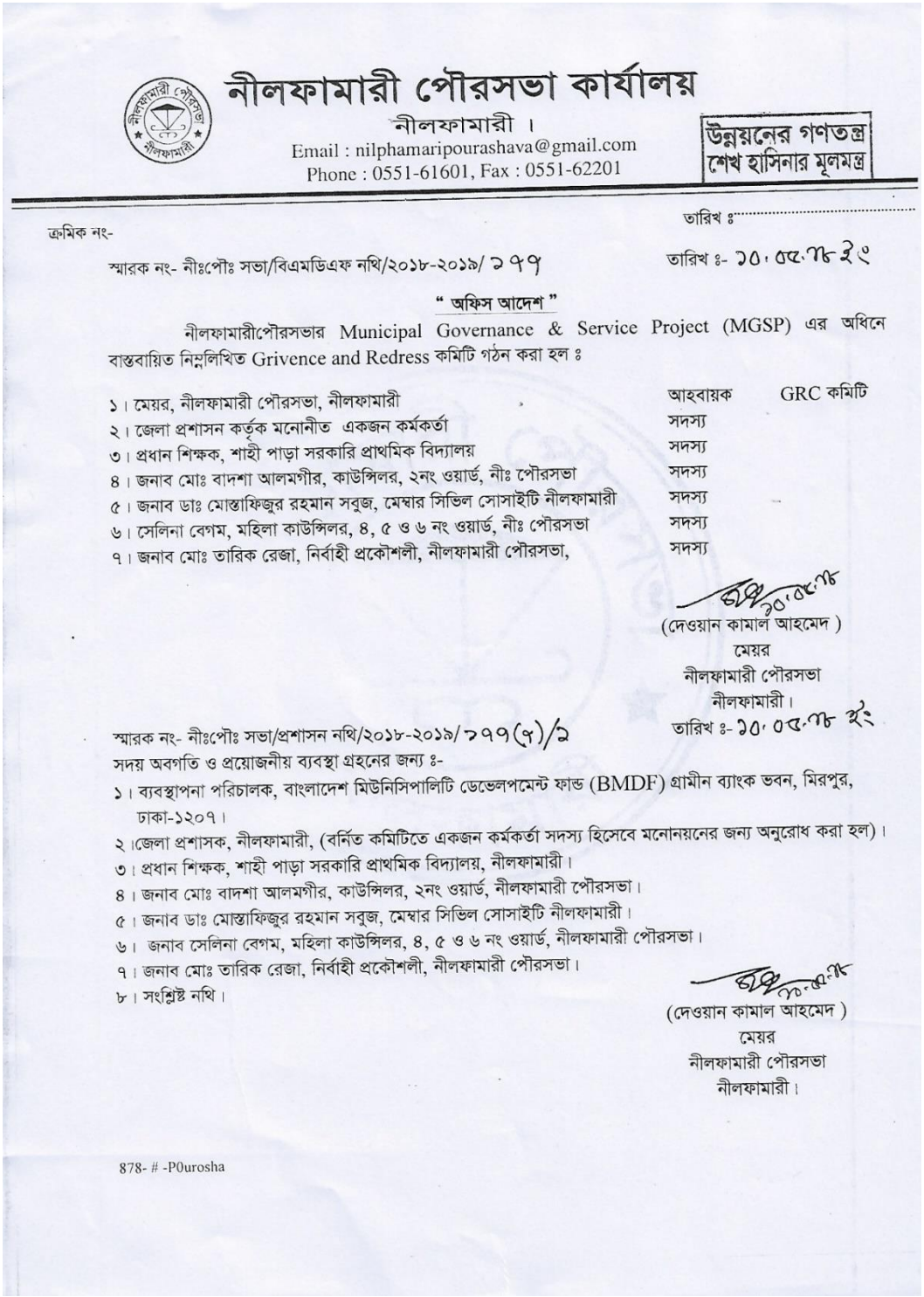
Name of Place: Ward No-2, Nilphamari Municipality **Date:** 29/07/2018

Level of participant: Local stakeholders, community member, WLCC/CBO

Attendance of participants in social screening exercise.

Nos.	Name	Gender	Social status	Contact no.	Signature
1	MD. MOFID ALAM	Male	Business	01715412454	
2	MD. Abdul Jobbar	"	[illegible]	[illegible]	
3	Md. Hamidul Islam	"	Bisnes	01918240747	
4.	Jafar Sadeque	"	counsilor	01713763020	
5	Md Israfil Hossain	"	[illegible]	01718644263	
6.	MD. Isa Ali	"	Councilor	01741700256	
7.	Shish Rahman	Male	Business	01712669777	
8.	MD Anisur Rahman	"	Busness	01718041876	
9.	MD Asgar Ali	"	Busines	01717253549	
10	A.S.M ABDUL WADUD SARKER	"	[illegible]	01717448379	
11	MD. ATIAR RAHAMAN	"	Bisness	01718300866	
12	MD MOKBUL HOSSEN	"	Bisness	01716878895	
13	MD. AMIN ALAM		Bisness	01734358299	
14	MD. Hossain khan (manik)	"	Bisness	01703659422	
15	MD. Rofiqul Alom	"	"	01712797012	
20	Md. Tarique Reza.	"	XEN Nilphamari pourosova	01716-211977	
21	Arifa Sultana Lovely	Female	Vice Chairman Sadar Upazila	01711223202	
22	Md. Hasan Ali	Male	Officer Janata Bank	01718863919	
23	Alina Begum	Female	[illegible]	[illegible]	

Annexure 6: List of GRC members along with the notification from the Mayor



নীলফামারী পৌরসভা কার্যালয়

নীলফামারী ।
Email : nilphamaripourashava@gmail.com
Phone : 0551-61601, Fax : 0551-62201

উন্নয়নের গণতন্ত্র
শেখ হাসিনার মূলমন্ত্র

ক্রমিক নং-

তারিখ ঃ.....

স্মারক নং- নীঃপৌঃ সভা/বিএমডিএফ নথি/২০১৮-২০১৯/ ২৭৭ তারিখ ঃ- ১০.০৫.১৮ ইং

" অফিস আদেশ "

নীলফামারীপৌরসভার Municipal Governance & Service Project (MGSP) এর অধিনে বাস্তবায়িত নিম্নলিখিত Grivence and Redress কমিটি গঠন করা হল ঃ

	আহবায়ক GRC কমিটি
১। মেয়র, নীলফামারী পৌরসভা, নীলফামারী	
২। জেলা প্রশাসন কর্তৃক মনোনীত একজন কর্মকর্তা	সদস্য
৩। প্রধান শিক্ষক, শাহী পাড়া সরকারি প্রাথমিক বিদ্যালয়	সদস্য
৪। জনাব মোঃ বাদশা আলমগীর, কাউন্সিলর, ২নং ওয়ার্ড, নীঃ পৌরসভা	সদস্য
৫। জনাব ডাঃ মোস্তাফিজুর রহমান সবুজ, মেম্বার সিভিল সোসাইটি নীলফামারী	সদস্য
৬। সেলিনা বেগম, মহিলা কাউন্সিলর, ৪, ৫ ও ৬ নং ওয়ার্ড, নীঃ পৌরসভা	সদস্য
৭। জনাব মোঃ তারিক রেজা, নির্বাহী প্রকৌশলী, নীলফামারী পৌরসভা,	সদস্য

১০.০৫.১৮
(দেওয়ান কামাল আহমেদ)
মেয়র
নীলফামারী পৌরসভা
নীলফামারী।

স্মারক নং- নীঃপৌঃ সভা/প্রশাসন নথি/২০১৮-২০১৯/ ২৭৭(৭)/১ তারিখ ঃ- ১০.০৫.১৮ ইং

সদয় অবগতি ও প্রয়োজনীয় ব্যবস্থা গ্রহনের জন্য ঃ-

১। ব্যবস্থাপনা পরিচালক, বাংলাদেশ মিউনিসিপালিটি ডেভেলপমেন্ট ফান্ড (BMDF) গ্রামীন ব্যাংক ভবন, মিরপুর, ঢাকা-১২০৭।
২।জেলা প্রশাসক, নীলফামারী, (বর্নিত কমিটিতে একজন কর্মকর্তা সদস্য হিসেবে মনোনয়নের জন্য অনুরোধ করা হল)।
৩। প্রধান শিক্ষক, শাহী পাড়া সরকারি প্রাথমিক বিদ্যালয়, নীলফামারী।
৪। জনাব মোঃ বাদশা আলমগীর, কাউন্সিলর, ২নং ওয়ার্ড, নীলফামারী পৌরসভা।
৫। জনাব ডাঃ মোস্তাফিজুর রহমান সবুজ, মেম্বার সিভিল সোসাইটি নীলফামারী।
৬। জনাব সেলিনা বেগম, মহিলা কাউন্সিলর, ৪, ৫ ও ৬ নং ওয়ার্ড, নীলফামারী পৌরসভা।
৭। জনাব মোঃ তারিক রেজা, নির্বাহী প্রকৌশলী, নীলফামারী পৌরসভা।
৮। সংশ্লিষ্ট নথি।

১০.০৫.১৮
(দেওয়ান কামাল আহমেদ)
মেয়র
নীলফামারী পৌরসভা
নীলফামারী।

878- # -P0urosha