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**Development Plan of Bagmara Upazila
(2013-2033)**

June, 2018

**Urban Development Directorate (UDD)
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রাজেস্টিড্রডং ডি এ-১

বাংলদেশে



গজেট

অতিরিক্তসংখ্য

কর্তৃপক্ষকর্তৃক প্রকাশিত

তারিখঃ

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

গৃহায়ন ও গণপূর্তমন্ত্রালয়

পরিকল্পনা শাখা-৩

প্রজ্ঞাপন

তারিখ,

নং - গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের Organizational Set up, Phase-II, (Department/Directorates and Other Organizations under them), Volume XV (Ministry of Works), Chapter VI (Urban Development Directorates, June, 1983 এর Allocation of Functions এর ক্ষমতা বলে সরকারের “প্রশিক্ষণ রেশন অব ডেভেলপমেন্ট প্রকল্প ফর ফাউন্ডেশন উপজেলার স প্রকল্প” এর বগমর উপজেলা, রাজশাহী এর জননতন Development Plan (Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan) যথার্থ প্রকল্প অনুসরণ করিয়া অনুমোদন করিয়াছে।

অতএব, সরকারের প্রজ্ঞাপন দ্বারা বগমর উপজেলা, রাজশাহী এর জনপ্রতন নতন Development Plan (Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan) এর অনুমোদনের বিষয়টি অনুমোদিত Development Plan সহ সংশ্লিষ্টসকলের অবগতির জন্য প্রকাশ করিল।

বিশেষ দ্রষ্টব্য: অনুমোদিত ডেভেলপমেন্ট প্রকল্প ও প্রবদনের কর্পোরেশন নগর উন্নয়ন অধিদপ্তর, ৮২, সুগুনবাগিচা, ঢাকা - ১০০০ (www.udd.gov.bd & www.14upazilaudd.gov.bd), জেলা প্রকাশক, রাজশাহী এবং উপজেলা নির্বাহী কর্মকর্তা বগমর উপজেলা, রাজশাহী এর কার্যালয়ে জনসাধারণের পরিদর্শনের সুবিধার্থে সংরক্ষিত থাকিবে।

রক্ষার আদেশক্রমে

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....., উপ-পরিচালক, বাংলাদেশ সরকারি মুদ্রালয়, অজগী ও, ঢাকা কর্তৃক মুদ্রিত।

....., উপ-পরিচালক, বাংলাদেশ ফরম ও প্রকাশনা অফিস,

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(২৮৪৯)

মূল্য ৪.০ টাকা

PREFACE

It is great pleasure for all concerned that a “Development Plan for Bagmara Upazila” has been prepared by Engineering Consultants and Associates limited under supervision of Urban Development Directorate (UDD), Ministry of Housing and public works, of the People’s Republic of Bangladesh. This development Plan for 20 years (2013-2033) will serve as a guideline for the future Infrastructure Development of **Bagmara Upazila** together with land use control, effective management of the Upazila municipal service facilities. The aim of preparing this plan is to identify the infrastructural facilities needed for overall socio-economic and physical development of the people as well as the society of **Bagmara Upazila**. The Development Plan contains a Five-tier Plan. These are:

- I. Sub-Regional Plan
- II. Structure Plan
- III. Urban Area Plan
- IV. Rural Area Plan
- V. Action Area Plan

For preparation of the development Plan, the Consultants successfully completed the most essential tasks such as topographic survey, land use survey, suitability assessment, physical feature survey, socio-economic survey, traffic and transport studies, formal and informal economic study, drainage and environmental study, GIS based base map preparation, series of consultation with stake holders and formal public hearing. The entire works for the preparation of development plan have been completed through participatory planning approach with the Upazila and related stake-holders. During implementation period if needed any change of the land use plan for the purpose of public interest that may be allowed with the approval of the appropriate authority.

Urban Development Directorate (UDD) acknowledges the full support and cooperation of **Bagmara Upazila** Authority, Member of Parliament, Stake-holders and Civil Societies with the deepest gratitude.

Dr. K. Z. Hossain Taufique
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Bangladesh

EXECUTIVE SUMMARY

Urban and rural development plan offers visionary, intelligent solution for the future oriented development opportunities in the locality of urban and rural areas. The development plan is the main public statement of planning policies for the local community. It sets out the land use, amenity and development objectives and policies of the planning authority for short, medium and long-term basis. The plan consists of a written statement of objectives and a map or series of maps along with separate land schedule. The main objectives of development plan of urban or rural areas are (i) reserving, improving and extending amenities; (ii) provision of utility services, waste recovery and disposal facilities; (iii) zoning of areas for residential, commercial, industrial, agricultural, forestry, flood plains etc. purposes; (iv) provision of accommodation for travelers and provision of services for the community. Development plans will also usually include development objectives related to the control of use of buildings, community planning, reservation of land, preservation, conservation etc.

Earlier, development in Bangladesh took place in and around a few major cities. Therefore, the benefits of development were enjoyed by the limited urban people. The small town called secondary town at Upazila headquarter or Pourashava situated at the urban-rural interface having some form of urban infrastructure and the rural population have the most access to these town. Therefore, the development of the town/urban centers in terms of the improvement and expansion of ranges of the services will directly benefit the population of their hinterlands and at the same time will be more economically feasible. According to the Sixth Five Year Plan (SFYP), the main goal of the government's land use policy and management is to ensure best possible use of land resources and delivery of land related services to the people through modernized and efficient land administration for sustainable development including accelerated poverty reduction.

Bagmara Upazila is situated in Rajshahi District and bounded on the north by Manda Upazila and Atrai Upazila of Naogaon Zila, east by Atrai Upazila and Natore Sadar Upazila, south by Puthia Upazila and Durgapur Upazila and west by Mohanpur Upazila. Bagmara is located in between 24°30' and 24°41' north latitudes and in between 88°41' and 88°58' east longitudes.

Bagmara Upazila occupies an area of 363.3 sq. km. It is comprised of 16 unions, 2 municipalities and 369 moujas. Bagmara upazila is the biggest upazila of Rajshahi Zila in respect of population. According to census 2011, total population is 3,54,664. Among them male 1,77,157, female 1,77,507; Muslim 338013, Hindu 16494, Christian 6, Buddhist 0 and others 151. The distribution of main source of income of the people in Bagmara Upazila are Agriculture 62.99%, livestock farming and fishing 2.38%, agricultural laborer 17.13%, wage laborer 1.43%, commerce 7.25%, service 2.34%, others 5.04%

Communication facilities Roads: pucca 92 km, semi pucca 12 km and mud road 585 km. Manufactories Ice factory 10, welding 25. Cottage industries Weaving 18, bamboo works 214, cane work 76, goldsmith 336, blacksmith 89, potteries 144, wood work 152, and tailoring 312. NGO activities operationally important NGOs are Brac, Asa, Grameen bank, Proshika. Then Mahila Sabuj Sangha, Jatiya Tarun Sangha, Abas Society. Health centres, Upazila health complex 1, Family welfare centre 10, and Satellite clinic 6. (Source: BBS-2011)

The development plan is to be prepared for the accommodation in planned and better way for the increased population. Therefore, population projection for 20 years is the prime and one of the important parameters for the preparation of development plan. Population projection has been done for the next 20 years and the projected population of upazila is 4, 81,267 and Paurashava is 48,714.

Development Plan of Bagmara Upazila was prepared based on the four stages: a) Data Collection & Survey Works; b) Preparation of Thematic Maps based on collected data and survey works; c) Preparation of Suitability Maps for planning; d) Preparation of Development Plan representing through a series of Maps.

There are 19 Thematic Maps were prepared based on 11 types of survey during the survey stage. Each survey has distinct output. The outputs of survey works were presented in the form of Thematic Maps. The Thematic Maps are a) Topographic: Slope, DEM, Contour; b) Geological and Geo-physical: Peak Ground Acceleration (PGA), Shear Wave, Foundation Depth, Micro-zonation; c) Physical Features: Land use, Vegetation, Ecology, Road Type and Width, Connectivity; d) Agriculture: Cropping Pattern, Cropping Intensity; e) Demographic: Population Density based on Year 2011 and Year 2033; f) Hydrology: Water Source, Flood Scenarios and Inundation.

On the basis of survey Bagmara upazila covers in total 60643 acres of land. Out of which 7790 acres of land is engaged in yearly single cropping farming, 15651 acres yearly double cropping farming, 34877 acres for yearly triple cropping farming and 2324 acres for yearly fourth cropping farming.

Suitability analysis is a prime requirement for the preparation of development plan of any urban and rural areas. There are 5 Suitability Maps were prepared after analyzing the suitability of the existing features. Through this analysis suitable area for agriculture, urban and infrastructure development were identified. The area that land slope is more than 5% is not considered for any infrastructure development plan except preservation for hilly or forest areas.

In sub-regional plan, the main focus was to make Bagmara Upazila well-connected in terms of communication with the surrounding Upazilas. Basically, Bagmara Upazila is an agro-based Upazila. The communication among the surrounding Upazilas will help to grow more strong economy through transportation of goods, opportunity of jobs, formation of many business centres, expansion of education facilities etc.

The structure plan prepared for the Bagmara Upazila in the light of national planning policies and other guidelines covering a period of 20 years. The structure plan of Bagmara Upazila is presented through Map and statistical table. The total area of Bagmara Upazila is 363.3 sq.km. The total area is covered under structure plan. In the structure plan the agricultural area has been divided into several zones which are Agricultural Zone, Eco Sensitive, Agriculture, Main Flood Flow Zone, Sub Flood Flow Zone and Water Supply Protection Zone etc.

The area under structure plan has been sub-divided into 13 strategic planning zones. Within the 13 zones, some issues were identified for policies of plan preparation. The plan contains policies for the following issues: a) Restricted Special; b) Urban Settlements; c) Rural Settlements; d) Agriculture; e) Circulation Network; f) Flood Flow, Water Body and Water Supply Protection Zone; g) Industrial Low Hazard Zone; h) Geology; i) Tourism Development; j) Economic Development.

Proposed facilities have selected based on the existing facilities, projected population, PRA demand and planning standard that are important for the development of the Upazila for the next 20-year. The locations of the proposed facilities have been indicated in the report.

Proposed Facilities of Bagmara Upazila	
Administrative	Future Govt. Office, Youth Development Center, Food Godown, Fire Station
Commercial	Wholesale Market, Shopping Complex, Neighborhood Market, RSSC, Fish Market, Pauro Market

Community Facilities	Auditorium, Multi-Purpose Hall, Cultural Center, Graveyard, Shamshan Ghat, Islamic Cultural Center, Community Center
Education & Research	Vocational Training Institute, Public Library, Agriculture Training Institute
Health Facilities	Hospital, Community Clinic
Industrial	Industrial Zone, Fish Processing Zone, Food Processing Zone, Cold Storage, Agro Based Industry, Brick Field Zone, Cottage Industry, Ice Factory, Silo
Open Space	Play Ground, Park, Children Park, Mini Stadium
Recreational	Stadium, Neighborhood Park, Sports Complex, Public Gathering Place, Indoor Stadium, Gymnasium, Park
Religious	Mosque Complex, Central Eidgah
Residential	Resettlement Zone, Poor Housing, Govt. Housing Area, Housing Area
Transportation Facilities	Bus Terminal, Truck Terminal, Bus Bay, Auto/Rickshaw Stand, Helipad, Fuel/CNG Station, Passenger Shed
Utility Facilities	Water Treatment Plant, Solar Park, Waste Disposal Site, Electric Sub Station, Night Soil Treatment Plant, Public Toilet, Solar Panel

During PRA in the Bagmara Upazila, local people demanded some immediate actions against river bank protection, flood protection, embankment slope protection, construction of regulators, growth centres and low-cost housing for landless people. The mentioned development activities are to be implemented by the concerned government agencies like BWDB, LGED for Bagmara Upazila on priority basis within the first five years of the plan period.

- Protection for river bank erosion;
- Embankment for river flood protection and embankment slope protection;
- Redevelopment plan for growth centres;
- Construction of Regulators for flood control, drainage and water management;
- Low cost housing.

This contingency plan for natural disasters summarizes the Government's alerting systems and organizational framework for responding to such disasters. Functions and responsibilities of Government departments and other bodies in the event of natural disasters including those resulting from severe weather conditions are also set out in this Contingency Plan. The following possible aspects are examined under contingency plan:

- Building Vulnerability Assessment
- Existence of Natural Hazards

In building vulnerability assessment had done to detect vulnerable buildings from existing physical structure survey. In Bagmara Upazila, vulnerability assessment done upon 496 buildings. Among 496 structures, 33 structures were found as moderately risky, 7 as risky, 456 as less risky. So, retrofit measure should be taken to make earth quake resistant structure according to its scale of sensitivity.

Four types of hazards have been identified for the project area, Bagmara which are categorized in planning process according to responsive stages to confine under a contingency plan. They are:

- Earthquake
- Landslide

- Flood
- Cyclone

On the other hand, installation of lightning arrestor due to thunder storm is utmost necessary to save human lives. Many people died due to thunder storm. Power Development Board (PDB) or Rural Electrification Board (REB) may study regarding this issue and may perform detailed design for construction of tower in the open field to save the lives.

The implementation modality for the proposed structure plan, urban and rural area plan and action area plan could be implemented by the concerned government agencies like BWDB, LGED, BADC, Pourashava, NHA, BSCIC, BEPZA, DPE etc. and details implementation modality.

The development plan is a blueprint for the planning and development of urban or rural areas for the next 20-years. It sets out where utility services (roads, water supplies, sewerage etc.) are to be provided and it zones land for particular purposes (housing, shopping, schools, factories etc.). When land is zoned for a particular type of development in the development plan, this is a clear indication that a planning permission for this form of development may be obtained. Zoning may also indicate restrictions on development. The plan may list for preservation, particular natural amenities (views, trees, landscape etc.) and particular buildings, features or sites of artistic, architectural or historic interest. Development proposals which might alter or interfere with any of these amenities will be restricted, and works which might otherwise be exempted development will require planning permission.

List of Abbreviations and Acronyms

ADB	Asian Development Bank
ADP	Annual Development Plan
BBS	Bangladesh Bureau of Statistics
BIWTA	Bangladesh Inland Water Transport Authority
BM	Bench Mark
BNBC	Bangladesh National Building Code
BRTA	Bangladesh Road Transport Authority
BSCIC	Bangladesh Small & Cottage Industries Corporation
CBO	Community Based Organization
CNG	Compressed Natural Gas
CS	Cadastral survey
dBase	Data Base
DC	District Commissioner
DEM	Digital Elevation Model
DAP	Detailed Area Plan
DLRS	Directorate of Land Records and Survey
DoE	Department of Environment
DPHE	Directorate of Public Health & Engineering
DTM	Digital Terrain Models
e.g	For Example
EIA	Environmental Impact Assessment
FAR	Floor Area Ratio
FGD	Focus Group Discussion
GCP	Ground Control Point
GIS	Geographic Information System
HQ	Head Quarter
i.e.	That is
LGED	Local Government Engineering Department
LGD	Local Government Division
MDG	Millennium Development Goals
MOFDM	Ministry of Flood and Disaster Management
MSL	Mean Sea Level
NHA	National Housing Authority
NGO	Non Government Organization
NMV	Non-motorized Vehicle
O-D	Origin and destination Survey
PCU	Passenger Car Unit
PRSP	Poverty Reduction Strategy Paper
PWD	Public Works Department
RHD	Roads and Highway Department
ROW	Right of Way

RTK-GPS	Real Time Kinematics Global Positioning System
SFYP	Sixth Five Year Plan
SOB	Survey of Bangladesh
SP	Structure Plan
TOR	Terms of Reference
TS	Total Station
TVS	Traffic Volume Survey
UDD	Urban Development Directorate
UNDP	United Nations Development Programme
UAP	Urban Area Plan
UP	Union Parishad
UZ	Upazila Parishad
WDB	Water Development Board

Glossary of Terms

Action Area Plan: The Action Area Plan guides land use and infrastructure within the area potential for immediate intervention based on public demand and necessity. It is prepared on 5 years interval.

Bazar: Bazar is a Market Place almost synonym of hat with some advanced facilities in comparison to hat. Generally, in a hat, there may not be any permanent business/trading house, shops. But in a bazar there are some permanent trading houses, shops and these shops are open every day and buyers and sellers attend the bazar from morning till late evening.

Buffer: A zone of user - specified distance around a point, line or area.

Building Code: Regulations established describing design, building procedures and construction details for new homes or homes undergoing rehabilitation.

Catchment: The area contributing surface water to a point on a (Drainage) Area drainage or river system, which may be divided into sub-catchments.

Climate Change: The slow variations of climatic characteristics over time at a given place. Usually refers to the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable periods.

Community Service: Community service covers a wide range of urban basic services, like, park, play field, eidgah, health and education services.

Contingency Plan: The problematic structures in project area found to be vulnerable and risky. For these structures a contingency plan has been prepared to make sure safety of the structures in case of earthquake.

Contour: The form of the land. Contour lines are map lines connecting points of the same ground elevation and are used to depict and measure slope and drainage. Spot elevations are points of a specific elevation.

Contour Interval: Difference in elevation between two successive Contour lines. The interval at which contours are drawn on a map depends on the amount of the relief depicted and the scale of the map.

Coordinates: Pairs of numbers expressing horizontal distances along orthogonal axes, or triplets of numbers measuring horizontal and vertical distances.

Detailed Area Plan: Detailed Area Plan is the last tier of the present plan package (Structure Plan, Master /Urban Area Plan and Detailed Area Plan) adopted in Bangladesh which gives detailed development plan of an area at plot to plot level. It also provides a land use zoning plan superimposed on mouza map. A detailed area plan is prepared for approximately three to five years, that is, the plan must be implemented during this period. Because, spatial changes in urban areas, particularly, in large cities takes place very rapidly. If the DAP is not implemented within five years it would turn obsolete, and a new plan will have to be prepared to accommodate new changes. So it should be executed as soon as possible. A detailed area plan can be both, participatory or non-participatory. Participatory plans are those plans when it is prepared with direct participation of the local people.

Development: The process whereby a local planning authority decides whether a planning application meets the requirements of planning policy, particularly as set out in development plans. The prime function of the Development Control section is to determine planning applications in the public

interest, in accordance with planning legislation and the local plan that has been adopted by the plan approving authority.

DEM: The representation of continuous elevation values over a topographic surface by a regular array of z-values, referenced to a common datum. DEMs (Digital Elevation Model) are typically used to represent terrain relief.

Encroachments: A structure that extends over the legal property line of other people or public land.

EIA: It is a detailed study based on Environmental Assessment (EA) to determine the type and level of effects an existing facility is having, or a proposed project would have, on its natural environment.

GIS: A geographic information system merges information in a computer database with spatial coordinates on a digital map.

GPS: Global Positioning System used to determine latitude, longitude, and elevation anywhere on or above the Earth Surface. This system involves the transmission of radio signals from a number of specialized satellites to a hand held receiving unit. The receiving unit uses triangulation to calculate altitude and spatial position on the Earth Surface.

Growth Centre: Hats and bazars are the trading centers of the rural Bangladesh. Considering the importance of their economic role in national economy, government has decided to develop infrastructure facilities of some selected hats and bazars in every upazila through LGED. The markets which are already provided with such extra infrastructure facilities are called growth center.

Hat: The term 'hat' is very much known to all from time immemorial throughout the country which is a temporary rural market place. In rural Bangladesh farmers and other producers/manufacturers used to sit with their surplus products in a suitable place having comparatively better communication system with surrounding villages to exchange these goods. This suitable place is called hat where generally on fixed days sellers and buyers get together and exchange goods and services. This gathering place is developed gradually by the local people at the beginning. The Hat is a rural trading center.

Household: Describes group of people who live in the same house and share food from the same kitchen. Household is similar to a family, except that household members may not have blood relationship.

Katcha: Impermanent structure/ building materials.

Land Use Zoning: Land use zoning plan can be a single plan or it can be devised as a part of master plan. In land use zoning plan the entire area under planning is sub-divided into suitable use zones according to their potentiality for that particular use. Accordingly planning permits are given to developers. Land use helps a city grow maintaining environmental sanctity ensuring livability.

Land Development: Re-shaping land to make better use of it. All planned and unplanned development on land is called land development. This term is usually used for housing development in urban areas.

Local Road: Those Roads are provided at local level to give access to houses and other establishments. It is the lowest level of road hierarchy.

Master Plan: It is the 2nd tier of the three level urban plans. It is prepared for the main city and its surroundings. Its development proposals are more detailed and prepared in map and report forms. It also contains a land use zoning map.

Mouza: Mouza is the smallest unit of Land Survey System with a unique number called Jurisdiction List Number (J.L.No).

Mode of Transport: Four ways are included in the mode of transport. They are Roadway or Highway, Railway, Waterway, and Airway.

National Highway: Highway is a public road, especially a more major road connecting two or more destinations. National Highways are the primary long-distance roadways. Connect national capital with state capital, major port towns, border areas etc. Most are maintained by the Government. Connecting the neighboring countries is also called the National Highway.

Paurashava: Paurashava is the local name of the municipality. The incorporated area administered by the government as urban area under the Paurashava Ordinance 2008 is considered as the paurashava.

Population Projection: Make future estimation of population using well established and scientifically developed formula.

Pucca: Permanent construction/structure using bricks, cement etc. **Right of Way:** The entire space reserved for use of road. Initially road is developed in a part of the space, but gradually with the pace of urbanization the entire reserved space is used for road and footpath.

Road Hierarchy: The hierarchy of roads categorizes roads according to their functions and capacities.

Rural Area Plan: Rural Area Plan (RAP) provides a mid-term strategy for 10 years and covers for the development of rural areas within the project area. Generally, RAP contains an explanatory report, resource maps, conservation and management report, planning rules, rural area plan and a multi-sectoral investment program etc.

Structure Plan: Structure plan develops broad strategies for managing and promoting efficient medium- to long-term urban development. The structure plan integrates economic, physical and environmental planning objectives, providing a framework for development activities in the area. It also indicates the direction and extent of urban growth over a period of next 20 years.

Sub-Regional Plan: It is the document of plan package which determines a long term vision for the development of an area

Shoulder: Shoulders are strips provided on both the sides of the carriage way. It serves as parking place for vehicles which have developed some defect and need parking.

Skyline: Outline of building, hills, etc. against the sky.

Solid Waste: Non-liquid waste materials that have been discarded. It may be classified by point of origin (such as agricultural waste, industrial waste, domestic waste or construction waste) or by the kind of waste involved (such as rubbish, ashes, garbage, and special waste).

Structure Plan: Structure Plan is the 1st tier plan of the three level plan currently prepared for urban centres in Bangladesh. It is a policy plan and not a plan in maps. Future urban development policies are written down in the plan report that serve as the framework for subsequent lower level plans, like, master plan/urban area plan and detailed area plan. Major development locations may be symbolically indicated in structure plan.

Suitability Analysis: The suitability is a GIS based process for evaluating the suitability of land for development.

Traffic Volume: Number of vehicles passing a particular road per unit time at a specified time is called Traffic volume.

Thematic Map: A thematic map is a type of map specifically designed to show a particular theme connected with a specific geographic area.

Upazilla/Thana: Sub-District administrative area.

Union: Smallest local administrative unit of rural area which is composed of mouzas and villages. A union has a union parishad.

Urban Fringe Area: Outskirt areas of an urban center. These areas are usually being developed. They have low density of population and structure and lack physical infrastructure, particularly road.

Urban Area Plan: It provides an interim mid-term strategy for 10 years and covers the development of urban areas within the project area. Generally, Urban Area Plan contains an explanatory report, resource maps, interim management report, planning rules, urban area plan and a multi-sectoral investment program.

Village: Smallest geographic area of rural area. A village may be same as mouza or there may be more than one village in a mouza.

Vulnerability Analysis: To analyze the vulnerable condition of buildings in the project area different criteria have been identified. These are: structure condition, structure age, historical time period, peripheral impact of structure. Depending on these criteria vulnerable buildings have been identified.

Ward: Smallest local administrative unit of urban area. For the operational convenience, Municipalities are divided into three or more wards. The ward boundaries are specified by gazette notification.

Zila/District: District administrative area.

Unit of Equivalence

1 lakh = 1,00,000

1 million = 10,00,000

1 crore = 1,00,00,000

1 katha = 0.05 bighas = 1.65 dec. = 66.9 sq.m. = 720 sq. ft.

1 bigha = 20 kathas = 33 dec = 0.33 ac.

1 acre (ac) = 3 bighas = 4000 sq.m. = 60.50 kathas = 100 dec

1 hectare (ha) = 2.47 ac. = 7.5 bighas = 10,000 sq. m.

1 square metre (sq. m.) = 1.20 sq. yards = 10.76 sq. ft.

1 square kilometre (sq. km.) = 247.1 ac. = 100 ha.

1 square mile (sq. mile) = 259 ha. = 640 ac. = 2.59 sq. km.

1 yard = 3 feet = 0.9m

1 metre = 3.281 feet

1 kilometre = 1000m. = 0.62 miles

1 mile = 1760 yards = 1.61 km.

1MW = 1000 KW = 106 watts

1 Nautical mile = 1.854 mile

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Chapter 01

Introduction

1.1 General

The project “Preparation of Development Plan for Fourteen Upazilas” funded by the Government of Bangladesh envisages preparation of development plan for some specific Upazilas such as Bagmara upazila of Rajshahi District, Faridpur Sadar upazila of Faridpur District and Gangni upazila of Meherpur District. This Plan along with report includes development strategies plan proposals, action plans and plan implementation strategies, in order to fulfill the requirements specified the Terms of Reference (TOR)

The aim of preparing this plan is to identify the infrastructural facilities needed for overall socio-economic and physical development of the people as well as the society. The Development Plan contains a Five-tier Plan which has been mentioned in Table 1.1:

Table 1.1: A Five-tier Plan for Bagmara Upazilla

Sub-Regional Plan	For a period of 20 years
Structure Plan	For a period of 20 years
Urban Area Plan	For a period of 10 years
Rural Area Plan	For a period of 20 years
Action Area Plan	For a period of 5 years

1.2 Project Background

Bagmara Upazila occupies an area of 363.3 sq. km., located in between 24°30' and 24°41' north latitudes and in between 88°41' and 88°58' east longitudes. It is bounded on the north by Manda Upazila and Atrai Upazila of Naogaon Zila, east by Atrai Upazila and NatoreSadarUpazila, south by PuthiaUpazila and Durgapur Upazila and west by Mohanpur Upazila. Bagmara Thana was formed in 1869 and it was turned into an Upazila in 1983. Main rivers or water bodies of this upazila is Baranai; Fakinni River, Beel Joshoi, Takta Beel, Mosher Beel, Nakkati Beel, Katila Beel and Bagir Dara (water channel), Talgharia Dara and Komorpur Dara are notable. The upazila has 30 hat/bazars, 5 fairs. Bagmara Upazila of Rajshahi District is generally functioning as a large agro-economic zone where many people are engaged with agriculture based economic activities. Main crops of this upazila are paddy, wheat, potato, corn, betel leaf, vegetables whereas extinct or nearly extinct crops are barley, kaun, jute, linseed, masuri, gram, khesari. Main fruits are Mango, banana, jackfruit, litchi, papaya, guava, plum. Main exports are Betel leaf, banana, papaya, vegetables.

Urban Development Directorate (UDD), Under Ministry of Housing and Public Works as the excluding agency. The project is merged monitored and evaluated by UDD at the field level. Engineering Consultants and Associates Ltd is the consultant of the project. The activities of the project were started in January 2015 and was expected to be completed by January 2017. But for some unavoidable reasons time period of the project had to be extended upto June 2018.

Bangladesh has been showing rapid growth of urban population since the partition of India in 1947, especially since the independence of Bangladesh in 1971. The average growth rate of urban population has been fluctuating in different census decades. Between 1961 and 1980, the growth rates

marked roughly 8 percent. Between 1991 and 2001, the rate has been declined to 3.5 percent. At present (2011) about 28.40 percent of the total population of Bangladesh lived in urban areas. This in fact indicates that Bangladesh is a low urbanized country, even if compared with even the Asian Context (50% urban). In absolute terms however the country has a huge number of urban populations. In 1971, the urban population of Bangladesh was 5.5 million while in 2001 the size of urban population rose to about 30 million. This simple statistics represent the clear picture of urban population growth. With the increasing of urban population, cities' physical limits are expanding; many sub-urban and rural areas are becoming urban. With such expansion, urban built environment is increasing. But in context of Bangladesh, such expansions are not being taken place in a planned way. Haphazard and unplanned development are seen everywhere which cost the inhabitants to much in social and economic terms.

Due to lack of practicing effective urban and regional planning, these secondary towns have been failed to put in order especially the most valuable resource i.e., the land in view of the citizens' socio economic and cultural needs. The land is used most haphazardly. As such, the developments are taking place in unplanned and unregulated manner resulting in low living standard of the people living in the cities and towns. This situation depressingly influences the investment patterns in the secondary towns resulting not creating employment opportunities for the urban dwellers and generating funds for development and better maintenance of urban infrastructure such as roads, water supply, drainage, waste disposal and sanitation, electricity, etc. within their boundaries. Thus, the role of the secondary towns in the overall socio-economic development both at the local and the national levels are not much noteworthy. Further, it is to be agreed that the issues concerning urbanization and practicing urban planning at the secondary town level have not been duly addressed as far as the national policies and strategies are concerned.

In this regard a comprehensive development plan is required to address the required land use transformation which will not allow any unauthorized and unplanned-development, either in urban area or in rural area. Due to lack of such plan, it is generally found that most of the Upazilas in Bangladesh have developed with least coordinated manner possessing very little development control. Measures for the adequate provision of infrastructure, service, utility and modern amenities for maintaining a minimum standard of life, considering environment and sustainability has to be taken. Moreover, in preparing such plan, development constraints and local development potentials are to be identified clearly, and plans should be formulated addressing' such development constraints and potentials of the area to make the plan practicable.

Considering this situation the project on “Preparation of Development Plan for Fourteen *Upazilas*” has been initiated with a view to prepare for a period of next 20 years (2013-2033).

1.3 Objectives of the Plan Packages

The vision of the plan is the creation of an urban livable environment where the people, able and or disable, irrespective of age-sex and income, cast-creed and religion, can live and enjoy today within affordable means without sacrificing interests of tomorrow. However the overall vision of the Development Plan is to make the Upazila by revitalizing its growth and make it a poverty free, livable and economically vibrant Upazila. Bangladesh Govt. has an agenda to develop its standard as middle income country in the year of 2021. The rate of this development is not uniform all over the country. Bangladesh has now going towards achieving the rank in the list of developed countries in the world and this plan will help to meet the SDGs of Bangladesh in Upazila stage in order to make the

development uniform all over the country to ensure sustainable growth. According to the Terms of Reference the objectives of Bagmara Upazila Development Plan are to:

1.3.1 National Objectives

To find out development issues and potentials of the Upazila and make a 20 years development vision for the Upazila (both urban and rural area) and prepare a Master Plan in line with the vision for the development.

1. Prepare plan for the people of whole upazila to develop and update provisions for better transport network, housing, infrastructures for roads, markets, bus terminals, sanitation, water supply, drainage, solid waste management, electricity, education, leisure and such other infrastructure facilities for meeting the social and community needs of the poor and the disadvantaged groups for better quality of life and at the same time ensure the development of rural area within the project area.
2. Prepare a multi-sector short and long-term investment plan through participatory process for better living standards by identifying the area based priority-drainage master plan, transportation and traffic management plan, other specific plan need as per requirement in accordance with the principle of sustainability;
3. Provide controls for private sector development, clarity and security with regard to future development;
4. Provide guidelines for development considering the opportunity and constraints of future development of Upazilla town; and rural area.
5. Prepare 20 years Development Plan to be used as a tool to ensure and promote growth of the city in line with the guiding principles of the Master Plan and control any unplanned growth by any private and public organizations.
6. Facilitating the urban growth to protect the valuable farmland and at the same time provide space and facilities for non-agricultural activities.
7. Provision of standards for use by public bodies.
8. Supporting the livelihood of the inhabitants of Bagmara Upazila.
9. Protecting the eco-system with the understanding that we are a component of the system rather than the consumer of the system.
10. Discouraging the involuntary displacement of the inhabitants in the name of development.
11. Control of undesired development in all areas for which plans have been prepared.

1.3.2 Immediate Objectives

The immediate objectives of the project are:

Objective 1: Determination of Present and Future Function of the Upazila

Preparation of Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan (AAP) are to be based on PRA sessions, land use survey, topographical survey, environmental, disasters/hazards and agricultural studies. The major studies are related to traffic and transportation, drainage and environmental, formal and informal economic studies, slums and squatters, unauthorized encroachment, recreational facilities and stakeholder's participation for planning and development control.

Objective 2: Mechanism for Improving and Guiding Development

The mechanisms for improving and guiding development are:

- Preparation of five tier Development Plans namely: Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan.
- Development of mechanisms for stakeholders, especially communities, who control over all development initiatives.
- Preparation of a set of Institutional and Legislative Restructuring Proposals.
- Selection of appropriate standards and guidelines for improving present conditions and guiding future development.

Objective 3: Review of Existing Problems and Propose initiatives

Review of existing problems and proposed initiatives are stated below:

- Detailed analysis of problems presently hampering development, which can be eliminated by action in the short term.
- Development of sectoral programs to alleviate poverty problems.
- Prepare a minimum number of action area plans for early area development or area upgrading of parts of the town that exhibits a representative cross section of development problems.
- Undertake initiative at Upazila level to promote sustainable economic activity by formal private sector and individuals, groups, GOB and NGOs.

Objective 4: Formulation of Bankable Projects

The factors for formulation of bankable projects areas are mentioned below:

- To determine methodology for identifying Multi-sectoral Investment Projects (MSIP) with their major priorities.
- Prepare a multi-sector investment plan through participatory process for better living standards by identifying areas based on the priority such as Drainage Master Plan, Transportation and Traffic Management Plan and other specific plan as per requirement.
- Providing controls for private sector development and clarity and security with regard to future development for inhabitants and investors. The targeted objectives and guidelines of the development projects would be to initiate and implement through participation.
- To identify a range of projects suitable in both sectoral and spatial terms.
- To develop a package for the priority to a level suitable for financial appraisal.

Objective 5: Increasing Capacity/formulation of Local Authorities for Urban and Rural Management and Development

The factors to be considered in regard to increasing the capacity/formulation of local authorities for urban management and development are:

- To prepare a detailed analysis of the past budgets, their expenditure, liabilities and sources of funds of Pourashava, Upazila Prishad and Union Parishad.
- Providing Land use maps and information at Mouza dag level (parcel) as a professional manner for efficient updating, exchange, dissemination and decision support use.

- To prepare practical and detail proposal for increasing the income of the local authorities with reference to any forthcoming donor's proposal to assist financial management and paying particular attention to the possibilities of increasing revenue from existing and proposed development activities.
- Providing guidelines for development considering the opportunity and constraints of future development. Moreover, for the betterment of the community, actions would be taken through government, public private partnership, private and non-government initiatives as indicated in AAP.
- To prepare proposal for rationalizing the roles and divisions of responsibilities between Upazila and other development agencies.
- To prepare priority list of projects which can be funded from local resources and examine any new forms of funding for such developments.
- To assist Upazila, Pourashava and Union in drawing up schemes within the framework of Strategic Plan and Action Plans for inclusion in Development Programs.
- To strengthen the technical capabilities of local authorities involved in urban management and development.
- Providing Planned Development to ensure Sustainable Environment Action Area Plan (AAP) should be undertaken with the cooperation of other development agencies. So all the agencies should cooperate, coordinate and participate in the process of preparation of Master Plan for proper planning and development. The Plan would be the guiding document for implementation by all concern. GIS based data; map and information would be the resource which could be easily updated when necessary.

1.4 Rationale of the Project

At the present age development plan is the demand of time. The upazilas are the main developing sectors of the country. For the planned development a master plan is the prerequisite. It will guide the future development of these areas. Master plan will direct the upazila towards a right path of development. With the population growth it will calculate the future demand of that growing population. It will trigger the way of new employment for the inhabitants of this area.

1.5 Scope of the Project

The scope of Consultancy Services encompasses for Preparation of five tiers Development Plan for Bagmara Upazila, which includes Sub Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan. The study will cover surveys of physical features and preparation of Land use Plan, Traffic and Transportation Management Plan, Drainage and Environmental Plan and Ward Action Plans for the project area.

Considering the above scope of services and to prepare an efficient Development Plan for Bagmara Upazila, the specific tasks to be performed by the consultants in realization of the scope of services as spelled out in the TOR are given below in brief:

- Determination of study area (755 sq. km) based on suitable physical boundary.
- Explanation of the plan (report) indicating population, density, livelihood and its future plan.

- Collection of socio-economic and demographic information and data both from primary and secondary sources in the study context to forecast future population, requirement of different services, physical and social infrastructure facilities, employment generation.
- Identify the existing natural and man-made drains in the town and investigating the mechanisms of the drainage and local river system to assess the extent and frequency of flood damage and determine areas where flooding or poor drainage is most severe.
- Preparing a conceptual report on the various alternative solutions to the present storm water problems and selecting the most appropriate and economical alternatives.
- Prepare a Development Plan of the storm water drainage & sewerage system treatment plant for all areas in the town, which will include discharge calculations for the catchment areas, design of main and secondary drains/sewerage including their sizes, types and gradients and retention areas with preliminary cost estimates for the proposed drainage/sewerage system.
- Prepare a conceptual plan to show the phase-wise implementation schedule in an affordable and practical manner considering the technical, environment, institutional, economic and social feasibility of the proposed works.
- Proposal for preparation of hydraulic and structural designs for the priority areas of the study area and preparing a first phase implementation program.
- Study of the existing drainage maintenance procedures and budgets, if any including solid waste collection and design and estimate costs for a planned maintenance system to ensure that the drains are kept free from blockages and physical damage.
- Recommend planning, institutional and legal mechanisms to ensure provision of adequate land for rights of way for storm water drainage, which will also determine illegal encroachments.
- Investigate methods to find the other phases of the storm water drainages and sewerage master plan.
- Assess additional data requirements, critical additional data, not currently available should be collected through reconnaissance and traffic surveys which should estimate present traffic volume and forecast the future traffic growth and identify travel patterns, areas of traffic, conflicts and their underlying causes.
- Study the viability of different solutions and develop a practical short-term traffic management scheme of implementation, including one-way systems, restricted access for large vehicles, improved signal system traffic islands, roundabout, pedestrian crossings, deceleration lanes for turning traffic, suitable turning radius, parking policies and separation of pedestrians and rickshaws.
- Assess the current land use with regard to transportation, bus and truck terminals, stations, railway stations etc. and recommend actions to optimize this land use.
- Assess existing plot information.
- Prepare a Long-Term traffic and Transportation Plan.
- The Development/Master Plan shall assess major investments and activities of the various development agencies/Ministries and indicate the stages of development preferably through 5-year programming approach. Consultants shall be making to liaison with all government and semi-government and other agencies concerned with their development at the Study area. Contract

should also be made with the headquarters of such agencies and full details of such plans should be referenced in the plan.

- Survey and evaluate Urban Land Capabilities considering factors such as flood basin, topography, fertility etc.
- The Development/Master Plan Package shall indicate/outline possible frameworks/strategy for management and development control, institutional arrangement ensuring people's participation etc. for effective implementation of the plan.
- Development of Proposal of By-laws for Land Development, Real Estate Development. Urban Plan Development control and Natural Resources/Green belt and places of historical interest.
- In line with the Master Plan, propose a Detailed Area Plan with a list of priority schemes for the development of roads, drains, traffic management and other social infrastructure for implementation during the first five years of plan period.
- Facilitate City Authority, Union Parishad about the publicity of Master Plan, its preparation strategy, function and their role through making, leaflet, newspapers, cable line, FGD etc.
- Allocating zones for as high, middle and low-density areas.
- Guidelines for control/promote industries at different locations according to their nature such as heavy industrial, light industrial and service industries including waste disposal / treatment plants.
- Guidelines for controlling/guiding location of commercial use.
- To identify the areas reserved for agriculture, flood flow, public/private open spaces, parks, play grounds, play-lots and other recreational uses like green belts, retention pond, water bodies, water front, natural reservoirs and historical monuments.
- Detailed Area/Action Area Plan will cover all related issues to bring about expected result.
- Allocating the zones where public utilities, institutions and civic services will be established. Moreover, zones of urban deferred areas, for future development expanded areas and areas for new development have to be considered.
- To ensure planning principles/standards, gross/net densities, guideline for future development and development control.
- To exercise control over architectural features, elevations, frontage of buildings and structures including zoning regulations to regulate locations, preservation of heritage, and type of buildings within each zone.
- Earthquake hazard, vulnerability, risk and loss assessment for project area.
- Development of scenario based spatial earthquake contingency plan for project area.

Prepare and submit Development Plan and Report with required standards as specified in the TOR.

1.6 Methodological Approach to Plan Preparation

The Preparation of Development Plan of Bagmara Upazila a participatory method has been followed. In this method down to top planning process where opinion, ideas, and needs of common people and stakeholders are considered to participate in making a successful plan. The overall methodology has been presented in Fig. 1.1. In the beginning a detailed survey has been carried out in order to know the existing condition of the surveyed area. PRA demand analysis has been done then and after that

consultation meeting has been carried out about the findings and for proposing development plans. After that a draft plan has been prepared and workshops were arranged. Public hearing was included in order to know the plan's usefulness in local level and then Final plan has been prepared.

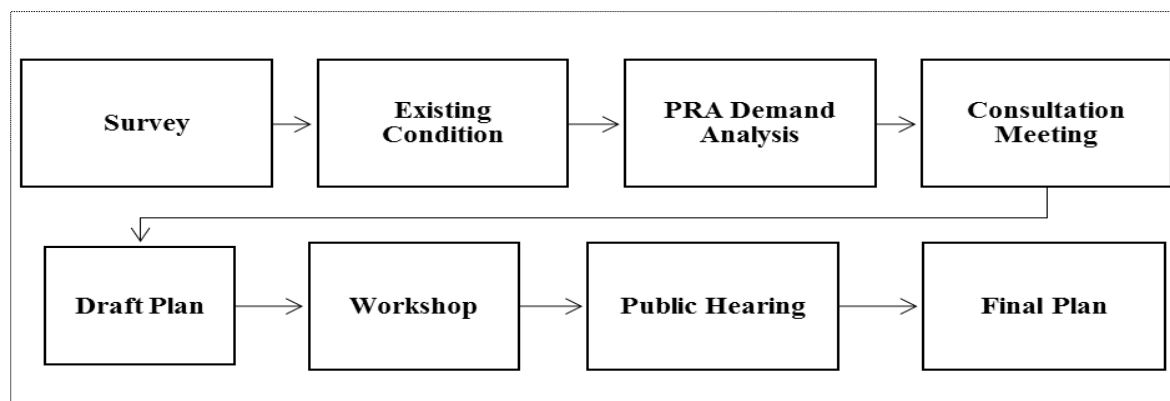


Fig 1.1: Overall Methodology

In the planning exercise a five-step planning methodology has been followed (Fig 1.1).

In step-1 the conceptualization, mobilization, and operationalize the activities were carried out and the output was the preparation of Mobilization Report. Different types of Background Studies, Reconnaissance Survey was carried out and step- 2 was the preparation of an Inception Report.

In step-3 different type of survey and studies were conducted and prepare a database and get an insight into the existing conditions. On the basis of findings of the studies, Survey Report was prepared.

Fourth step were review of Survey and PRA findings for making draft plan. Reviews were made by exchange of opinion with the cross section, people and stakeholders either groups or individual basis. Important task or activities in this step was to formulate strategies, policies, and preparing plans for all five stages like Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan, Action Area Plans for selected areas.

Fifth and Final step was review and evaluation of the Strategies, Plans, feedback and opinion of experts and public hearing. After compilation of all the opinion, the Final Plan has been prepared.

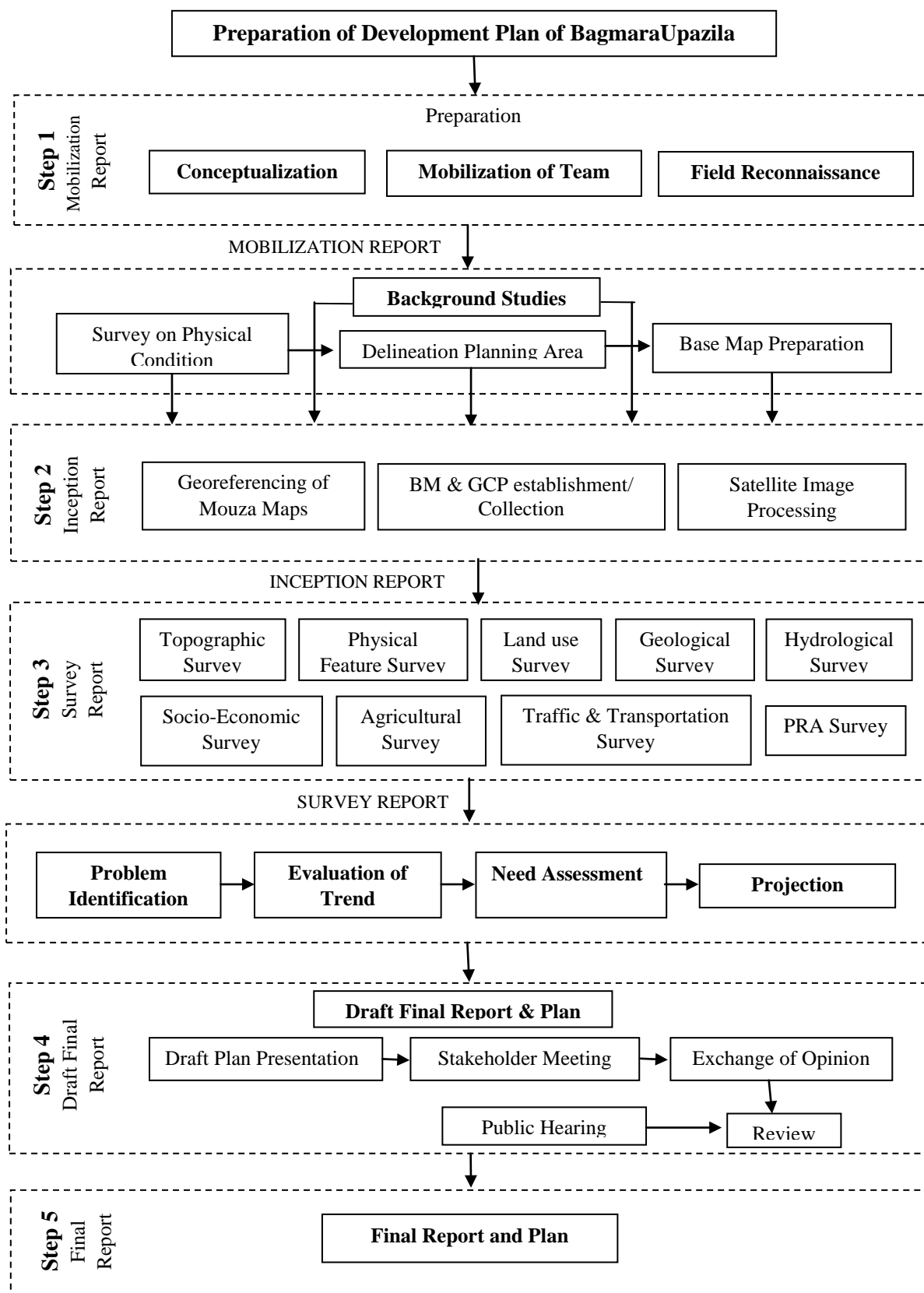


Fig 1.2: Preparation of Development Plan of Bagmara Upazila

Chapter 02

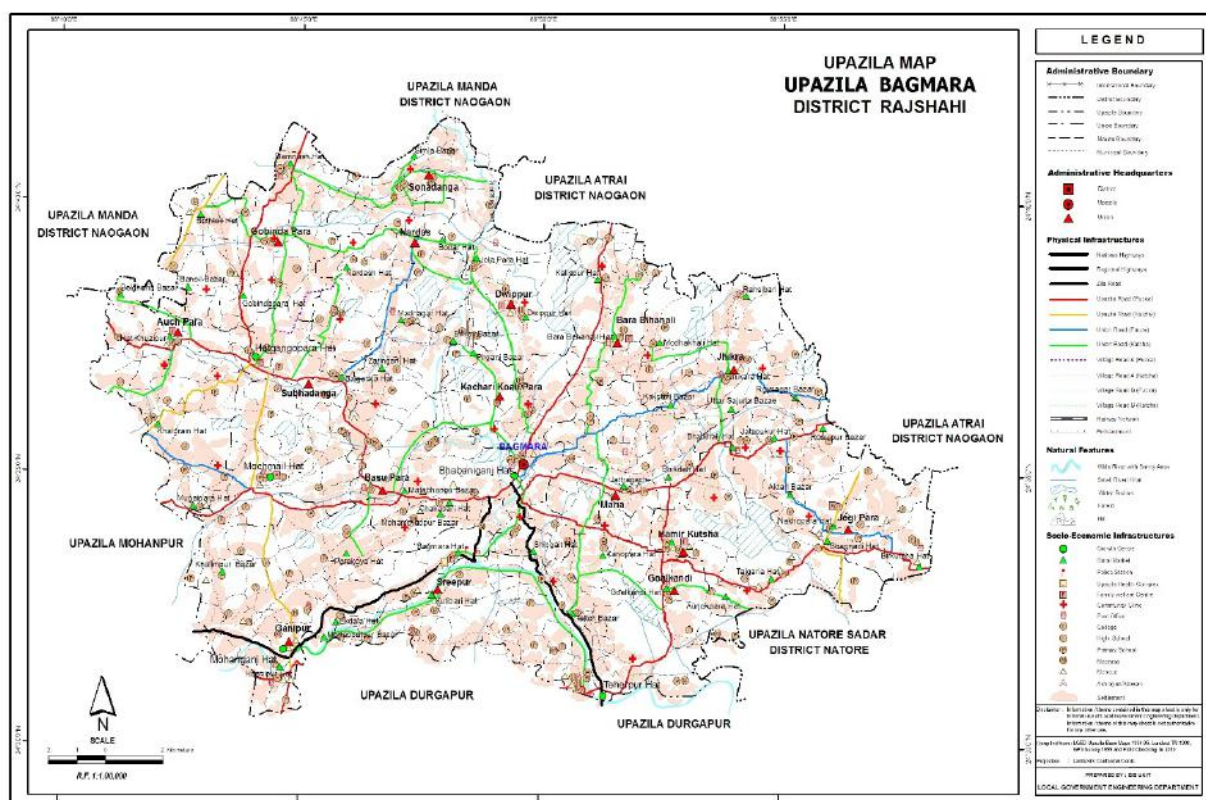
Study Area Profile

2.1 Introduction

The current chapter describes the basic information about Bagmara Upazila. The information presents in this chapter has been collected directly from the field as well as from many other secondary sources including National Population Census Reports of BBS.

2.2 Brief Description of the Project Area

Bagmara upazila (Rajshahi district) with an area of 363.3 sq.km. is bounded on the north by Manda Upazila and Atrai Upazila of Naogaon Zila, east by Atrai Upazila and Natore Sadar Upazila, south by Puthia Upazila and Durgapur Upazila and west by Mohanpur Upazila. Bagmarathana was formed in 1869 and it was turned into an upazila in 1983.



Map-1.1: Upazila Map, Bagmara, Rajshahi (Source: LGED, 2017)

2.2.1 Location and Geography

Bagmara upazila (Rajshahi district) with an area of 363.3 sq. km. is located in between 24°30' and 24°41' north latitudes and in between 88°41' and 88°58' east longitudes. Main rivers or waterbodies of this upazila is Baranai River, Fakinni River, Beel Joshoi, Takta Beel, Mosher Beel, Nakkati Beel, Katila Beel and Bagir Dara (water channel), Talgharia Dara and Komorpur Dara are notable.

2.2.2 Administrative and Cadastral Boundaries

The area of Bagmara Upazila is 363.3 square kilometers. Bagmarathana was formed in 1869 and it was turned into an upazila in 1983. It is comprised of 16 unions, 2 municipalities and 369 moujas.

2.2.3 Demography and Social Composition

Bagmara upazila is the biggest upazila of Rajshahi Zila in respect of population. According to census 2011, total population is 3,54,664. Among them male 1,77,157, female 1,77,507; Muslim 338013, Hindu 16494, Christian 6, Buddhist 0 and others 151.

Table 2.1: Union and Ward wise population distribution and population density

Study Area Information					
Bwabanigonj Paurashava	Area in Acre	Area in sq. km	%	Population in 2011	Population Density in Acre (2011)
Ward No-01	307	1.24	0.34	1634	5
Ward No-02	364	1.47	0.40	1664	5
Ward No-03	519	2.10	0.57	1937	4
Ward No-04	253	1.02	0.28	1607	6
Ward No-05	160	0.65	0.18	2137	13
Ward No-06	398	1.61	0.44	2911	7
Ward No-07	289	1.17	0.32	2168	7
Ward No-08	466	1.89	0.52	1753	4
Ward No-09	381	1.54	0.42	2144	6
Taherpur Paurashava	Area in Acre	Area in sq. km	%	Population in 2011	Population Density in Acre (2011)
Ward No-01	34	0.14	0.04	1597	47
Ward No-02	157	0.64	0.17	2646	17
Ward No-03	127	0.52	0.14	1715	13
Ward No-04	229	0.93	0.25	1752	8
Ward No-05	228	0.92	0.25	1805	8
Ward No-06	377	1.53	0.42	1773	5
Ward No-07	533	2.16	0.59	2374	4
Ward No-08	495	2.00	0.55	2521	5
Ward No-09	543	2.20	0.60	1761	3
Bagmara Union	Area in Acre	Area in sq. km	%	Population in 2011	Population Density in Acre (2011)
Auch Para	6760	27.36	7.48	26685	4
Bara Bihanali	3812	15.43	4.22	12571	3
Basu Para	7111	28.78	7.87	26943	4
Dwippur	3396	13.74	3.76	9852	3
Goalkandi	5946	24.06	6.58	24275	4
Gobinda Para	6673	27.00	7.38	22707	3
Ganipur	8953	36.23	9.90	36469	4
Hamir Kutsha	5412	21.90	5.99	19817	4

Jhikra	6163	24.94	6.82	22026	4
Jogipara	7022	28.42	7.77	24830	4
Kachari Kayali Para	1425	5.77	1.58	7509	5
Maria	4550	18.41	5.03	19487	4
Nardas	5893	23.85	6.52	19528	3
Sonadanga	2593	10.49	2.87	8684	3
Sreepur	2789	11.29	3.09	11789	4
Shubhadanga	6034	24.42	6.68	25593	4

2.2.4 Infrastructure and Social Services

2.2.4.1 Houses and Accommodation

Most of the houses and infrastructure of this upazila is building, metalled, semi-metalled. The number of concrete houses very few at out of sadar and different unions and village level. Though the school, Mosque and various infrastructures are pucca and semi pucca but most of the houses are semi pucca, hut. Total numbers of houses at Bagmara upazila are 62410. Among these 17055 are katcha, 5604 are pucca, 39703 are semi pucca and 48 are under construction. (Source: Field Survey, 2016) There are Mazar of Panchpir and Shahi Mosque at village Achin Ghat on the bank of the river Baranai as Archaeological heritage and relics (Banglapedia, 2016).

2.2.4.2 Roads

Bagmara Upazila is directly connected with Mohonpur, Durgapur and Puthia through the zila road. This zila road also covers Godagari, Poba, Shahmokhdum, Rajpara, Boalia Charghat and Bagha. The regional highway doesn't cover Bagmara Upazila. It covers Godagari, Poba, Shahmokhdum, Rajpara, Boalia and Moanpur. There is no railway network in Bagmara Upazila. Railway network passes by the outside of Bagmara Upazila area.

Most of the roads within Bagmara upazila are paved; the communication system has improved significantly over the last 5-10 years. The road system within the unions of the upazila is good. All most villages connected to main road with herring bone road and earthen road.

Table 2.2: Road Type of Bagmara Upazila

Type	Length in Km.	Percentage
Katcha	166.96	24.15%
HBB	45.32	6.55%
Pucca	479.06	69.30%
Total	691.34	100%

(Source: Field Survey, 2017)

Table 2.3: Road Hierarchy of Bagmara Upazila

Road Hierarchy	Length in Km.	Percentage
Local Road	14.07	2.03%
Pouro Road	41.75	6.02%
Union Road	152.14	21.93%
Upazila Road	123.95	17.87%
Village Road	338.57	48.80%

Zilla Road	23.35	3.36%
Total	693.83	100.00%

(Source: Field Survey, 2017)

2.2.4.3 Haat Bazar

Growth centers are 5, Haats and bazars are 52, most noted of which are Birkutsha bazar, Nardas haat, Banoil bazar, Shikdari haat, Bagmara haat, Bara Bihanali haat, Gobindapara haat, Ekdala haat, Dwippur haat, Goalkandi haat etc. The Growth centers are Mohonganj haat, Mokhmail haat, Bwabaniganj haat, Taherpur haat and Hatgangopara haat.

2.2.4.4 Educational Institutions

Educational institutions: college 63, secondary school 35, primary school 210, madrasa 75.

2.2.4.5 Health care

There are 4 hospitals, 4 health centers and 13 community clinics in whole upazila.

2.2.5 Agricultural Land

Bagmara upazila covers in total 60643 acres of land. Out of which 7790 acres of land is engaged in yearly single cropping farming, 15651 acres yearly double cropping farming, 34877 acres for yearly triple cropping farming and 2324 acres for yearly fourth cropping farming.

Main crops of this upazila are paddy, wheat, potato, corn, mustard, sesame, betel leaf, vegetables whereas extinct or nearly extinct crops are barley, kaun, jute, linseed, masuri, gram, khesari. Main fruits are Mango, banana, jackfruit, litchi, papaya, guava, plum.

2.2.6 Geo-physical Profile

The soil of Bagmara Upazila is categorized into five types. These are given below:

Table 2.4: Soil classification of Bagmara Upazila

Soil Type	Area(Sq. Km)	% of Area
Stiff/Dense Soil	4.8125	1.24%
Medium Stiff to Stiff/Medium Dense to Dense Soil	169.3125	43.63%
Medium Stiff/Medium Dense Soil	174.0625	44.85%
Soft/Loose to Medium Stiff/Medium Dense Soil	30.5625	7.88%
Very Soft to Soft/ Very Loose to Loose Soil	9.3125	2.40%
Total	388.0625	100%

2.2.7 Hydrology and River Hydraulics

Main River is Baranai River and Fokinini River of Bagmara upazila.

Beels: Beel Joshoi, Takta Beel, Mosher Beel, Nakkati Beel, Katila Beel and Bagir Dara (water channel), Talgharia Dara and Komorpur Dara are notable water bodies of Bagmara upazila.

Ponds: In total there are 5501 ponds in Bagmara upazila comprised of both big and small ponds. Most of the ponds contain water but during the monsoon season, they all get filled up. Water from the ponds is used for everyday activities, fish farming, irrigation, etc. Most of the fishes grown in the

pond are Rui, Katla, Tilapia and other different types of carps although there has been a growth in the small fish production thus fulfilling nutritional demands as well as providing financial security. The fish farmers are contributing to the national economy by growing fishes in the ponds.

2.2.8 External Linkage

Roadway communication is the communication of Bagmara Upazilla with Rajshahi sadar as well as other sub districts of Chittagong District. Types of transport used in this sub district minibus, Baby taxi, tomtom, auto-rickshaw. Rajshahi District is directly connected with Natore, Pabna, and Kushtia through the national highway. The regional highway covers Naogaon, Rajshahi, Bogra and Kushtia. Railway network covers a huge area. Nawabganj, Rajshahi, Natore, Sirajganj, Pabna, Kushtia, Chuadanga and Bogura has a good railway communication.

2.2.9 Local Stakeholder of the Project Area

1. Upazila Parishad
2. Union Parishad
3. Paurashava/Municipality
4. Upazila Agricultural Office
5. Upazila Health and Family Planning Office
6. Upazila Office, LGED
7. Upazila Education Office
8. Upazila Office of Food Controller
9. Upazila Social Service Office
10. Upazila Youth Development Office
11. Local Level Police Authority
12. Upazila Somobay Office
13. Press Club
14. Roads and Highways Department
15. Bangladesh Small and Cottage Industry Corporation
16. Upazila Ansar and VDB Office
17. Fire Service and Civil Defense
18. Upazila Post Office

Chapter 03

Development Related Policies, Laws and Regulations

3.1 Introduction

National policies and laws broadly cover the aspects of intervention necessary for the development of the diverse areas within an Upazilla. The related policies and laws are considered in the Preparation of Development Plan for Fourteen Upazilas and its sector wise development. This review highlights the important legal issues in acts, rules and regulations relevant to planning.

The aim of the project is to prepare five tier of development plan such as- Sub-Regional Plan, Structure Plan, Urban Area Plan, Rural Area Plan and Action Area Plan to facilitate the improvement of infrastructure and services of the upazilla.

These plans include several sectoral components such as- socio-economic, housing, population, urban and rural economy, hydrology, geology, disaster, environment, agriculture etc.

Objectives of the study:

- The aim of the policy review is to highlight the special features of the relevant legal documents.
- Point out necessary areas of intervention to make them effective facilitators for future regional development.
- Issue identification and attention that need for actions.

3.2 Terminology

Policy: A policy is a deliberate system of principles to guide decisions and achieve rational outcomes. A policy is a statement of intent, and is implemented as a procedure or protocol. The declared objectives that the government seeks to achieve and preserve in the interest of national community.

Law: Law is a system of rules that are enforced through social institutions to govern behavior. Laws can be made by a collective legislature or by a single legislator, resulting in statutes, by the executive through decrees and regulations, or by judges through binding precedent, normally in common law jurisdictions

Planning law must clearly define the extent and content of the rights of the Government and the people. Thus, legislative measures can help to frame policies for best use of land and its policies to control. Law should aim at a clear definition of the responsibilities and functions of various Government departments and its respective powers.

Act: An Act is the final form of any legislation passed by a legislature.

Sub-Regional Plan: Sub-Regional Plan of the study area would be prepared for 20 years according to the guidelines of national policies, formulated and integrated different sectoral strategies at sub regional level, spatially interpreted sectoral strategies at sub regional level, formulated Conservation Plan at sub regional level and formulated Development Plan.

It is also necessary to figure it out the economic disparity by using “shift-share analysis” or “input-output analysis” technique among the Upazila within districts under study for drawing the future socio-economic development scenario.

The sub-region may overlap local authority boundaries relating more to specific problems than administrative convenience. It is a more localized area with its own particular structure, problems and potentials.

Structure Plan: The term Structure Plan is derived from British planning practice but has been internationally adopted. The principal components of such a plan are:

- An inventory of existing physical, demographic, economic, and social and infrastructure features.
- An analysis of the major existing problems.
- An estimation of trends and changes likely in future (for the next 20 years).
- The identification of the major constraints on and opportunities for development.
- Consideration of the major development options and policies.
- An indication of the most suitable areas for such development.
- The identification of the priorities in each sector and the major activities needed to implement the development strategy.

The structure plan concentrates on the broad structure of the Upazila and is not concerned with the details of physical layout or individual development details which cannot be implemented until the later stages of the planning period.

Urban Area Plan: Urban Area Plan (UAP) provides an interim mid-term strategy for 10 years and covers for the development of urban areas within the project area. Generally, UAP contains an explanatory report, resource maps, interim management report, planning rules, urban area plan and a multi-sectoral investment program.

Rural Area Plan: Rural Area Plan (RAP) provides a long-term strategy for 20 years and covers for the development of rural areas within the project area. Generally, RAP contains an explanatory report, resource maps, conservation and management report, planning rules, rural area plan and a multi-sectoral investment program.

Action Area Plan: The Action Area Plan (AAP) guides land use and infrastructure within the area potential for immediate intervention based on public demand and necessity. It is prepared on 5 years interval. The preparation of Action Area Plan (AAP) will be formulated through participatory approach involving the local people. It will contains problem analysis using participatory approach, stakeholder analysis, Potential analysis (Basic and derived potentials), Identification of possible projects, Priority ranking of projects, Strategy formulation for prioritized projects. Action Area Plan will provide prioritized projects consisting location of project, goal & objectives, activities, tasks, actors, resources, cost and assumptions/constraints.

The action plan consists of three parts, a summary of resources available, project selection and project evaluation. The analysis of available resources looks at the past availability of funds, insofar as this is possible for such a recent institution as an Upazila and attempts to assess funds likely to be available for the Upazila itself for development in the action plan period.

3.3 Reviewed Policies, Acts and Rules

Policy document usually follows a staged approach for development. Identify specific issues that could trigger the need for a policy review or new policy development or an identification of policy gap. The list of reviewed policies, acts and rules are given below:

1. Climate Change Policies
2. The Sendai Framework for Disaster Risk Reduction 2015-2030
3. Quito Implementation Plan for the New Urban Agenda
4. Sustainable Development Goals (SDG)
5. The United Nations Framework Convention on Climate Change
6. Seventh Five Year Plan((FY2016 – FY2020)
7. National Urban Sector Policy, 2011
8. National Land Use Policy 2001
9. National Housing Policy, 2008 (Draft)
10. Population Policy 2004
11. National Environment Policy 1992
12. Disaster Management Act 2012
13. National Plan for Disaster Management 2008-2015
14. The Climate Change Strategy and Action Plan 2009
15. Industrial Policy 2005
16. National Tourism Policy 1992
17. National Agriculture Policy, 1999
18. National Forest Policy 1994
19. National Fisheries Policy 1998
20. National Water Policy 1999
21. Bangladesh National Building Code (BNBC) 1993
22. The Building Construction Act 1952
23. Building Construction Rules 1996
24. Private Residential Land Development Rule-2004
25. Real Estate Development and Management Act 2010
26. Burning of Bricks (Control) Act 1989
27. National policy for safe water supply and sanitation 1998

3.4 Policy Review according to Five Tier Plan wise

3.4.1 Framework of Five Tier plan

Among 22 policies, the policies are reviewed according to duration and strategy. So, according to duration and strategic point of view some policies are shortlisted.

Table 3.1: List of policies according to five tier plan

Five Tier Plan	Review policies
Sub-regional Plan	<ul style="list-style-type: none"> • Climate Change Policies • The Sendai Framework for Disaster Risk Reduction 2015-2030 • National Agriculture Policy 1999 • Climate Change Strategy 2009 • Disaster Management Act 2012 • National Plan for Disaster Management 2008-2015 • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • National Water policy 1999

	<ul style="list-style-type: none"> • Industrial Policy 2005 • National Urban Sector Policy 2011 • National Fisheries Policy 1998
Structure Plan	<ul style="list-style-type: none"> • Climate Change Policies • The Sendai Framework for Disaster Risk Reduction 2015-2030 • Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG) • The United Nations Framework Convention on Climate Change • National Agriculture Policy 1999 • Climate Change Strategy 2009 • National Plan for Disaster Management 2008-2015 • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • The Building Construction Act, 1952 • National Water policy 1999 • Industrial Policy 2005 • National Urban Sector Policy 2011 • National Fisheries Policy 1998
Urban Area Plan	<ul style="list-style-type: none"> • Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG) • Climate Change Strategy 2009 • National policy for safe water supply and sanitation 1998 • The Building Construction Act, 1952 • National Water policy 1999 • National Urban Sector Policy 2011 • Bangladesh National Building Code 1993
Rural Area Plan	<ul style="list-style-type: none"> • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • National Water policy 1999
Action Area Plan	<ul style="list-style-type: none"> • Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG) • National Agriculture Policy 1999 • Climate Change Strategy 2009 • National Plan for Disaster Management 2008-2015 • Population Policy 2004 • National policy for safe water supply and sanitation 1998 • The Building Construction Act, 1952 • National Water policy 1999 • Industrial Policy 2005 • Burning Bricks Act 1989 • National Urban Sector Policy 2011 • National Fisheries Policy 1998 • Seventh Five Year Plan

(To find the key issues please see the Appendix- A)

The issues or the key factors which identify in these policies according to five tier plan are listed in Appendix A.

3.5 Policy Review according to conducted Survey Sectors

In the project, the survey was conducted according to the following sectors:

- | | |
|--|--------------------------------------|
| 1. PRA (Participatory Rural Appraisal) | 7. Topographic Survey |
| 2. Socio-economic Survey | 8. Photogrammetric works Survey |
| 3. Agricultural Survey | 9. Traffic and Transportation Survey |
| 4. Formal-informal Economic Survey | 10. Geological & geophysical Survey |
| 5. Physical Features Survey | 11. Hydrological Survey |
| 6. Landuse Survey | |

But in the policy review from the 11 sectors, some sectors are merged as they are identified as same category. So as per the benefits of policy review and for the asperity of work, the sectors are categorized. And same policies are reviewed in different sectors so to remove repeatness, the sectors are categorized.

Table 3.2: Sectors are categorized as per policy review

Sectors	Agriculture
	PRA and Socio-Economic, Formal-informal Economic Sector
	Geology
	Hydrology
	Transport
	Physical, Landuse and Topographic Features

Table 3.3: Summary of Policies according to sectors

Sector Wise Policy list					
Agriculture Sector	PRA and Socio-Economic Formal-informal Sector	Physical, Landuse and Topographic Features	Geology	Hydrology	Transport
1. National Agriculture Policy 1999 2. Climate Change Strategy 2009 3. National Plan for Disaster Management 2008-2015 4. Population Policy 2004 5. Safe Water Supply and Sanitation 1998 6. National Water policy 1999 7. Seventh Five Year Plan 8. National Environment Policy 1992 9. Industrial Policy 2005 10. National Urban Sector Policy 2011 11. The United Nations Framework Convention on Climate Change	1. National Agriculture Policy 1999 2. Climate Change Strategy 2009 3. Disaster Management Act 2012 4. National Plan for Disaster Management 2008-2015 5. Population Policy 2004 6. Safe Water Supply and Sanitation 1998 7. National Water policy 1999 8. Industrial Policy 2005 9. National Urban Sector Policy 2011 10. Seventh Five Year Plan(FY2016 – FY2020) • Quito Implementation Plan for the New Urban Agenda • Sustainable Development Goals (SDG)	1. National Agriculture Policy 1999 2. Climate Change Strategy 2009 3. National Plan for Disaster Management 2008-2015 4. Population Policy 2004 5. The Building Construction Act, 1952 6. National Water policy 1999 7. Industrial Policy 2005 8. Burning Bricks Act 1989 9. National Urban Sector Policy 2011 10. National Fisheries Policy 1998 11. Seventh Five Year Plan (FY2016 – FY2020)	1. Climate Change Strategy 2009 2. National Plan for Disaster Management 2008-2015 • The Sendai Framework for Disaster Risk Reduction 2015-2030 3. The United Nations Framework Convention on Climate Change	1. Population Policy 2004 2. National Water policy 1999 3. National Urban Sector Policy 2011 4. National Fisheries Policy 1998 • Climate Change Policies 5. The United Nations Framework Convention on Climate Change	1. Population Policy 2004

(To find the key issues please see the Appendix- B)

Among the 26 policies, the sectors are identified. So, here is the summary of the sectors which are identified among the policies.

Table 3.4: Summary of sectors according to policies

Policy	Sector
National Agriculture Policy 1999	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
Climate Change Strategy 2009	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology
Disaster Management Act 2012	<ul style="list-style-type: none"> • Formal-informal Sector
National Plan for Disaster Management 2008-2015	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology
Population Policy 2004	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Transport • Hydrology
Safe Water Supply and Sanitation 1998	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector
The Building Construction Act,1952	<ul style="list-style-type: none"> • Physical, Landuse and Topographic Features
National Water policy 1999	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Hydrology
Industrial Policy 2005	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Formal-informal Sector
Burning Bricks Act 1989	<ul style="list-style-type: none"> • Physical, Landuse and Topographic Features
National Urban Sector Policy 2011	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Formal-informal Sector • Physical, Landuse and Topographic Features • Hydrology
National Fisheries Policy 1998	<ul style="list-style-type: none"> • Physical, Landuse and Topographic Features

	<ul style="list-style-type: none"> • Hydrology
Seventh Five Year Plan(FY2016 – FY2020)	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
National Land Use Policy 2001	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Hydrology • Transport
Climate Change Policies	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology • Hydrology
The Sendai Framework for Disaster Risk Reduction 2015-2030	<ul style="list-style-type: none"> • Agriculture • Physical, Landuse and Topographic Features • Geology • Hydrology
Quito Implementation Plan for the New Urban Agenda	<ul style="list-style-type: none"> • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features
Sustainable Development Goals	<ul style="list-style-type: none"> • Agriculture • PRA and Socio-Economic Formal-informal Economic Sector • Physical, Landuse and Topographic Features • Geology • Hydrology
The United Nations Framework Convention on Climate Change	<ul style="list-style-type: none"> • Agriculture • Geology • Hydrology

(To find the key issues please see the Appendix- B)

3.6 Planning Standard Review

Facilities and services are the main features of a development plan. Depending on the demand and population projection facilities and services are calculated. For this purpose planning standard is formulated for this specific project.

3.7 Components of Planning Standard

SITE density includes only the residential component of the land area. It is the most concentrated measure of density.

NET residential density includes the residential component plus local roads.

GROSS residential density includes residential uses, local roads plus local non-residential land uses such as parks and schools.

URBAN residential density includes all the above land uses plus regional land uses such as employment, transport and regional open space.

METROPOLITAN density is a macro measure, often used in international comparisons and includes all land (i.e. including non-urbanised land within what are often arbitrary administrative boundaries)

Use of Density Measures

- Estimate the intensity of built form on a particular site or a place.
- Model the impacts of development standards.
- Keep track of how well a development is performing against the original ‘vision’.
- Calculate population densities.

Working with Density Measures

- Density measures are only indicators, not design tools
- The ‘right’ density evolves over time
- Higher density does not always equal higher buildings
- Higher net residential density does not always equal more people
- The same building type can yield different net residential densities
- Density is not intensity

3.8 Formulation of Planning Standard

Table 3.5: Recommended Standard for Major Land Uses

Types of Land Uses	Recommended Standard
1. Residential	
General residential	150 persons/1 acre
Real Estate-Public/Private	200 population/ 1 acre
2. Roads	
Upazila primary roads	70 feet and above
Upazila secondary roads	40feet
Upazila local/Tertiary roads	32 feet
Access Road	20 feet
3.Education	
Nursery	0.5 acre/10,000 population
Primary School/ kindergarten	2.00 acres/5000 population
Secondary/High School	5.00 acres /20,000 population
College	10.00 acres/20,000 population
Vocational Training Centre	5 - 10 acres / Upazila
Other	5.00 acres / 20,000 population
4.Open Space	
Play field/ground	3.00 acres/20,000 population
Park	1.00 acre /10000 population
Neighborhood park	1.00 acre /10000 population
5. Recreational	
Stadium/sports complex	5 – 10 acres/Upazila HQ

Types of Land Uses	Recommended Standard
Cinema/ Theatre	1.0 acre /20,000 population
6. Health	
Upazila health complex	10 -20 acres/Upazila HQ
health centre/Maternity clinic	1.00 acre/ 5,000 population
7. Community Facilities	
Mosque/Church/Temple	0.5 acre /20,000 population
Eidgah	1.0 acre/20,000 population
Graveyard	1.00 acre /20,000 population
Community centre	1.00 acre /20,000 population
Police Station	3 – 5 acres/Upazila HQ
Police Box/outpost	0.5 acre/ per box
Fire Station	1.00 acre/ 20,000 population
Post office	0.5 acre /20,000 population
8. Utilities	
Water supply	1.00 acre /20,000 population
Gas	1.00 acre /20,000 population
Solid waste disposal site	5– 10 acres/Upazila HQ
Waste transfer station	0.25 acres/per waste transfer station
Electric sub-station	1.00 acre/20,000 population
Telephone exchange	0.5 acre/20,000 population
Fuel Station	0.5 acre/20,000 population
Others	-
9. Commerce and Shopping	
Wholesale market	1.0 acres/ 10000 population
retail sale market	1.0 acres/ 1000 population
Corner shops	0.25 acre/per corner shop
Neighborhood market	1.00 acre/per neighborhood market
Super Market	1.50 – 2.50 acres/per super market
10. Industry	
small scale	1.50 acres /1000 population
Heavy Industry	5.0 acres /10000 population
11. Transportation	
Bus terminal	1.0 acre /20,000 population
Truck terminal	0.50 acre /20,000 population
Launch/steamer terminal	1.00 acre /20,000 population
Rickshaw/van/Tempoo stand	0.25 acre /one baby taxi/tempo stand
Passenger Shed	0.25 acre /one baby taxi/tempo stand
Others	-
12. Administration/Govt. Service	
Upazila complex	10-15.00 acres
Paurashava office	3 – 5 acres
Others	-

3.9 Residential Density Control

Residential density can be measured in five ways: site, net, gross, urban and metropolitan. All five residential density measures are calculated using the same basic ratio formula: the number of dwellings divided by the area of land they occupy.

Table 3.6 Residential Standard

Public Sector Housing Site/Estate	Private Sector Housing Site/Estate	Neighbourhood Size	Rural/Scattered Housing Area
Calculate the Gross and Net density	Calculate the Gross and Net density	Calculate the Housing UnitShow the FAR aspectsDetermine the maximum and minimum area size	

Public Sector Housing Estate

It is proposed that all public-sector housing estates should develop 55% for residential area and reserve at least 45% of its area for community service facilities including road. Density of public sector is determined in the following manner:

Assuming that,

- ✓ There is 2 units in each floor of each 3 katha plot (Comfortable housing with respect of our country) area on average,
- ✓ Each building having maximum 3 storied in height (If the distance is 7.6 meter to 10.59 meter between front side road and mandatory open space of the building, the height of the building will be maximum 9.50 meter, Building Construction Rules, 1996)
- ✓ 6 families will be living in each 3 katha,
- ✓ Total population in each 3 katha will be (Average household size is 4.9 in BagmaraUpazila, converting to 5 as average H/H size): $5 \times 6 = 30$ persons,
- ✓ Net density per acre $(30 \div 3 \times 55) = 550$ persons,
- ✓ Assuming 55 acres as net residential area of a 100 acre residential area estate,
- ✓ Total population of the housing area: $55 \times 550 = 30,250$,
- ✓ Gross density of public sector housing area $(30250 \div 100) = 302$ persons/acre.

GROSS RESIDENTIAL DENSITY/ACRE: 302 persons

NET RESIDENTIAL DENSITY/ACRE: 550 persons

Means of Implementation: incorporation of density standard as rules under Section 18 of EBBC Act, 1952.

Private Sector Housing Estate-Cooperative and Commercial

Due to profit motive of the private housing companies it would be difficult to achieve the same density standard as suggested for public sector housing estates. The amount of saleable land percentage is 60% and minimum land for services and facilities can be fixed at 40%. This would give following gross and net densities for privately organized housing estates:

Assuming that,

- ✓ 2 units in each floor of each 3 katha plot on average,
- ✓ each building having 3 storied in height,
- ✓ 6 families living (2×3) in each 3 katha,

- ✓ total population in each 3 katha (assuming 5 as average family size): $5 \times 6 = 30$ persons,
- ✓ net residential density per acre ($30 \div 3 \times 60$) = 600 persons
- ✓ gross residential density can be calculated as follows:
- ✓ assuming 60 acre as net residential area of a 100 acre residential area estate,
- ✓ Total population of the area: $60 \times 600 = 36000$ persons.
- ✓ Gross residential density of the private organized housing area: $36000 \div 100 = 360$ persons/acre.

GROSS RESIDENTIAL DENSITY/ACRE: 360 persons

NET RESIDENTIAL DENSITY/ACRE: 600 persons

Neighbourhood Size

According to the Private Residential Land Development Rule, 2004, the following issues have to be considered:

- There will be minimum 5 acres land for development of private residential land in Dhaka City Corporation Area and outside of City Corporation and Pourashava there will be minimum 10 acres land.
- There will be gross density maximum 350/acre for the development of private residential land.
- Maximum 70% area of the total land are allowable to sell and 30% of the land will be preserved for providing civic facilities and utility facilities according to the private residential development rule, 2004.

Limit all public and private sector housing estates (plot) units to 50 acres maximum and minimum 5 acres for Urban Area and 10 acres for Rural Area.

This would give an estimated maximum population size of 15,100 persons (at 302 persons /acre gross density) for public sector housing estates and 18,000 persons (at 360 persons / acre gross density) for private sector housing estates including cooperative housing.

Housing Unit Calculation

Given,

1 acre = 43,560 square feet (sq. ft.) and 20 units/acre as a minimum density

Example Plot Size = 5,000 sq. ft. plot

$$\text{Plot Size} = \frac{\text{Total Land}}{\text{Desired Unit}}$$

$$= \frac{43560}{20} = 2178 \text{ sq. ft.} \approx 2160 \text{ sq. ft.}$$

Example Plot Size	Plot Size	Allowable Unit	Round up to
5000	2160	2.31	2
7500		3.47	4
10000		4.63	5

The thresholds for whole units at 20 units per acre are as follows:

2160 sq. ft. == 1 unit

4320 sq. ft. = 2 units

6480 sq. ft. = 3 units

1 acre = 43,560 square feet (sq. ft.) and 30 units/acre as a minimum density

Example Plot Size = 5,000 sq. ft. plot

$$\text{Plot Size} = \frac{\text{Total Land}}{\text{Desired Unit}}$$

$$= \frac{43560}{30} = 1452 \text{ sq. ft.} \approx 1450 \text{ sq. ft.}$$

Example Plot Size	Plot Size	Allowable Unit	Round up to
5000	1450	3.45	4
7500		5.17	5
10000		6.90	7

The thresholds for whole units at 20 units per acre are as follows:

1450 sq. ft. = 1 unit

2900 sq. ft. = 2 units

4350 sq. ft. = 3 units

Building Construction Rules for Density Control

Section 12(1) of Building Construction Rules, 1996 sets a formula for building height determination based on the width of the front road. This rule imposes a limit on the building height as long as the front road is less than 75 ft. (22.87 meter). Indirectly this limits the number of family or the size of population in a building.

Building Height

According to the Building Construction Rules (1996), the maximum height of a building will not be more than the summation of front side road width and the mandatory open space between road and building site. According to the law, the following decisions can be summarized.

Distance between Front side road and space of the building	Building's Highest Height (meter)
7. 60-10.59 m	9.5 m
10. 60-13.59m	12. 50m
13. 60-16.59m	15.50m

According to the rules, the building's height doesn't less than the above values, if the width of adjacent road of the site tends to the following conditions, the estimated building's height will be the correspondent value according to the following table.

Width of the Road of Adjacent Site	Building's Highest Height (meter)
4.55-7.59m	18.50m
7.60-10.66m	27. 50m
10. 67-15.24m	42.50m
15.25-22.99m	60.50m

Chapter 4

Development Planning Issues in Bagmara Upazila

4.1 Introduction

This is the summary of the information based on the existing conditions of the development and planning issues, which is to be considered in the planning and development processes of Bagmara Upazila. These are the issues that connect the decision making in setting proposals for future urban development.

4.2 Physical Infrastructure

The survey on Physical feature shows in detail that residential structures are mostly developed in core potential areas. The information collected from the survey that about 27.33 % of the structures are kacha, 63.62 % are semi-pucca and 8.98 % are pucca respectively.

Table 4.1: Existing Structure Type of Bagmara Upazila

Structure Type	No. of Structures	Percentage
Katcha	17055	27.33%
Semi-Pucca	39703	63.62%
Pucca	5604	8.98%
Under Construction	48	0.08%
Total	62410	100%

(Source: Field Survey, 2017)

However, the Bagmara Upazila has lack of central park, only the educational institution has playgrounds. Road is one of the significant physical features of an area. The information collected from survey shows that the total length of the road in that Upazila is 691.34 km. It is also stated that about 24.15% of the road is kacha and 69.30% of the road is pucca and the rest are semi-pucca.

Table 4.2: Existing Road Type of Bagmara Upazila

Road Type	Length in Km.	Percentage
Kacha	166.96	24.15%
HBB	45.32	6.55%
Pucca	479.06	69.30%
Total	691.34	100%

(Source: Field Survey, 2017)

The Upazila has no proper canal structure that is required to control the water flow. As a result the Upazila is facing drainage problems. The study shows that the Upazila has many unplanned infrastructures such as bridges and culverts. These structures which are built in an improper manner can also be a reason for the drainage problems.

4.3 Socio –Economic

Bagmara Upazila (Rajshahi district) with an area of 363.30 sq km, is bounded by Manda and Atrai upazilas on the north, Durgapur, Puthia and Natoesadar upazilas on the south, Atrai and Natoesadar upazilas on the east, Mohanpur upazila on the west. Noted rivers: Barani and Fakinni. The location of Bagmara town is 24.5812092N 88.8201768E. Bagmara (Town) located at Bwabaniganj, stands on the

bank of the river Fakinni. The area of the town is 3.84 sq km. The town has a population of 16289; male 51.13%, female 48.87%. Density of population is 4242 per sq km. Literacy rate among the town people is 40%. Bagmarathana, now an upazila, was established in 1963. The upazila consists of one municipality (Taherpur), 15 union parishads, 292 mouzas, and 362 villages. Archaeological heritage and relics: Remnants of old palaces at Taherpur, Khaira, Goal Kandi, Machmoil and Birkutsha villages. Historical events: The famous poet Kritibas translated the Ramayana in mid fifteenth century under the patronage of King Kangsanarayan, the founder of Taherpur. The Saradia Durga Puja was observed at Taherpur for the first time in the Indian Subcontinent under the endeavour of King Kangshnarayan. As of the 1991 Bangladesh census, Population 282520; male 50.01%, female 49.99%; Muslim 94.43%, Hindu 5.49%, others 0.08%; ethnic nationals santal 106 families. Religious institutions Mosque 705, temple 65, tomb 6 most noted of which are Taherpur Bara Mosque. Literacy and educational institutions: Average literacy 22.9%; male 32.5%, female 13.3%. Educational institution: College 16, secondary school 59, madrasa 83, government primary school 104, non-government primary school 106. Noted educational institution: Birkutsa Abinash High School (1917). Main occupations Agriculture 62.99%, livestock farming and fishing 2.38%, agricultural laborer 17.13%, wage laborer 1.43%, commerce 7.25%, service 2.34%, others 5.04%. Land use Total cultivable land 26940.51 hectares; single crop 39%, double crop 42%, treble crop 19%; cultivable land under irrigation 85%. Land control Among the peasants 32% are landless, 29% small, 28% intermediate, 11% rich; cultivable land per head 0.10 hectare. Fisheries, dairies, poultries Dairy 45, poultry 35, hatchery 5. Communication facilities Roads: pucca 92 km, semi pucca 12 km and mud road 585 km. Manufactories Ice factory 10, welding 25. Cottage industries Weaving 18, bamboo works 214, cane work 76, goldsmith 336, blacksmith 89, potteries 144, wood work 152, and tailoring 312. NGO activities operationally important NGOs are Brac, Asa, Grameen bank, Proshika. Then Mahila Sabuj Sangha, Jatiya Tarun Sangha, Abas Society. Health centres, Upazila health complex 1, Family welfare centre 10, and Satellite clinic 6. (Source: BBS-2011)

Bagmara has two economic activities which are mentioned below:

- The major formal types of economic activities in Bagmara are: (1) Cold storage; (2) Cottage Industry; (3) Food Processing; (4) Ice Cream factory (5) Poultry farm (6) Rice and Flour Mill (7) Workshop.
- Informal economic sector covers a lot of activities. The major formal types of economic activities in Bagmara are: (1) Fish farm; (2) Furniture making; (3) Saw mills; (4) Poultry; (5) Poultry & Fish farm. Various type of fixed salable items like food, fish, nuts, coconut, vegetables, daily household items, old cloth / garment, repairing of household gadgets, electronic items repairing, hair cutting, shoe polishing, etc. are considered as informal economic activities.

4.4 Existing Land use

The information depicted from the survey shows that 58611.48 acres of the land is used for agriculture and 16316 acres of land is used for residential. The existing land uses of all study areas have been presented on **Table 4.1**

Table 4.3: Existing Land use of Bagmara Upazila

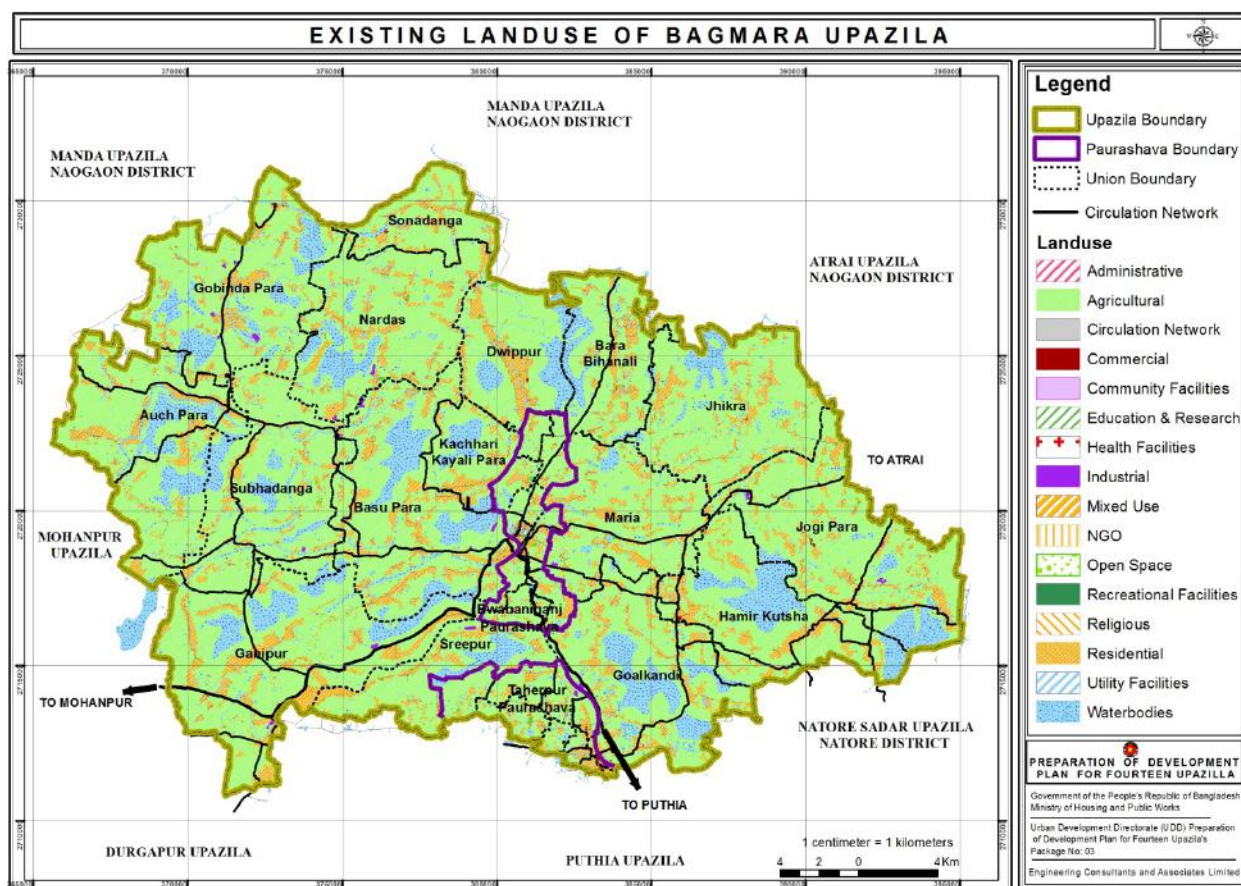
Land use	Area in Acres	Area in Sq.km
Administrative	26.46	0.107072
Agricultural	58611.48	231.192252

Commercial	164.12	0.664175
Community Facilities	0.39	0.001594
Education & Research	61.28	0.247976
Health Facilities	2.63	0.01066
Industrial	6.96	0.028185
Miscellaneous	0.50	0.002008
Mixed Use	14.86	0.060136
NGO	0.51	0.002046
Recreational Facilities	0.14	0.00056
Religious	8.55	0.034616
Residential	16316.24	66.029498
Utility Facilities	0.91	0.003689
Water bodies	15502.78	62.737509
Circulation Network	495.50	2.00523
Total	91213.32	363.13

Source: Estimated by Consultants, 2018.

The information collected from the survey is shown below:

- 16316.24 acre areas have been used for residential purposes, to build house, orphanage, residential quarters, rest house, slum etc.
- The land is also used for Commercial purposes such as katcha bazar, market and others. About 164.12 acre of the land is used as commercial area.
- 26.46 acre of the land in that area is used for Administrative facilities. It is used to build Government Office, Non-Government Offices, etc. Paurashava area comprises the highest amount of administrative land.
- 6.96 acre of the land is used for industrialization.

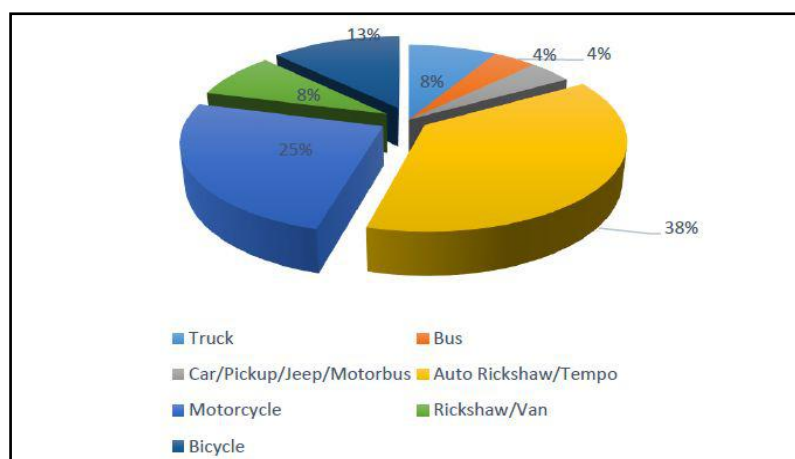


Map 4.1: Existing Land use of BagmaraUpazila

4.5 Transportation

Traffic and Transportation system is the backbone or mirror of an Upazila. It describes about the prospects of an Upazila. For preparation of a Development Plan, Transport is the prime issue for resolving different problems. For knowing different issues and problems, several surveys have been selected for depicting the perfect scenario of the Upazila. To know the different scenario the consultants have conducted a number of surveys on traffic and transportation which are as follows:

- Traffic Volume Count Survey
- Origin & Destination (O D) Survey
- Passenger Interview Survey and
- Regional Transportation Survey

**Map 4.1: Types of Mode**

Source: Traffic and Transportation Survey, 2016

The pie chart shows that the available modes which are roaming in this upazila and their percentages of usages. There are 7 types of mode of transport in this area. People use them according to their convenience. 38% people choose auto/rickshaw/tempo to reach to their destinations and it is the highest demanding mode in this area. The second one is Motorcycle which is 25%. They use it to travel to nearby areas. 8% use Rickshaw, 13% bicycle, 8% truck, only 4% car/pickup/jeep/motorbus and Bus. These modes are used depending on need of the passengers such as they can be used for shopping purpose, education purpose, business purpose, etc.

4.6 Participatory Rural Appraisal (PRA)

Participatory Rural Appraisal (PRA) is considered one of the popular and effective procedure to incorporate the knowledge and opinions of people in the planning and management of development projects and programs. In recent years there has been rapid expansion of new participatory reflection and action methods and related approaches in the context of development and research. PRA methods are now increasingly used in both Rural and Urban situations. Three tools were selected such as Social Mapping, Venn diagram and Technology of Participation for collecting information from the field.

Table 4.4: Union wise PRA Demand of Bagmara Upazila

Union/Ward	Problems	Potentials
Auchpara Union	<ul style="list-style-type: none"> ➤ Communication ➤ Pure drinking water ➤ Drainage problem ➤ Education ➤ Unemployment 	<ul style="list-style-type: none"> ➤ Agricultural land ➤ Fruit garden ➤ Cattle farming ➤ Fish farming ➤ Active manpower
Basu Para Union	<ul style="list-style-type: none"> ➤ Communication ➤ Pure drinking water ➤ Agricultural problem ➤ Educational infrastructure ➤ Health service 	<ul style="list-style-type: none"> ➤ Agricultural land ➤ Educated people ➤ Cattle farming ➤ Fish farming ➤ Farmer
Bara Bihanali Union	<ul style="list-style-type: none"> ➤ Communication ➤ Health Facilities ➤ Water Logging ➤ Electricity ➤ Child Marriage 	<ul style="list-style-type: none"> ➤ Agriculture ➤ Fisheries ➤ Livestock & Fisheries ➤ Hat-Bazar ➤ Man power

Dwippur Union	<ul style="list-style-type: none"> ➤ Communication ➤ Health Facilities ➤ Water Logging ➤ Electricity ➤ Child Marriage 	<ul style="list-style-type: none"> ➤ Agriculture ➤ Fisheries ➤ Livestock & Fisheries ➤ Hat-Bazar ➤ Man power
Goalkandi Union	<ul style="list-style-type: none"> ➤ Polder ➤ Communication ➤ Pure Drinking water ➤ Agricultural Instruments ➤ Health Complex lacking 	<ul style="list-style-type: none"> ➤ Beel ➤ Agricultural Land ➤ Fisheries ➤ Active Manpower ➤ Livestock
Gabindapara Union	<ul style="list-style-type: none"> ➤ Communication ➤ Electricity ➤ Pure Drinking Water ➤ Modern Education ➤ Agriculture 	<ul style="list-style-type: none"> ➤ Agricultural Land ➤ Active Manpower ➤ Livestock & Fisheries ➤ Educational Institutions ➤ Hat-Bazar
Gonipur Union	<ul style="list-style-type: none"> ➤ Communication ➤ Pure Drinking Water ➤ Electricity ➤ Education ➤ Health 	<ul style="list-style-type: none"> ➤ Bettle leaf ➤ Agriculture ➤ Fisheries ➤ Livestock ➤ Hat-Bazar
Hamirkutsha Union	<ul style="list-style-type: none"> ➤ Communication ➤ Health Facilities ➤ Water Logging ➤ Electricity ➤ Child Marriage 	<ul style="list-style-type: none"> ➤ Agriculture ➤ Fisheries ➤ Livestock ➤ Hat-Bazar ➤ Man Power
Jhikra Union	<ul style="list-style-type: none"> ➤ Communication ➤ Electricity ➤ Water Logging ➤ Health Facilities ➤ Industry Lacking 	<ul style="list-style-type: none"> ➤ Agriculture Land ➤ Fisheries ➤ Livestock ➤ Hat-Bazar ➤ Fruits & Forest
Jogipara Union	<ul style="list-style-type: none"> ➤ Communication ➤ Pure Drinking Water ➤ Drainage Problem ➤ Education ➤ Unemployment 	<ul style="list-style-type: none"> ➤ Agriculture Land ➤ Fruit Garden ➤ Cattle Farming ➤ Fish Farming ➤ Active Manpower
Kachari Kayalipara Union	<ul style="list-style-type: none"> ➤ Communication ➤ Electricity ➤ Educational Institute ➤ Health Facilities ➤ River Digging 	<ul style="list-style-type: none"> ➤ Agriculture ➤ Fisheries ➤ Livestock ➤ Adeqate River ➤ Man Power
Maria Union	<ul style="list-style-type: none"> ➤ Communication ➤ Agricultural Facilities ➤ Health Facilities ➤ Residential ➤ Agriculture 	<ul style="list-style-type: none"> ➤ Agriculture Land ➤ Fruit Garden ➤ Cattle Farming ➤ Fish Farming ➤ Active Manpower
Nordas Union	<ul style="list-style-type: none"> ➤ Communication ➤ Pure Drinking Water ➤ Drainage Problem ➤ Education ➤ Unemployment 	<ul style="list-style-type: none"> ➤ Agriculture Land ➤ Fruit Garden ➤ Cattle Farming ➤ Fish Farming ➤ Active Manpower

Sonadanga Union	<ul style="list-style-type: none"> ➤ Communication ➤ Water Logging ➤ Education ➤ Agricultural Facilities ➤ Electricity & Fuel 	<ul style="list-style-type: none"> ➤ Agriculture ➤ Fruit Garden ➤ Manpower ➤ Livestock & Fisheries ➤ Hat-Bazar
Sreepur Union	<ul style="list-style-type: none"> ➤ Communication ➤ Agricultural Facilities ➤ Health Facilities ➤ Residential ➤ Agriculture 	<ul style="list-style-type: none"> ➤ Agriculture Land ➤ Fruit Garden ➤ Cattle Farming ➤ Fish Farming ➤ Active Manpower
Subhadanga Union	<ul style="list-style-type: none"> ➤ Communication ➤ Agricultural Facilities ➤ Health Facilities ➤ Residential ➤ Agriculture 	<ul style="list-style-type: none"> ➤ Agriculture Land ➤ Educated Person ➤ Cattle Farming ➤ Fish Farming ➤ Active Manpower
Bwabanigonj Pourashava Ward No. 01	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 02	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 03	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 04	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 05	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 06	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City

Bwabanigonj Pourashava Ward No. 07	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 08	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Bwabanigonj Pourashava Ward No. 09	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 01	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 02	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 03	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 04	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 05	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand Main Road in City
Taherpur Pourashava Ward No. 06	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City

Taherpur Pourashava Ward No. 07	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 08	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City
Taherpur Pourashava Ward No. 09	<ul style="list-style-type: none"> ➤ Shortage of Pure Drinking Water ➤ Road Broken ➤ Water Logging ➤ Unemployment to Women ➤ Problem of Drug addiction & Entertainment 	<ul style="list-style-type: none"> ➤ River ➤ Children Park ➤ Natural Cannel ➤ Bus Stand ➤ Main Road in City

4.6.1 Finding of PRA

The key findings of PRA study are:

- ❖ From the social mapping, it is evident that Taherpur & Bhawanigonj Paurashava and all 16 unions of Bagmara Upazila are having almost common problems. All the problems or issues indicated or identified by the local skilled persons with the spatial location of the issues.
- ❖ Most of the participants have participated in order to identify the problems and prioritized the problems with causes, impact and potentials. Poor communication system, Lack of Drainage System, Lack of pure drinking water, Water logging, Child Marriage and Unemployment problems services are the common problems in all locations. Again, Lack of good Educational infrastructure, Health Facilities, River Dredging, Electricity, and Agricultural Facilities are also identified as their less important problems. Among all the study areas, Taherpur & Bhawanigonj Paurashava are also suffering from Poor transportation system, Drug Addiction, problem, Unemployment, Water logging and so on.
- ❖ From the opinions of local people, almost all unions of Bagmara Upazila are suffering from communication problems, scarcity of pure drinking water, Drainage problem, and educational problems. All the study areas' employment systems and education systems are very poor. All the study areas' have scarcity of pure drinking water and are experiencing serious water logging problems. There is a limitations of improved health services, modern hospital, experienced doctor and other medical facilities in all the areas. In the context of health facilities, all the areas are suffering most. Again the people also spoke about Lack of electricity and Drug Addiction as their less prominent problems.
- ❖ The local inhabitants also identify the potentials of the respective area which may be used as resources during planning. Most of the participants mentioned Agricultural land, Availability of manpower, River, Natural Channel, Fish farming as their main potential to development among all the identified potentials.
- ❖ The participants have demanded the development in many aspects which needs to be fulfilled for improving their lifestyle as well as environment. The demands are not same for all the areas and sometime the demands are asked by more than one participant. It is found that, most of the demands are concentrated in the communication, education, sanitation, health service,

drainage, safe water and electricity, waterlogging, unemployment found almost all the area. On the other hand employment, river dredging, child Marriage and agricultural problem are asked by few people from a few unions.

4.7 Geological Analysis

An extensive geo-scientific investigation is one of the fundamental prerequisite for any sustainable infrastructural development initiative. In this context, a systematic study including geological, geophysical, geotechnical study was done in the proposed project area. The study report would be useful for planning, designing and future maintenance of the project area. Moreover, the current study would also be beneficial for the planners as well as the concerned authorities to take relevant decisions pertaining to disaster risk reduction and mitigation. Keeping those in mind, prior to any sort of infrastructural development in the area the current study is an inevitable component of the project.

In this study, following investigations and surveys has been carried out into the field which are geomorphological survey; drilling of boreholes and preparation of borehole logs; collection of undisturbed and disturbed soil sample as per standard guide line; conducting standard penetration tests (SPTs); drilling of boreholes and casing by PVC pipe for conducting PS logging test (Down-hole seismic test); conducting PS logging test (Down-hole seismic test) and conducting Multi-Channel Analysis of Surface Wave (MASW). Geomorphologic conditions of the study area are covered by floodplain and elevated Pleistocene trace with some low or marshy land. Geologically and structurally the area is not much complex, that's why geotechnical and geophysical investigations are covered whole floodplain and elevated Pleistocene trace area except low or marshy land and almost everywhere soils are clay and recent fluvial type of deposit which are much soft and thicker. These field and technical laboratory data were analyzed to produce risk sensitive micro-zonation maps of the project area.

Surface geology

The study area is characterized by relatively flat terrain comprising of floodplain deposits (Alluvial Sand, Alluvial Silt & Clay) throughout the area as shown in the Error! Reference source not found.. A surface geological map of the area exemplifies the physiographic features of the terrain and also reveals the geological attributes. The surface geological map units are the litho-genetic units that ultimately reflect the surface lithology as well as the physical processes involved in the geological evolution of the study area. Table depicts the surface geological (geomorphological) classification of the study area based on litho-genetic category, with a brief lithological description.

Table 4.5: Surface geological map units and lithological characteristics for each unit in the study

Litho-Genetic Category	Map Unit	Detail Description
Floodplain Deposits	Alluvial Silt	Alluvium or alluvial deposits are loose, unconsolidated sediments, which has been eroded, reshaped by water in some form, and re-deposited in a non-marine setting. Alluvial deposits are usually most extensive in the lower part of a river's course, forming floodplains and deltas. Alluvium is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel. When alluvial deposits are primarily consists of silt size particles the deposit is termed as alluvial silt. Silt, sediment particles ranging from 0.004 to 0.06 mm (0.00016 to 0.0024 inch) in diameter irrespective of mineral type. Silt is easily transported by moving currents but settles in still water. An unconsolidated aggregate of silt particles is also termed silt, whereas a consolidated aggregate is called siltstone
	Alluvial Sand	Alluvium or alluvial deposits are loose, unconsolidated sediments, which has been eroded, reshaped by water in some form, and re-deposited in a non-marine setting. Alluvial deposits are usually most extensive in the lower part of a river's course, forming floodplains and deltas. Alluvium is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel. When alluvial deposits are primarily consists of sand size particles the deposit is termed as alluvial sand. Sand, sediment particles ranging from 0.06mm to 2mm in diameter irrespective of mineral type. The most common component of sand is silicon dioxide in the form of quartz. Sand is easily transported by moving currents and wind and settles where the energy of wind and current is low. An unconsolidated aggregate of sand particles is also termed sand, whereas a consolidated aggregate is called sandstone
	Alluvial Silt & Clay	Clay particles are with diameters less than 0.005 mm and rocks that is composed essentially of clay particles. Rock in this sense includes soils, ceramic clays, clay shales, mudstones etc. The term alluvial silt & clay are used for loose, unconsolidated sediments, which has been eroded, reshaped by water in some form, and re-deposited in a non-marine setting where both silt and clay size particles are dominated. Alluvial deposits are usually most extensive in the lower part of a river's course, forming floodplains and deltas.

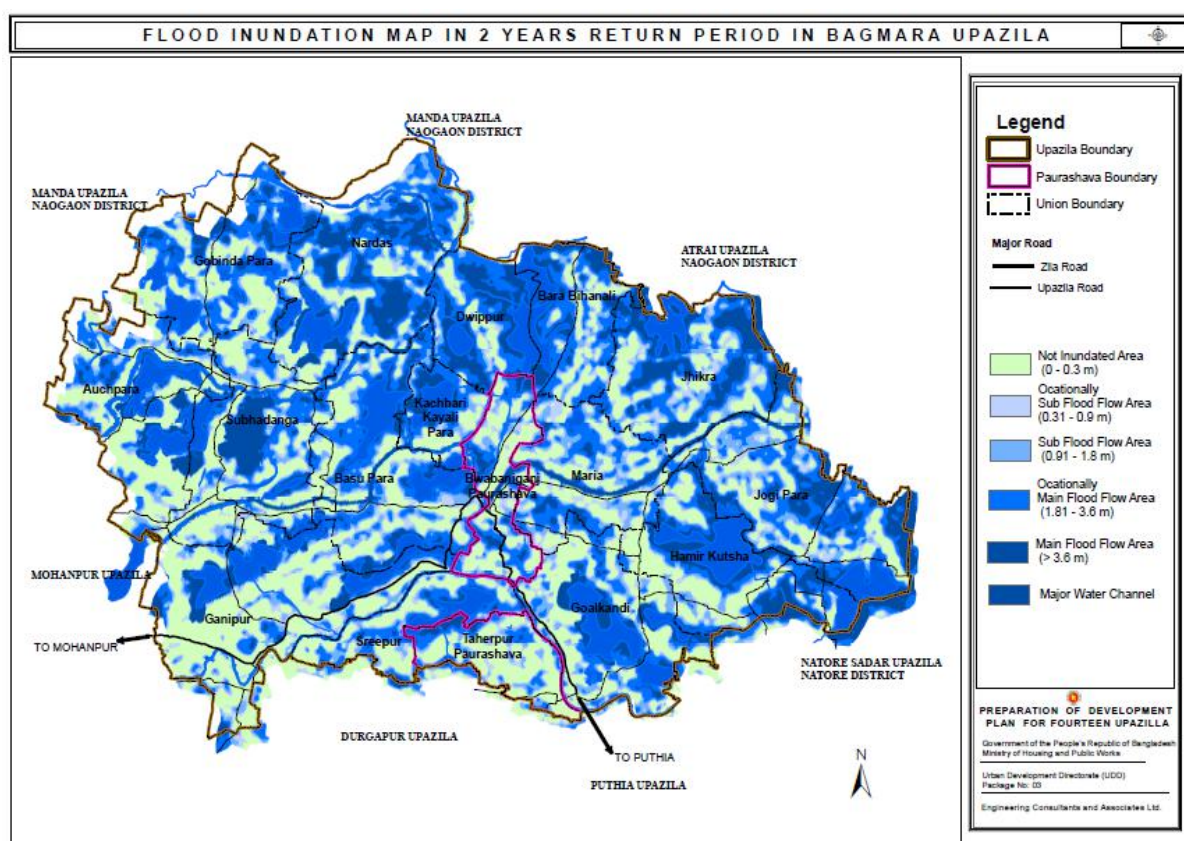
4.8 Hydrology Analysis

As the Bagmara Upazila is the land of beel, the major portion of the upazila in the zone of main flood flow and occasionally flood flow zone. Around 48% percent area is under flood flow zone. Beside

this, 22% area is in sub flood flow zone and only 22% area is not inundated. So, Hydrological context is very important in Bagmara development Plan and for the frequent flood affected condition the flood flow zoning map must be a great concern for development plan.

Table 4.6: Different Flooding Scenario

Flooded Land Category	Water Depth	Percentage area	Remarks
1st Degree Flooded area	0-0.3m	28%	Not Inundated Area
2nd Degree Flooded area	0.31-0.9m	9%	Ocationally Sub Flood Flow Area
3rd Degree Flooded area	0.91-1.8m	13%	Sub Flood Flow Area
4th Degree Flooded area	1.81-3.6m	22%	Ocationally Main Flood Flow Area
5th Degree Flooded area	>3.6m	27%	Main Flood Flow Area



Map 4.2: Flood Inundation Map in 2 Years Return Period in Bagmara Upazila

4.9 Population Growth and Projection

The growth of population and the physical expansions of the town or Upazila are interrelated. To accommodate the growing population, new areas are required not only for residence but also for other functions like commerce, road network, service facilities etc. The population projection has been estimated by taking into account both the natural increase of existing population and the balance between migrations in and out of the Upazila.

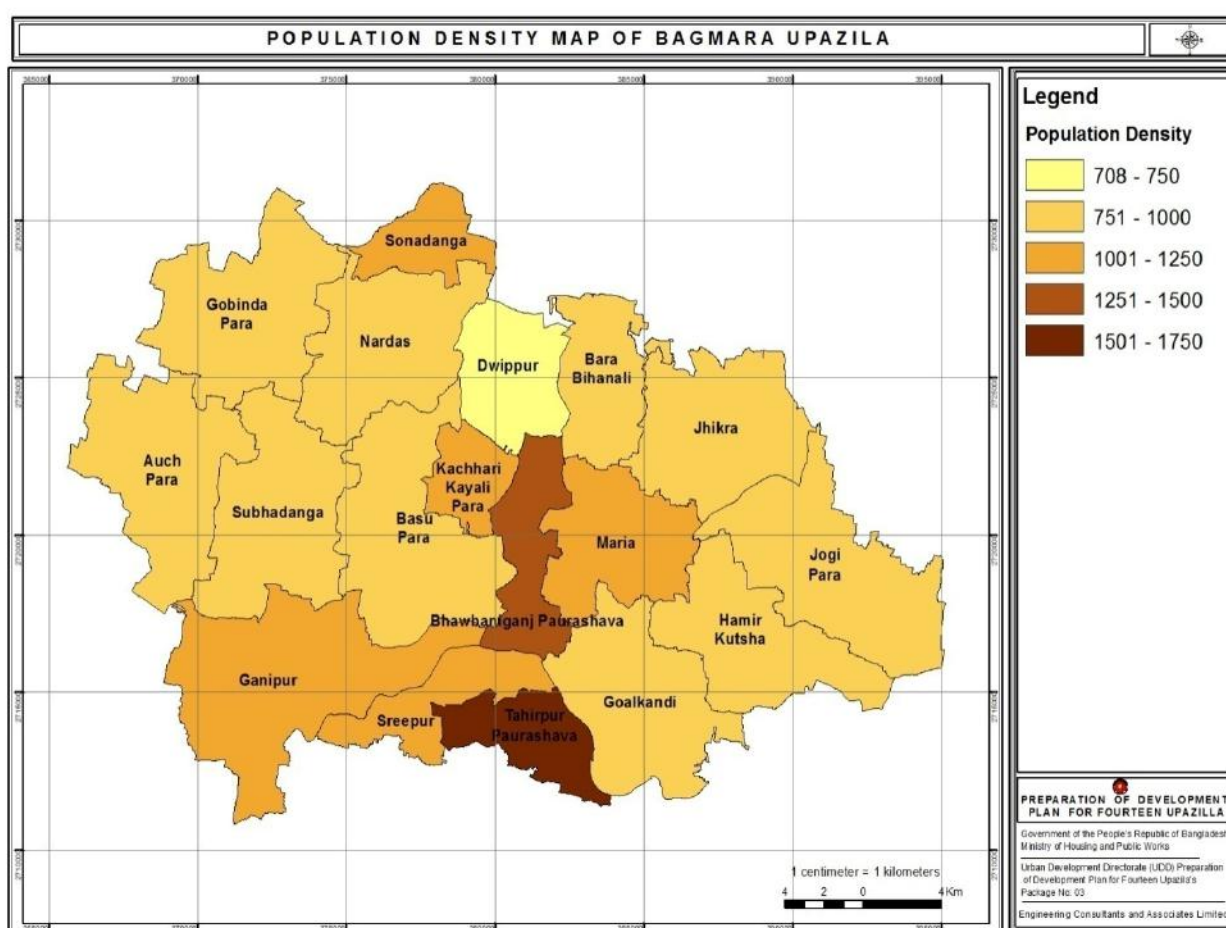
4.9.1 Projection of Population

BagmaraUpazila is now growing in diverse sites and its development will be flourished in near future. The recent compound annual growth rate of BagmaraUpazila is 1.08%. For the projection of future population in BagmaraUpazila, medium growth rate which is 1.28% has been determined for Urban, Suburban and Rural areas and the projected results are summarized in below tables respectively Urban, Suburban and Rural Areas.

Table 4.7: Projected Population according to the Urban, rural and Suburban Area

Area Type	Year Based Projected Population				
	2011(Base Year)	2018	2023	2028	2033
BagmaraUpazila (Total)	354664	387689	413144	440271	481267
BagmaraUpazila Rural	316450	345916	368629	392833	429412
BagmaraUpazila Urban	35899	39242	41818	44564	48714
BagmaraUpazila Other Urban	2315	2531	2697	2874	3141

Source: Projected by Planning Team Based on BBS, 1991-2011.



Map 4.3: Population Density Map of Bagmara Upazila (2033)

Table 4.8: Union wise projected population of Bagmara Upazila

Unions	Base Year Population (BBS,2011)	Projected Population (Consider Medium Growth Rate, 1.28%) 2033
Auch Para	26685	36211
Bara Bihanali	12571	17058
Basu Para	26943	36561
Dwippur	9852	13369
Goalkandi	24275	32940
Gobinda Para	22707	30813
Ganipur	36469	49487
Hamir Kutsha	19817	26891
Jhikra	22026	29889
Jogipara	24830	33693
Kachari Kayali Para	7509	10189
Maria	19487	26443
Nardas	19528	26499
Sonadanga	8684	11784
Sreepur	11789	15997
Shubhadanga	25593	34729
Bhawaniganj paurashava	17955	24364
Taherpur paurashava	17944	24349

4.10 Demand Analysis

According to population projection in project time period, the different facilities and its number is analyzed. By considering existing facility and needed facility the final proposal has distributed among the unions and paurashva. For this analysis the planning standard and projected population is the main basis for the future proposal distribution.

Table 4.9: Union and Ward wise PRA Findings of Bagmara Upazila

Union/ Paurashava	Facilities	Population Standard	Projected Population (2033)	Required Facilities	Existing Facilities
Bhabaniganj Paurashava	Primary School/ kindergarten	5000	24364	5	4
	Secondary/High School	20000	24364	1	3
	College	20000	24364	1	3
	Neighborhood park	10000	24364	2	1
	Health center	5000	24364	5	5
Taherpur Paurashava	Primary School/ kindergarten	5000	24349	5	4
	Secondary/High School	20000	24349	1	4
	College	20000	24349	1	3
	Neighborhood park	10000	24349	2	0
	Health center	5000	24349	5	4
Auch Para	Primary School/ kindergarten	5000	36211	7	14
	Secondary/High School	20000	36211	2	6
	College	20000	36211	2	3

Union/ Paurashava	Facilities	Population Standard	Projected Population (2033)	Required Facilities	Existing Facilities
	Neighborhood park	10000	36211	4	0
	Health center	5000	36211	7	5
Bara Bihanali	Primary School/ kindergarten	5000	17058	3	0
	Secondary/High School	20000	17058	1	4
	College	20000	17058	1	0
	Neighborhood park	10000	17058	2	0
	Health center	5000	17058	3	0
Basu Para Union	Primary School/ kindergarten	5000	36561	7	2
	Secondary/High School	20000	36561	2	1
	College	20000	36561	2	1
	Neighborhood park	10000	36561	4	0
	Health center	5000	36561	7	3
Dwippur Union	Primary School/ kindergarten	5000	13369	3	7
	Secondary/High School	20000	13369	1	3
	College	20000	13369	1	0
	Neighborhood park	10000	13369	1	0
	Health center	5000	13369	3	0
Goalkandi Union	Primary School/ kindergarten	5000	32940	7	12
	Secondary/High School	20000	32940	2	2
	College	20000	32940	2	0
	Neighborhood park	10000	32940	3	0
	Health center	5000	32940	7	2
Gobinda Para Union	Primary School/ kindergarten	5000	30813	6	16
	Secondary/High School	20000	30813	2	4
	College	20000	30813	2	2
	Neighborhood park	10000	30813	3	0
	Health center	5000	30813	6	0
Ganipur Union	Primary School/ kindergarten	5000	49487	10	4
	Secondary/High School	20000	49487	2	5
	College	20000	49487	2	3
	Neighborhood park	10000	49487	5	0
	Health center	5000	49487	10	0
Hamir Kutsha Union	Primary School/ kindergarten	5000	26891	5	10
	Secondary/High School	20000	26891	1	2
	College	20000	26891	1	0
	Neighborhood park	10000	26891	3	0
	Health center	5000	26891	5	0
Jhikra Union	Primary School/ kindergarten	5000	29889	6	15
	Secondary/High School	20000	29889	1	4
	College	20000	29889	1	1
	Neighborhood park	10000	29889	3	0
	Health center	5000	29889	6	0
Jogi Para	Primary School/ kindergarten	5000	33693	7	7

Union/ Paurashava	Facilities	Population Standard	Projected Population (2033)	Required Facilities	Existing Facilities
Union	Secondary/High School	20000	33693	2	4
	College	20000	33693	2	2
	Neighborhood park	10000	33693	3	1
	Health center	5000	33693	7	1
Kachhari Kayali Para Union	Primary School/ kindergarten	5000	10189	2	2
	Secondary/High School	20000	10189	1	1
	College	20000	10189	1	1
	Neighborhood park	10000	10189	1	0
Maria Union	Health center	5000	10189	2	0
	Primary School/ kindergarten	5000	26443	5	9
	Secondary/High School	20000	26443	1	8
	College	20000	26443	1	1
	Neighborhood park	10000	26443	3	0
Nardas Union	Health center	5000	26443	5	1
	Primary School/ kindergarten	5000	26499	5	2
	Secondary/High School	20000	26499	1	2
	College	20000	26499	1	1
	Neighborhood park	10000	26499	3	0
Sonadanga Union	Health center	5000	26499	5	0
	Primary School/ kindergarten	5000	11784	2	5
	Secondary/High School	20000	11784	1	2
	College	20000	11784	1	1
	Neighborhood park	10000	11784	1	0
Sreepur Union	Health center	5000	11784	2	0
	Primary School/ kindergarten	5000	15997	3	2
	Secondary/High School	20000	15997	1	1
	College	20000	15997	1	1
	Neighborhood park	10000	15997	2	0
Subhadanga Union	Health center	5000	15997	3	1
	Primary School/ kindergarten	5000	34729	7	11
	Secondary/High School	20000	34729	2	2
	College	20000	34729	2	2
	Neighborhood park	10000	34729	3	0
Subhadanga Union	Health center	5000	34729	7	0

4.11: Demand Analysis for Urban residential

4.11.1 Taherpur Paurashava

By the building footprint analysis and average plot area for each household the future urban residential area has analyzed here and future demand for urban area is demarked. In 2011, the population of Taherpur Paurashava is 25500 and for the project time in 2033, the population will be 36799. With an estimation of average household need for five people per household, the demand of

the household number in 2033 is 7360. And according to present condition (2011) the household no is 5100. So required household no in project period is $(7360-5100) = 2260$.

Table 4.10: Ward Wise Demand for Urban Residential Area in Taherpur Paurashava

Population Pourashava 2011	Population Pourashava 2033	Poura Household 2011	Poura Household need 2033	Required Household no	Required per Plot Area(sq ft)	Net Building Foot Print Area (acre)	Gross Residential Area (acre)
17944	24349	3589	4870	1281	2067	61	122

In the paurashava the numbers of pucca structures are 1968 and the average building footprint area is 978 sq. ft. By considering, the building will occupy the 60% area of the plot area; the average plot area will be 1630 sq.ft per household. So net building foot print area is $(\text{Required Household No} * \text{Average Plot Area}) = (2260 * 1630) = 85 \text{ Acre}$. For calculating gross residential area the other facilities and roads must be considered. By considering everything the gross area should be two times of the net building Area. So the gross residential area for the Taherpur Paurashava will be 169 acre.

According to building footprint Area, The needed residential area and remaining residential area among the ward:

Table 4.11: Ward Wise Demand for Urban Residential Area in Taherpur Paurashava

Ward No	Population 2011	Population 2033	Structure No	Popn. Per Str 2011	Popn. Per Str 2033	Pucca Structure No	Building Foot print Area	Existing Floor Area (acre)	Existing Residential Area(acre)
Ward No-01	3329	4442	406	3.90	5.29	38	1240	12	21
Ward No-02	2497	3332	522	3.96	5.38	39		15	78
Ward No-03	5625	7506	428	3.57	4.84	41		12	68
Ward No-04	2967	3959	390	4.46	6.06	51		11	66
Ward No-05	3019	4025	481	3.22	4.37	62		14	62
Ward No-06	3094	4129	421	3.00	4.07	40		12	78
Ward No-07	3971	5299	523	6.57	8.92	62		15	127
Ward No-08	4968	6623	612	4.16	5.65	103		17	116
Ward No-09	3171	4227	432	5.15	6.99	85		12	72
Total			4215			521		120	687

4.11.2 Bhawaniganj Paurashava

By the building footprint analysis and average plot area for each household the future urban residential area has analyzed here and future demand for urban area is demarked. In 2011, the population of Bhawaniganj Paurashava is 25500 and for the project time in 2033, the population will be 36799. With an estimation of average household need for five people per household, the demand of the household number in 2033 is 7360. And according to present condition (2011) the household no is 5100. So required household no in project period is $(7360-5100) = 2260$.

Table 4.12: Ward Wise Demand for Urban Residential Area in Bhwaniganj Paurashava

Population Pourashava 2011	Population Pourashava 2033	Poura Household 2011	Poura_Household need 2033	Required Household no	Required per Plot Area(sq ft)	Net Building Foot Print Area (acre)	Gross Residential Area (acre)
17955	24364	3591	4873	1282	2108	62	124

In the paurashava the numbers of pucca structures are 1968 and the average building footprint area is 978 sq. ft. By considering, the building will occupy the 60% area of the plot area; the average plot area will be 1630 sq.ft per household. So net building foot print area is (Required Household No* Average Plot Area) = (2260*1630) = 85 Acre. For calculating gross residential area the other facilities and roads must be considered. By considering everything the gross area should be two times of the net building Area. So the gross residential area for the Bhawaniganj Paurashava will be 169 acre.

According to building footprint Area, The needed residential area and remaining residential area among the ward:

Table 4.13: Ward Wise Demand for Urban Residential Area in Bhawaniganj Paurashava

Ward No	Population 2011	Population 2033	Structure No	Popn. Per Str 2011	Popn. Per Str 2033	Pucca Structure No	Building Foot print Area	Existing Floor Area (acre)	Existing Residential Area(acre)
Ward No-01	1634	2217	419	3.90	5.29	10	1265	12	47
Ward No-02	1664	2258	420	3.96	5.38	57		12	85
Ward No-03	1937	2628	543	3.57	4.84	33		16	69
Ward No-04	1607	2181	360	4.46	6.06	43		10	52
Ward No-05	2137	2900	663	3.22	4.37	203		19	29
Ward No-06	2911	3950	970	3.00	4.07	301		28	129
Ward No-07	2168	2942	330	6.57	8.92	64		10	54
Ward No-08	1753	2379	421	4.16	5.65	39		12	120
Ward No-09	2144	2909	416	5.15	6.99	36		12	89
Total			4542			786		132	674

CHAPTER 05

Technical Process of Plan Preparation

5.1 Introduction

In this chapter the formulation of thematic maps has been described. The survey outputs are incorporated in order to produce specific maps of Bagmara Upazila. Through this process the existing land use, physical features, agricultural situation, flooding scenario, geological factors and other related facts are portrayed into maps.

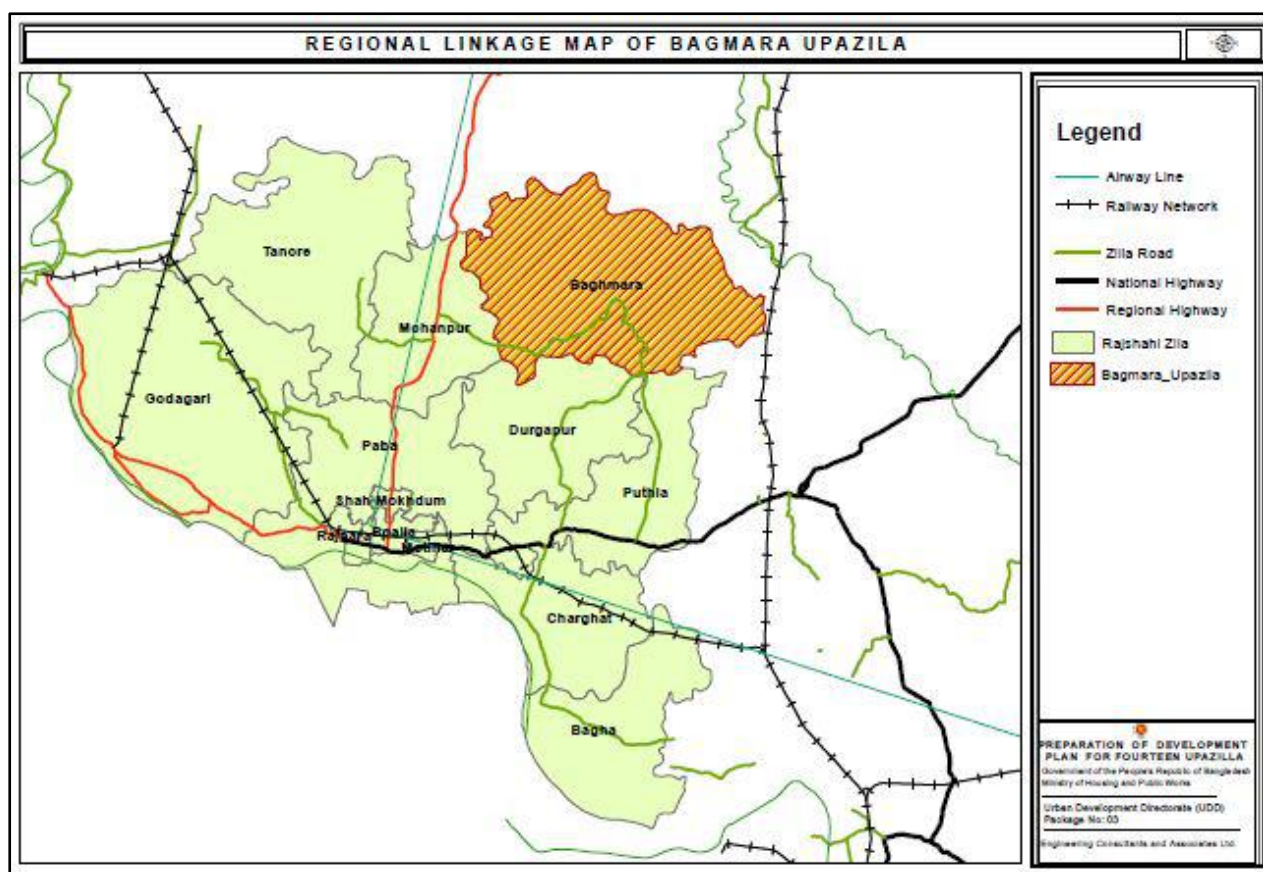
5.2 Formulation of Thematic Maps

During the survey stage 11 types survey has been conducted. Which are: PRA, Socio-Economic survey, Formal-Informal survey, Agricultural survey, Transportation survey, Physical Feature survey, Land use survey, Topographic survey, Geological & Geo-physical survey and Hydrological survey. Each survey has distinct output. These outputs are presented in the form of thematic maps. Here is a list of thematic maps:

- Slope
- DEM
- Geological-Geo-physical survey
 - PGA
 - Shear wave
 - Foundation depth
 - Microzonation map
- Land use survey
 - Existing Land use plan
- Physical-Feature survey
 - Existing road network in terms of type
 - Existing road network in terms of width
 - Existing Structure type
- Agricultural Survey
 - Cropping Intensity map
- Hydrological Survey
 - Flooding Scenario map
 - Main and Sub Flood Flow Zone map

5.2.1 Connectivity

Bagmara Upazila has great significance in the context of road network. Bagmara Upazila is directly connected with Mohonpur, Durgapur and Puthia through the zila road. This zila road also covers Godagari, Poba, Shahmokhdum, Rajpara, Boalia Charchat and Bagha. The regional highway doesn't cover Bagmara Upazila. It covers Godagari, Poba, Shahmokhdum, Rajpara, Boalia and Mohanpur. There is no railway network in Bagmara Upazila. Railway network passes by the outside of Bagmara Upazila area.



Source: Prepared by Consultant Team

Map 5.1: Regional Linkage Map of BagmaraUpazila

5.2.2 Existing Physical Feature

5.2.2.1 Road Network according to Type

From the Physical feature survey the road network of the study area has been summarized in the Table 6.3. From the survey it is found that there are total 166.96 km roads are Katcha, 45.32 km roads are HBB and 479.06 km roads are pucca road.

Table 5.1: Existing Roads of BagmaraUpazila

Road Type	Length in Km.	Percentage
Katcha	166.96	24.15%
HBB	45.32	6.55%
Pucca	479.06	69.30%
Total	691.34	100%

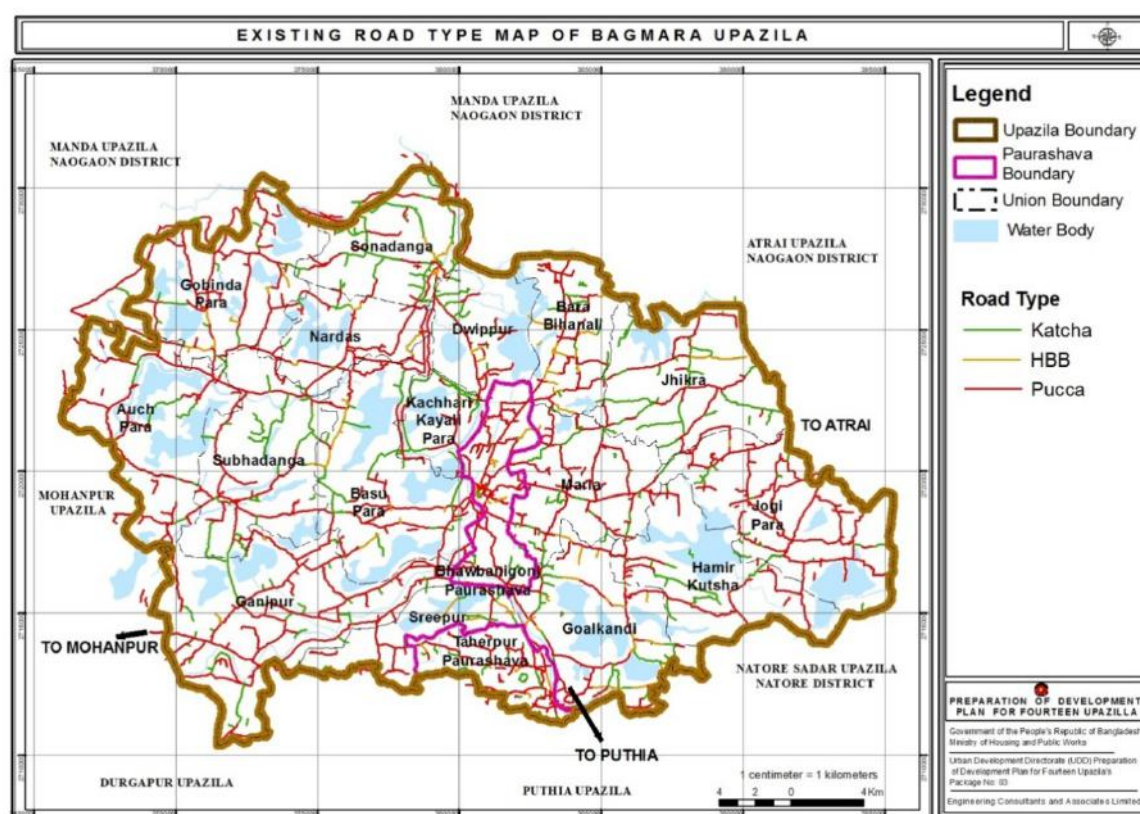
Source: Estimated by the Consultants, 2017

Table 5.2: Union Wise Existing Roads of BagmaraUpazila

Type	Union	Area
HBB	Auch Para	1.13
Katcha	Auch Para	5.27
Pucca	Auch Para	29.65
HBB	Bara Bihanali	6.82

Type	Union	Area
Katcha	Bara Bihanali	3.87
Pucca	Bara Bihanali	18.49
HBB	Basu Para	5.82
Katcha	Basu Para	13.00
Pucca	Basu Para	34.79
HBB	Bwabanigonj Paurashava	3.44
Katcha	Bwabanigonj Paurashava	4.15
Pucca	Bwabanigonj Paurashava	31.72
HBB	Dwippur	1.88
Katcha	Dwippur	8.27
Pucca	Dwippur	15.47
HBB	Ganipur	1.13
Katcha	Ganipur	13.15
Pucca	Ganipur	46.50
HBB	Goalkandi	8.64
Katcha	Goalkandi	9.67
Pucca	Goalkandi	23.97
HBB	Gobinda Para	3.09
Katcha	Gobinda Para	5.60
Pucca	Gobinda Para	35.47
Katcha	Hamir Kutsha	8.80
Pucca	Hamir Kutsha	19.67
HBB	Jhikra	2.02
Katcha	Jhikra	17.90
Pucca	Jhikra	16.86
Katcha	Jhikra	0.00
Pucca	Jhikra	0.00
HBB	Jogi Para	0.26
Katcha	Jogi Para	7.57
Pucca	Jogi Para	44.24
HBB	Kachhari Kayali Para	0.26
Katcha	Kachhari Kayali Para	7.58
Pucca	Kachhari Kayali Para	7.07
HBB	Maria	1.17
Katcha	Maria	7.88
Pucca	Maria	30.64
HBB	Nardas	3.13
Katcha	Nardas	12.41
Pucca	Nardas	24.09
Katcha	Nardas	0.00
Pucca	Nardas	0.00
HBB	Sonadanga	0.05
Katcha	Sonadanga	9.37

Type	Union	Area
Pucca	Sonadanga	8.45
HBB	Sreepur	1.66
Katcha	Sreepur	3.89
Pucca	Sreepur	15.97
Katcha	Subhadanga	15.52
Pucca	Subhadanga	28.09
HBB	Taherpur Paurashava	3.67
Katcha	Taherpur Paurashava	4.74
Pucca	Taherpur Paurashava	21.62



Source: Prepared by Consultant Team Based on Field Survey, 2017

Map 5.2: Existing Road Type Map of BagmaraUpazila

5.2.2.2 Road Network according to Hierarchy

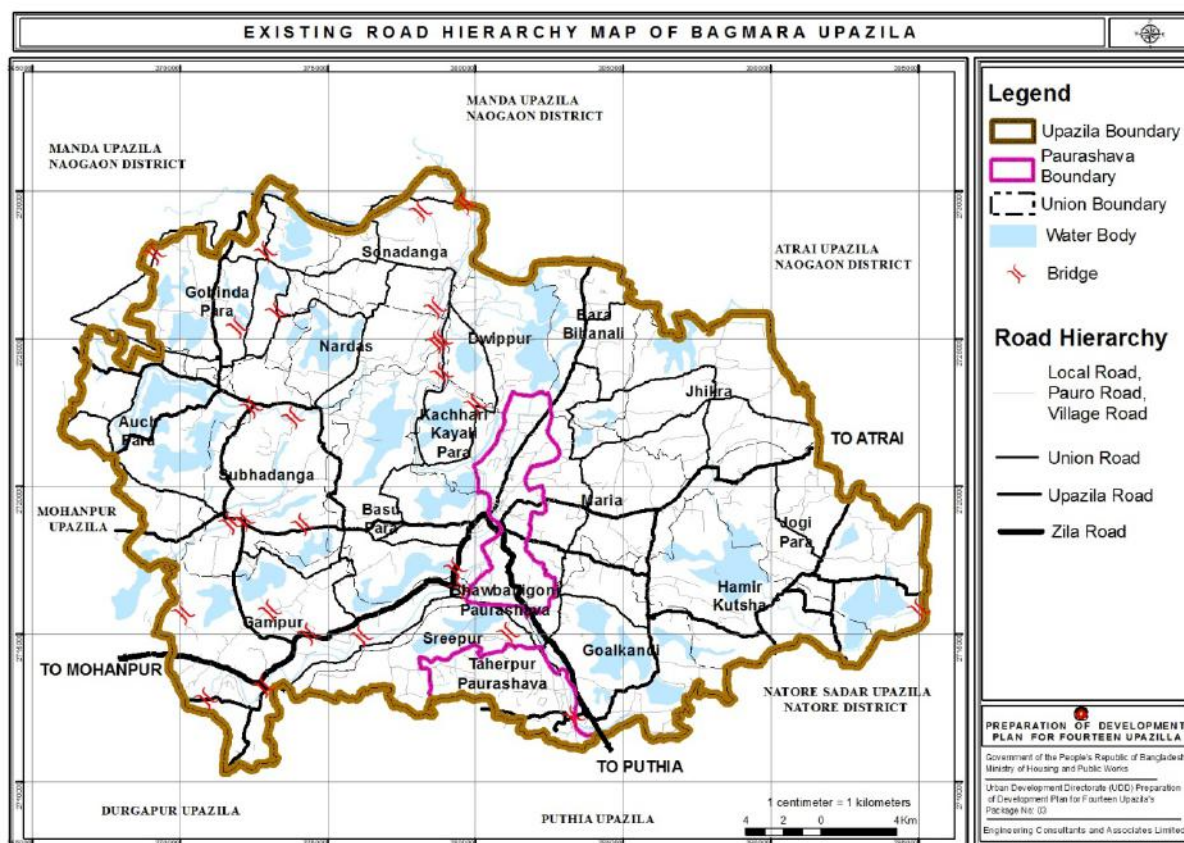
About 6 types of road hierarchy have been found in BagmaraUpazila. Most of the roads are village road both in terms of number and length. The Road hierarchy condition has been shown in the following table.

Table 5.3: Road Hierarchy of BagmaraUpazila

Road Hierarchy	Length in Km.	Percentage
Local Road	14.07	2.03%
Paura Road	41.75	6.02%

Union Road	152.14	21.93%
Upazila Road	123.95	17.87%
Village Road	338.57	48.80%
Zilla Road	23.35	3.36%
Total	693.83	100.00%

Source: Estimated by the Consultants, 2017



Source: Prepared by Consultant Team Based on Field Survey, 2017

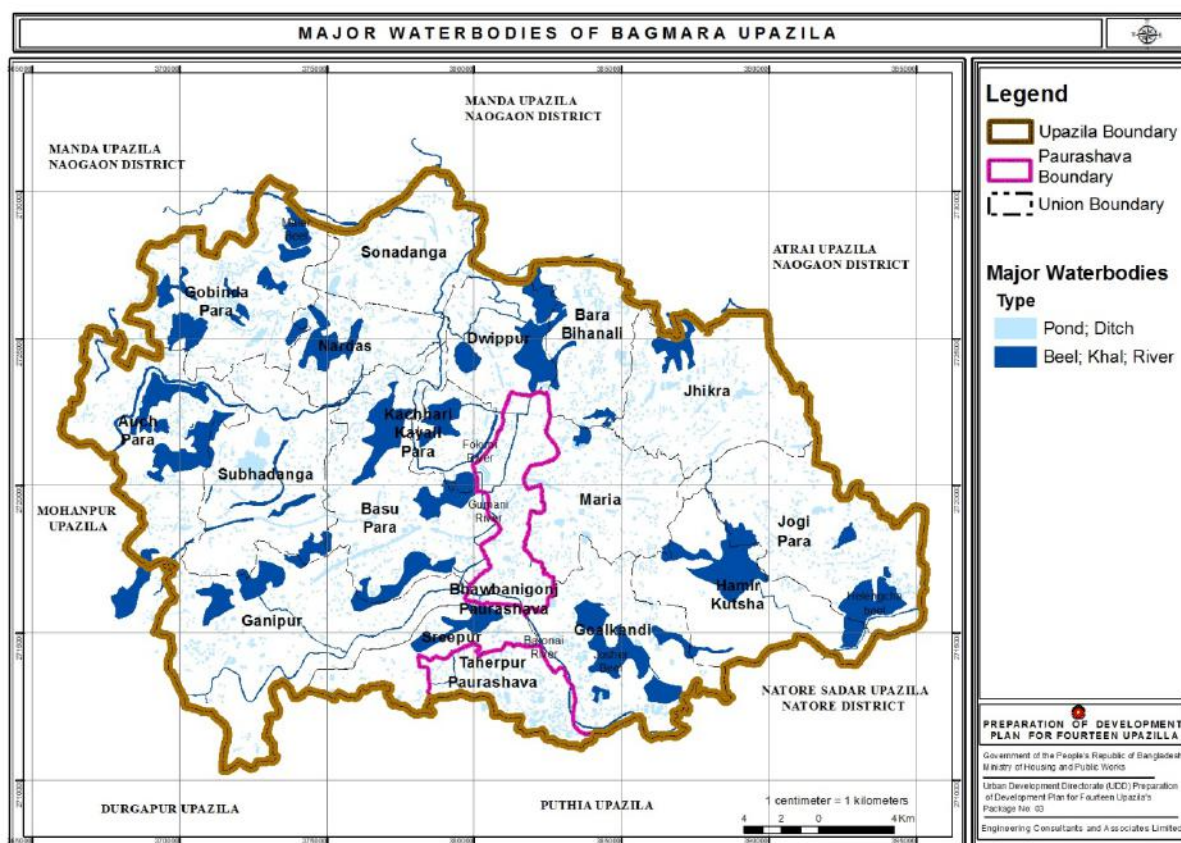
Map 5.3: Existing Road Hierarchy Map of BagmaraUpazila

5.2.2.3 Waterbody

Table 5.4: Existing waterbody

TYPE	Area(sq. km)	Area (Acre)
Beel	39.80841	9836.873
Ditch	0.446421	110.3129
Gher	0.253309	62.59399
khal	3.71843	918.8441
Pond	15.81288	3907.448
River	1.333224	329.4469

Source: Field Survey, 2016



Source: Prepared by Consultant Team Based on Field Survey, 2017

Map 5.4: Major Waterbodies of BagmaraUpazila

5.2.2.4 Structure type

According to the interpretation of satellite image and field survey there are 55968 structures found within the BagmaraUpazila. Among them 30353 are katcha, 11369 are pucca and 14246 are semi-pucca. The statistic has been shown in the Table 6.4.

Table 5.5: Structure Type in BagmaraUpazila

Structure Type	No. of Structures	Percentage
Katcha	17055	27.33%
Semi Pucca	39703	63.62%
Pucca	5604	8.98%
Under Construction	48	0.08%
Total	62410	100%

Source: Field Survey, 2016

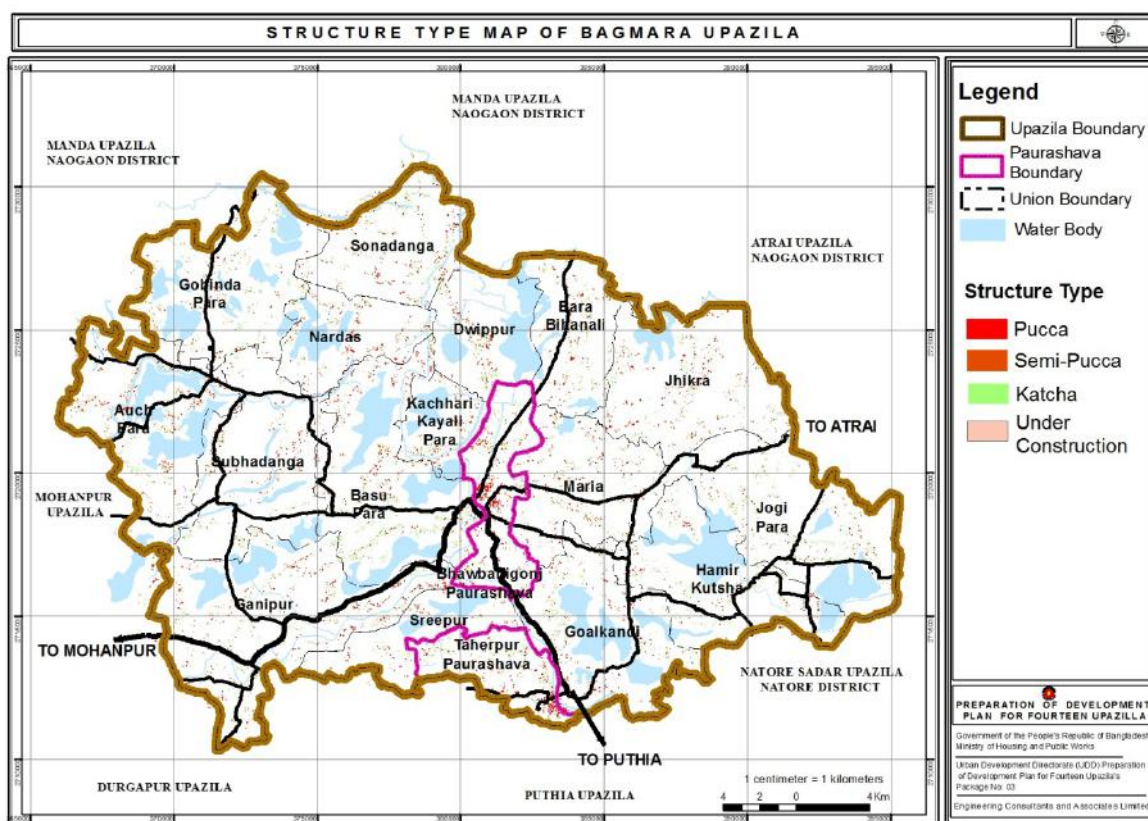
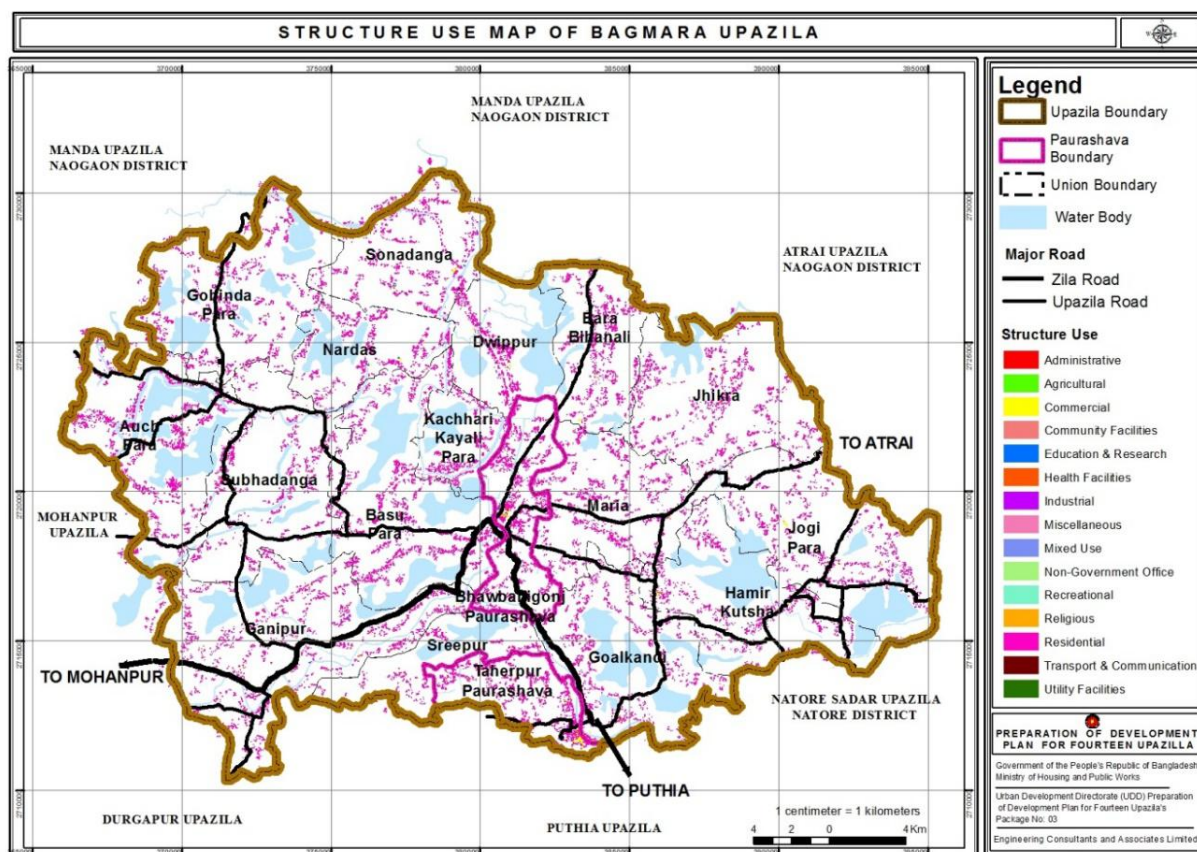


Table 5.6: Structure Use of Bagmara Upazila

Structure Use	No. of Structures
Administrative	123
Agricultural	70
Commercial	1982
Community Facilities	2
Education and Research	220
Health Facilities	22
Industrial	34
Miscellaneous	37
Mixed Use	60
Non-Government Services	21
Recreational Facilities	2
Religious	97
Residential	59723
Transportation Facilities	9
Utility Facilities	8

Source: Estimated by the Consultants, 2017



Map 5.6: Structure Use Map of BagmaraUpazila

5.2.2.5 Structure Type TaherpurPaurashava

According to the interpretation of satellite image and field survey there are 4146 structures within the Taherpur Paurashava. Among them 1058 are katcha, 564 are pucca and 2506 are semi-pucca. The statistic has been shown below in the table:

Table 5.7: Structure Type in TaherpurPaurashava

Structure Type	No. of Structures	Percentage
Katcha	1058	25.52%
Semi Pucca	2506	60.44%
Pucca	564	13.60%
Under Construction	18	0.43%
Total	4146	100%

Source: Field Survey, 2016

5.2.2.6 Structure Type in Bwabanigonj Paurashava

According to the interpretation of satellite image and field survey there are 5330 structures within the BwabanigonjPaurashava. Among them 843 are katcha, 862 are pucca and 3622 are semi-pucca. The statistic has been shown below in the table:

Table 5.8: Structure Type in BwabanigonjPaurashava

Structure Type	No. of Structures	Percentage
Katcha	843	15.82%
Semi Pucca	3622	67.95%
Pucca	862	16.17%
Under Construction	3	0.06%
Total	5330	100%

Source: Field Survey, 2016

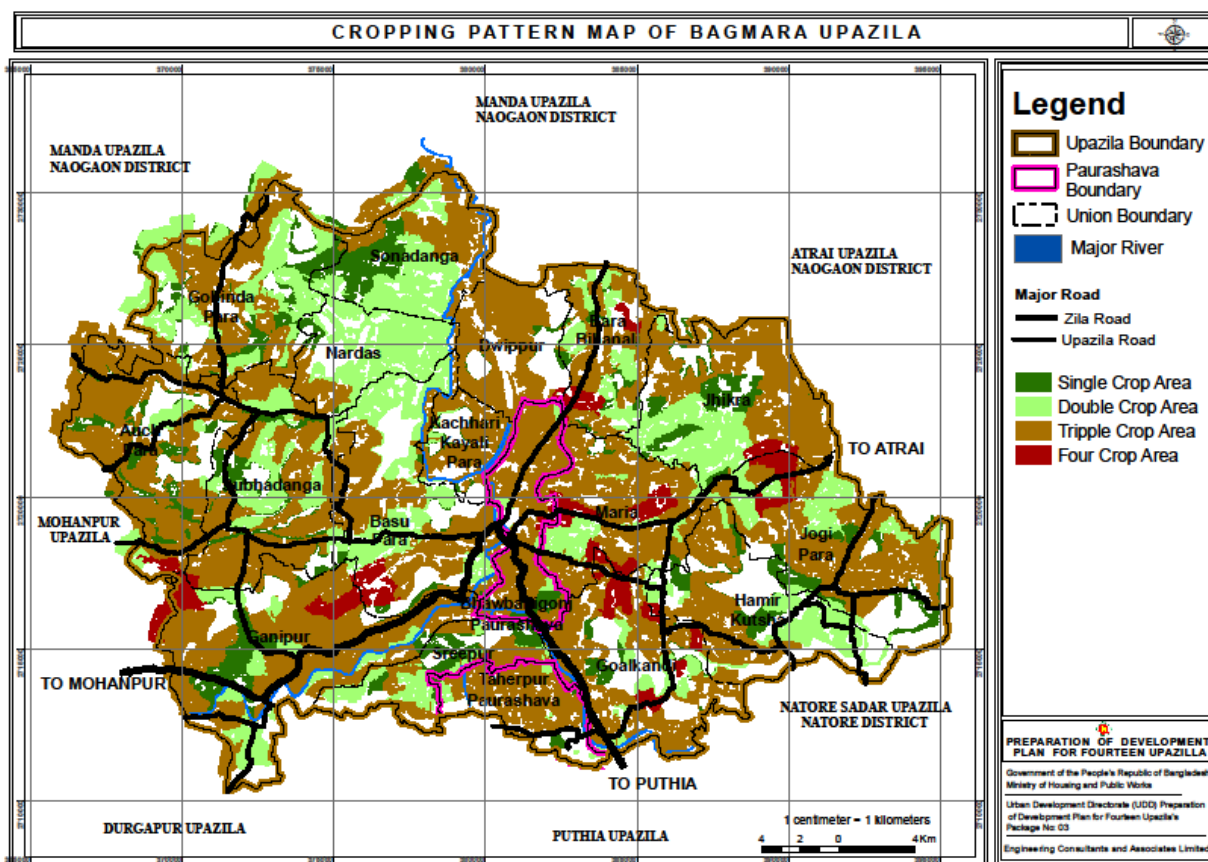
5.2.3 Agriculture

5.2.3.1 Cropping Intensity

Table 5.9: Cropping Intensity of Bagmara

Cropping Pattern	Area in Acre	Area in Sq.km	Percentage
Single Cropping	7790.023111	31.525105	12.85%
Double Cropping	15651.78868	63.340542	25.81%
Triple Cropping	34876.84722	141.141593	57.51%
Four Cropping	2324.321155	9.406194	3.83%
Total	60642.98017	245.413434	100%

Source: Field Survey, 2017

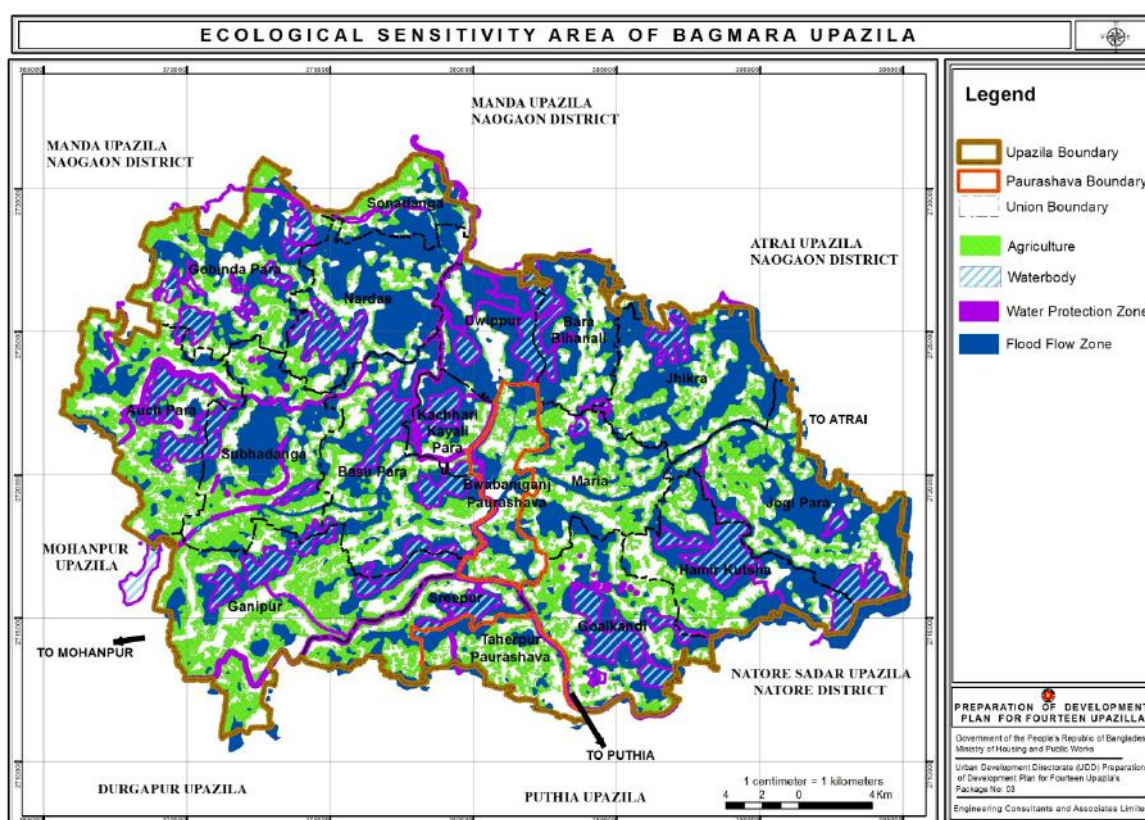


Map 5.7: Cropping Pattern Map of BagmaraUpazila

5.2.4 Ecology

Ecology has practical applications in conservation biology, wetland management, natural resource management (agroecology, agriculture, forestry, agroforestry, fisheries), city planning (urban ecology), community health, economics, basic and applied science, and human social interaction (human ecology). For example, the *Circles of Sustainability* approach treats ecology as more than the environment 'out there'. It is not treated as separate from humans. Organisms (including humans) and resources compose ecosystems which, in turn, maintain biophysical feedback mechanisms that moderate processes acting on living (biotic) and non-living (abiotic) components of the planet. Ecosystems sustain life-supporting functions and produce natural capital like biomass production (food, fuel, fiber, and medicine), the regulation of climate, global biogeochemical cycles, water filtration, soil formation, erosion control, flood protection, and many other natural features of scientific, historical, economic, or intrinsic value.

Bagmara upazila is full of water bodies and ecological heritages. The map shows the ecological sensitivity area of Bagmara upazila



Source: Prepared by Consultant Team Based on Field Survey, 2016

Map 5.8: Ecological Sensitivity Area of Bagmara Upazila

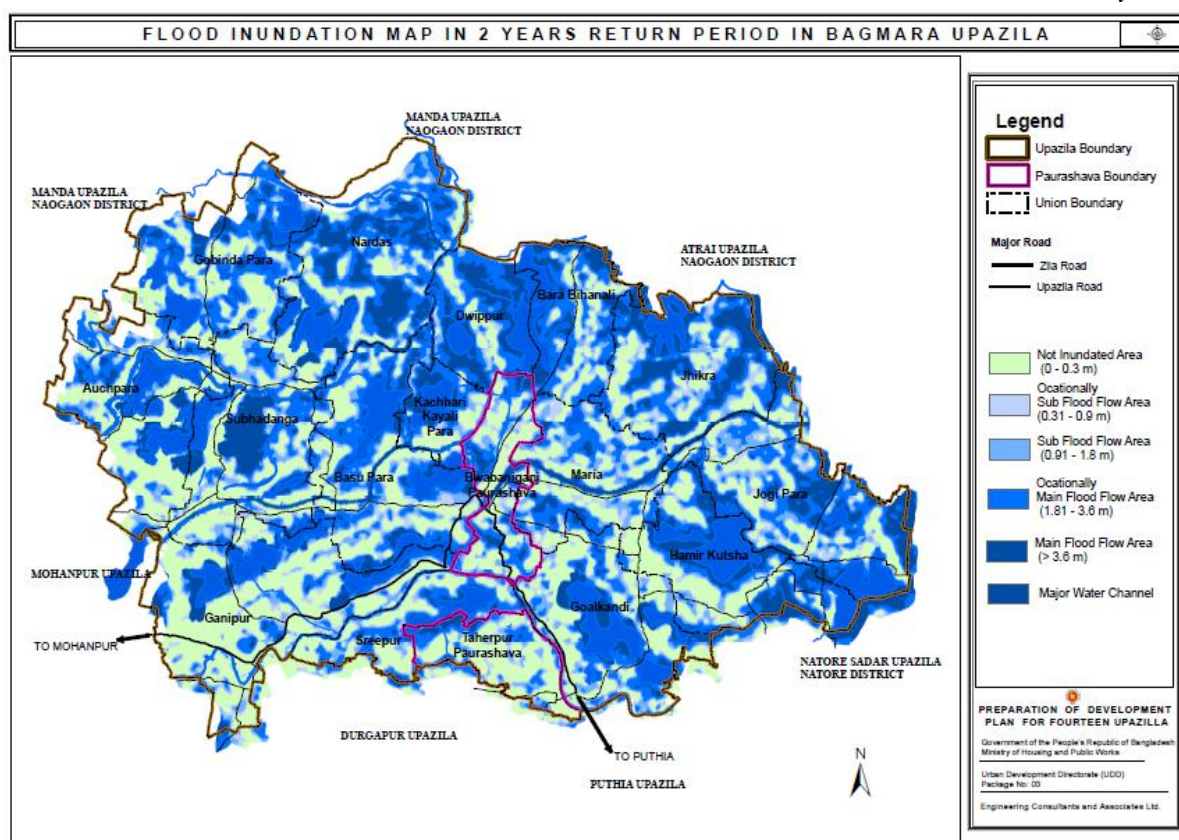
5.2.5 Hydrology-Flooding Scenario

The project area has been divided into five categories depending on the flooding scenario which are 1st degree flooded area, 2nd degree flooded area, 3rd degree flooded area, 4th degree flooded area and 5th degree flooded area. The statistics has been summarized in the table (6.7):

Table 5.10: Different Flooding Scenario

Flooded Land Category	Water Depth	Percentage area	Remarks
1st Degree Flooded area	0-0.3m	28%	Not Inundated Area
2nd Degree Flooded area	0.31-0.9m	9%	Ocationally Sub Flood Flow Area
3rd Degree Flooded area	0.91-1.8m	13%	Sub Flood Flow Area
4th Degree Flooded area	1.81-3.6m	22%	Ocationally Main Flood Flow Area
5th Degree Flooded area	>3.6m	27%	Main Flood Flow Area

Source: Field Survey, 2016



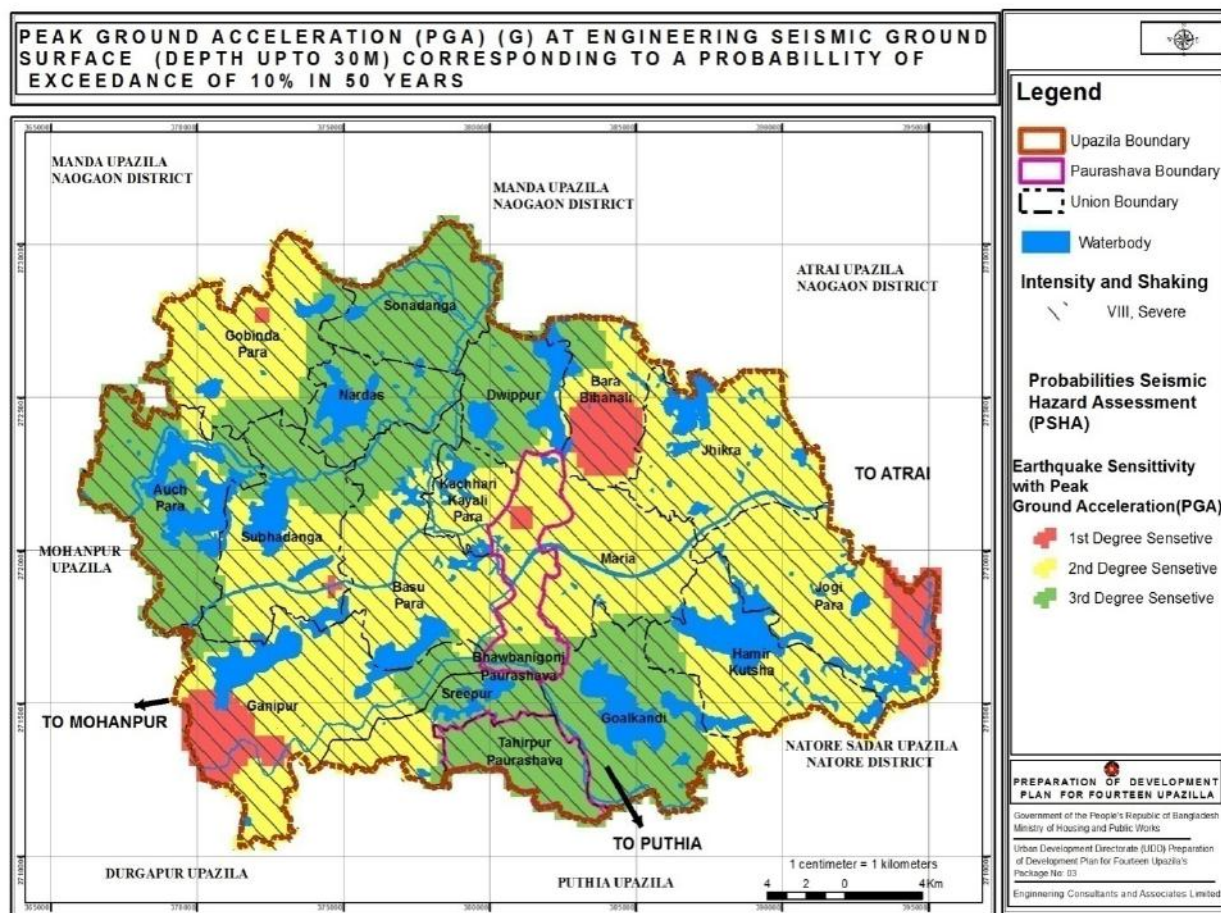
Map 5.9: Flood Inundation Map in 2 Years Return Period in Bagmara Upazila

5.2.6 Geology

5.2.6.1 PGA (Peak Ground Acceleration)

Table 5.11: PGA of Bagmara Upazila

Category	Sq.m	Sq.km	Acre	Percentage
1st Degree Sensitive	75000000	75.000	18532.904	38.573
2nd Degree Sensitive	87375000	87.375	21590.833	44.937
3rd Degree Sensitive	32062500	32.063	7922.816	16.490
Total	194437500	194.4375	48046.55	100



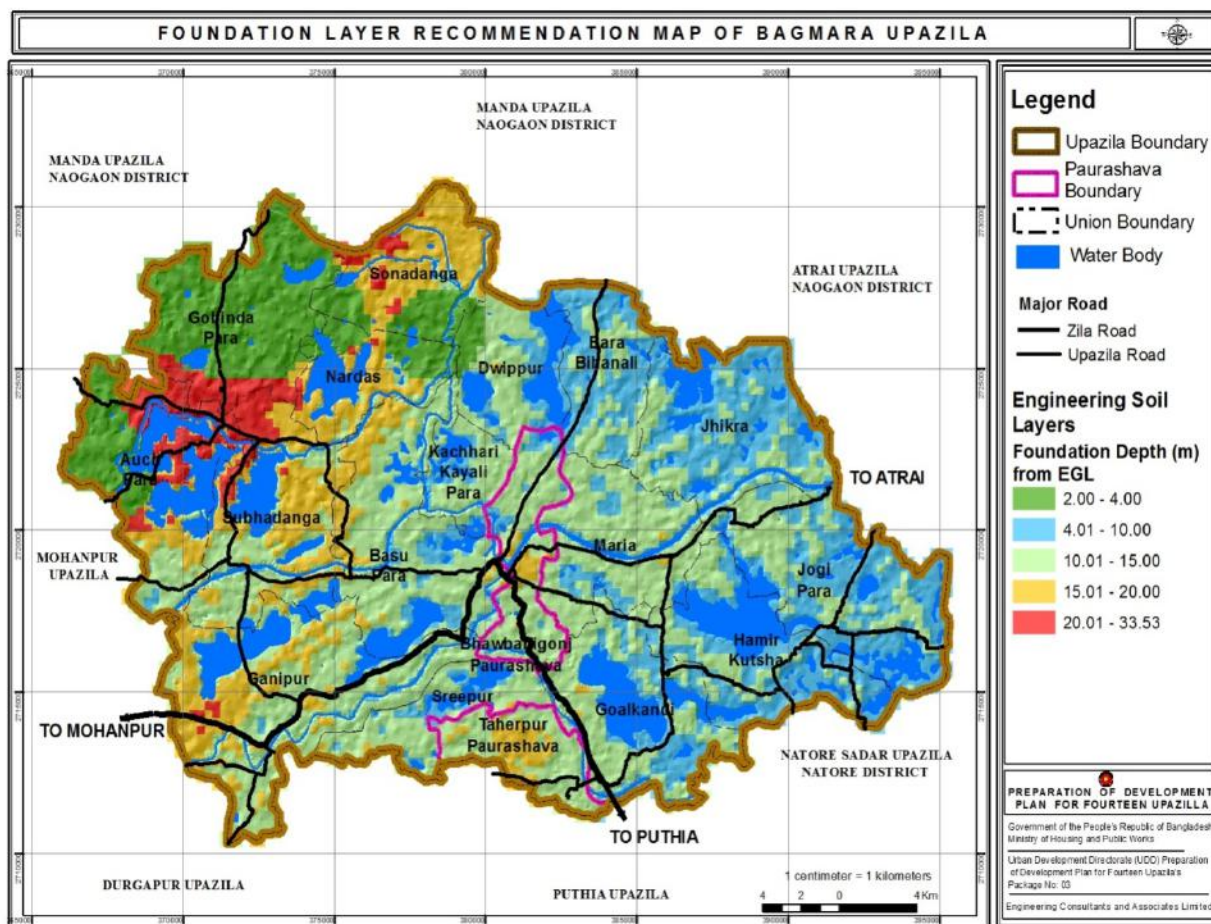
Map 5.10: Geology (PGA) of BagmaraUpazila

5.2.6.2 Foundation Depth

Table 5.12: Foundation Depth of BagmaraUpazila

Category	Sq.m	Sq.km	Acre	Percentage
Very Poor	15625000	15.625	3861.022	8.036
Poor	6062500	6.063	1498.076	3.118
Moderate	4375000	4.375	1081.086	2.250
Good	11875000	11.875	2934.376	6.107
Very Good	156500000	156.500	38671.992	80.489
Total	194437500	194.438	48046.553	100

Source: Field Survey, 2017



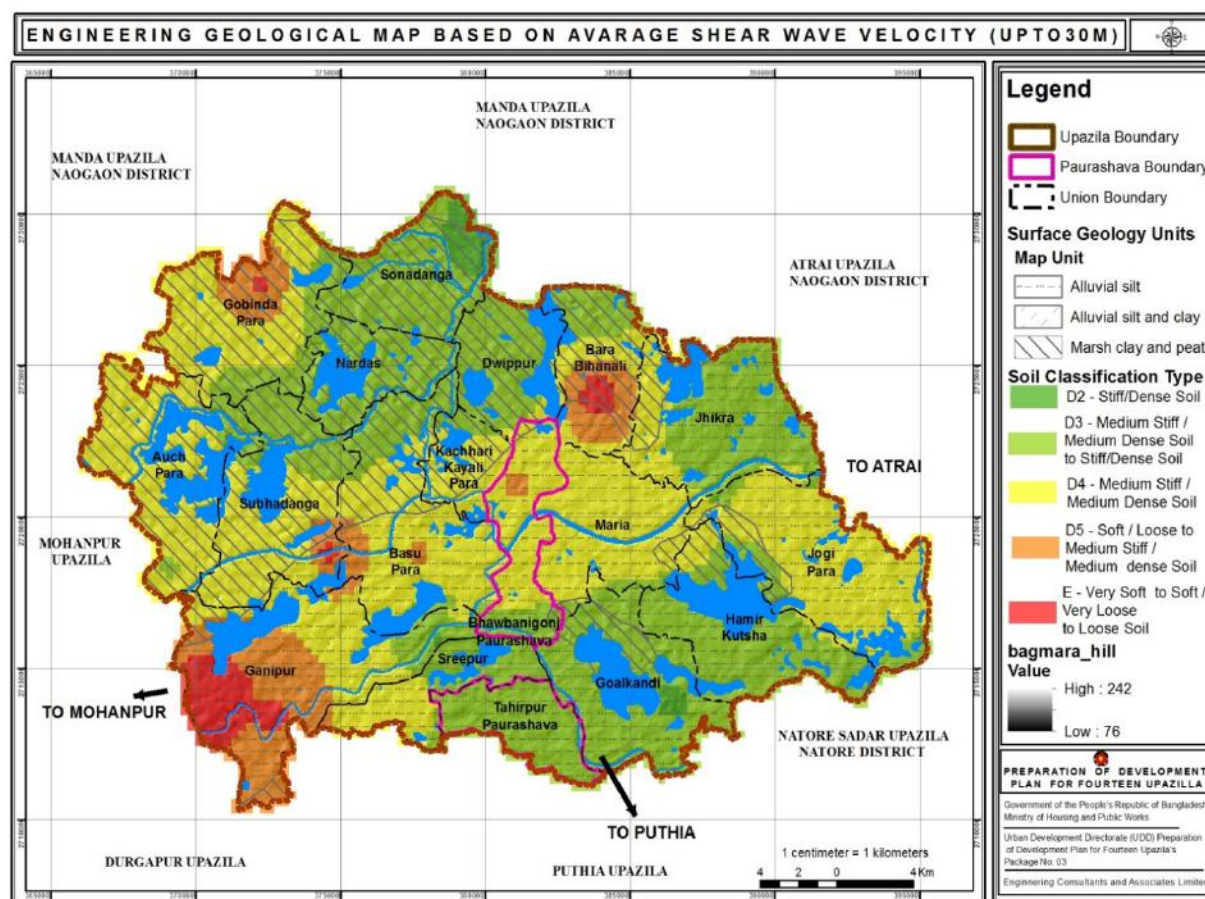
Map 5.11: Foundation Layer Recommendation Map of BagmaraUpazila

5.2.6.3 Soil Classification

Table 5.13: Soil Type of BagmaraUpazila

Soil Type	Area(Sq. Km)	% of Area
Stiff/Dense Soil	4.8125	1.24%
Medium Stiff to Stiff/Medium Dense to Dense Soil	169.3125	43.63%
Medium Stiff/Medium Dense Soil	174.0625	44.85%
Soft/Loose to Medium Stiff/Medium Dense Soil	30.5625	7.88%
Very Soft to Soft/ Very Loose to Loose Soil	9.3125	2.40%
Total	388.0625	100%

Source: Field Survey, 2017



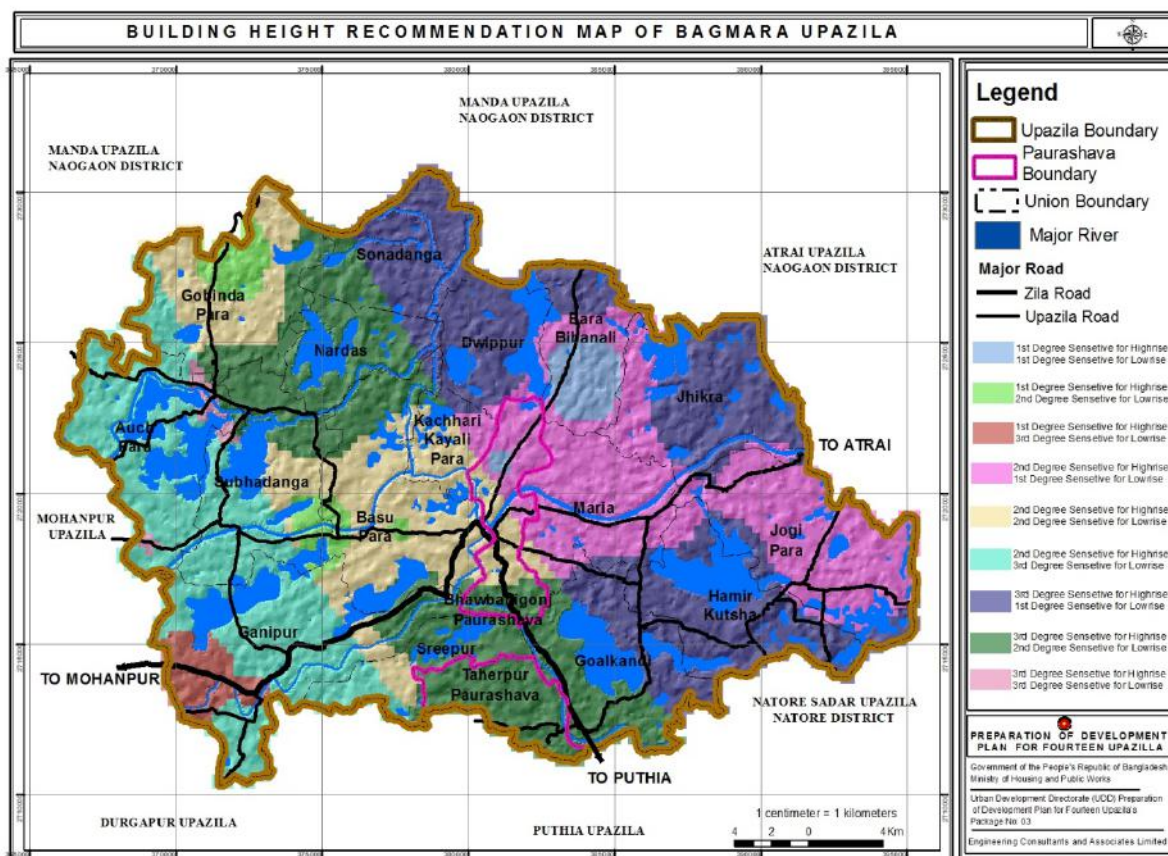
Map 5.12: Soil Classification of Bagmara Upazila

5.2.6.4 Building Height Recommendation

Table 5.14: Building Height Recommendation of BagmaraUpazila

For Low-rise Building	Area (sq. km)
1st Degree Sensetive for Lowrise	168
2nd Degree Sensetive for Lowrise	139
3rd Degree Sensetive for Lowrise	81

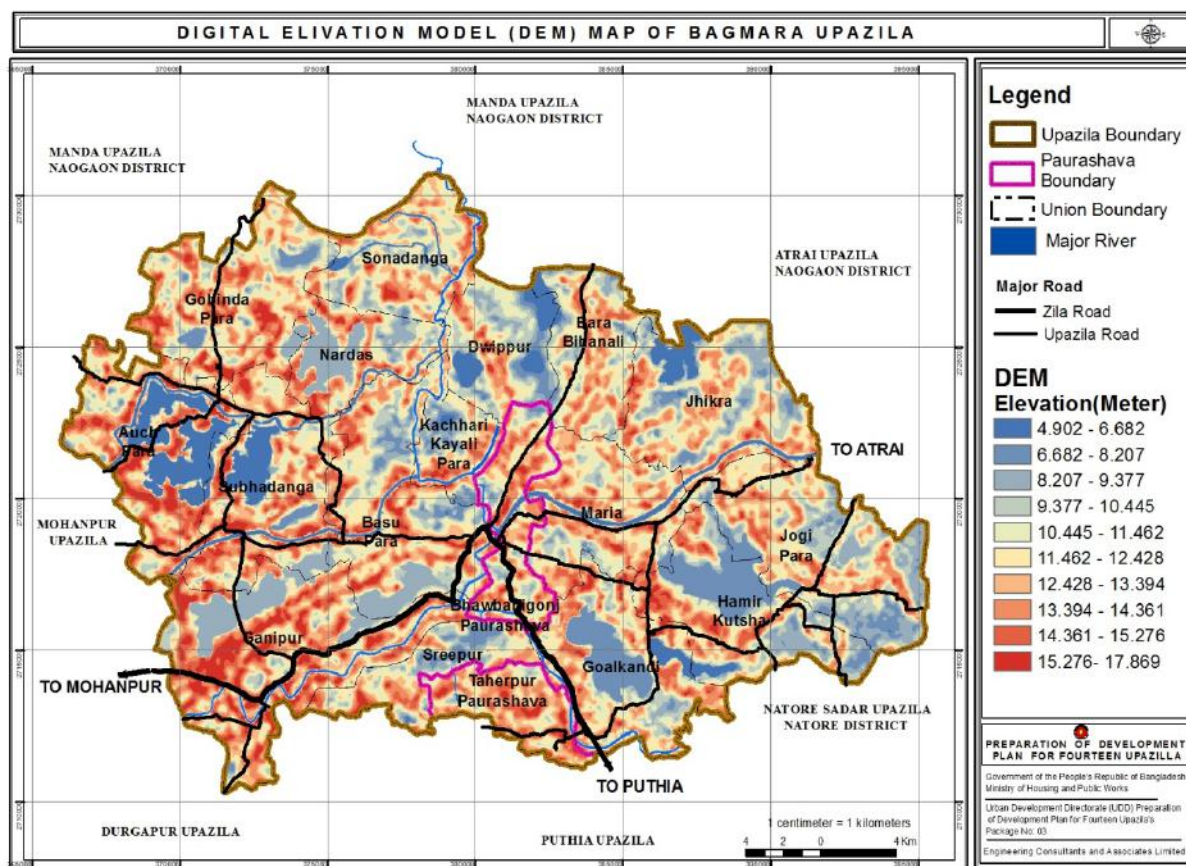
For High-rise Building	Area (sq. km)
1st Degree Sensetive for Highrise	24
2nd Degree Sensetive for Highrise	190
3rd Degree Sensetive for Highrise	174



Map 5.13: Building Height Recommendation Map of Bagmara Upazila

5.2.7 DEM (Digital Elevation Model)

The overall elevation condition in Bagmara Upazila is moderately good. The higher elevation has been found in Ganipur, Gobindapara Union and half portion of Subhadanga Union. Taherpur and Bwabanigonj Pourashava have a medium elevation in context of the unions where higher elevation has been found.



Map 5.14: Digital Elevation Model (DEM) Map of Bagmara Upazila

5.2.8 Suitability Analysis

For the plan preparation of Bagmara Upazila suitability analysis is an essential step. Through this analysis suitable area for agriculture, urban and infrastructure development have been identified for planning. In this step firstly undesirable area, the area with slope more than 5% has been delineated from Bagmara Upazila.

5.2.8.1 Infrastructure Suitability

In order to identify the area for zoning an analysis has been carried out. For this analysis the criteria are shear wave, PGA and foundation layer. From this analysis most and least suitable areas for infrastructure has been identified which will help for further development of the project area.

Infrastructure Suitability Calculation:

The raster equation is: ["Foundation Depth" * .33 + "PGA Value" * .33 + "Earthquake Intensity" * .33]

Where,

Foundation Depth = Foundation Depth Inversely influenced the infrastructure suitability from minimum to maximum.

PGA Value = PGA Value Inversely influenced the infrastructure suitability from minimum to maximum.

Earthquake Intensity = Earthquake intensity inversely influenced the infrastructure suitability from minimum to maximum.

Where, 1⁰ Sensitive means high risk zone

2⁰ Sensitive means Moderate risk zone

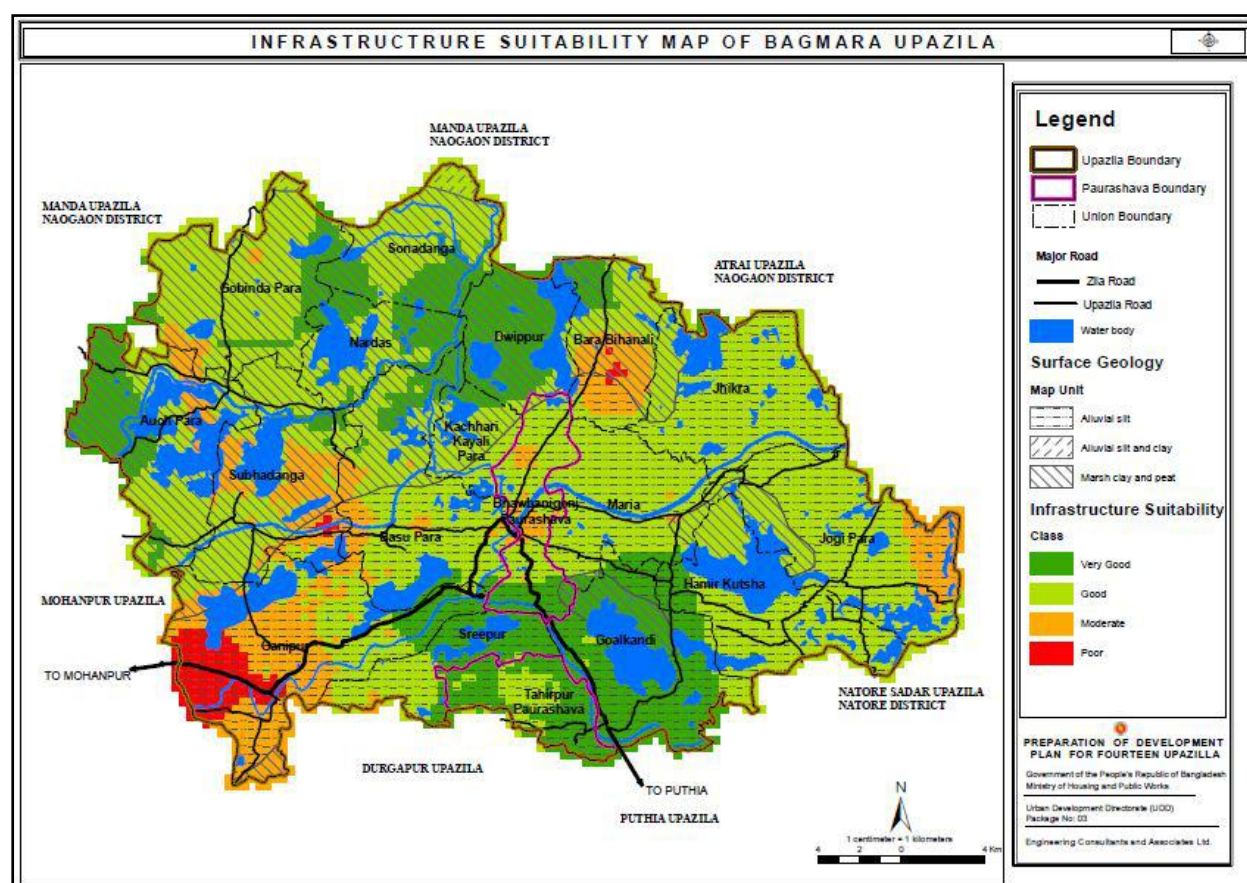
3⁰ Sensitive means Low risk zone

The whole upazila area have highly good and very good category in context of making infrastructure. The infrastructure category is showed in table 5.14

Table 5.15: Infrastructure Category of BagmaraUpazila

Infrastructure Category	Area(Sq.Km)	% of Area
Good	228.88	58.98%
Moderate	46.00	11.85%
Poor	8.06	2.08%
Very Good	105.13	27.09%
Total	388.06	100%

Source: Field Survey, 2016



Map 5.15: Infrastructure Suitability Map of BagmaraUpazila

5.2.8.2 Hydrological Suitability

To identify the best suitable area for agriculture an analysis has been done. It is derived from the data of water depth and DEM.

The raster equation is: [Depth of water” *.6 + “DEM” * .4]

Where,

Depth of water = Depth of water positively influenced the agriculture suitability.

Here,

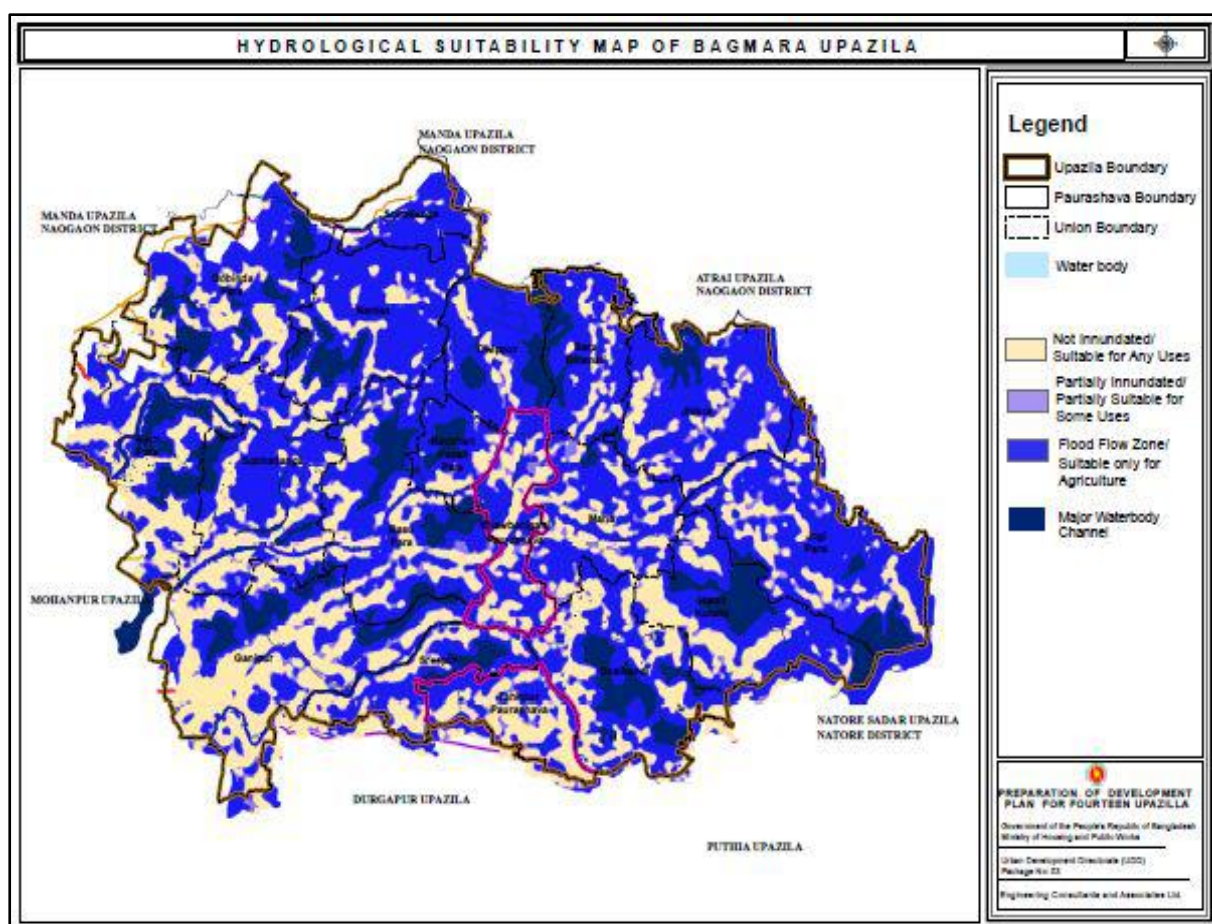
Depth 0 – 0.3m = F_0 = Permitted for agriculture and other uses

Depth 0.3 – 0.9 m = F_1 = double/triple crop land and permitted only for Agriculture.

Depth 0.9 – 1.8 m = F_2 = Single crop land and permitted only for Agriculture.

DEM = DEM Inversely influenced the Hydrological suitability from maximum to minimum value.

Maximum portion of Nardas, Dwippur, Jhikra, Jogipara, Maria and Subhadanga Unions have gone under flood flow zone. A huge area of Ganipur Union is not inundated. In the context of hydrological suitability analysis, the condition of TaherpurPourashava is better than BwabaniganjPourashava.



Map 5.16: Hydrological Suitability Map of Bagmara Upazila

5.2.8.3 Agricultural Suitability

To identify the best suitable area for agriculture and analysis has been conducted using water depth, slope and cropping intensity. These following factors have been incorporated in the following way.

The raster equation is: ["Cropping Intensity" * .6 + "Depth of water" * .4]

Where,

Cropping Intensity (CI) = CI positively influenced agricultural suitability from single to

Multiple crop land

Water Depth = Water depth positively influenced the agricultural suitability

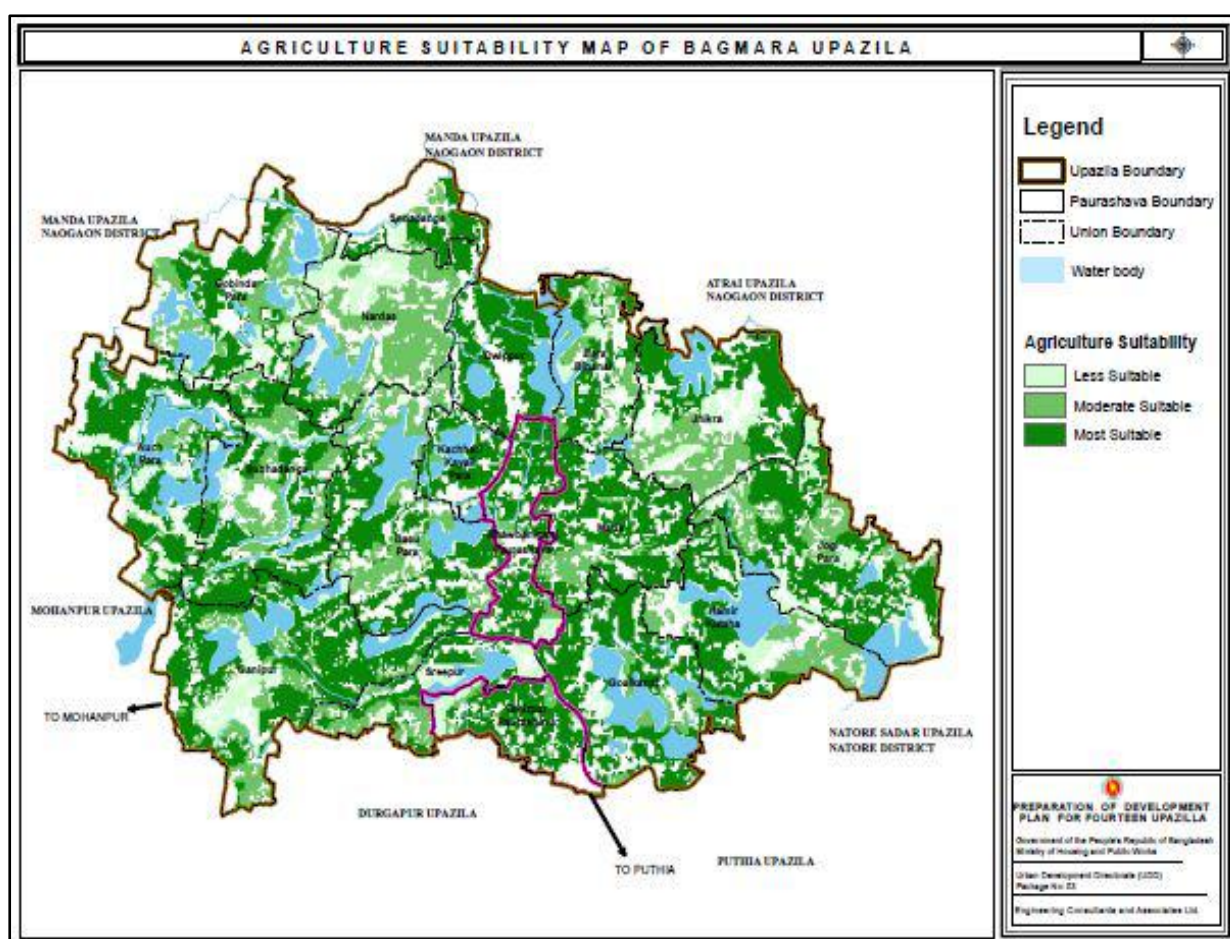
Here, Depth 0 – 0.3m = Double/Triple Crop Land

Depth 0.3 – 0.9m = Double/Triple Crop Land

Depth 0.9 – 1.8m = Single Crop Land

Crop-land suitability analysis is a prerequisite to achieve optimum utilization of the available land resources for sustainable agricultural production.

Maximum agricultural land condition of Bagmara Upazila is most suitable. A large part of Jhikra Union and Ganipur Kutsha Union are less suitable. Agricultural lands of Bwabanigonj Pourashava and Taherpur Pourashava are most suitable.



Map 5.17: Agricultural Suitability Map of Bagmara Upazila

5.2.8.4 Human Settlement Suitability

To identify the best suitable area for human settlement an analysis has been done. It is derived from the data of water depth, slope and cropping intensity. The main reason of this analysis is to identify the most suitable agricultural land for conservation.

The raster equation is: ["DEM" * .2 + "Population density" * .2 + "Settlement Area" * .2 + "Proximity to road (250m buffer)" * .2 + "infrastructure Suitability" * .2]

Where.

DEM = positively influenced the Human Settlement Suitability from Minimum to maximum Value.

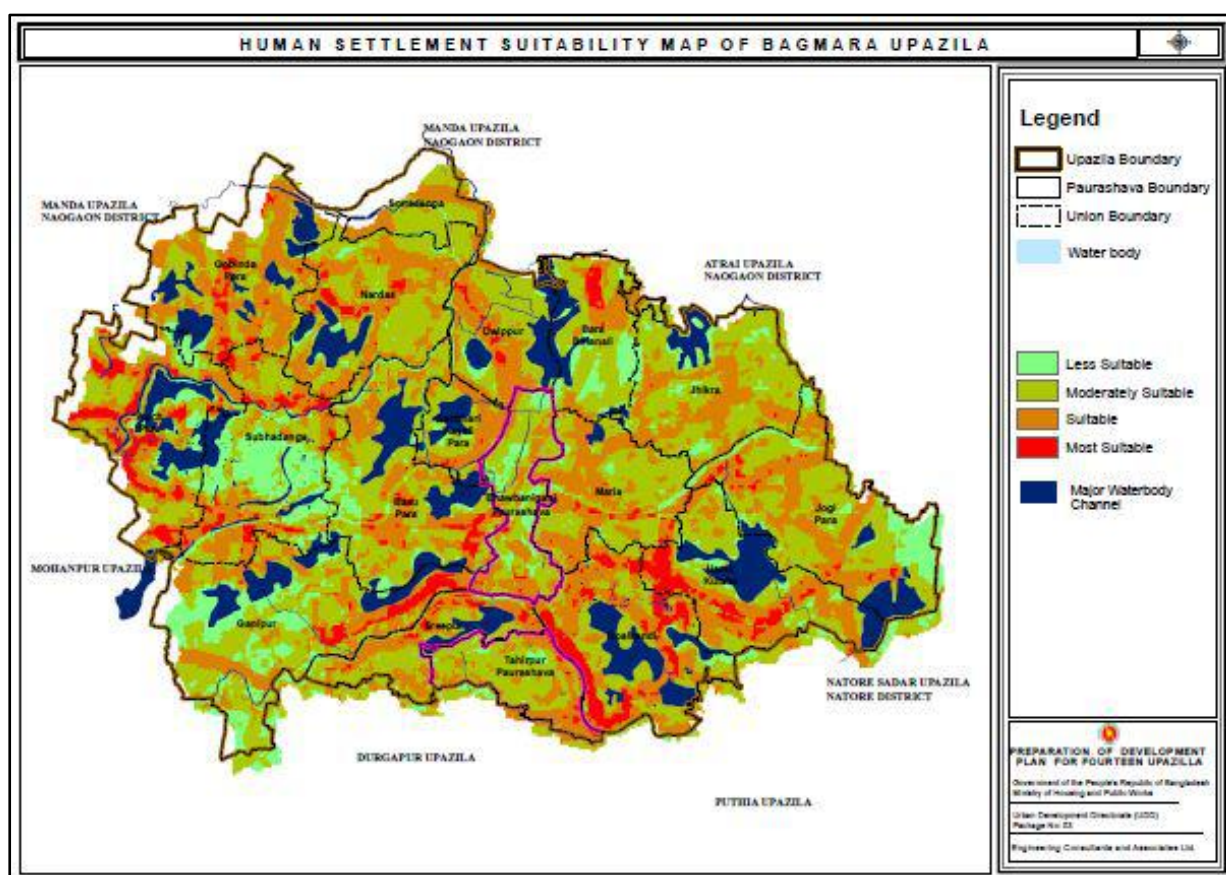
Population density = positively influenced the Human Settlement Suitability from minimum to maximum Range.

Settlement Area = positively influenced the Human Settlement Suitability in a range of 1 to 5 in respect of landuse type.

Proximity to road = Proximity to Road influenced the human settlement suitability according to road type. (Katcha = 1; Semi pucca= 2; Pucca =3)

Infrastructure Suitability = Infrastructure Suitability positively influenced human settlement Suitability from “poor” to “very good”.

A less area of BagmaraUpazila is most suitable in the context of human settlement suitability. This most suitable human settlement is belonged to Goalkandi and HamirKutsha Union. Overall BagmaraUpazilahave a suitable human settlement.



Map 5.18: Human Settlement Suitability Map of Bagmara Upazila

5.2.8.5 Urban Suitability

For the identification of the urban suitable area some criteria have been fixed such as DEM, Geological suitability and major road. In which areas these four criteria have met the consideration those areas are the urban suitable areas.

The raster equation is: ["DEM" * .2 + "Settlement Area" * .3 + "Proximity to road (250m buffer)" * .2 + "Infrastructure Suitability" * .3]

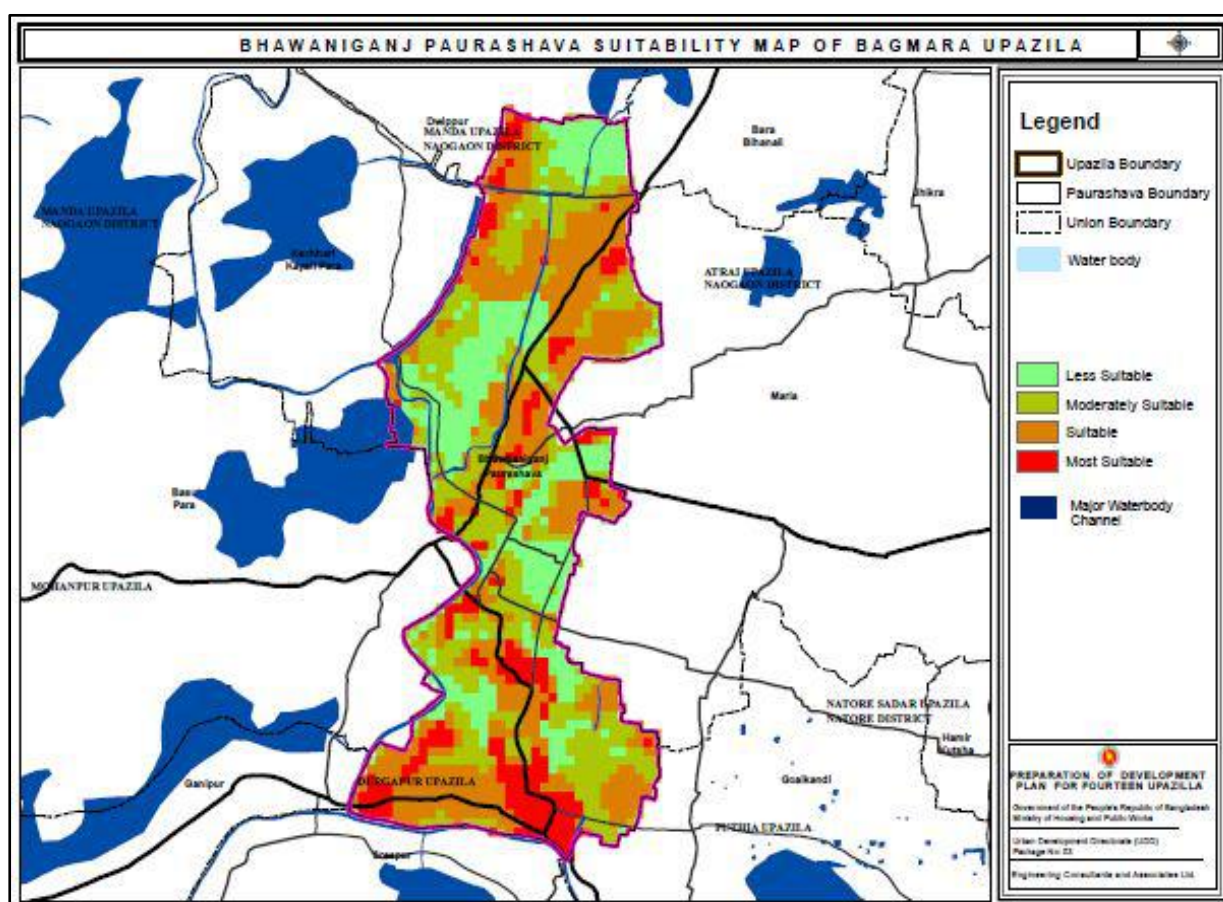
Where,

DEM = positively influenced the Human Settlement Suitability from minimum to maximum Value.

Settlement Area = positively influenced the Human Settlement Suitability in a range of 1 to 5 in respect of landuse type.

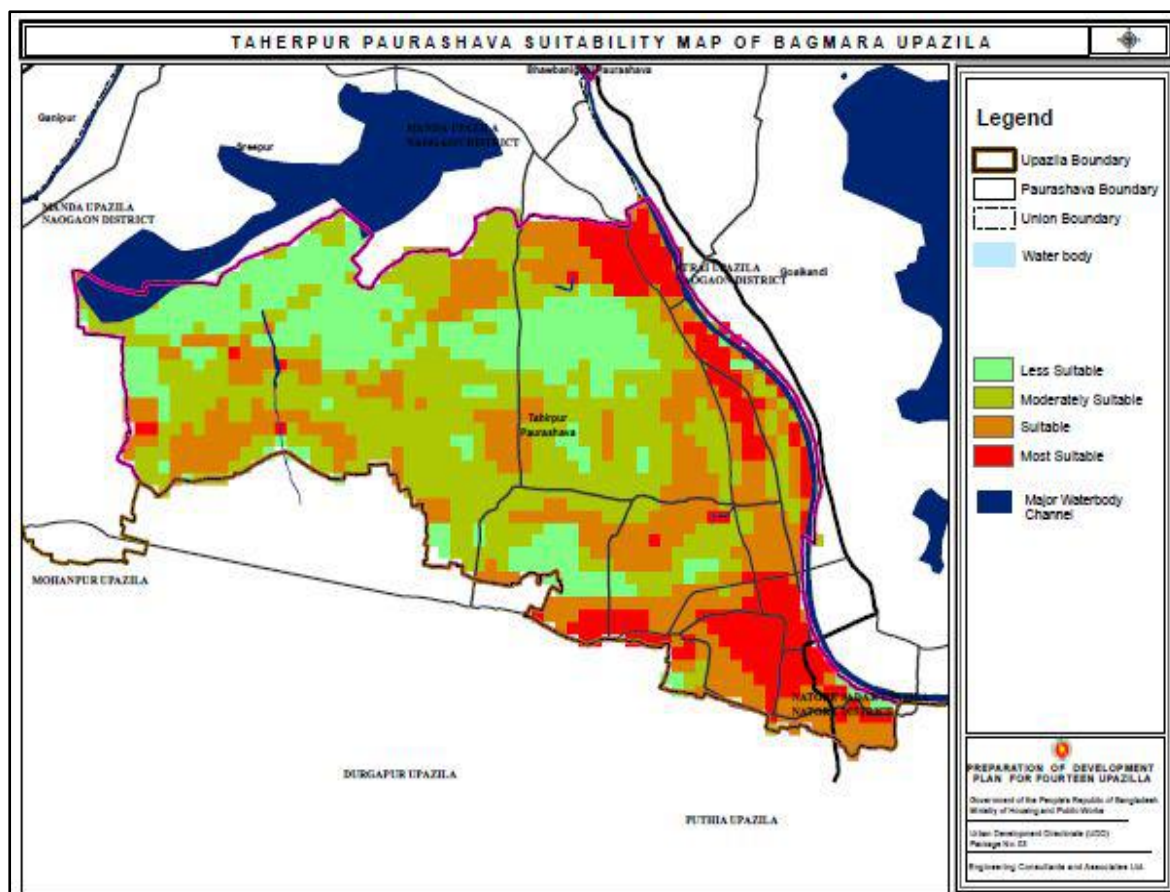
Proximity to road = Proximity to Road influenced the human settlement suitability according to road type. (Katcha = 1; Semi pucca= 2; Pucca =3)

Infrastructure Suitability = Infrastructure Suitability positively influenced human settlement suitability from “poor” to “very good.



Map 5.19: Bhawaniganj Paurashava Suitability Map of Bagmara Upazila

Half portion of the total area of Bwabaniganj Paurashava is less suitable. The center of Bwabaniganj Paurashava as well as the border area of Paurashava consists of most suitable and moderately suitable area.



Map 5.20: Taherpur Paurashava Suitability Map of Bagmara Upazila

Overall maximum area of TaherpurPaurashava is less suitable and moderately suitable. Taherpur growth centre area is the most suitable area among Taherpur Paurashava area.

Chapter 06

Sub-Regional Plan and Regional Analysis

6.1 Introduction

Bagmara Upazila is located in the periphery of Rajshahi, Noagaon and Nator Upazila. Being naturally conditioned by an agricultural hub the upazila serves the city as a hinterland by providing agricultural goods. Secondly, the upazila is gradually turning into a service providing area as being very close to Rajshahi. These two conditions provide Bagmara Upazila with immense potentials to become economically and socially integrated with the Rajshahi Divisional area. These opportunities are the basis of development of the regions as a sub-system of the whole economic region.

6.1.1 Conceptualization of Sub-Regional Plan

Strategic plan determines a long-term vision for the development of an area where the area is going over the next several years as say 20 years, how it's going to there and how it will know if it got there or not. The strategic plan includes the clear goal envisioning the future growth and developments which will be directed with country's development activities and different policies of the country.

6.1.2 Extent and Nature of Sub-Regional Plan

- **Strategic Plan at Sub-Regional Level**

Country's development systems can be enhanced by developing a clear vision, objectives, strategies and detailed actions plans. It enables a global sense of purpose and direction capable of guiding implementers in making everyday choices what actions should be taken to produce the expected results. Strategic plan identifies the following steps:

- Assesses needs and resources;
- Defines a target audience and a set of goals and objectives;
- Plans and designs coordinated strategies with evidence of success;
- Logically connects these strategies to needs, assets, and desired outcomes;
- Measures and evaluates the process and outcomes.

Strategic Plan would be prepared for 20 years for Bagmara Upazila according to the guidelines form which will dictate the development plan such policies as National policies, Formulated and Integrated different sectoral strategies at sub regional level, spatially interpreted sectoral strategies at sub regional level, formulated Conservation Plan at sub regional level and formulated Development Plan.

- **Regional Structure Zoning Category**

Zoning generally allows the authority to control the use of land and development of land. Zoning is an important tool for guiding the private development, so that land is used in a way that promotes both the best utilization of the land and the prosperity, health and welfare of the residents. Naturally, Zoning is enacted by the law by following respective procedures. Regional Structure Zoning is comprehensive planning process that allows a city or region to develop a plan for creating and maintaining a desirable environment and safe and healthy community. Once a plan is adopted, it guides local officials in making their day to day decisions and becomes a factor in their decision-making process. By creating zoning categories that separate uses, the city assures that adequate space is provided for each use and that a transition area or buffer exists between distinct and incompatible uses. Adequate separation of uses prevents congestion, minimizes fire and other health and safety hazards, and keeps residential areas free of potential commercial and industrial nuisances such as smoke, noise and light.

Regional Structure Zoning can be adopted by ensuring the following mundane purposes:

- ✓ Minimising adverse effect resulting from the inappropriate location or use of sites and structures,
- ✓ Conserving limited land resources and encouraging their efficient use.

- **Conservation Plan**

A conservation plan can be a vision for the future ecological health of an area. It typically includes reference to a natural resources inventory, a description of important features and an action plan to protect these features over a long period of time.

Major land use pressure is heavily depending on the ecosystems and resources of the existing nature. Land-use conflicts and clearly unsustainable uses may be found in planning areas. There is a clear need for broad-based, multi-sectoral and long term development management, including community-based initiatives in sanitation, biomass preservation and collective management of natural resources, including more detailed priorities such as ecosystem preservation of fisheries habitat, maintenance of biological diversity and productivity, forestry management, containment of saltwater intrusion and population risk management. Also needed are institutional and regulatory actions.

Contrary to some current impressions, conservation and economic development are not conflicting ideas. In fact, well-planned conservation-oriented development will add to the general economic and social prosperity of a coastal community, while bad development will sooner or later have a negative effect. With innovative management based upon sustainable use, communities may be able to achieve a desirable balance without serious sacrifice to either short-term development progress or longer-term conservation needs. In broad sense, Conservation Plan would cover ecology and environment, land forms: forest, wetland, rivers and agricultural land, Major infrastructures, area of archaeological/ anthropological interest. Conservation plan will derive the following issues:

- ✓ Articulate the most important natural features within the Geographic Area.
- ✓ Flourish conservation of these important natural features.
- ✓ Dictate local government or private voluntary to develop land conservation planning
- ✓ Document conservation priorities and recommend policies in Upazila Development Plan

Suggest viable regulatory process for some resources and features.

6.2 Goals and Objectives of Sub-Regional Plan

To achieve the vision of developing Bagmara Upazila as an economically vibrant, liveable, sustainable and planned Upazila, the following objectives are outlined:

- The Sub-Regional Plan for Bagmara Upazila for the next 20 years will guide the upazila to become integrated with Rajshahi Divisional area as their economic sub-system;
- The sub-system will be provided strength by development of various linkages, physical, economic and social connections; and
- Making provision and plans for the growth of economy, employment, social, and environmental conditions
- Control unauthorized development throughout the city.
- Providing suitable economic base for future growth of the city.
- To provide a rational land use pattern in order to protect and conserve agricultural land and other unproductive land as well as the water bodies.

- To develop selected areas with infrastructural facilities.
- Ensuring sustainability without violating the environmental concerns.

6.3 Shift Share Analysis

6.3.1 Objectives

- 1) To determine the contribution of different sectors in the growth of Bagmara Upazila by using shift share components from year 2003 to 2013.
- 2) To compare the regional growth status of the Bagmara Upazila and also identify progressive and less progressive industries with respect to the employment of the selected industrial sectors.

6.3.2 Concept of Shift Share Analysis

Shift share analysis is a regional economic growth tool. This process helps in order to determine trend of local economy, prioritizing the industry which have to developed, use of public funds efficiently. The dynamic and changing regional economies have been capturing the attention of policy makers, community leaders, and researchers (McNamara 1991; Knudsen, 2000.). However, a regional economy consists of firms and industries with a variety of economic potentials. Growth or decline in any of these sectors occurs by technological innovation, capital and labor productivity, location, changes in product demand, and shifts in input costs, which directly or indirectly affect the overall growth of the economy (Gebremedhin and Lass, 1995; Bartik 2004). As various sectors affect economic growth of a particular region differently, understanding the comparative advantage of these sectors becomes important in development decisions of the region (Deming, 1996; Melachroinos, 2002).

As a regional planning tool shift share analysis explores the scenario of economic growth of a region which is generated by a national growth in that sector, supportive industry mix and comparative advantage of that particular region. The shift-share analysis divides the change in local industry employment into three components:

- National share (NS)
- Proportionality Shift /Industry mix (IM)
- Local Share/Regional Shift/Differential Shift (RS)

6.3.3 National Share (NS) Component

Share of regional job growth attributable to growth of the national economy. The share of local job growth can be attributed to growth of the national economy. Specifically, if the nation as a whole is experiencing employment growth ("a rising tide lifts all boats"), one would expect total national growth to exert a positive growth influence on the local area.

6.3.4 Industry Mix (IM)/Proportionality Shift Component

The industrial mix or proportionality shift component reflects differences in industry "mix" between the local and national levels. The mix-factor examines how national growth or decline of a particular industry translates into local growth or decline of that industry. It deals with how much growth can be attributed to the region's mix of industries. Also estimates how many jobs were created/not created in each industry due to differences in industry and total national growth rates

6.3.5 Regional Shift (RS)/Differential Shift Component

This share of local job growth describes the extent to which factors unique to the local area have caused growth or decline in regional employment of an industrial group. Even during periods of general prosperity, some regions and some industries grow faster than others do. This is usually attributed to some local comparative advantage such as natural resources, linked industries or favourable local labour situations. It helps to identify how many jobs are created/not created as a result of the region's competitiveness and the region's progressive and less progressive industries.

6.3.6 Calculation of shift share components

The shift share component for each industry in the region has been determined using the following formulas:

$$\text{National Share, } N_j = \sum [E_{ijo}(E_t/E_o) - E_{ijo}]$$

$$\text{Proportionality Shift Component, } P_j = \sum [(E_{it}/E_{io}) - (E_t/E_o)]E_{ijo}$$

$$\text{Differential Shift Component, } D_j = \sum [(E_{ijt}/E_{ijo}) - (E_{it}/E_{io})]E_{ijo}$$

$$\text{Total Regional Growth, } G_j = E_{jt} - E_{jo} = N_j + P_j + D_j$$

$$\text{Total Net Shift Component, } (P+D)_j = E_{jt} - (E_t/E_o)E_{jo} = G_j - N_j$$

Where, E_j = total employment in region j

E = total national employment

o, t = initial and terminal period

i = industry subscript

6.3.7 Identification of fast growing and slow growing sectors

In the above equations, if the proportionality shift component is found to be positive, the region is specialized in nationally fast-growing sectors and if this component is negative, the region is specialized in nationally slow growing sectors.

6.3.8 Identification of progressive and less progressive sectors

The progressive and less progressive sectors of a region are identified from the differential shift component. The progressive sectors for a region has been identified by the positive differential shift component and the less progressive sectors have been identified by the negative differential shift component. Positive differential shift component for an industry implies the region has advantage (e.g. natural resources, favourable location and an efficient labour market) for flourishing of the industry. Differential shift component with negative value means there exists locational disadvantage for the industry to grow in the region.

The economic growth of the Upazila has been compared in terms of national share component, industry mix component and regional shift component and growth rate for every industrial sector.

6.4 Scope of the Study

Shift share is a standard regional analysis method that attempts to determine how much of regional job growth can be attributed to national trends and how much is due to unique regional factors. It helps answer why employments are growing or declining in a regional industry, cluster, or

occupation. It is the tool to study the components of economic growth. Its popularity is mainly its simplicity and easy to use that means required data and excel spread sheet. Here its scopes are mention below

- Showing the connection between different region and success.
- Polarizing the indication of regional growth rate decline if negative and increase if positive.
- Differentiating in the sectoral structure of regions on the differences in their success.
- Identifying the progressive and less progressive industries.

6.4.1 Comparison of Employment Growth among Industries

The analysis has been carried out by comparing the percentage change values of the national share, proportionality shift, differential shift and regional growth with respect to the total employment in the respective region considering employment data in the year 2003 and 2013. The percentage change instead of absolute values has been used to assess the actual magnitude of the change and to find out the actual progressive regions.

In Bagmara Upazila the national share component has the major impact on total regional employment growth. Differential shift comprises a positive value which means some local factors employment growth is better than the national growth. It has been also found that Proportionality Shift Component has a negative impact on the employment growth.

Bagmara Upazila has large number of employment in Wholesale and Retail Trade, Repair of Motor Vehicles & Motorcycles, Accommodation and Food Services Activities (Hotel & Restaurants). Besides this manufacturing, health and social works have employment growth more than national growth of these sectors. The possible reason behind this may be the rapid urbanization and close proximity with Dhaka. All these sectors have been promoting large employment for local advantages.

Table 6.1: Shift Share Components of Bagmara Upazila in context of national: 2003 and 2013

Employment Category	National Share	Industrial Mix	Regional Shift	Total Regional Growth	Net Shift
Mining and Quarrying	0	0	0	0	0
Manufacturing	4251	872	-727	4396	145
Electricity, Gas, Water, Steam, and Air Conditioning Supply	5	1	-1	5	0
Construction	23	-18	-19	-13	-36
Wholesale and Retail Trade, Repair of Motor Vehicles & Motorcycles	7048	-1867	8072	13253	6205
Transportation, Storage, Information and Communication	468	2432	-2780	120	-348
Accommodation and Food Services Activities (Hotel & Restaurants)	914	-328	734	1320	406
Financial and Insurance Activities	501	-47	-205	248	-253

Public Administration and Defense	562	-230	-120	211	-350
Education	4618	-1697	-1697	1224	-3394
Health and Social Works	347	-107	324	564	217
Others	3459	443	-1626	2276	-1182
Total Employment	22195	-546	1956	23604	1409

Source: BBS Economic Census, 2003 and 2013

Net Shift Component for Bagmara Upazila provides Positive value which means overall economic growth of Bagmara Upazila is more progressive than national growth.

From Table 2, the overall national growth component shows that, if the local economy was identical to the national economy, then the number of jobs in the county should have grown by 23604 between 2003 and 2013.

Mining and quarrying, electricity, gas and water supply and construction sectors added less jobs than expected if they performed at the national average. Obviously, the changes (gains or losses) in employment that occur at the local level do not exactly follow the overall national trend.

According to the regional shift component, the positive value means the overall condition of job generated is developing in Bagmara Upazila. Most of the sectors have positive values so that means these industries are growing smoothly.

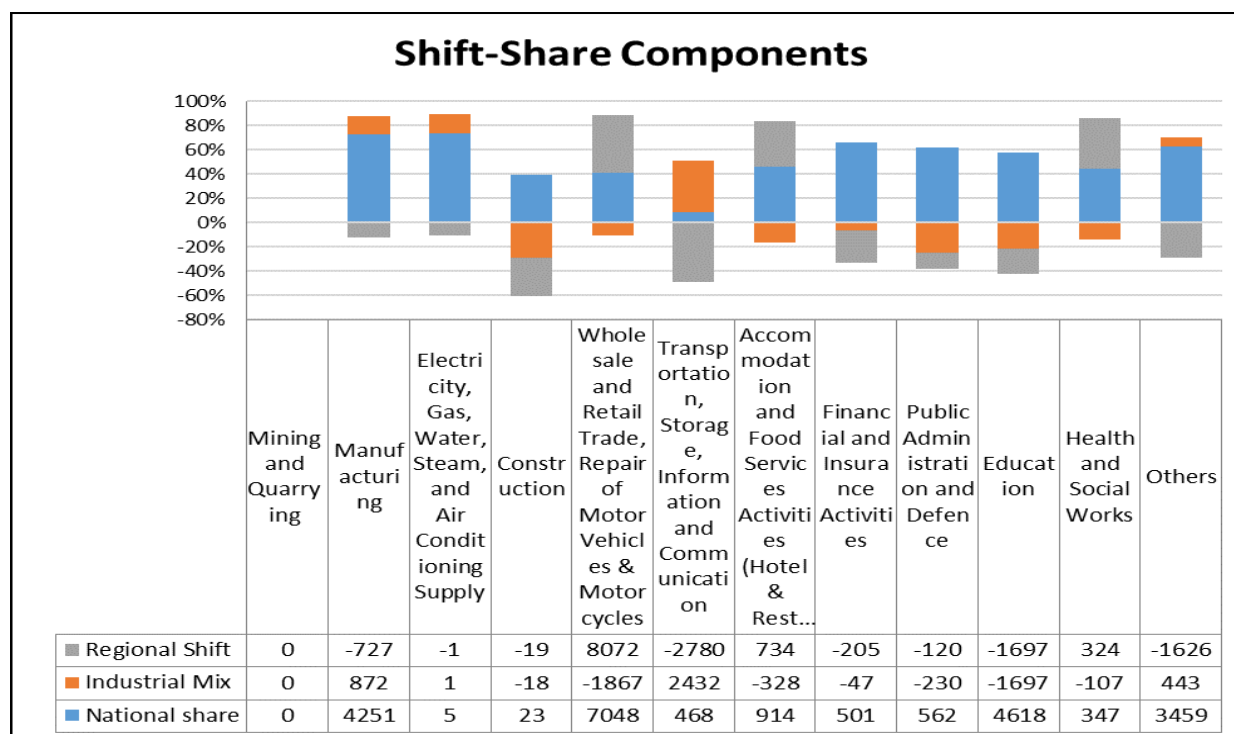


Fig 6.1: Shift-share components of different activity sectors.

The analysis has been carried out by comparing the change values of the national share, proportionality shift, differential shift and regional growth with respect to the total employment in the respective region considering employment data in the year 2003 and 2013.

In Bagmara Upazilla, most of employment growth has been generated because of national employment growth. Proportionality shift/industrial mix has a very mild impact on regional employment growth but Regional Shift/ Differential shift has negatively influenced in employment growth. It could be recognized that employment in this Upazila has grew more slowly than the nation because of regional shift effects.

In Bagmara Upazila, differential shift for Wholesale and Retail Trade, Repair of Motor Vehicles & Motorcycles, Accommodation and Food Services Activities (Hotel & Restaurants), Health and Social Works have a positive values but all other sector have negative impact. So, these sectors have some slow growing industries which generate employment at a lower rate.

6.2 Sector wise Analysis

The aim of sector wise analysis is to compare the employment growth of each sector in Bagmara Upazila. From the calculation it could be easily recognized that which sector is progressive and which sector is less progressive in this sector by using Net Shift Component. If the value of Net Shift Component is positive it indicates regional growth of this sector is better than national growth. If the value is negative, it indicates less regional growth of this sector than national growth. Table 1.7 shows progressive and less progressive sectors of Bagmara Upazila as per Shift-share analysis.

Table 6.2: Progressive and Less Progressive Sectors of BagmaraUpazila.

Activity Sector	Progressive	Less Progressive
Mining and Quarrying		
Manufacturing	✓	
Electricity, Gas, Water, Steam, and Air Conditioning Supply	✓	
Construction		✓
Wholesale and Retail Trade, Repair of Motor Vehicles & Motorcycles	✓	
Transportation, Storage, Information and Communication		✓
Accommodation and Food Services Activities (Hotel & Restaurants)	✓	
Financial and Insurance Activities		✓
Public Administration and Defence		✓
Education		✓
Health and Social Works	✓	
Others		✓

It is important to keep in mind that this is a descriptive tool rather than a diagnostic one is important. The shift-share analysis does not tell us why some local industries are more competitive and why some are less competitive—differences may be due to technology, management, or worker productivity. A more in-depth analysis of local versus national industries is required to sort out the sources of these differences. Potential factors could include access to natural resources, local wage rates, workforce productivity, or regional transportation networks.

Chapter 07

Sub-Regional Policy Recommendation

7.1 Nature of Sub-Regional Plan

The overall vision of the sub-regional plan is to make Bagmara Upazila as a well-linked and integrated, liveable and sustainable Upazila. It contains the policies drawn for development of Bwabanigonj Paurashava, Taherpur Paurashava and rest of the upazila area over a longer period of time (20 years). It also contains a comprehensive package of social, economic and physical policies which deals in principles only with all aspects of development (urban/rural) over a given period of time. The predominant policy areas include agriculture, linkages, mobility, employment, land, infrastructure for linkages such as transport and social provisions. This framework has been generated from data and findings from shift share analysis and location quotient earlier in the survey section.

7.2 Linkage with National and Regional Context

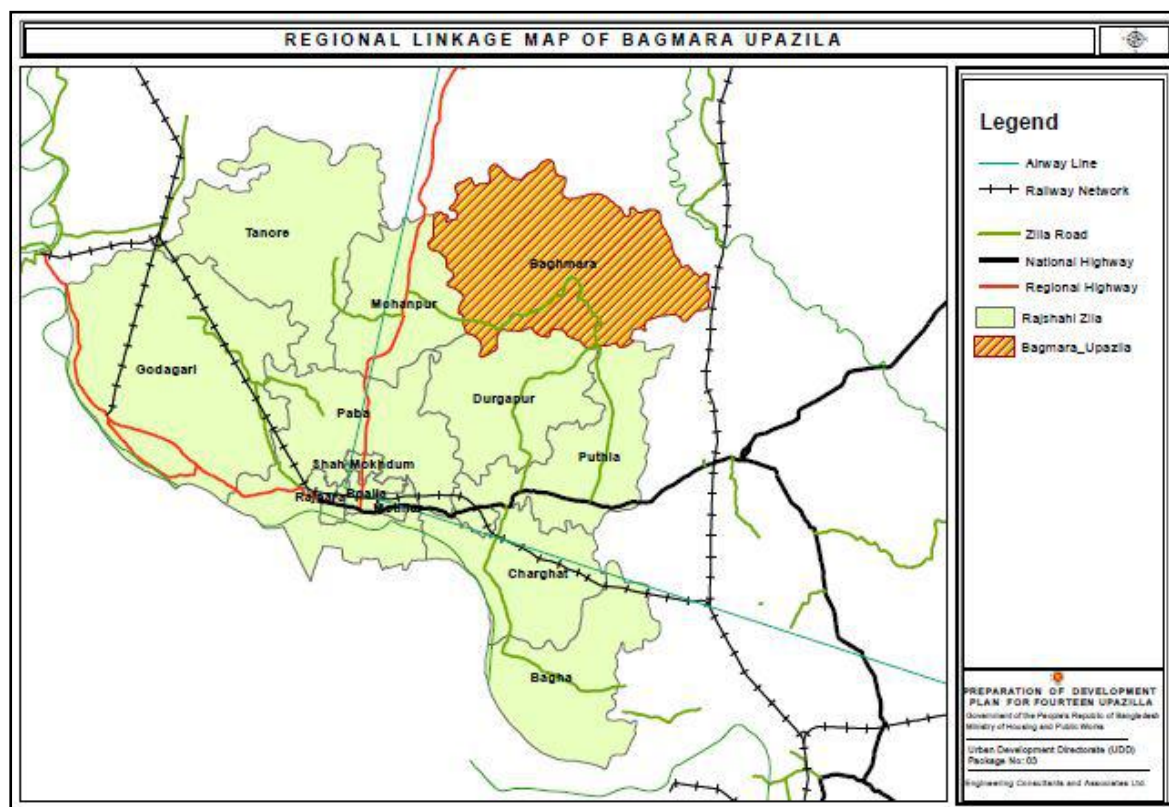
7.2.1 National Context

Communication system of Bagmara with Capital city Dhaka and other divisional town is not good for both internal and external communication Bagmara Upazila has less significance in the context of road network. Regional Highway and Railway has gone outside of it which makes the Upazila Center deprived. Bagmara Upazila is not connected with the railway network.

7.2.2 Regional Context

In the process of globalization, the world has experienced surges of regional integration initiatives in the last century. A strong connectivity not only strengthens the intra and inter regional trade but also generates higher income and prosperity. Increased connectivity can play an important role in achieving efficiency and enhanced productivity. Transport connectivity along with trade facilitation measures may spur regional trade and commerce by reducing cost of transportation and logistics.

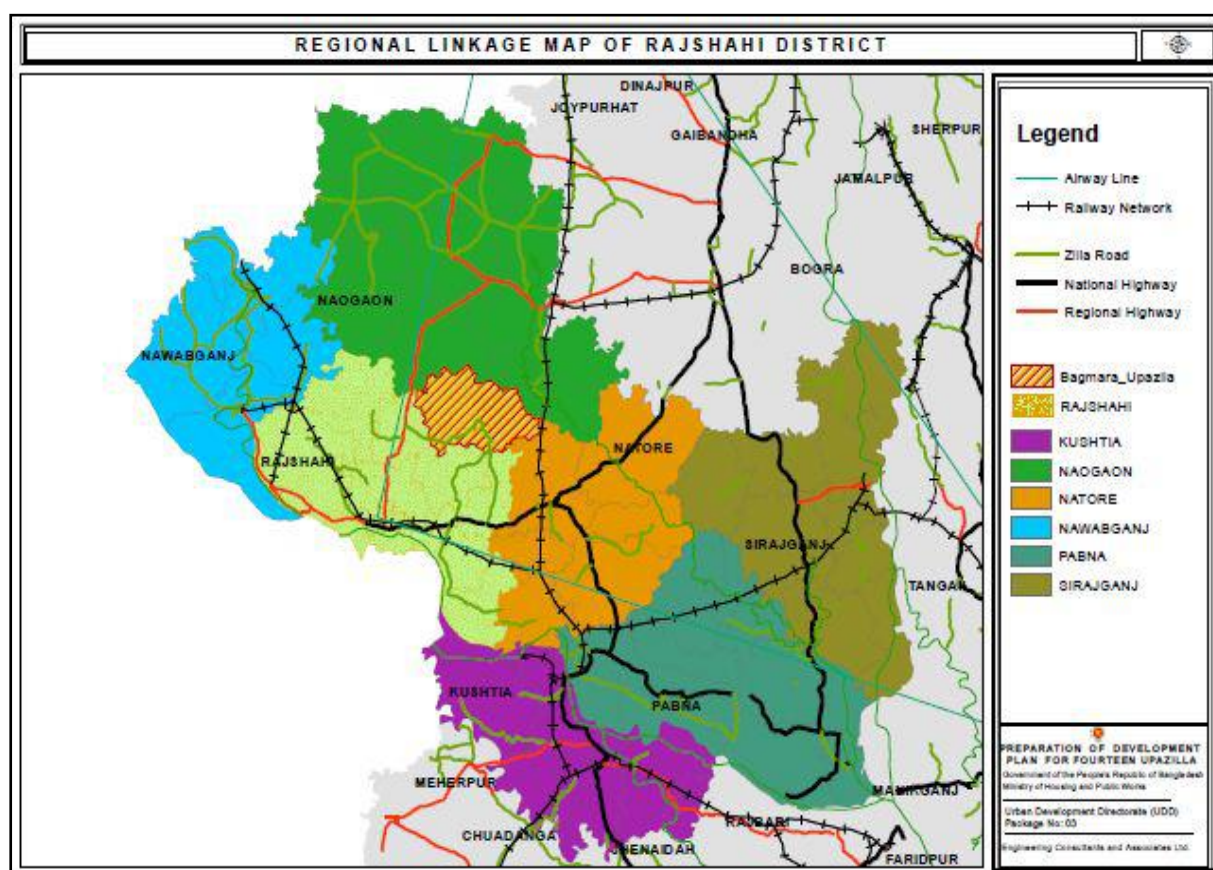
Bagmara Upazila has great significance in the context of road network. Bagmara Upazila is directly connected with Mohonpur, Durgapur and Puthia through the zilaroad. This zila road also covers Godagari, Poba, Shahmokhdum, Rajpara, Boalia Charghat and Bagha. The regional highway doesn't cover Bagmara Upazila. It covers Godagari, Poba, Shahmokhdum, Rajpara, Boalia and Moanpur. There is no railway network in Bagmara Upazila. Railway network passes by the outside of Bagmara Upazila area.



Map 7.1: Regional Linkage Map of Bagmara Upazila

7.2.3 Regional Linkage of Rajshahi District

From the Regional Linkage Map of Rajshahi District it is clearly seen that Rajshahi District is directly connected with Natore, Pabna and Kushtia through the national highway. The regional highway covers Naogaon, Rajshahi, Bogra and Kushtia. Railway network covers a huge area. Nawabganj, Rajshahi, Natore, Sirajganj, Pabna, Kushtia, Chuadanga and Bogura has a good railway communication



Map 7.2: Regional Linkage Map of Rajshahi District

7.3 Components of Sub-regional Plan

Major four components for the regional growth of the Bagmara upazila has considered here in sub regional plan. The policy recommendations in these sectors are mentioned here for further development and connectivity in regional context. The major four components are mentioned below.

1. Connectivity and Transportation Network
2. Biodiversity, Agriculture and Nature Conservation
3. Economic acceleration
4. Community Resilience through Disaster Management

7.4 Policies for Sub-regional Planning

7.4.1 Connectivity and Transportation Network

1. Developing an integrated local, regional and national transportation system :

Development of local transportation network will help build up improved internal road and waterway transport system within the Upazila. This will connect all parts of the Upazila with the regional and national transportation system and help transportation of goods and services between the Upazila and many other potential regional and national centres.

2. Improving local transport network within the Upazila linking the nearest districts.

At present, all the Union Parishads are not directly connected by roads between each other and some of them are also not directly connected to the Upazila Parishad. To exploit full potentials of both

urban and rural areas of the Upazila for economic growth and development, improved transportation connectivity between the upazila and nearest district Naogaon and Natore is of paramount importance.

3. Establishing a Railway Platform Connecting to the Jogi Para Union for better communications

There is no railway connectivity in Bagmara Upazila, but nearest Nator District has rail line which is nearly connected to the place named Birkutsha bazar in Jogi Para Union, Bagmara Upazila. If it is possible to establish a Railway platform in that place, the connectivity between the two district Natore and Rajshahi will increase. It will be a great achievement for the local people if the communication system developed. So establishment of a Railway platform is a crying need for the betterment of connectivity in the whole upazila.

4. Build an integrated (land, rail and water) transportation network

The Upazila level transportation network of roads, waterways and railways will be designed and developed in a way so that the network and system can be integrated with the regional and national network and system of transportation.

7.4.2 Biodiversity, Agriculture and Nature Conservation

1. Preserving and maintaining the existing natural water bodies for drainage, flood control and environmental purposes

All the water bodies of the Upazila should be preserved for natural flow of water, especially the rain and flood water. The natural water bodies generally have desired slopes for flow of water. This unique flow system cannot be developed easily by man-made drainage system. All national and regional highways, railway tracks, and public buildings and facilities will be constructed above the highest ever-recorded level of flood in the Upazila complying with the National Water Policy. This principle will also apply in cases of reconstruction of existing structures of this nature. All plans for roads and railways embankment will adequately provide for unimpeded drainage. Strategy adopting integrated actions for major water bodies, rivers and other large water reservoirs within the Upazila can be developed as these are concerns of national, regional and local authorities.

2. Conserve ecosystem through the delineation or demarcation of eco-sensitive zones

As the Bagmara Upazila and the adjacent upazilas are the lands of Beel. These area are ecologically critical in context of waterbody. For what, these areas should be preserved as eco sensitive zone as well as water retention area. Beside this, by considering the river morphology the water bodies must be preserved considering its foreshore as eco sensitive zone in sub regional level.

3. Demarcating 2 crops and 3 crops land and preserving the existing agricultural lands.

Demarcation of agricultural lands in the Upazila will be performed for preservation especially those lands whose cropping patterns are 2 and 3. No encroachment of other uses will be allowed in the agricultural zones. To save the agricultural land for food security in the country, it is necessary that further loss of agricultural land is prevented.

4. Preserving the existing beels and ponds to increase the fish production

Bagmara is a land of beels and ponds. There are huge beels and ponds in Bagmara upazila which are used for fish cultivation. A large portion of fisheries from Bagmara Upazila fulfill the national demand. So these existing ponds and beels should be preserved for fisheries development.

7.4.3 Economic acceleration

1. Creating special economic zones for faster industrial development

Creating special economic zones in the strategic locations of the Upazila will help industrial growth. Identification, demarcation and development of Special Economic Zones (SEZ) for medium and large scale economic investment in the Upazila can be important for the Upazila economy.

2. Demarcating and preserving the existing and future potential locations and areas for livestock production

Livestock sector including cattle, poultry and others is important contributor in the national nutritional needs. Preservation of sources and areas of livestock is required in the local and national interests. Identification, demarcation and preservation of livestock sources and areas will be required. Increased investment will be attracted to this sector. People can be encouraged for household level livestock development.

7.4.4 Community Resilience through Disaster Management

1. Identification of seismic hazard prone zones.
2. Identification of flood hazard prone zones and river erosion areas.
3. Provision and implementation of a risk sensitive land use planning

Chapter 08

Structure Plan Conceptualization

8.1 Introduction

The Structure Plan is the second basic document of the Plan Package which contains policy framework for further plans and development actions. This report is based on the policy framework of the Structure Plan, in which the development proposals are prepared at subsequent lower levels. It identifies areas where growth is likely to take place in the future that addresses the major issues only. This report consists of plans that comprises a broad policy guidelines. It also indicates the direction and extent of urban growth and long term strategy covering the twenty years from 2013-2033, for urban development infrastructure facilities and broad indication of land use.

8.1.1 Conceptualization of Structure Plan

Structure plan typically shows how broad scale development or change in a Geographical area will be physical organized on the ground. It provides long term statutory framework to guide the development and redevelopment of land which contains a development concept and policies by establishing the general pattern for land use, densities, major roads and utilities with the goal of ensuring that subdivision or development occur in an orderly, economic and efficient manner. The Structure Plan consists of a report and plans that comprises of a broad policy guideline. The term Structure Plan is derived from British planning practice but has been internationally adopted. The principal components of such a plan are:

- An inventory of existing physical, demographic, economic, and social-infrastructure features.
- An analysis of the major existing problems.
- An estimation of trends and changes likely in future (for the next 20 years).
- The identification of the major constraints on and opportunities for development.
- Consideration of the major development options and policies.
- An indication of the most suitable areas for such development.
- The identification of the priorities in each sector and the major activities needed to implement the development strategy.

The structure plan concentrates on the broad structure of the Upazila and is not concerned with the details of physical layout or individual development details which cannot be implemented until the later stages of the planning period. In those areas and sectors where action is anticipated or proposed within a relatively short time however, more detail may be needed than is provided in the structure plan. Such appropriate level of detail is provided in the action plan.

8.1.2 Extent and Nature of Structure Plan

Structure Plan for Bagmara Upazila would be prepared for 20 years which would cover up to 2033 with the content and meaning of the development policy of Planning Commission and guidelines laid in the Poverty Reduction Strategy Paper (PRSP), National Water Management Plan (NWMP), Disaster Management Plan, Wetland Protection Act, Environmental Laws, etc. This will bridge the gap between National level policy and local level plan.

The Structure Plan would include the following studies on:

- Hydrological study on the of the Upazila and connecting rivers (Hydrodynamic characteristics, Morphological characteristics, Geomorphologic development, Dominant Hydrodynamic and Morphologic process)
- Disaster management: Flood, water logging, drainage congestion,
- Water Resource Management
- Lands Study: Change in Land Use
- Livelihood Study
- Settlement Pattern
- Population Study
- Housing, Water supply and sanitation
- Communication, energy, education and health
- Agriculture and fisheries
- Transport system (road and water)
- Ecology and Environment

These sectoral studies would provide planning guidelines for land use and physical infrastructure. There is a need for a legal instrument in order to regulate land use in a manner that would encourage orderly urban and rural settlements in accordance with the strategic policies of the Structure Plan. Zoning regulations in Sub Regional Plan will be applied for the delineation of the Structure Plan.

The Structure Plan consists of a report and plans that comprises of a broad policy guideline. The report is supported by a number of maps of 1: 10000 scales illustrating various plan proposals. As such, at they are broad b rush and indicative and are developed and elaborated in the Urban Area Plan and Action Area Plan. The boundary of Structure Plan will coincide the future jurisdiction of Bagmara Upazila as the future expansion has duly been considered during preparation of Structure Plan.

8.1.3 Objectives

- (i) The main objective of Structure Plan is to demarcate the future growth areas and set a strategy for future development of Bagmara Upazila.
- (ii) To identify the urban areas and different rural centres of the upazila; and determine the planning requirements for the urban area, rural centres and rural area.
- (iii) Identification of urban growth area based on analysis of patterns and trends of development, and projection of population, land use and economic activities for next 20 years
- (iv) Formulation and Integration of different sectoral strategies for the Upazila.

8.2 Broad Landuse Zoning

In Land-use strategies Zoning is a technique that is used as a tool for urban planning by the governments to develop and regulate a real estate. The purpose of zoning is to divide a property uniformly into residential, commercial, and industrial districts. Zoning regulates the use and development of private and public real estates of an area.

The Total area of the Upazila is segregated under some broad classes that will basically guide future growth with wide aspects. Definitions of broad classes of Structure Plan are given below for conceptualizing focus of the future magnitude as well as illustration of the policies and strategies.

8.2.1 Agriculture zone

Agriculture zone is the zone of food production where predominantly agricultural production will be encouraged. All types of agricultural activity such as crop production, aquaculture, vegetable production etc. will be dominant and will be permitted to ensure food security and also fishing, poultry, etc. will be included in this zone. The main purposes of this zone are to

- Protecting high value agriculture land
- Promote farming activity and farming operation in the land especially suitable for the purpose.
- Conserve agriculture lands within the urban area.

8.2.2 Circulation Network

Circulation network contains major road network and railways linkage with regional and national settings. The purpose of this zoning is:

- Development of Regional Connectivity.
- To reduce traffic congestion within the Paurashava area
- Widening of existing Narrow Roads.

8.2.3 Growth Center

Growth centers are service centers (rural or urban) which has a potential for further development. It has been conceived as points of attraction for the people who otherwise would go to large congested urban areas.

- To sustain economic activity and economic development of rural area
- To provides goods and services to its own population as well as its surroundings.

8.2.4 Hat Bazar

Hat Bazar serves as a trading venue for local people in rural areas. These area is considered as the market place for the villagers provide a noticeable number of commercial activities and have a higher concentration of structures than the rural settlement area.

- Promote trade and commerce compactly associated with all other facility.

8.2.5 Industrial Zone

Industrial zone has been earmarked as the primary location to promote industrial development, the use generally include manufacturing, repairs, warehousing, distribution and transport operating centers.. Agro based industry major consideration for this zone.

- Accommodate a variety of industrial establishments of high environment quality that may function as an integral part of an overall development of the area.
- Link the zone with major transport network for convenience of the employees and production function.

8.2.6 New Growth Center

The hut bazar area which has the potentiality of new development and has a good connectivity and prospects to serve local community by increasing commercial activities area considered as New Growth Center.

- New Growth Center will be the new development hub in the rural area
- The development should not go beyond the area of the growth center zone what will preserve the agriculture land.

8.2.7 Urban Area

This area is also known as built-up area or core area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density at the present day. Height restriction or density zoning can be the tool to control the present growth trend and establish the targeted density.

8.2.8 New Urban Area

In preparing the Structure Plan some areas are identified outside the existing Paurashava area. Due to some growth and development factors of these areas are considered as Structure Plan area. This area will be developed within the plan period (2033). This zone also accommodates the required area for proposed public facility like administrative services, utilities, recreational area, major religious educational area, etc.

8.2.9 Rural Settlement and Vegetation

Rural settlement is a sparsely populated community that exists away from densely populated urban centers and has low population density. In Bagmara Upzila, Rural Settlement area is predominantly influenced by agriculture, homestead farming and vegetation etc. Rural Settlement haphazardly developed at road side areas.

- Rural settlement zone will preserve the rural and traditional character of the area.

8.2.10 Water body

This zone conserves various types' water bodies such as river, canal, khal, beel and pond etc. Water body under this category are grouped under two functional sub categories, natural water system – rivers and canals; water retention –controlled canal and large ponds.

- Ensure natural drainage network
- Provide irrigation facility round the year, especially in dry seasons

8.2.11 Water Supply Protection Zone

Water supply protection zone comprises river, canal/chara/khal. 50 meter buffer from the edge of the rivers, 10 meter buffer from the chara/khal will be preserved for water supply protection zone.

8.3 Urban Structure Plan

In Structure Plan, different policies have been described for different sectors comprising Socio-Economic, Physical Infrastructure and Environmental Issues including different sub-sectors. The policy implication of these sectors has structured the Urban Area for next 20 years. Thus, Land use Plan is the reflection of Structure Plan policy which will revised after 10 years.

Total Urban Area Plan is segregated under some broad classes that will basically guide future growth with wide aspects. Definitions of broad classes of Urban Structure Plan are given below for conceptualizing focus of the future magnitude as well as illustration of the policies and strategies.

Agriculture: Agricultural land denotes the land suitable for agricultural production, both crops and livestock. All types' agricultural activities such as crop production, vegetable production, and aquaculture etc. will be dominant and also fishing, poultry etc. will be included in this zone.

Circulation Network: This area includes rail and road communication.

Core Area: This area is also known as built-up area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density.

Urban Fringe Area: This area is considered as the influenced area of urban core area. The area is mainly urban settlement area beside the core area. And the influence of core area and major development can be go to this area after development of core area.

New Urban: Future Urban refers to the extended developed area. It will be developed where the new growth trend can be identified. New service provisions and many new facilities can be provided in this area. The area will be developed as the future build up area and will support a huge population among the Paurashava as well as Upazila. About **580.30** acre area has been proposed for Future Urban.

Water body: Equal or more than 0.25 acre land justification by the consultant and wet land will merge with water body. Total 155 acres land has been proposed for water body in Bhawaniganj and 127 acre in Taherpur.

Chapter 9

Structure Plan and Land use Zoning

9.1 Introduction

The Structure Plan refers to certain strategies and policies that are used to manage, plan and control the growth of the urban area as well as Rural Area so that the unplanned growth can be discouraged. Land use development strategies are formulated in such way that can form the regulation associated with the optimum use of land.

The land use Zoning is well known as a key instrument of planning regulation, which is environmental regulation in its broadest sense. Structure Plan and Land use Zoning are closely interacts and helps to ensure that pressure for change does not diminish area's social and environmental qualities as well as the protection of the Bagmara Upazila character.

9.2 Broad Land use Zoning

9.2.1 Upazila Structure Plan

Bagmara Upazila consist an area of 366.26 sq. kilometres. This large scale geographic area is a potential opportunity broad scale land use zoning to implement a fruit full structure plan. The reflection of inventory for the Upazila regarding existing physical, demographic, economic, and social-infrastructure features, separated under some broad classes that will basically guide future growth with wide aspects. Broad Land use Zoning will provide sustainable structural development for future growth and designing strategic guidelines.

Table 9.1 Chart of percentage 9.1 and Map 9.1 Shows the Structure Plan of Bagmara Upazila.

Table 9.1: Structure Plan

Type	Area_sqkm	Area_acre
Agriculture	124.44	30749.96
Circulation Network	6.76	1669.57
Growth center	1.76	434.19
Hut Bazar	2.11	522.21
New Growth Center	1.35	333.90
New Urban Area	3.90	963.06
Rural Settlement	148.47	36688.41
Urban Area	21.06	5204.83
Water Protection Zone	8.97	2217.62
Water body	44.57	11013.28

Source: Estimated by the Consultants, 2017.

The **Table 9.1** and **Map 9.1** Shows the Structure Plan of Bagmara Upazila with Broad Landuse Zoning segregated under Agriculture, Circulation Network, Growth center, Hut Bazar, New Growth Center, New Urban Area, Rural Settlement, Urban Area, Water Protection Zone and Water body by the Consultants.

These sub divisions of Landuse Zoning will priorities in each type growth regarding the proposed structure plan for Bagmara Upazila.

Agriculture Zone includes 33.98% of total Upazila will promote farming activity and farming operation in the land especially suitable for the purpose.

Circulation Network Zone includes 1.85 % of total area of Upazila for development of Regional Connectivity; reduce traffic congestion within the Paurashava area and widening of existing Narrow Roads.

Growth centerZone includes 0.48 % of total area of Upazila to sustain economic activity and economic development of rural area and to provide goods and services to its own population as well as its surroundings.

Hut BazarZone includes 0.58 % of total area of Upazila Promotes trade and commerce compactly associated with all other facility.

New Growth CenterZone includes 0.37 % of total area of Upazila as new development hub in the rural area

New Urban AreaZone includes 1.06 % of total area of Upazila which accommodates the required area for proposed public facility like administrative services, utilities, recreational area, major religious educational area, etc.

Rural SettlementZone includes 40.54 % of total area of Upazila will preserve the rural and traditional character of the area.

Urban Area Zone includes 5.75 % of total area of Upazila will preserve the rural and traditional character of the area.

Water Protection Zone includes 2.45 % of total area of Upazila for the purpose of preserve water supply under protection.

Water bodyZone includes 12.17 % of total area of Upazila will Ensure natural drainage network and provide irrigation facility round the year, especially in dry seasons.

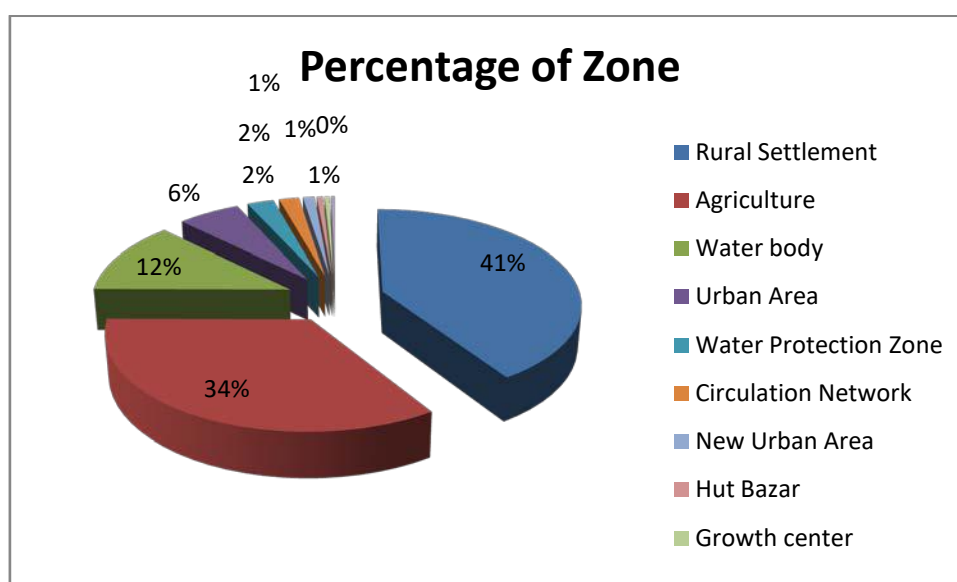


Fig 9.1: Structure Plan of Bagmara Upazila with Percentage of Each Zone.

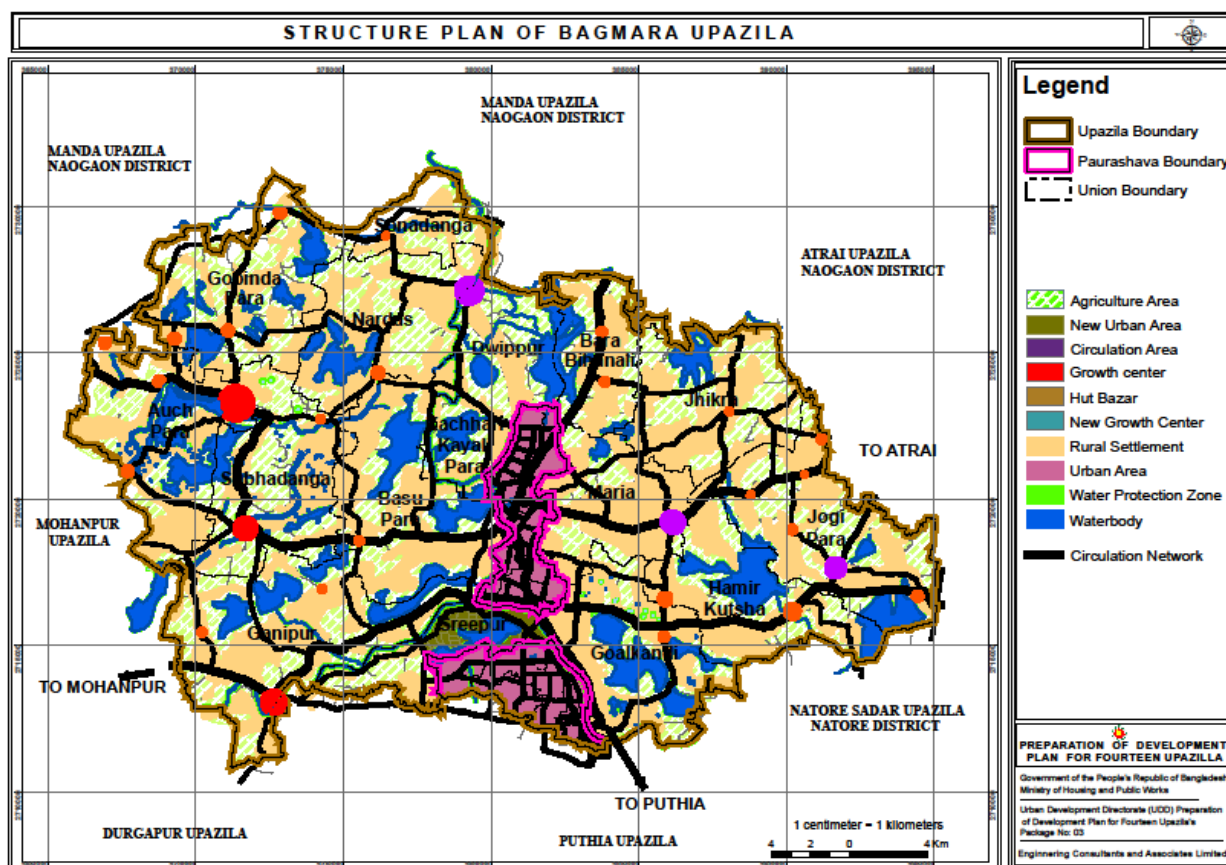


Fig 9.1: Structure Plan of Bagmara Upazila

9.2.2 Urban Structure Plan: Bwabanigonj Paurashava

Table 9.2 Chart of percentage 9.2 and Map 9.2 Shows the Structure Plan of Bwabanigonj Paurashava.

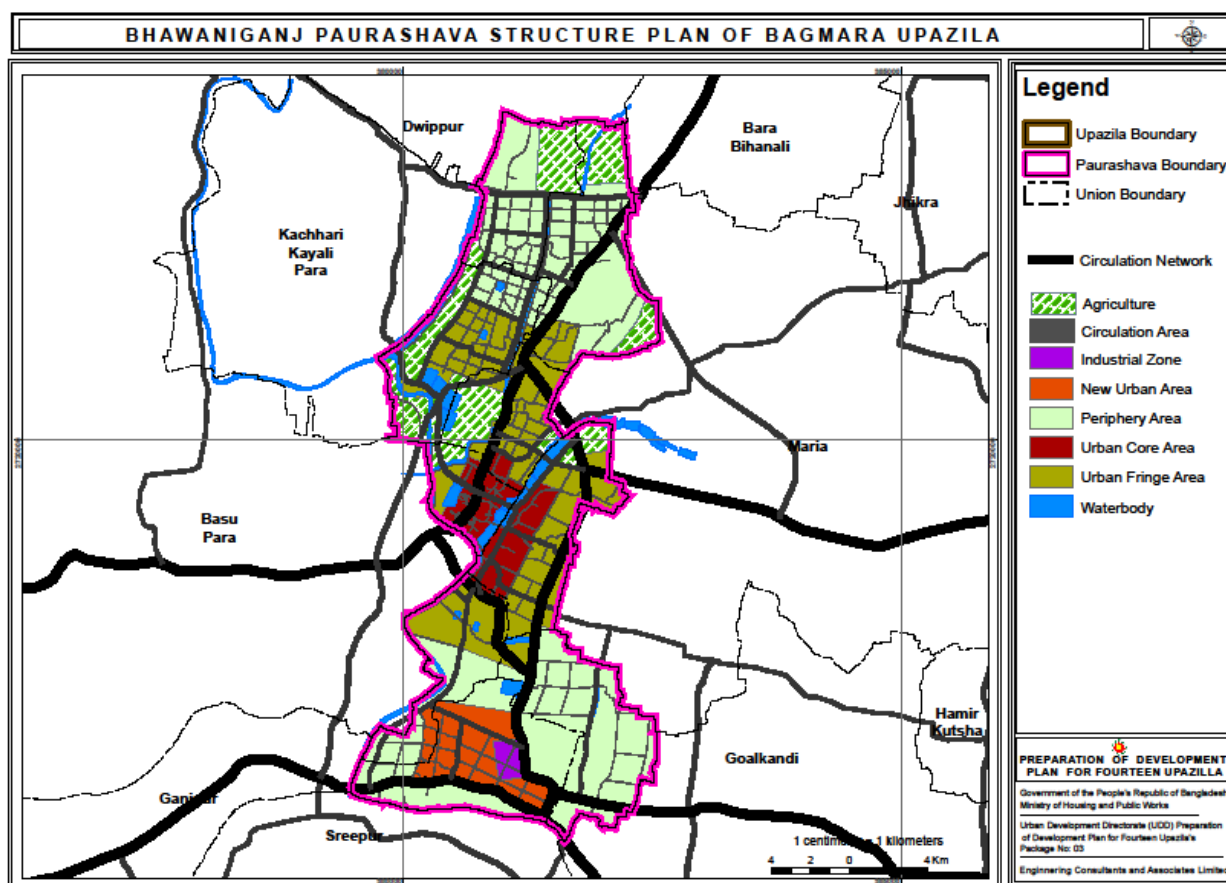
Map 9.2: Structure Plan of Bhwaniganj Paurashava

Type	Area (sqkm)	Area (acre)
Periphery Area	5.15	1272.66
Agriculture	1.75	433.62
Urban Core Area	0.77	189.92
Urban Fringe Area	2.67	659.70
Industrial Zone	0.10	25.25
New Urban Area	0.74	183.09
Waterbody	0.63	155.12
Circulation Network	0.79	195.84

Source: Estimated by the Consultants, 2017.

The Table 9.2 and Map 9.2 Shows the Structure Plan of Bhwaniganj Paurashava with Broad Landuse Zoning segregated under Periphery Area, Agriculture, Urban Core Area, Urban Fringe Area, Industrial Zone, New Urban Area, Water body, Circulation Network by the Consultants.

These sub divisions of Landuse Zoning will priorities in each type growth regarding the proposed structure plan for Bhwaniganj Paurashava.



Map 9.2: Bhwaniganj Paurashava Structure Plan of Bagmara Upazila

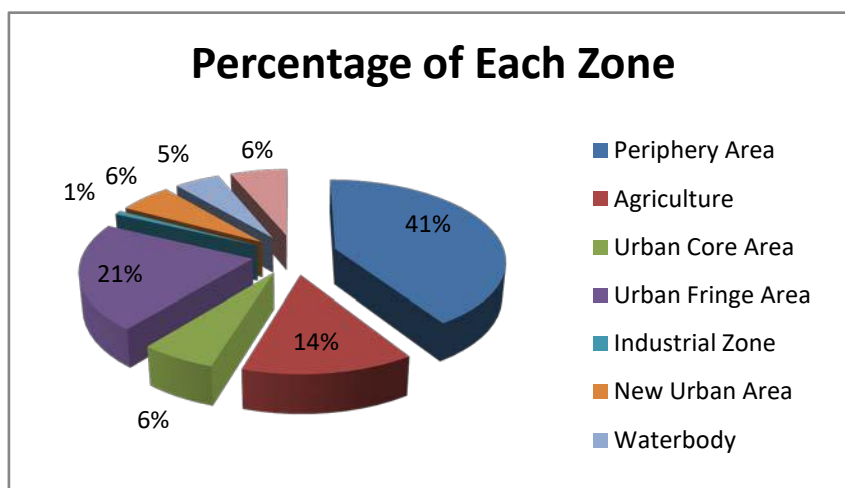


Fig 9.2: Structure Plan of Bhwaniganj Paurashava with Percentage of Each Zone.

Agriculture Zone includes 13.79 % of total area of Paurashava will promote farming activity and farming operation in the land especially suitable for the purpose.

Periphery Area Zone includes 40.58 % of total area of Paurashava preserved as buffer zone.

Urban Core Area Zone includes 6.07 % of total area of Paurashava as built-up area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density.

Urban Fringe Area Zone includes 21.04 % of total area of Paurashava as the influence of core area and major development can be go to this area after development of core area.

Industrial Zone Zone includes 0.79 % of total area of Paurashava will accommodate a variety of industrial establishments of high environment quality that may function as an integral part of an overall development of the area. It will also link the zone with major transport network for convenience of the employees and production function.

New Urban Area Zone includes 5.83 % of total area of Paurashava which accommodates the required area for proposed public facility like administrative services, utilities, recreational area, major religious educational area, etc.

Water body Zone includes 4.96 % of total area of Paurashava will ensure natural drainage network and provide irrigation facility round the year, especially in dry seasons.

Circulation Network Zone includes 6.23 % of total area of Paurashava for development of Regional Connectivity; reduce traffic congestion within the Paurashava area and widening of existing Narrow Roads.

9.2.3 Urban Structure Plan: Taherpur Paurashava

Table 9.3 Chart of percentage 9.3 and Map 9.3 Shows the Structure Plan of Taherpur Paurashava.

Table 9.3: Structure Plan of Taherpur Paurashava

Type	Area_sqkm	Area_acre
Agriculture	1.98	489.53
Circulation Area	0.60	148.92
New Urban Area	1.13	279.28
Periphery Area	3.82	1297.51
Industrial Zone	0.9	22.25
Urban Core Area	0.51	125.54
Urban Fringe Area	1.59	392.52
Waterbody	0.51	127.19

Source: Estimated by the Consultants, 2017.

The Table 9.3 and Map 9.3 Shows the Structure Plan of Taherpur Paurashava with Broad Landuse Zoning segregated under Agriculture, Circulation Area, New Urban Area, Periphery Area, Industrial Zone, Urban Core Area, Urban Fringe Area, Water body by the Consultants.

These sub divisions of Landuse Zoning will priorities in each type growth regarding the proposed structure plan for Taherpur Paurashava.

Agriculture Zone includes 17.93 % of total area of Paurashava Promote farming activity and farming operation in the land especially suitable for the purpose

Circulation Area Zone includes 5.43 % of total area of Paurashava for development of Regional Connectivity; reduce traffic congestion within the Paurashava area and widening of existing Narrow Roads.

New Urban Area Zone includes 10.24 % of total area of Paurashava which accommodates the required area for proposed public facility like administrative services, utilities, recreational area, major religious educational area, etc.

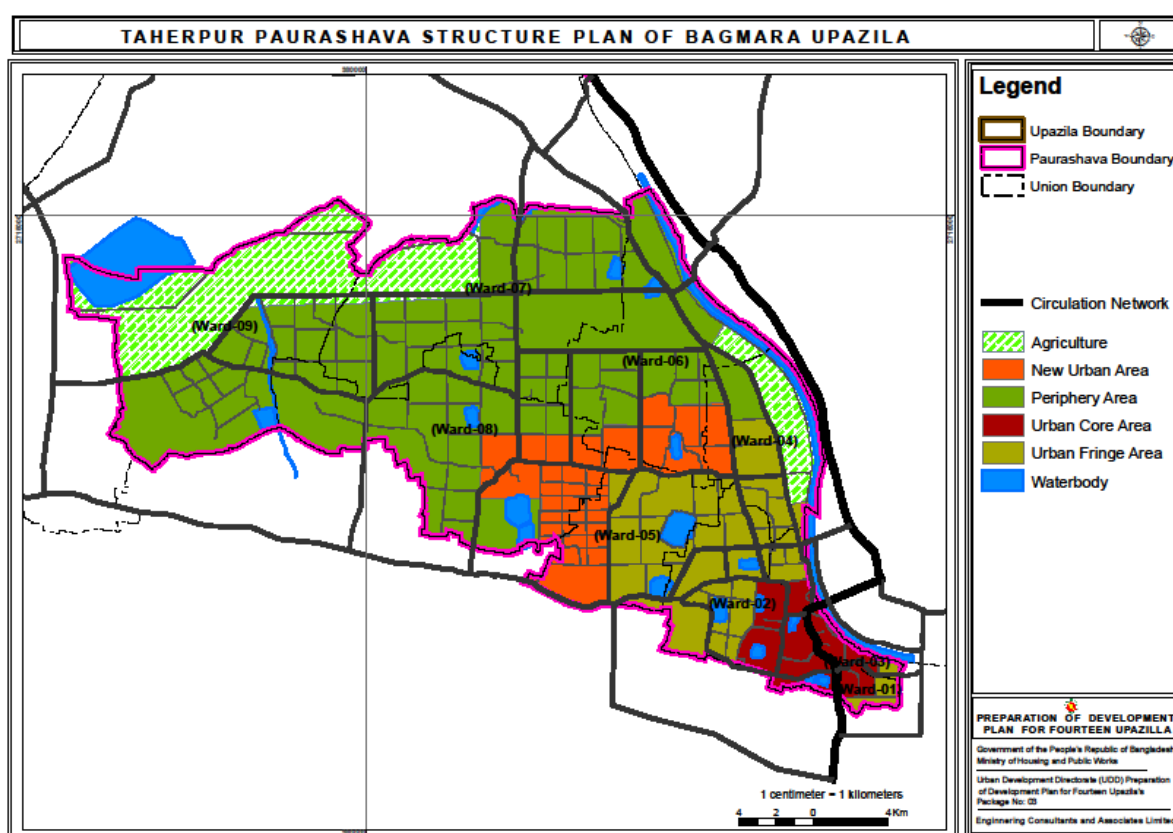
Periphery Area Zone includes 34.60 % of total area of Paurashava preserved as buffer zone.

Industrial Zone Zone includes 8.15 % of total area of Paurashava will accommodate a variety of industrial establishments of high environment quality that may function as an integral part of an overall development of the area. It will also link the zone with major transport network for convenience of the employees and production function.

Urban Core Area Zone includes 4.62 % of total area of Paurashava as built-up area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density.

Urban Fringe Area Zone includes 14.40 % of total area of Paurashava as the influence of core area and major development can be go to this area after development of core area.

Water body Zone includes 4.62 % of total area of Paurashava will ensure natural drainage network and provide irrigation facility round the year, especially in dry seasons.



Map 9.3: Taherpur Paurashava Structure Plan of Bagmara Upazila

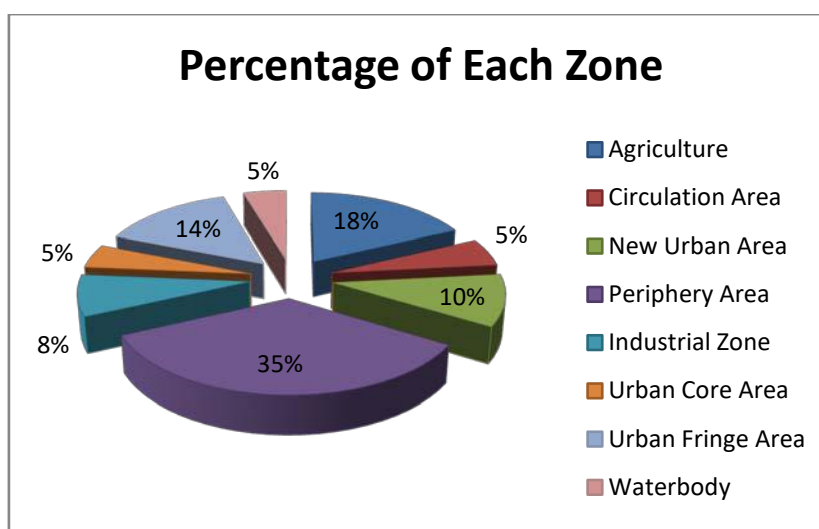


Fig 9.3: Structure Plan of Taherpur Paurashava Percentage of Each Zone.

Chapter 10

Strategies and Policies for Sectoral Development

10.1 Introduction

The function of the Structure Plan is to promote the development of Bagmara Upazila. These are as follows:

- The Structure Plan will serve as a framework for the development.
- It will work out as a mechanism for coordination and prioritizing development activities by public and private sector agencies.
- It will set the context for action area plan by the identification of the development needs of specific areas and the time period of action.
- The Structure Plan will consider the major development options and policies.

The Structure Plan Area is determined on the basis of reviewing its growth, geographical context, geological and hydrological aspects, socio-economic context and other relevant issues. As per ToR, the study area of the planning is determined as the whole Upazila comprising two Paurashavas and sixteen unions with an area of 363.3 sq.km

10.2 Economic Development

Policy-01: Attracting investment in various economic sectors

Justification: Attraction of investments in various sectors of the economy in the Upazila by various local Governments will be important tasks once the plan is ready for implementation. The volume of internal and external investments in various sectors of the Upazila economy will therefore be dependent on the performance of these local government units. With the legal and other logistical support from the national government, there is strong possibility that there will be increasing investments in the future.

Policy-02: Light Industries need to be developed to flourish the Industrial Sector Development

Justification: To accelerate the economic development of Bagmara Upazila in the long run, it is required to encourage the industrial establishment within Upazila area.

To control the haphazard industrial development measures will be undertaken

- Follow the category of industries as categorized by DOE (Green Category) and Bangladesh National Building Code (low and medium category hazards)
- Follow Bangladesh National Building Code, 1993 and Building Construction Regulation, 1952 (amendment in 1996) for providing Road, setback before construction of any industrial structures

Policy-03: Developing Growth Center Markets

Justification: Small growth Center should be developed in different union. Public and private investment should concentrate in this growth center. This policy will create opportunities for developing basic agro-based industries in Bagmara Upazila using the agricultural products as input at a comparatively cheaper rate. Agro-based industries will help the existing producer to increase their earning and increase the employment opportunities.

Policy 04: Ensure Best Possible Use of Land

Justification: To contribute to the land for economic development and employment generation proper land use is necessary. Within the Paurashava area, land is limited and agriculture has been discouraged.

To make a successful implication of this policy, following strategies should be taken:

- Inland Water bodies for fishery purpose and recreational purpose.
- Khas land will be distributed among the landless and a more transparent process of land settlement will be ensured

Policy-05: Encourage Investment in Business**Justification:**

- Local people can be encouraged to invest in business.
- Authority can reduce cost, revenue on business to encourage people.

Policy 06: Creating special economic zones for faster industrial development

Justification: Creating special economic zones in the strategic locations of the Upazila will help industrial growth. Identification, demarcation and development of Special Economic Zones (SEZ) for medium and large scale economic investment in the Upazila can be important for the Upazila economy.

Policy 07: Employment Generation through Development of Potential Sectors

Justification: To sustain economic activity of Upazila people for longer period. The economic activity of existing Bagmara Upazila is oriented with mainly Agriculture, small scale business in some extent. Proper planning and co-ordination among these sectors and future potential sectors would be possible to engage active labor force.

Following measures will be encouraged to implement this policy implication:

- Industrial Zone declaration in Land Use Zone (mainly light industries)
- Infrastructure development to flourish agro industry (Market, Storage facility, electricity supply etc.)
- Involvement of active labor force and community participation in different management activities of Upazila such as solid waste management in transferring the wastes from Solid-waste transfer sites, road maintenance, public sanitation

10.3 Infrastructure Development**Traffic and Transportation**

Traffic is the function of land use. It is also mention here that traffic network and the traffic generated induces the growth of land use. There is an interrelation between road network and utility services which together play key role to guide physical development in the town and Upazila.

Policy -01: Developing an integrated local, regional and national transportation system

Justification: Development of local transportation network will help build up improved internal road and waterway transport system within the Upazila. This will connect all parts of the Upazila with the regional and national transportation system and help transportation of goods and services between the Upazila and many other potential regional and national centres. The Upazila level transportation

network of roads, waterways and railways will be designed and developed in a way so that the network and system can be integrated with the regional and national network and system of transportation.

Policy -02: Improving local transport network within the Upazila linking the nearest districts

Justification: At present, all the Union Parishads are not directly connected by roads between each other and some of them are also not directly connected to the Upazila Parishad. To exploit full potentials of both urban and rural areas of the Upazila for economic growth and development, improved transportation connectivity between the upazila and nearest district Naogaon and Natore is of paramount importance.

Policy -03: Establishing a Railway Platform connecting to the Jogi Para Union for better communications

Justification: There is no railway connectivity in Bagmara Upazila, but nearest Nator District has rail line which is nearly connected to the place named Birkutsha bazar in Jogi Para Union, Bagmara Upazila. If it is possible to establish a Railway platform in that place, the connectivity between the two district Natore and Rajshahi will increase. It will be a great achievement for the local people if the communication system developed. So establishment of a Railway platform is a crying need for the betterment of connectivity in the whole upazila.

Policy -04: Widening of Existing Narrow Roads

Justification: Due to narrow road and inadequate road space traffic congestion is common in the Upazila. Transport facility is not adequate for convenience and comfort. For example, passenger shades, sufficient and footpaths etc. are not available.

Policy-05: Develop Efficient inter Upazila Communication Facilities

Justification: To create easy traffic movement within the Upazila, the roads have to be widened. The main artery of both the Paurashava and unions has to be kept free from any development.

Policy-06: For better Accessibility Transport Terminals should be Located at Major Roads

Justification: To develop and facilitate easy means of transport, consultant encourages the promotion of public transport and terminals.

- Make a priority for in space allocation of ROW for better space utilization and promoting non-motorized traffic avoiding interruption, ensuring speed with motorized traffic.
- 10-20 ft. plantation at road side will be proposed.
- The Road Hierarchy of Bagmara Upazila will be modified and proposed on the basis of Road width Standards.
- Follow up the basic rules mentioned in Building Construction Act, 1996 at Major Intersections of the Paurashava. Some basic rules are:
 - ✓ In each Corner plot of major intersection 1m×1m land area has to be open for traffic movement.
 - ✓ At the cross section of two or three roads within 50 meter distance, construction of commercial complex, Cinema Hall etc. are prohibited. But, 500 square meter

area in total is permitted for commercial purpose (Shopping Complex), road width is 23 meter or greater.

- Promote efficient traffic management system within Upazila by pursuing Regulatory measures (parking control and speed control in Highway Road, access control of trucks in the area,) and Design measures (Details of lay-out of Proposed Primary Road and Secondary Road, use of lighting equipment etc.) in Road Transportation System.

Policy 07: Develop Safe Pedestrian Sidewalks and Bicycle Paths along the Roads

Justification: For achieving a better quality of life in the Paurashava and UPAs, safe sidewalks and bicycle paths are required along the road system. An exclusive bicycle trails can also be created in suitable areas or along the roads with low traffic volume for supporting healthy lifestyle of local communities.

10.4 Utility Services

Policy-01: Facilitating Access for all Citizens to Basic Level of Services in Water Supply and Sanitation

Justification: Facilitate safe drinking water supply and safe sanitation to each household as per demand in 2033 through various means, including:

- Piped Water Supply System
- Water treatment plant, Overhead Tank
- Rainwater Harvesting and Conservation

Policy-02: Management of Toxic Waste from Industry

Justification: Toxic waste from industries is hazardous for human health. Industrial waste must be treated through proper method include Effluent Treatment Plant (ETP).

- Promotion of public health
- Prevention of public nuisance
- Promotion of healthy environment

Policy-03: Providing street lighting within the whole upazila boundary

Justification: There are lackings of proper utility facilities in Bagmara upazila. Still there is no street lighting facilities in the connecting road from Taherpur Paurashava to Bwabanigonj Paurashava. As a result there is possibility of occurring anti-social activities in those areas at night time. The Paurashava authority should take necessary activities to provide street light along the road side within the whole upazila.

10.5 Agriculture Development

Policy 01: Demarcating 2 crops and 3 crops land and preserving the existing agricultural lands

Justification: Demarcation of agricultural lands in the Upazila will be performed for preservation especially those lands whose cropping patterns are 2 and 3. No encroachment of other uses will be allowed in the agricultural zones. To save the agricultural land for food security in the country, it is necessary that further loss of agricultural land is prevented.

Policy 02: Increasing production in the existing agricultural lands

Justification: There are single, double and multiple cropped lands in the Upazila. Further intensification of production will be possible in these various categories of cropping lands. Increasing food supply of land will be required for the increasing population in the Upazila. Higher quality seeds, fertilizers and technologies of cultivation should be applied for higher production. The Agriculture Extension Department of the Ministry of Agriculture will be supervising and monitoring the execution of the plan with support and cooperation of the respective local governments within the Upazila.

Policy 03: Discouraging residential expansion in the agricultural land

Justification: Bangladesh is an agricultural country. Its economy is mostly dependent on agriculture. But in order to provide housing, most of the agricultural lands are converting to residential areas. As a result of expansion of residential areas, the total amount of agricultural lands is decreasing day by day which is harmful for future food production. So it is the demand of the time to discourage residential expansion in the agricultural land.

Policy 04: Promotion of Regional Agriculture

Justification: Promotion of agriculture would help raising income and savings to employment. The main objectives of agriculture sector to increased production and simultaneously ensure value addition. Surplus from agriculture will help development of agro-based industries and investment in other productive sectors.

10.6 Open Space and Recreation**Policy-01: Conserving the play field, open space, park and natural water reservoir**

Justification: To provide a livable environment for the Upazila people, community level recreational facilities should be preserved. In the long run, preservation of recreational lands for future generations should be ensured. Parks should be created at central and neighborhood level through Master Plan and Ward Action plan. Both public and private sectors investment is encouraged. Standard wise recreational facilities such as Playground, Neighborhood parks, Stadium, Cinema hall will be provided as described in Land Use Plan of Volume II.

Policy 02: Development of Public Park**Justification**

- Creation of recreational facilities and breathing place
- Preservation of ecological balance
- Promotion of physical and mental health both for the residents and tourists.

10.7 Housing Development**Policy-01: Making Provision of Affordable Housing for the Low Income People**

Justification: Upazila and Paurashava have to think about housing facilities for the low income people. Private sector will be operated for profit earning, the low income people will not access to these scheme. Thus to reduce unplanned development, the development authority may take initiative

for low income people. Also by providing services the general people can be encouraged to build their own houses.

Policy 02: Densification of Residential Areas

Justification: Housing category need to be decentralized through effective measures of planning.

To make a successful implication of this policy, following strategies should be taken:

- Core Area should be preserved for high income group through high land price. Core area comparatively highly dense area and vertical expansion is proposed for this area.
- Periphery portion where land price comparatively low can be declared for low income group.

Policy 03: Stop all Illegal Construction

Justification:

- Prevention of land carrying capacity
- Promotion of urban environment

Policy 04 Specific Policies for Urban and Rural Settlement Area

Urban Settlements

Policy 1: Promote urban area to buildable lands.

Policy 2: Restrict urban growth in seismic and flood prone zones.

Policy 3: Provide better transportation connectivity throughout urban areas linking rural hinterlands.

Policy 4: Provision of appropriate infrastructure and service facilities (road, drain, bridge, culvert, water supply, sewerage and sanitation, garbage disposal, energy, education and health etc) with equity to the urban dwellers.

Rural Settlements

Policy 1: Save agriculture lands in rural areas by encouraging nucleated/clustered villages.

Policy 2: Provision of better infrastructure and service facilities to the rural dwellers.

Policy 3: Promote integrated rural development connecting growth centres and villages.

10.8 Ecology and Environment

Policy-01: Preservation of Ponds and Water bodies

Justification: To ensure natural water bodies and fish resources which are crucial to sustain the livelihood and to retain the eco-system.

Permitted land use will be maintained in the demarcated areas that are as follows:

- Irrigation
- Provision of water way transportation in wet season
- Fishing/Fish Culture

Identify and conserve big ponds. These water bodies work as retention pond resource for fish cultivation and vital components to retain ecological balance.

Policy 02: Treatment of Industrial Waste before Discharging into the River

Justification:

- Prevention of water pollution
- Promotion of public health

- Promotion of healthy environment.

Policy 03: Incepting Drainage Network Plan in Response of Water Logging Problems

Justification: Lack of adequate and planned drainage facility causes Water logging problem. The depth of maximum internal inundation ranges from 2-5 ft and duration varies 3 to 4 hours.

Following strategies should be reflected in Drainage Network Plan:

- A planned Drainage network will be provided in Drainage and Environment management Plan considering the standards, appropriate method and formula
- Regular maintenance of existing man-made and natural drainage network with Community involvement
- Illegal encroachment of Water bodies by Water Reservoir Conservation Act, 2000 ensuring storm water drainage
- Scattered throw of solid waste in water bodies by proper solid waste management activities

Policy-04: Identifying the Hazard Risk Zones

Justification: Environmental Management Plan will be prepared under Urban Area Plan for all possible hazards (Cyclone, Flood, River Erosion, etc.).The Plan will provide the adaptation, prevention (structural/non-structural measures), mitigation, Preparedness techniques against a natural disaster through comprehensive disaster risk management.

To reduce the impact of hazards same manures will be undertaken which are as follows:

- Embankment, flood control sluice gates and other structural measures
- Early Warning System
- providing of multi-purpose cyclone shelter

Policy-05: Pollution Control

Justification: Pollution level such as water, air and soil pollution rate is very low. Besides air and soil pollution rate is also negligible. But this should not allow increasing pollution rate. To ensure safe environment for the Paurashava area, maintenance of the surface water quality is vital.

To control pollution following measures will be required:

- Make free surface waters form domestic wastes and other types of wastes which require proper solid waste management
- Riverside dumping needs to be restricted and dumping site has to be located through prescribed land use planning
- Discourage the high hazarders industries (Only Green Category Industries of DOE)
- Excessive pesticides and fertilizers use in Agriculture field cause soil pollution, therefore it is required to follow the Pesticides law, 1985

Policy-06: Ensuring Safe Sanitation for Citizen

Justification: There exist two types of latrine viz. katcha and Pucca. Besides, dumping of solid wastes in a scattered way is a common phenomenon.

Following strategies should be promoted in ensuring sanitation:

- Dumping Site and solid waste transfer sites demarcation in Land Use Plan of Paurashava area ensuring effective management including community participation
- Proposal of Solid Waste Dumping site
- Installing public toilets in schools, bus stations, launch Terminal, Markets, important public places and community latrines in densely populated poor communities or slums

10.9 Heritage Development

Policy01: Conservation of Heritage Site

Justification:

- Identify and preserve Ecologically Sensitive Area (ESA)
- Locate and conserve 'Heritage Sights'.
- Preventing intrusion into the protected areas by identifying and minimizing the root causes of illegal encroachment and occupancy.
- Bringing up the ecologically and culturally valuable sights into prominence and making them functional.
- Encourage public participation through central and local conservation committees.

Policy 02: Promoting and Attracting Investment in Tourism Development

Justification:

- For attracting tourists, tourist zone should be developed.
- Improved infrastructure and accommodation facilities can help promote tourism in the Upazila.

10.10 Drainage and flood control

Policy 01: Developing drainage system within the Paurashava area

Justification: Internal drainage system is important to keep the urban areas free from water logging and flooding. Drains are also required for the transportation of household sludge. At present, drains are highly inadequate in the municipal area especially in Bwabanigonj and Taherpur area. A detailed network of drainage system for Bwabanigonj and Taherpur Paurashava will be designed and implemented through several phases in the future.

Policy-02: Preserving and maintaining the existing natural water bodies for drainage, flood control and environmental purposes

Justification: All the water bodies of the Upazila should be preserved for natural flow of water, especially the rain and flood water. The natural water bodies generally have desired slopes for flow of water. This unique flow system cannot be developed easily by man-made drainage system. All national and regional highways, railway tracks, and public buildings and facilities will be constructed above the highest ever-recorded level of flood in the Upazila complying with the National Water Policy. This principle will also apply in cases of reconstruction of existing structures of this nature. All plans for roads and railways embankment will adequately provide for unimpeded drainage. Strategy adopting integrated actions for major water bodies, rivers and other large water reservoirs within the Upazila can be developed as these are concerns of national, regional and local authorities.

10.11 Industry

Policy 01: Stopping establishment of new brickfields within the Paurashava area and close proximity of any agricultural zone

Justification: This is necessary for maintaining the environment for agricultural production and quality of bio-diversity. Concerned authorities will be responsible for supervising and monitoring the activities of brick burning. It is very necessary to stop the establishment of new brick fields within the Paurashava area and also in the agricultural zone. Not only that, but also shifting of brick fields from the Paurashava area is a crying need now a days to prevent environmental pollution.

Policy 02: Encouraged the agro based industries and cottage industries

For reducing the loss and value addition to the agricultural produces, agro-based industries can be established in the industrial estates. Agro-based industries can be promoted in the designated industrial areas within the Upazila. Both public and private agencies can be encouraged for investment in agro-based industries in the Upazila.

Policy 03: Heavy industries must be developed in concentric way in specific land use category

Justification: Prohibit polluting or high hazard creating establishments/industries in haphazard way or in close proximity of human settlement or agriculture zone or ecologically critical area. And these kind of industries must be located in more concentric way with proper measure to minimize the pollution.

Policy 04: Creating special economic zones for faster industrial development

Justification: Protect grey area for alternative use (low hazard industry) rather than agriculturesettlement. If the landuse category does not make any conflict or any kind of adverse effect to the agriculture zone or ecology special economic zone can be considered for industrial purpose with proper measure.

Flood Flow, Water Body and Water Supply Protection Zone

- Policy 1: Protect main flood flow zone from encroachment.
- Policy 2: Discourage development on the influence area of main flood flow zone.
- Policy 3: Protect existing and newly buildable urban growth from river erosion.
- Policy 4: Ensure utilization of surface water for irrigation and supply of water to the urban residents.

Chapter 11

Traffic and Transportation Plan

11.1 Introduction

Transportation occupies a high place in modern life. Transport planning is a science that seeks to study the problems that arise in providing transportation facilities in an urban, regional or national setting and to prepare a systematic basis for planning such facilities. Transport planning is an important part of overall Town and Country Planning.

In Bangladesh, Transport Planning is not in practice still. Recently, government has developed the National Land Transport Policy, 2004 in order to provide a safe, integrated, effective transport system. Also, attempt has been taken to link relationship with land, economic activities and road network development. In preparing the Traffic and Transport Management Plan for Bagmara Paurashava under Urban Area Plan (Part C), the Survey Phase has been completed successfully. In precedence of these activities, this plan is prepared.

11.2 Existing Road Network

Bagmara Upazila is one of the largest Upazila of Rajshahi District. According to Banglapedia, 2017; Pucca road 127 km, Katcha road 406 km. Road network data and other road infrastructure will be updated through physical feature survey.

Table 11.1: Major Roads of Bagmara Upazila

Road ID	Name of the Road	Length (km)
Z6853	Mohonpur-Bagmara (Bhabaniganj) Road	23
Z6004	Puthia-Bagmara Road	26
Z6856	Manda-Bagmara-Atrai Road	48

Source: RHD, 2016.

The Regional Highway R6856 has been linked with Zila road Z6853 and several Zila Roads have been passed through Bagmara Upazila. The major roads of Bagmara Upazila have shown in Table 7.1

Table 11.2: Existing Roads of Bagmara Upazila

Road Type	Length in Km.	Percentage
Katcha	166.96	24.15%
HBB	45.32	6.55%
Pucca	479.06	69.30%
Total	691.34	100%

Source: Estimated by the Consultants, 2018

11.3 Roads Hierarchy

About 6 types of road hierarchy have been found in Bagmara Upazila. Most of the roads are village road both in terms of number and length. The Road hierarchy condition has been shown in the following table.

Table 11.3: Road Hierarchy of Bagmara Upazila

Road Hierarchy	Length in Km.	Percentage
Local Road	14.07	2.03%

Paura Road	41.75	6.02%
Union Road	152.14	21.93%
Upazila Road	123.95	17.87%
Village Road	338.57	48.80%
Zilla Road	23.35	3.36%
Total	693.83	100.00%

Source: Estimated by the Consultants, 2018

11.4 Transportation Network Considered

The primary road of Bagmara Paurashava is well connected with other part of the Upazila areas and also connected with secondary and access roads and all these roads maintain good connectivity within the Paurashava area. But these roads are not wide enough on the basis of standard. So, the narrow roads have to be widened on the basis of and also traffic management system need improved. Besides, some new roads need proposed to accommodate the future travel demand. Moreover, footpath facilities have to be introduced to meet up the demand of pedestrians.

11.4.1 Design Principals and Standards

In preparing detail design some basic principals have been followed:

Intersection improvement

This measures can be categorized into 2 types, are as follows:

Channelization

b. Improvement of Intersection geometry

Channelization

Channelization of intersection at grade is the separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

Channelization is done for:

Separation of conflicts (by using roundabout, raised island, etc.)

Reduction of conflict points

Reduction of excessive pavement areas

Improvement of intersection geometry includes

Corner Plot widening

Establishment of Traffic islands

According to Building Construction Act, 1996, in each Corner plot of major intersection, 1m×1m land area has to be open for traffic movement.

B) Land use Proposals at the Major Intersections

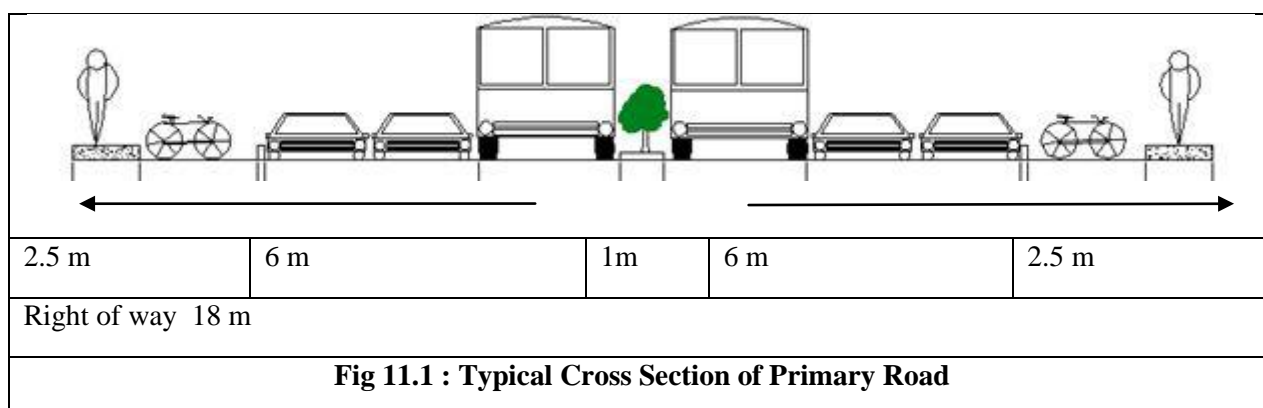
According to Building Construction Act, 1996, the construction permission of Shopping Complex, Cinema Hall or similar type of buildings are restricted within 50 m (164 ft) from major road intersections to avoid traffic congestion.

C) Prioritization in ROW Space Allocation according to Road Hierarchy

In pertaining with the National Land Transport Policy, 2004, for promoting an efficient road transport system, provision of Motorized and Non-motorized vehicles is prioritized. Therefore, effective road space allocation and utilization is also emphasized in national policy.

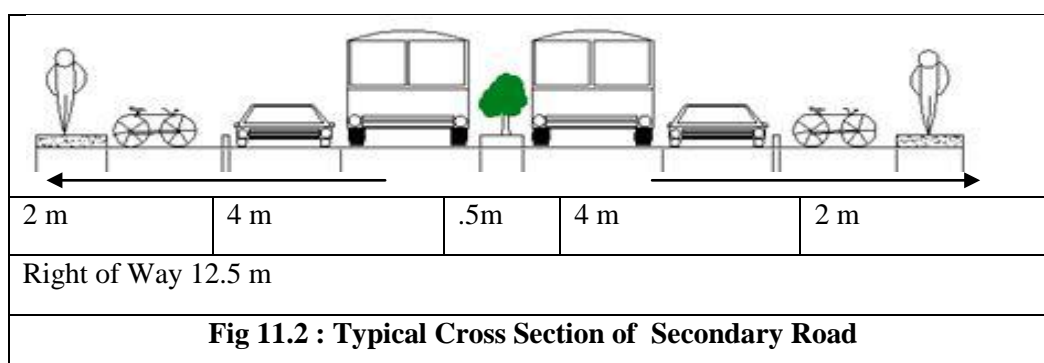
Primary Road

Provide four lane (12 m) for motorized vehicles including Bus, Car and Jeep etc. The width of each lane is minimum 3 m depending on the availability of space. Pedestrian paths as per existing demand (minimum 1.5 m).



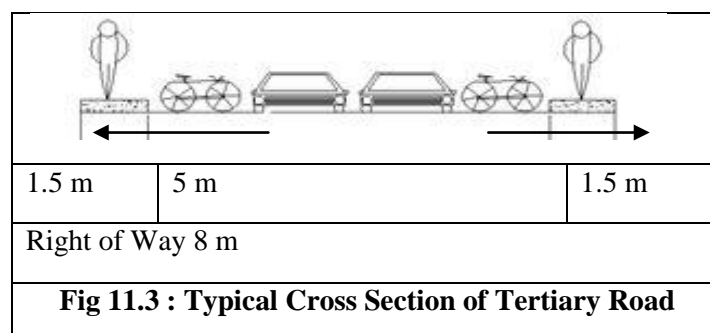
Secondary Road

Provide four lane (8.0 m) for motorized vehicles including Bus, Car and Jeep etc. The width of each lane is minimum 2.0 m depending on the availability of space. Pedestrian paths as per existing demand (minimum 2.0 m).



Tertiary Road

Provide one lane (5 m) for motorized and non- motorized vehicles including Car, Jeep, Motorcycle and Rickshaws etc. Pedestrian paths as per existing demand (minimum 1.5 m).



Access Road

Provide one lane (3 m) for motorized and non- motorized vehicles including Car, Jeep, Motorcycle and Rickshaws etc. The width of each lane is minimum 2.5 m depending on the availability of space

11.4.2 Transportation Network Plan

Transportation Network Plan covering its development plan proposals and management of the project area up to the year 2033. Existing transportation facilities and proposal on the important facilities such as, bus terminal, truck terminal, rickshaw/van stands, baby taxi/tempo stands and passenger sheds for local bus users are described in this section.

Road Network Plan

The proposed best suitable road hierarchy for the study area has been determined considering road standard by Planning Commission, 2004 and LGED, 2005. The aim of planning team is to design urban roads with a clear functional hierarchy. Primary roads (Class A& B) are those major routes specially designated to channelize large volume of traffic moving longer distances from one locality to another; Secondary collector and access roads provide for shorter journeys to schools, shops and recreation, and give access to residential plots. By creating a residential road pattern that discourages thorough traffic, residential amenity-traffic noise, accidents, and delays to pedestrians crossing roads- can be protected.

Table 11.4: Recommended Road Hierarchy.

Hierarchy (Planning Commission,2004)	Hierarchy (LGED,2005)	Recommended Hierarchy Type	Width (ft)
National	National	National	80-200
Regional	Regional	Regional	60-100
Feeder A	Zila	Primary	40-60
Feeder A/B	Zilla/Upazilla	Primary	40-60
Feeder A/B	Zilla/Upazilla	Secondary-1	30-40
Feeder B	Upazilla	Secondary-1	30-40
Union/Paurashava Road	Union Road	Secondary-2	25-35
Union/Paurashava Road	Union Road	Tertiary	20-25
Village Road	Village Road	Access Road	N.R

Source: Estimated by the Consultants, 2018

Existing road network covers most of the area but not interconnected and in scattered condition. In the road network plan, consultants have tried to meet the problems by proper channelization and widening of roads. As a result, proposed new roads will make a planned circulation network through the connection with existing roads of total. About 36.89 km new roads have been proposed and about 76.25 km roads have been proposed for widening.

The proposal should be implemented in near future to ensure smooth traffic flow in the town. In case of major road network (primary, secondary and even collectors), it would be essential to earmark the ROW as per the UDD planning standard but not acquiring the land right at this movement. The original owner can continue to use the land for the same purpose as of now but no change in land use should be allowed. It would be essential to build “bus-bays” as part of the geometric design standards, so that buses do not stop on a traffic lane while loading and unloading of passengers. Proposed primary, secondary and collector road network have been listed below.

11.5 Plans for Transportation Facilities

Parking Facilities

In entire Paurashava area there is no defined parking area. The buses/trucks/minibuses are parked haphazardly for at shoulder of roads illegally. As per Paurashava context, it is recommended to provide parking facilities in commercial and industrial area. .

Footpath

More than one third of the total trips are performed by walking, which is a good indicator to ensure sustainability for transportation and for the city. This also indicates the compact nature of the development. The travel distance information also suggests a lower travel distance for everyday job, school and shopping. People can easily perform that by walking. However, there is absent of footpath in the Paurashava area. This study suggests a network of footpath that can connect the transport stoppage with the important activities such as commercial centers, schools, hospital etc. In such case footpath is proposed in some area. Standard Footpath width is 2.45 m. Footpath has been proposed beside primary and secondary road at Paurashava area

Bus Stoppage/ Bus Bays

In the proposed Bus stoppage, the Bus Bay has been provided for safe embarking and disembarking. Bagmara Paurashava needs to pursue with concerned authorities to prepare action plan and to conduct full length feasibility study to design, develop and construct public bus stoppage.

Construction of By Pass

Traffic currently goes through the urban area using major urban linkages causes’ traffic congestion to the core area. Bypass on the outer part of the existing urban settlement about 1.81 km has been proposed to reduce pressure of motorized vehicles from core urban area as it becomes a major link for its internal traffic.

Eco-friendliness and Sustainability

Use of fossil fuel and harmful emissions are a major environmental issue all over the world. That’s where FFT (Fuel Free Transport) can play a vital role. Modes like walking, bicycling are in general

called ‘green transport’ for their environmental friendliness. Promotion of these means of mobility can eliminate long-term negative impacts of fuel-based vehicles and enhance health and safety of the inhabitants.

Fire Route

According to Fire Protection section of BNBC fire apparatus access road shall have required 14.7ft (4.5 Meter) width for free access of fire brigade vehicles and the hosepipe can cover 50m surrounding the road. It has been suggested that several existing roads need to widen from 10 to 15 feet to increase to ensure access to vulnerable inhabitants.

11.6 Road network Plan

Preparation of Master Plan for Bagmara Upazila aims to provide compatible land users supported by essential services specially establishment of appropriate linkage within the town. It is expected that renovation/rebuilding of existing road network and introduction of new roads and facilities will enhance the linkage and movement through congestion free appropriate management system.

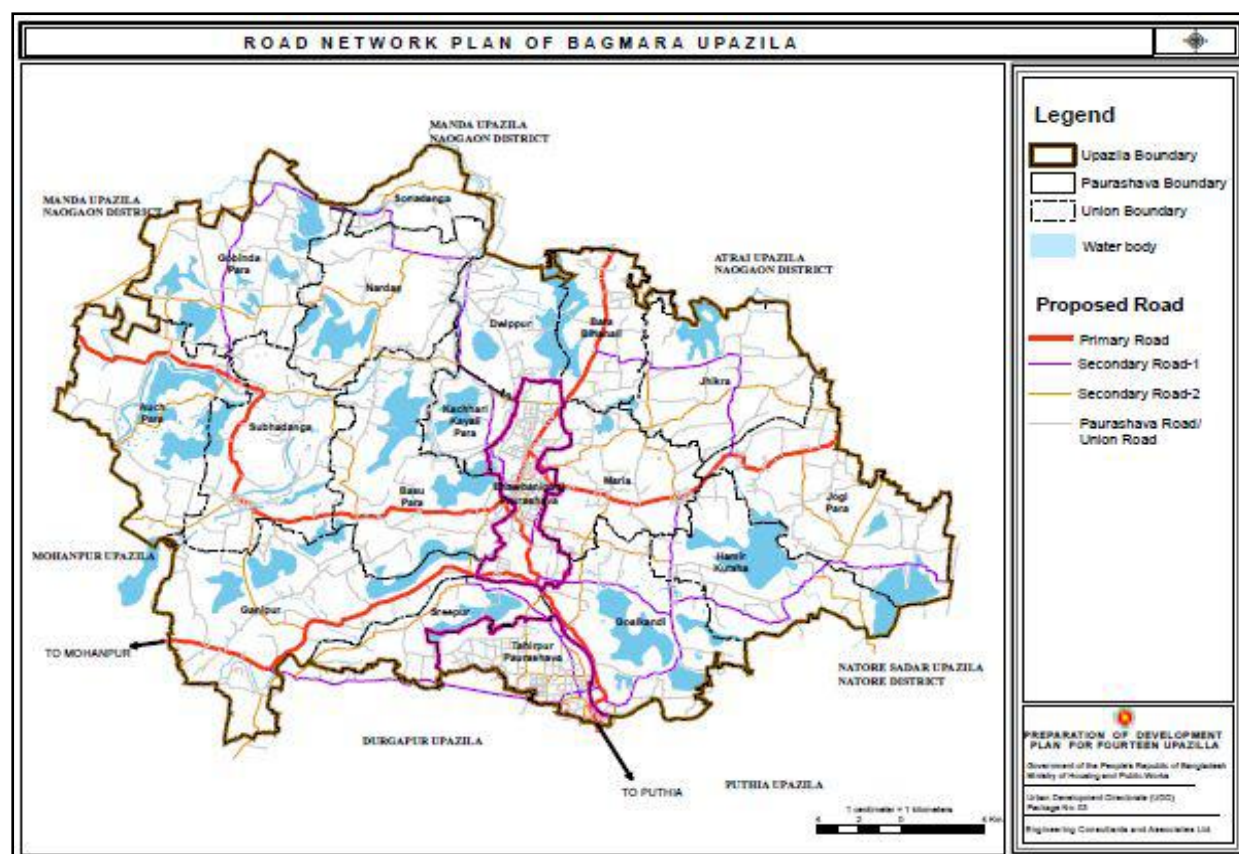
Proposed Road

The road network plan has been prepared considering the service area by the proposed roads and well-connectivity with the major growth centers and highways. Besides these the minimum loss of the land has been also ensured. Total 808.19 km roads have been proposed in the plan consisting of 67.44 km Primary Road, 128.8 km Secondary Road I, 81.18 km of Secondary Road II, and 530.77 km of Paurashava Road / Union Road. Bypass has been proposed along the main regional way of Bagmara Upazila. The proposed road has been shown in the table below with their respective Length.

Table 11.5: Proposed Roads Length in Bagmara Upazila

Proposed Hierarchy	Length (km)
Access Road	98.42
Paura Road	105.89
Primary Road	84.03
Secondary Road-1	104.55
Secondary Road-2	156.60
Union Road	354.66
Walkway	16.93

Source: Estimated by the Consultants 2018.



Map 11.1: Road Network Plan of Bagmara Upazila

Primary Roads

The existing Zilla road (Z6853), Mohonpur to Bagmara (Bhawaniganj) road will be considered as the Major primary road of the Upazilla as the road is connected with the two urban area of Bagmara. Beside this for the major linkage in the western part of the upazila, the road from the Manda Upazila (Naogaon District) through the Auchpara Union, Shuvadanga Growth center and Basupara Union will be considered another primary road for the upazila. In eastern part another two primary roads has proposed to connect the adjacent Atrai upazila of Naogaon district and the Railway track of Atrai Upazila just beside the Jogipara Union of Bagmara. The first one will go through the Jogipara and Maria union and will be linked to the proposed Bypass road of Bhwaniganj Paurashava. And another one will go from the Zilla road of the Bagmara and will go through the Goalkandi, Hamir kutsha and Jogipara Union and will pass the Bagmara Upazila in Durlavpur point.

Secondary Roads

Two types of secondary road according to need have been proposed in Bagmara Upazila. One Secondary road of 40 ft has proposed from Gobindara to Taherpur paurashav to link up the whole upazila and most of the union of northern part with the paurashva. Another 40 ft road has proposed from Bara bihanli union to Taherpur paurashava through jhikra, Maria, hamir kutsha and goal kandi union. Beside this, an outer bypass road of 40 ft from zila road to Bhawaniganj Upazila primary road has proposed for major linkage. There are some 30 ft roads considered as secondary road within the upazila. These roads are mainly linked road of these major secondary roads and primary road. On other hand, for some facilities and vehicle attraction hub this type of road is needed for better circulation. Ingrowth centers, the main road must be at least secondary road-2.

Walkway

In Urban Area, where the Boronai river and Fokirni river pass through the paurashava the walkway has proposed to avoid the encroachment and to make a better public place for city people. These walkway beside the river and beel will demark the water body line and preserve the land from any other use.

Bypass Road

The Main bypass of the Bhawaniganj Paurashava will be start from the Taherpur-Bhawaniganj road at the point (88°49'39.546"E, 24°34'5.863"N). And the bypass road will meet at the Upazila Road at the point (88°49'36.269"E, 24°35'47.672"N), 1.5 km far from the Upazila Parishad.

Table 11.6: Proposed Transportation Facility

Union	Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-05)	Passenger Shed	0.16	Transport and Communication
Bhawbaniganj Paurashava(Ward-05)	Passenger Shed	0.10	Transport and Communication
Bhawbaniganj Paurashava(Ward-06)	Auto Stand	0.85	Transport and Communication
Bhawbaniganj Paurashava(Ward-07)	Auto Stand	0.85	Transport and Communication
Bhawbaniganj Paurashava(Ward-08)	Bus Terminal	2.70	Transport and Communication
Bhawbaniganj Paurashava(Ward-08)	Truck Terminal	0.71	Transport and Communication
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21	Transport and Communication
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21	Transport and Communication
Goalkandi	Auto Stand	0.44	Transport and Communication
Goalkandi	Bus Bay	0.14	Transport and Communication
Goalkandi	Bus Terminal	3.10	Transport and Communication
Tahirpur Paurashava(Ward-02)	Mini Bus/Auto Stand	0.44	Transport and Communication
Tahirpur Paurashava(Ward-02)	Rickshaw/ Auto Stand	0.47	Transport and Communication
Tahirpur Paurashava(Ward-02)	Auto Stand	0.12	Transport and Communication
Tahirpur Paurashava(Ward-03)	Auto Stand	0.12	Transport and Communication
Tahirpur Paurashava(Ward-05)	Bus Bay	0.12	Transport and Communication
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21	Transport and Communication

Source: Estimated by the Consultants 2018.

The advantages of increased mobility need to be weighed against the environmental, social and economic costs that transport systems pose. Transport is not an isolated issue. Any new scheme like a major road construction may improve connectivity and expand economic activities. But, at the same time, it may evict hundreds of people and cause critical change to the surrounding ecology. A sensible trade-off must be done in these cases; and, the net result has to be positive on the lives of the people and their environment. Therefore, all the study needs to ensure in-depth analysis of socio-economic and environmental impact of transport projects.

Chapter 12

Drainage and Environment Management Plan

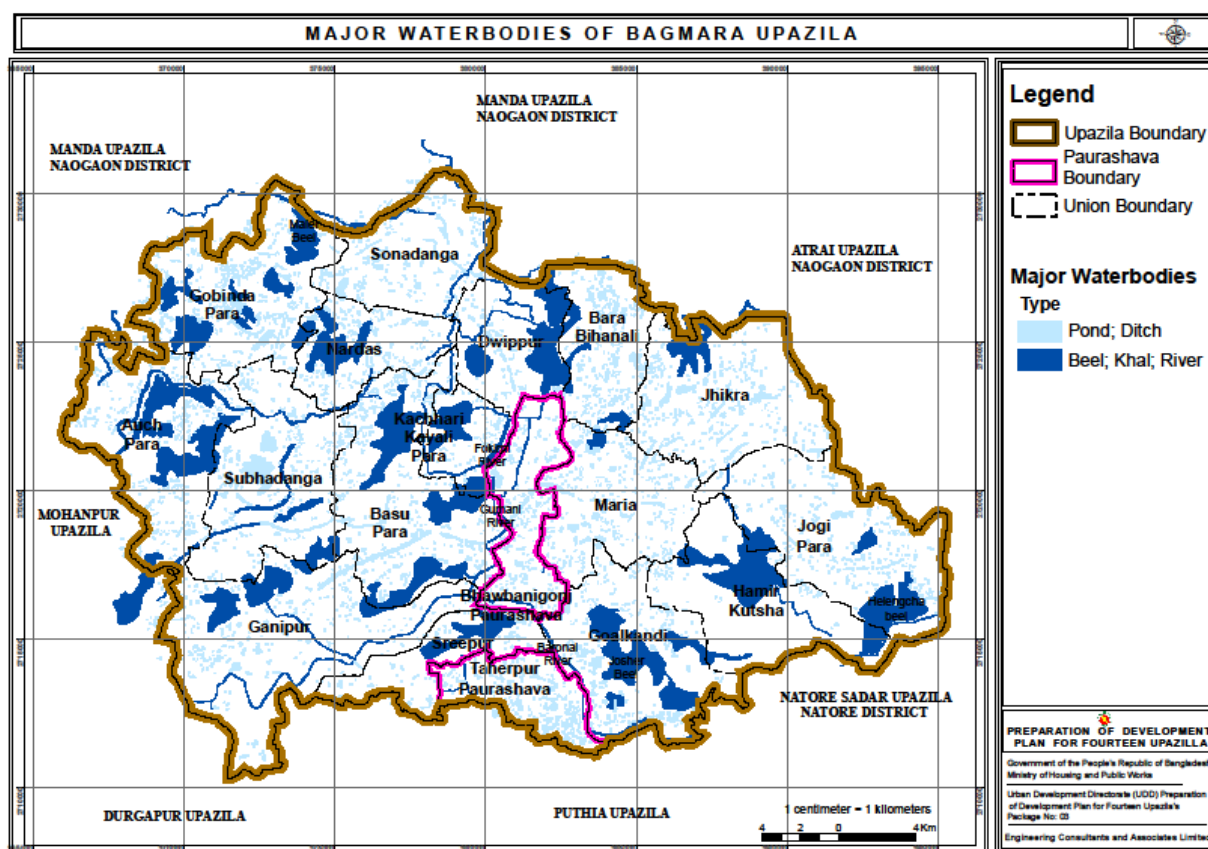
12.1 Introduction

Drainage condition and facilities are important concern to human settlements to create better living environment. On the other hand, Environment is an important factor during preparation of any development plan of an area, Different environmental condition and drainage situation have been analyzed and information has been collected accordingly in order to present the overall drainage and environment profile and plan of Bagmara Upazila.

12.2 Hydrological Analysis for Drainage

Existing Natural Water Channel

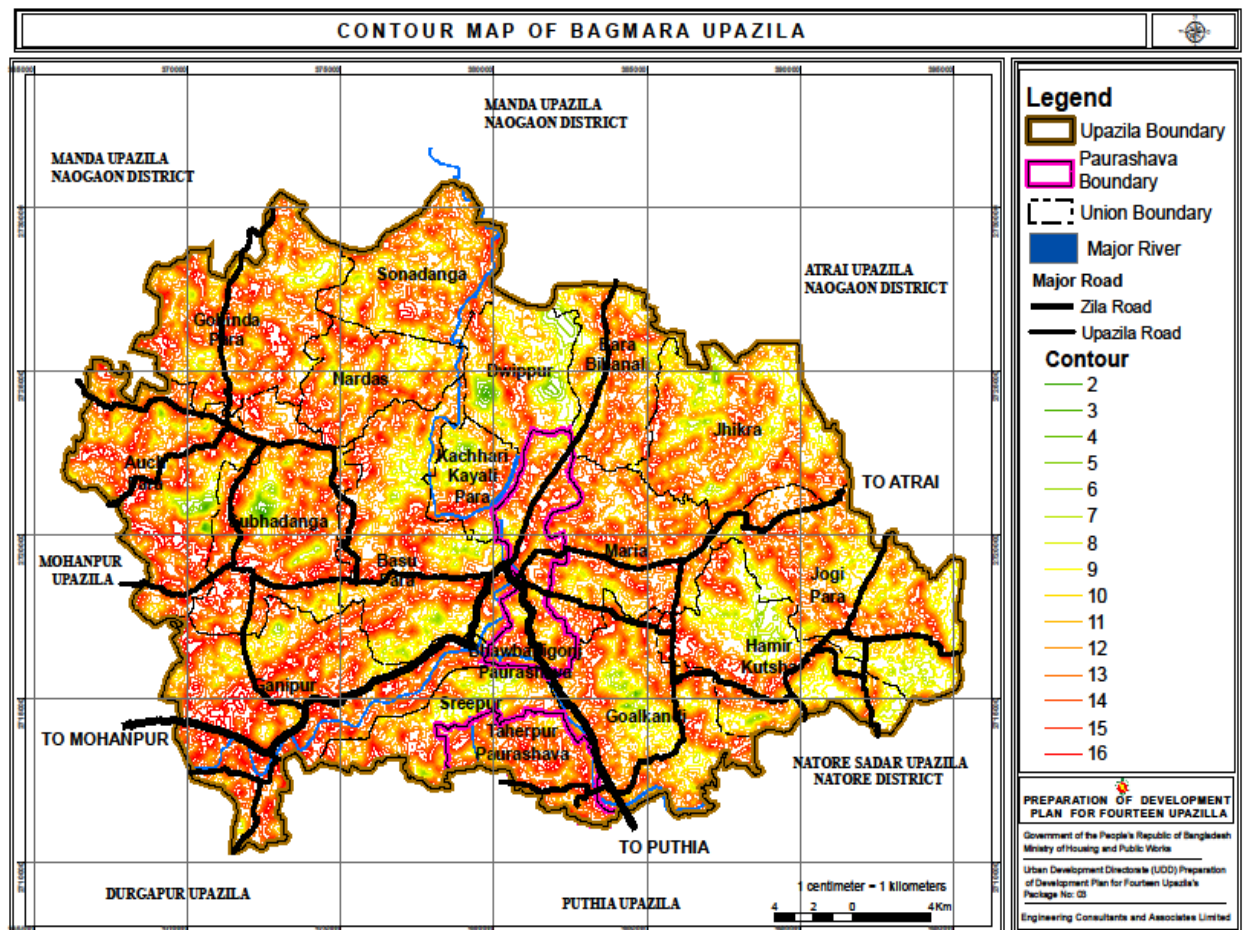
Bagmara has huge numbers of water bodies which serve to contain flood water. Baronoi, Fokirmi, Atrai River are the main drainage channels in the vicinity. The whole system of rivers in and around the Upazila is essentially connected to the Atrai River. The area does not face heavy flooding during the monsoon but does face drainage congestion during monsoon and post-monsoon. And the major beels are: Lakatti Beel- Kachari Koyalipara, Likra Beel- Dwippur, Pallarkati Beel- Basupara, Joshir Beel-Goalkandi, Kalar beel-Shuvadanga, Hathkholar Beel, Gamar Beel, Harjor Beel- Gobindapara, Nimar Beel-Auchpara, and Hatar Beel-Nardas.



Map 12.1: Major Waterbodies of Bagmara Upazila

Contour

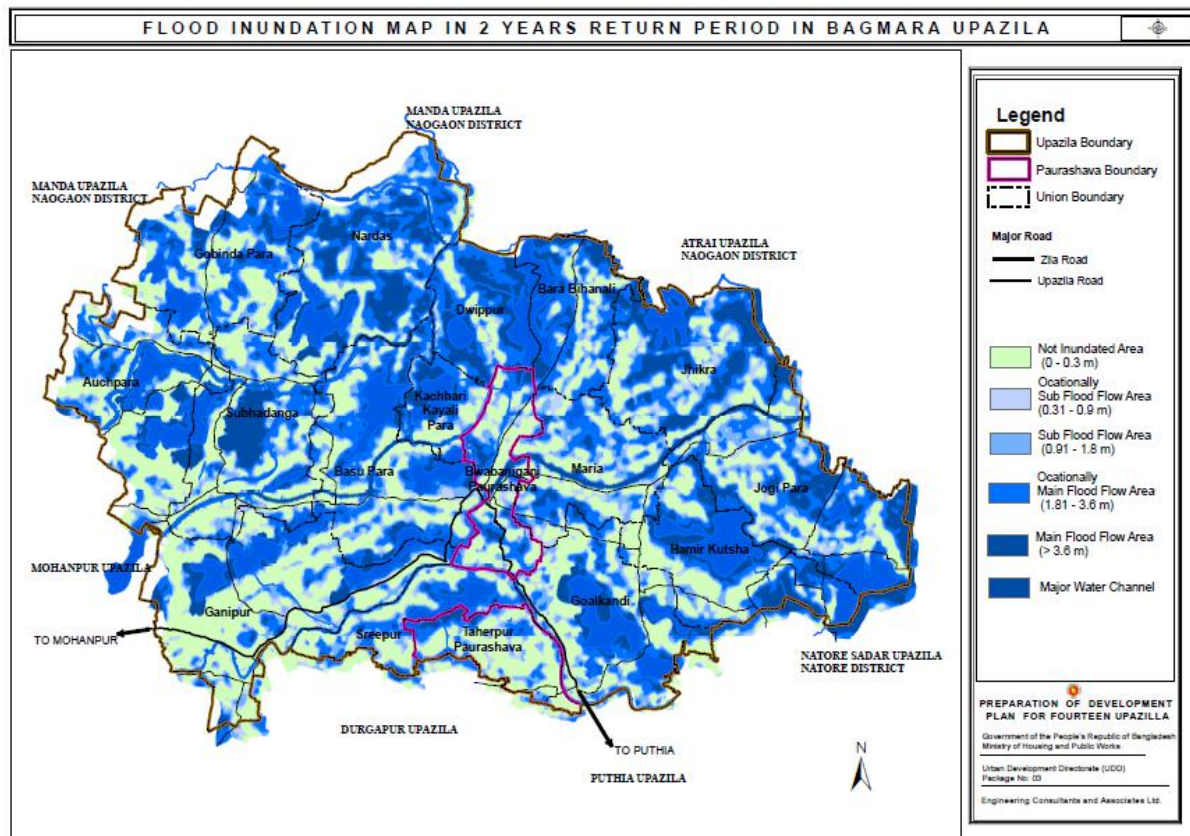
Contour level data is essential to determine the water flow and the drainage plan. In Bagmara Upazila the average contour level is 2 to 16 m. In Map 12.2, Red portion showing the higher contour. In this upazila the southern part and the west southern part is relatively high.



Map 12.2: Contour Map of Bagmara Upazila

Inundation Mapping

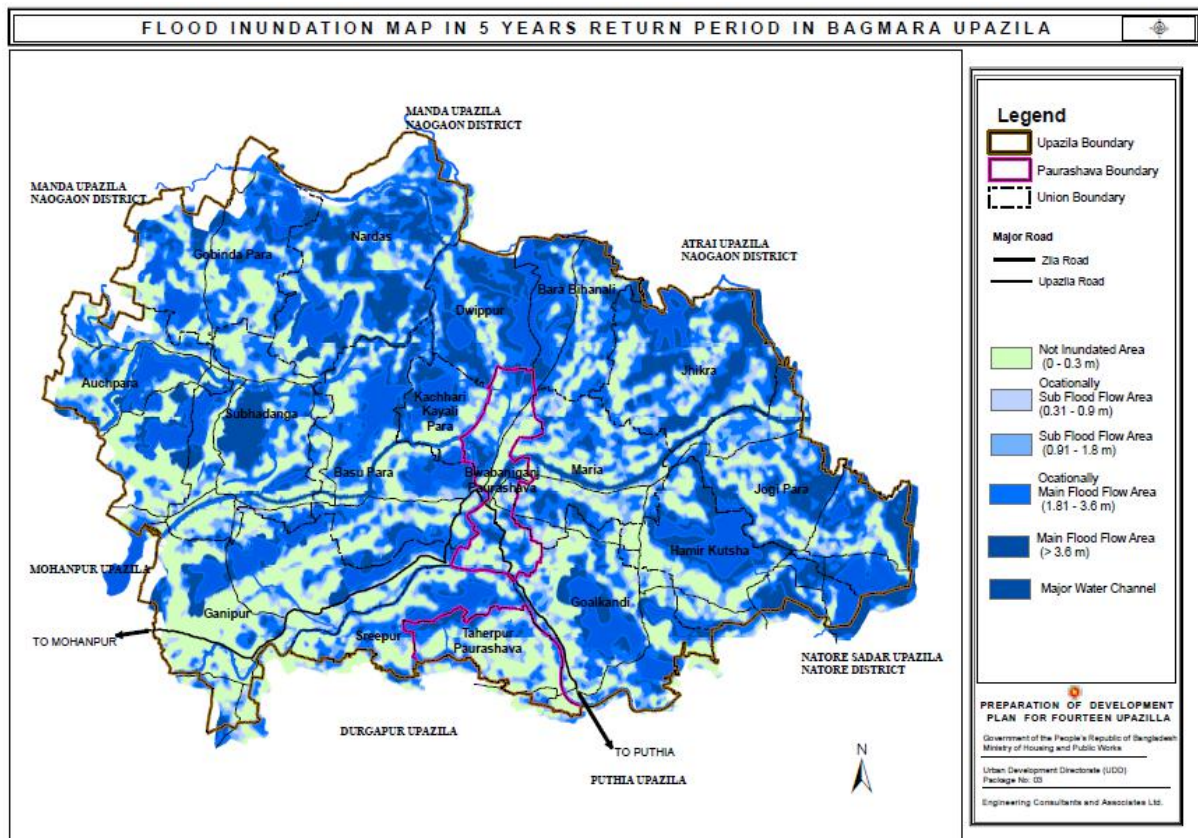
By the HYCRAS software the average inundation condition of the upazila has presented in the map. According to the data the northern part of the upazila are mostly affected by the flood. And for the missing linkage and drying river this portion is affected most.



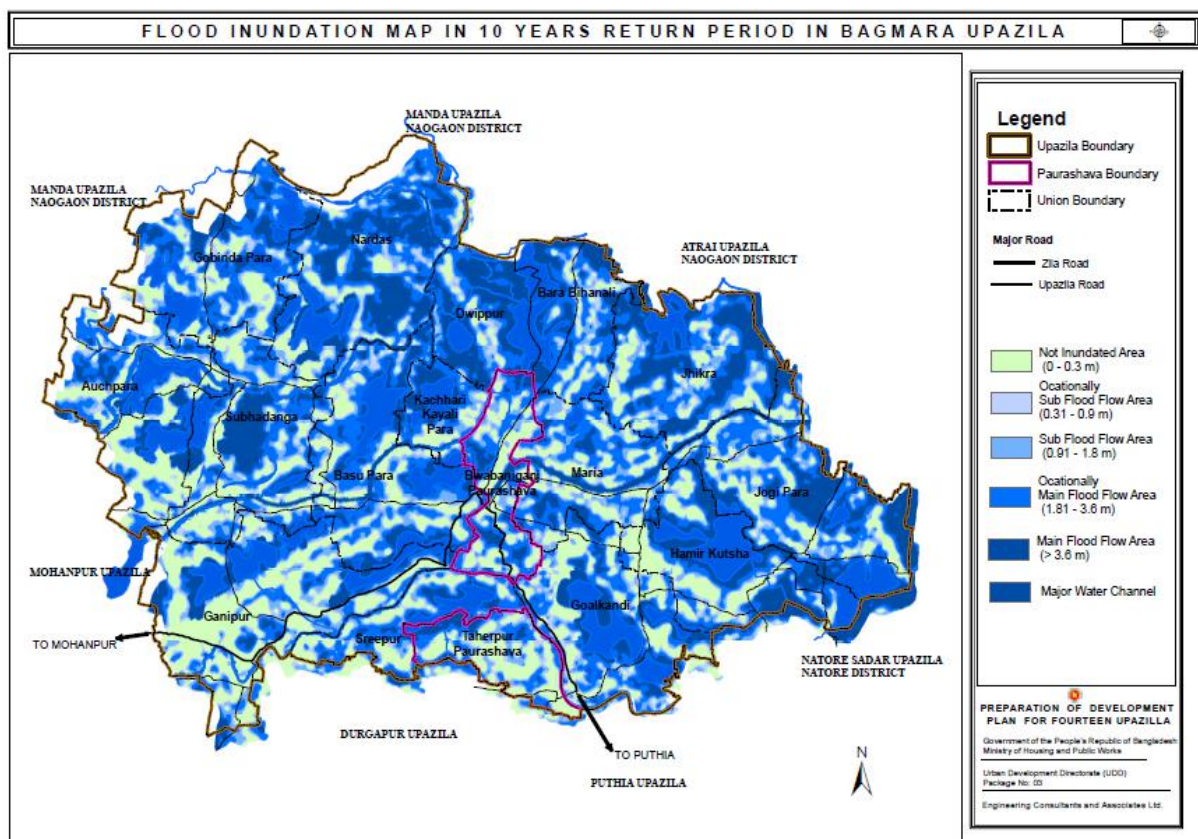
Map 12.3: Flood Inundation Map in 2 Years Return Period in Bagmara Upazila

Return Period data Analysis

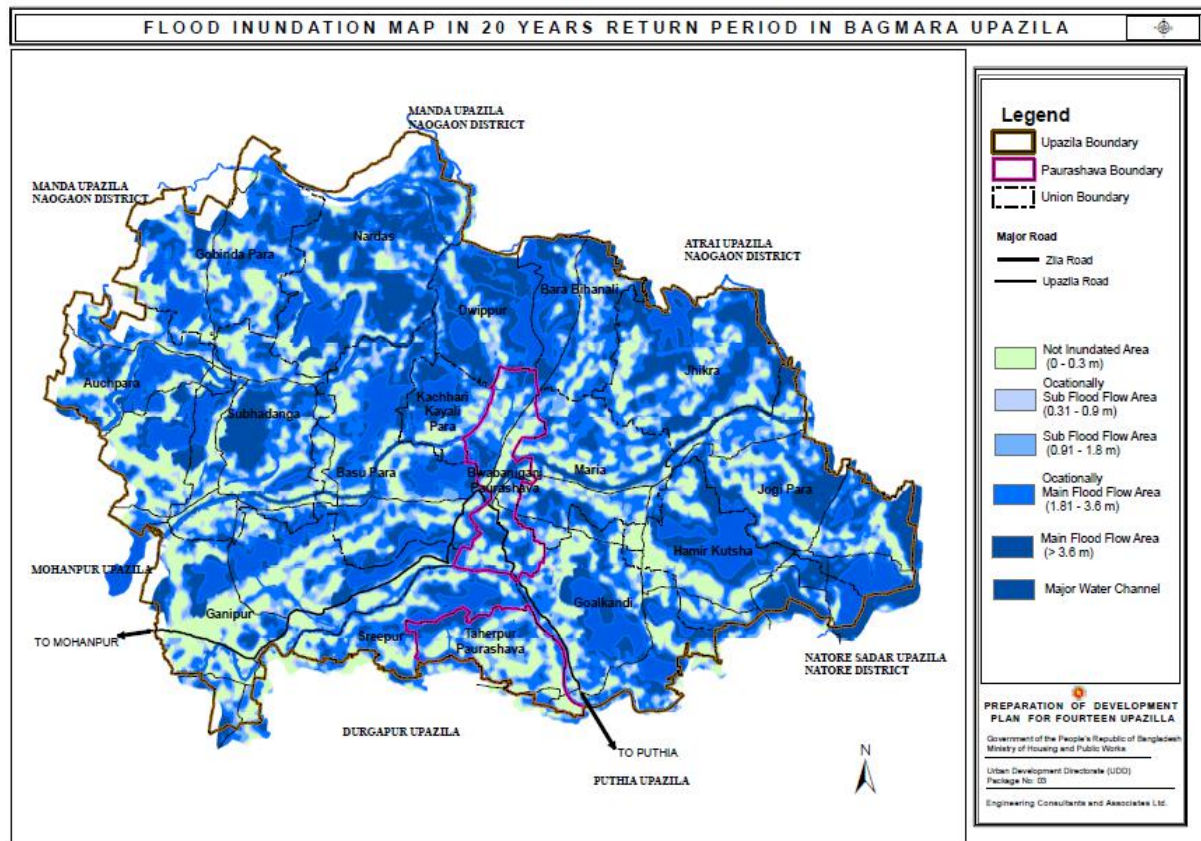
By the HYCRAS modeling the flood condition in different return period scenario has presented here. For the long period development this flood modeling is essential for permanent structure and declaration of zoning. Here the return period flood mapping for 5, 10, 30 and 50 is presented.



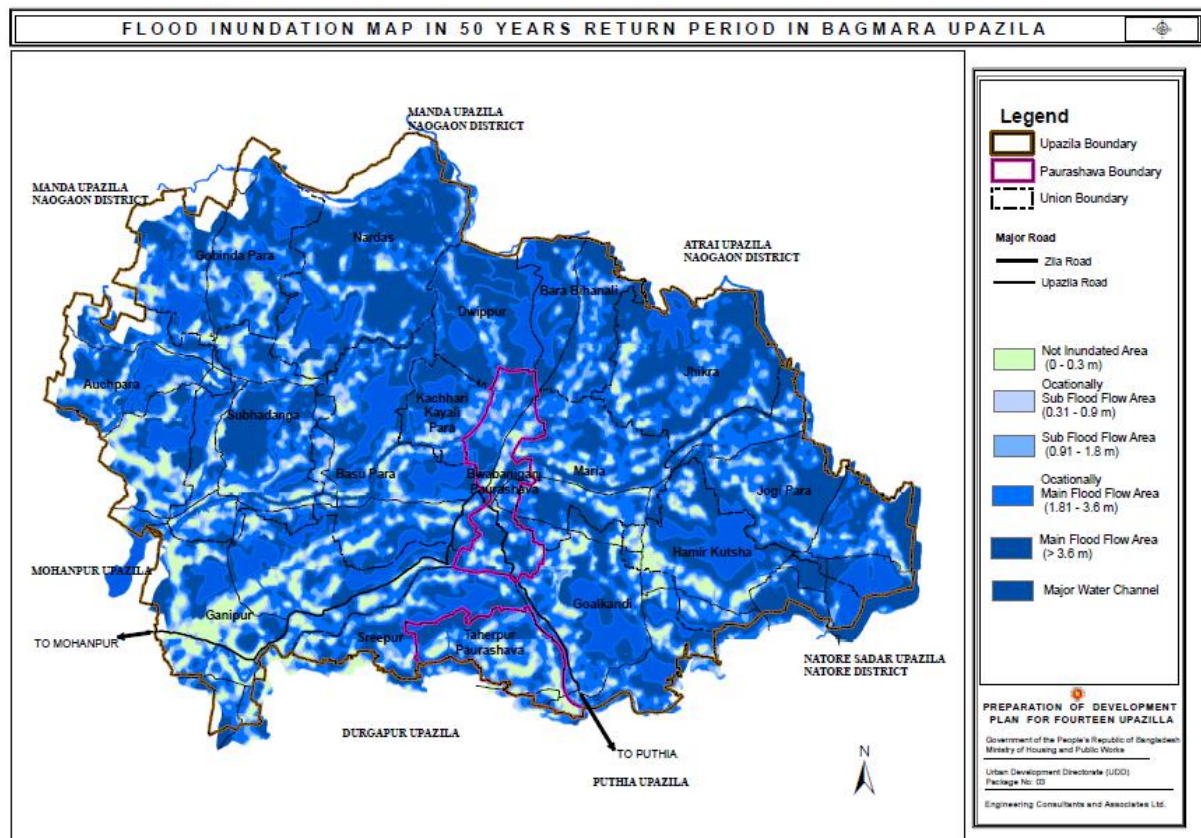
Map 12.4: Flood Inundation Map in 5 Years Return Period in Bagmara Upazila



Map 12.5: Flood Inundation Map in 10 Years Return Period in Bagmara Upazila



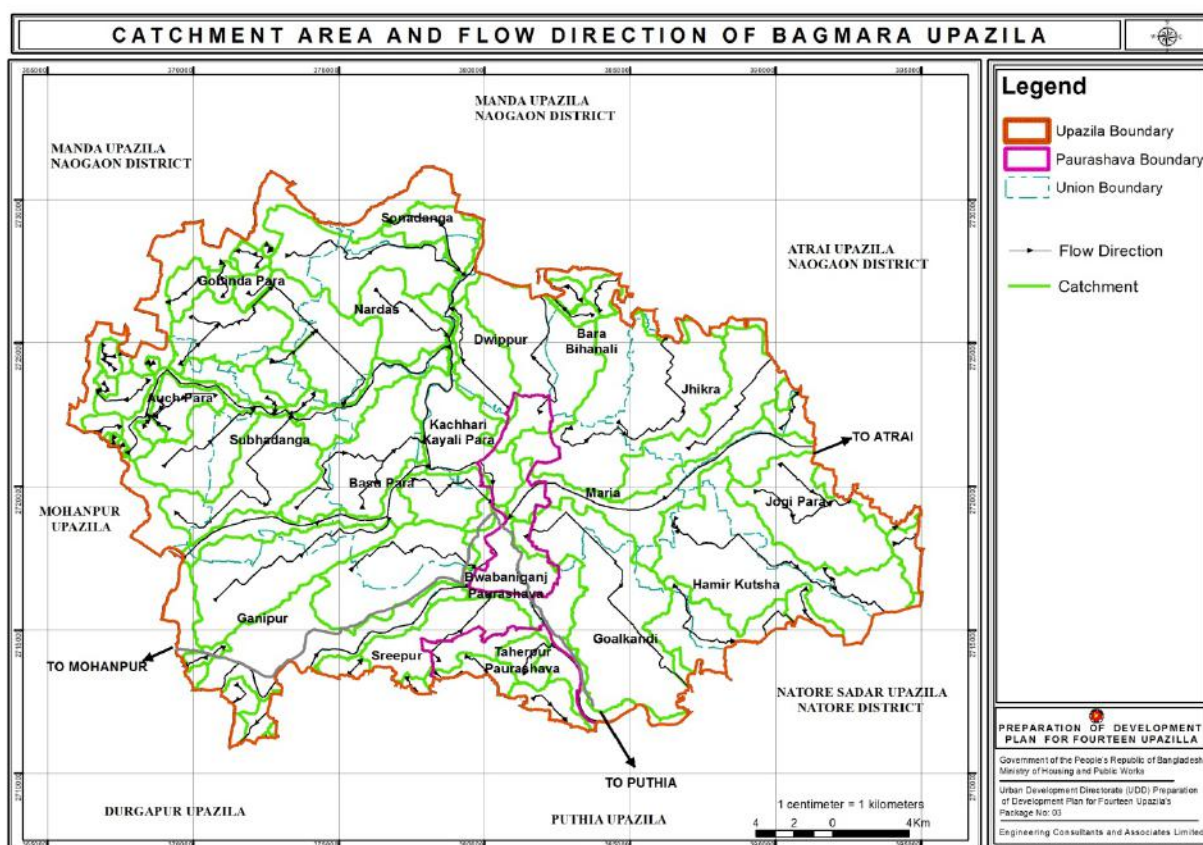
Map 12.6: Flood Inundation Map in 20 Years Return Period in Bagmara Upazila



Map 12.7: Flood Inundation Map in 50 Years Return Period in Bagmara Upazila

Catchment Area and Flow Direction

With the Digital Elevation Model and field level data analysis, the catchment area boundary has delineated and flow direction of the every catchment area water has been identified naturally. The flow direction modeling is very important to identify the drainage channel of the area.



Map 12.8: Catchment Area and Flow Direction Bagmara Upazila

12.3 Drainage Management Plan

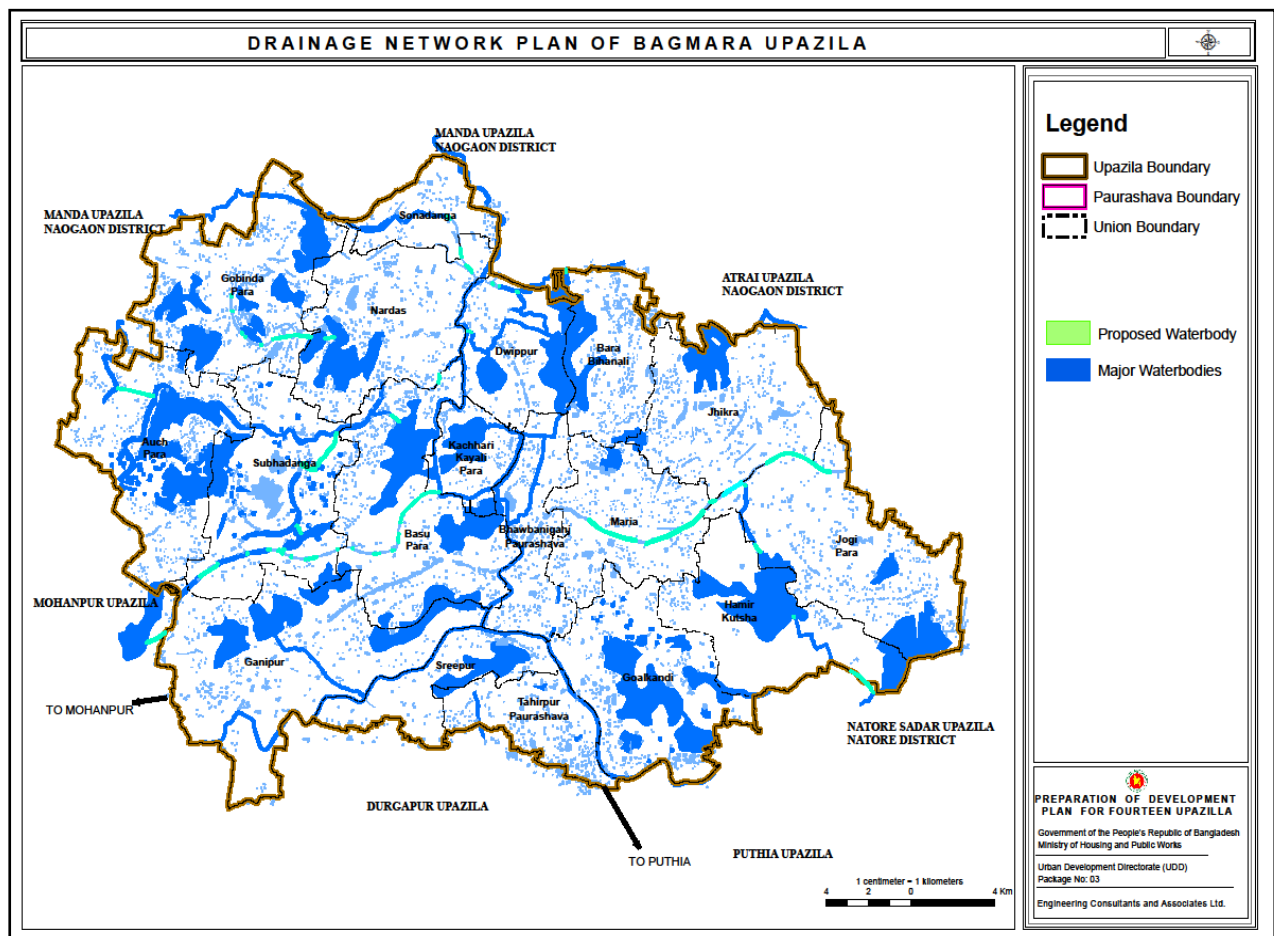
Drainage management system of an area includes natural canal and river system, and different drainage issues. The drainage profile of Bagmara Upazila is not very much complex.

Proposed Natural Drainage System

The urban areas lack proper drainage system. Flood modeling software should be used to understand flooding conditions, identify the water logging areas and establish the drainage requirements. From the hydrological analysis of Bagmara Upazila 4 types of area has been delineated. In the suitability analysis of Bagmara Upazila it shows 4 categories of land inundation type i.e; not suitable for other use or water bodies, suitable for agriculture, moderately suitable for other uses and area which are not inundated. Most of the area of Bagmara has been found to be inundated. Area suitable land for agriculture has been found in most of the parts. **Map 12.3** Shows Drainage Plan of Bagmara Upazila.

As Most of the river channel in Bagmara Upazila is illegally occupied by the power holder and in many cases the river channel is drying for lack of water. Only in rainy season the water is found in the channel. And no better linkage is found among the beels having water in drt season. So in drainage

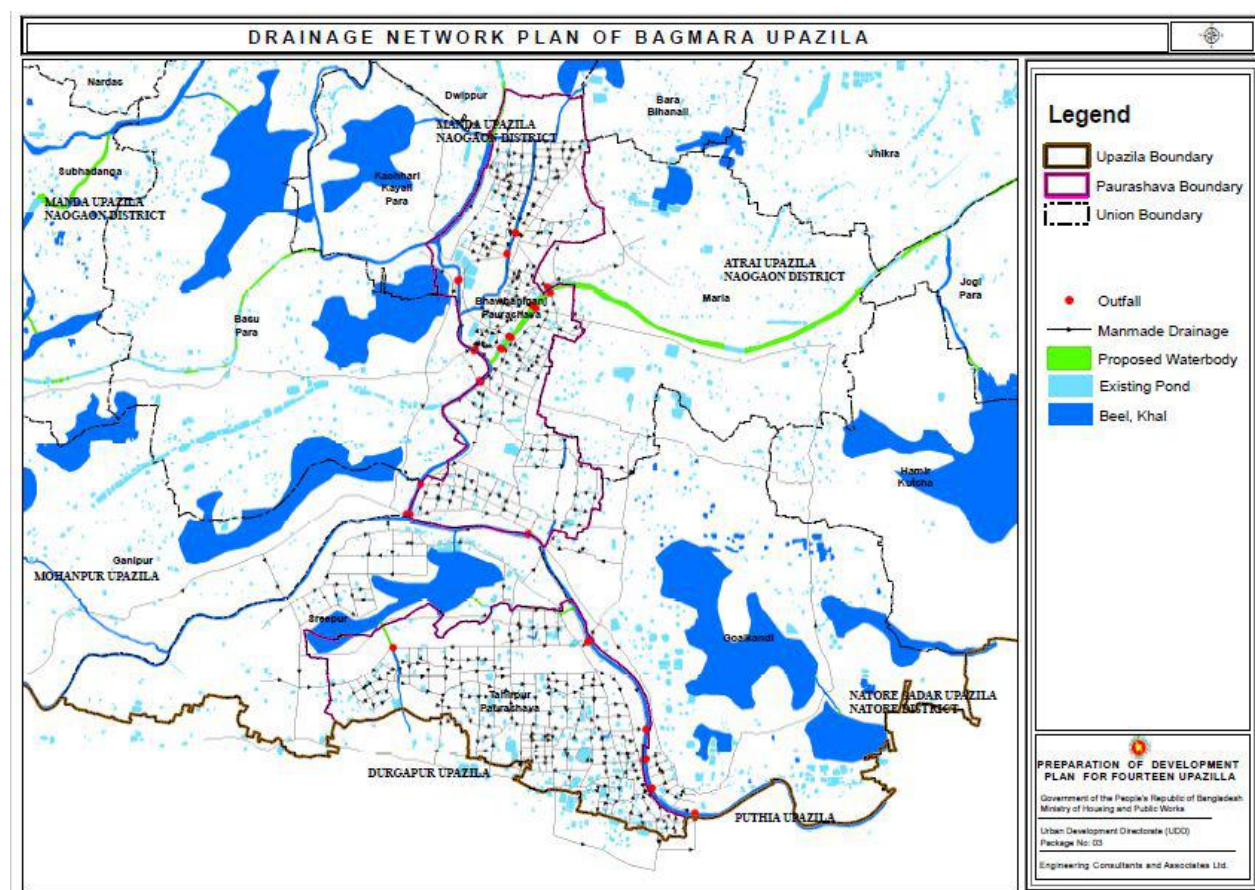
network proposal this dry channel of the rivers and canals will be excavated. All the illegal encroachment must be demolished and all the fish processing area with illegal dam must be omitted. And the previous channel of the river according to mouza line will be re established.



Map 12.9: Drainage Network Plan of Bagmara Upazila

Proposed Manmade Drainage

According to all type of analysis, Flow direction, contour the man made drainage channel has proposed along with the road network. In Bagmara Upazila, as there is enough natural water bodies through all the unions the man made drain is proposed only in urban area. For what, In Paurashava and in some cases growth center or in hut bazaar area man made drain will be build up to reduce the water congestion.



Map 12.10: Proposed Manmade Drainage Channel of Bagmara Upazila

12.4 Environment Management Plan

12.4.1 Existing Environment

Physical Environment of Bagmara Upazila includes its overall climatic condition along with the topographical and geological condition.

Atmosphere and Climate

Meteorological conditions of the area are not that different from the central part of the country with respect to temperature, rainfall and humidity. Bagmara Upazila enjoys generally a sub-tropical monsoon climate. Temperature ranges from 12.7°C to 36°C (Annual Average). The presence of arsenic, in an intolerable level, has been detected in the shallow tube-well water of the Upazila. Besides, Bagmara Upazila is not a drought prone area so the agricultural production is suitable for any type of production. It has productive plain land, agriculture, housing, rural settlement, urban built-up area, forestry, water bodies, capture and culture fisheries etc. These diversified uses of land have been giving financial benefits in one hand but on the other creating many problems in respect of criteria based uses and conflicts among the users. Land resources of this upazila have been brought into seed production and fish farms as commercial basis. Again soil condition is good in that upazilla. Maximum soil is medium dense soil.

Topography

Almost the whole of the Rajshahi is level and interested with a number of small rivers and channels. Bagmara is no exception. The general topography of the study area is ranges from 3 to 80 meter MSL. The hilly and forest land area mainly high comparatively than the other part of the Upazila.

Geology

Geologically and geo-morphologically Bagmara Upazila and its adjoining areas is mostly comprises by monotonous flood plain area except few depression and very homogeneous in their soil quality. Geologically very good and good quality land are found in very small amount in some parts of Bagmara, especially Bwabanigonj and Taherpur. In this area inundation has been found to be very low. Besides this area, some small parcel of suitable area has been found in Dwippur, Nordas, Sonadanga, Subhadanga, and Goalkandi. Geologically poor quality of land use has been found in upper parts of Bagmara Upazila containing Goalkandi, and small parts of Ganipur. Rest of the area of Bagmara Upazila is found to be moderately suitable which covers most of the area of the upazila.

Ecology

From the survey data it has been shown that the ecology of Bagmara is comparatively simple. Only four types of ecosystem found in Bagmara Upazila. Among them grass land ecosystem, Wetland ecosystem, River Ecosystem and in some parts forest ecosystem has been found with a very little amount. Grass land ecosystem has been found in all over Bagmara Upazila.

Most of the agricultural field and homestead area have grass land ecosystem. Different types of flora and fauna has been found in this ecosystem interacting with one another. Vegetables cultivation is very popular in Bagmara Upazila. Hence different types of vegetables and other agricultural crop, bushes, different types of trees etc. are found in Bagmara Upazila. These large varieties contribute to the flora of both grass land ecosystem and forest ecosystem. In the fauna category different types of animal, insects etc. are found. On the other hand, wetland ecosystem has been found in the major Beels such as Josher Beel, Malerbeel, and Helencha beel and all other small pond, ditch etc. River Ecosystem is mainly found in Fokirni River, Baronoi River, and Nasurpur Khal etc. In this ecosystem different types of fish and water insects are considered in the fauna categories. Flora categories considered different types of wetland bushes and underwater bushes.

Based on the ecology of Bagmara some sensitive areas have been identified where special treatment has to be adopted in order to protect the area. Among those areas in Josher beel, Maler beel and Helencha Beel have been declared most sensitive area. For the protection of the Beel sand extraction from the Beel area has been proposed to be stopped in the proposal. Besides these, buffer zone up to 50 meters has been proposed on the both side of the major rivers and declared as protected zone in the plan. In this zone No major permanent structure can be built.

12.4.2 Solid Waste and Garbage Disposal

Condition of solid waste management at Bagmara Upazila is not satisfactory. According to the opinion of surveyed households, there is no better solid waste management system at this Upazila. Dumping is a major issue because, people of that area litter random places and that causes the environment to degrade. Water logging occurs due to dumping.

Existing Waste Management System and Disposal Sites

According to the opinion of surveyed households, there are not so many dustbins at Bagmara Upazila. Most of the people throw their garbage here and there and specially dump to the canal and khal which cause environmental pollution and also sometimes clogged the existing drainage network. From the field survey it is also found that there is no clinical waste management system.

From the survey it has been found that food processing industries make highest amount of solid waste whereas brickfields make maximum portion of solid waste. And rest of the types of industries produce less than one tons of solid waste. About half of them dispose the waste into roadside. Moreover, the whole waste is non-refined waste.

Moreover, approximately more than 80% of total industries said they do not have any waste treatment system. Thus, the waste disposal condition of the industries of this upazila is unhealthy and unplanned. Necessary steps should be taken regarding these.

12.4.3 Pollutions

Many causes have been identified for surface water pollution. Maximum surface water are polluted by domestic source and chemical fertilizer used in agriculture field. Noise pollution is a minor phenomenon in this upazila. However such type of pollution problem is occurring by the road vehicles. But it has been identified that this is not a major problem for all over the area. It is a problem for some particular road side areas. Land pollution is not found as problem in Bagmara Upazila. Air pollution is not prominent but it will increase gradually due to the presence of some brick fields and industries in this area. Arsenic contamination is also very high which is not negligible in this area. Regarding measures taken against pollution generated by the organization about same small percentage of industries said that they use Fix Chimney (brick field) that is free from Environmental Pollution and dumped their waste under soil (food processing). But alarming is that, about more than 80% of total industries mentioned that they do not take any measurements regarding against pollution. In addition, not single industries completed their Environmental Impact Assessment (EIA) report and about one third of total industries do not have any environmental clearance of the industry

12.4.4 Natural Calamities and Localized Hazards

Another undesirable phenomenon is water logging. It refers to as both man-made and natural. Ground may be regarded as waterlogged when the water table of the ground water is too high to conveniently permit an anticipated activity. Different causes are responsible for water logging. Poor drainage system is one of the most important causes of water logging in the study area. There is no fixed location where water logged frequently. Most of the areas suffer water logging during heavy rainfall. . It is reported that natural disasters like drought, flood, decreasing ground water, heavy rain, early rain, erosion, cold, fog and hail-storm damage crops of this upazila. Bagmara Upazila is situated on seismic zone where probability of earthquake is really low with a greater return period. But there are some of the structures there which are risky because of their vulnerability.

Chapter 13

Vulnerability Analysis and Contingency Plan

13.1 Introduction

Risk assessment is process of determining the spatial variety of in risk scale in terms of specific hazard. Risk assessment is necessary for any development project to evaluate the sustainability of the project. Risk is different in terms of hazard and vulnerability of the area. This report mainly looks for the existing risk condition of Earthquake and Fire Hazards in Bagmara Upazila area. After that a contingency plan has been prepared to overcome the risk.

13.1.1 Vulnerability Assessment

To analysis the vulnerable condition of buildings in Bagmara Upazila different criteria have been identified. These are: structure condition, structure age, historical time period, peripheral impact of structure. Depending on these criteria vulnerable buildings have been identified. The criteria and the results have been given respectively.

Table 13.1: Criteria's for Vulnerability Assessment

No.	Scale	Explanation
0	Not Sensitive	No existance of variables
10	Less Sensitive	Existance of any 1 variable
20	Average Sensitive	Existance of any 2 variables
30	Moderate Sensitive	Existance of any 3 variables
40/50/60	Most Sensitive	Existance of 4/5/6 variables

Step 01: Exposure Condition of Structure

Primarily to identify risk sensitive structure, the structure condition of each structure has been taken as the base. For that reason, every structure condition has given the same weightage. During earthquake the 6 factors stated in the **Table 13.2** that related to structure condition can be worked independently.

Table 13.2: Structure Condition

Structural Condition Variable	Weightage
Soft Story	10
Short Column	10
Overhanging	10
Pounding Possibilities	10
Tilting	10
Ground Set	10

Step 02: Age of Structure

At this stage structure age (0 to 10 years, 10 to 30 years and above 30 years) has been given weightage according to their age. It has been assumed that most aged structure is mostly vulnerable to earthquake and has given the highest weightage value.

Table 13.3: Structure Age

Structure Age	Weightage
Above 30 Years	3
10 to 30 Years	2
0 to 10 Years	1

After that the summation of structure condition has been multiplied by the weightage of structure condition and the result has been generalized numbering between 60 sensitive structures has been identified at this stage.

Generalization

If Structure Condition's sum= 40 and Structure Age Weightage=3

So, That Structure multiplication value will be 120 from 180 (as highest structure condition weightage=60 & structure age=3)

As, generalization will be in 60, the calculated value= $\frac{120 \times 60}{180} = 40$

Table 13.4: Generalization of Weightage Range Value

Rank	Generalized Weightage Range value
Not Sensitive	0
Less Sensitive	1-10
Average Sensitive	11-20
Moderate Sensitive	21-30
Most Sensitive	31-60

Source: Designed by Consultants

Step 03: Historical Construction Time Period

Weightage has been given according to the historical construction time period (British, Pakistan, and Bangladesh Period). The oldest structure has been assumed as most vulnerable and weightage has been given according to that.

Table 13.5: Historical Time Period

Historical Time Period of Structure	Weightage
British Period	3
Pakistan Period	2
Bangladesh Period	1

Source: Designed by Consultants

The summation of structure condition weightage has been multiplied by the weightage of historical time period. After that the result has been generalized numbering between 60 sensitive structure has been identified at this stage.

Step 04: Peripheral Impacts

Peripheral Impact includes having Mobile tower and not having set back. If a structure has Mobile Tower, it seems to be vulnerable because it may not be thought in the time of construction and having set back has positive site in the time disaster it can minimize the impact.

Table 13.6: Peripheral Impact of Structure

Peripheral impact of Structure	Weightage
Mobile Tower	10
Set back	10

Source: Designed by Consultants

The summation of structure condition weightage has been multiplied by the weightage of peripheral impact of structure. After that the result has been generalized numbering between 60 sensitive structures.

Step 05: Quality of Physical Condition

Weightage has been given according to the visible physical condition of structure. The poorest structure has been given the highest weightage. It has been assumed that visibly poor structure may be more sensitive to earthquake.

Table 13.7: Visible Physical Condition of Structure

Visible Physical Condition of Structure	Weightage
Poor Structure	3
Average Structure	2
Good Structure	1

Source: Designed by Consultants

Step 06: Final Stage

Finally, to identify the risk sensitive structure the summation of structure conditions have multiplied by structure age, historical time period, peripheral impact and visible physical condition. After that the result has generalized through marking 0 to 60 to identify of sensitive structure at this stage. In this case the structure that has got more number, it was identified as more sensitive. This analysis has done for 496 structures.

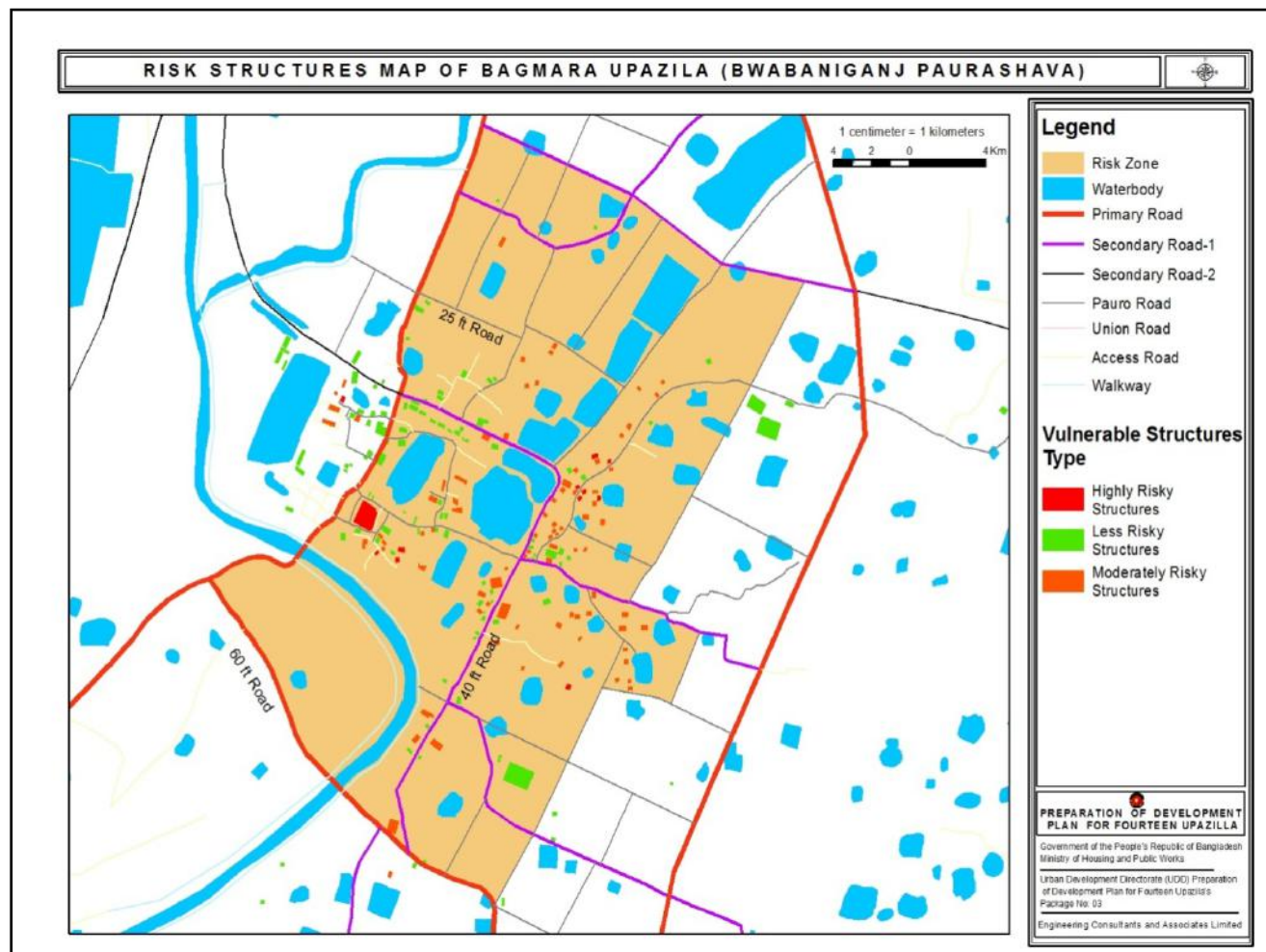
13.2 Existing Risk Scenario

Risk Calculation has been conducted using the equation of risk which has been demonstrated before. Risky structures are mainly found in the core area of Bwabaniganj Paurashava, Taherpur Paurashava area and all other risky zone of Bagmara Upazila. According to the calculated risk it has been found out that 496 structures are risky in whole Bagmara Upazila. Among them about 7 structures are highly risky, 33 structures are moderately risky and 456 structures are less risky.

In the Bwabaniganj Paurashava core area about 208 structures are found to be risky. Among them from a comparative analysis it has been revealed that about 12 structures are highly risky, 87 structures are moderately risky and 109 structures are less risky. Among them 203 pucca structures are found to be risky. **Map 13.1** Shows existing risky structures of Bwabaniganj Paurashava. Among the risky structures Bank, College, Server Station and Market etc. are important structures which are found to be risky. The

vulnerable structures are found mainly in Bwabaniganj Bazar Area, Chanpara, Chourasta University Road, University High School Road area etc.

In the Taherpur Paurashava core area about 140 structures are found to be risky. Among them from a comparative analysis it has been revealed that about 0 structures are highly risky, 3 structures are moderately risky and 137 structures are less risky. Among them 136 pucca structures are found to be risky. **Map 13.2** Shows existing risky structures of Taherpur Paurashava. Among the risky structures College, Hospitals and Residential houses etc. are important structures which are found to be risky. The vulnerable structures are found mainly in Taherpur Bazar Area, Chankhali Road, Durgapur Road and Taherpur Bus Stand area etc.



Map 13.1: Risk Structures Map of Bwabaniganj Paurashava

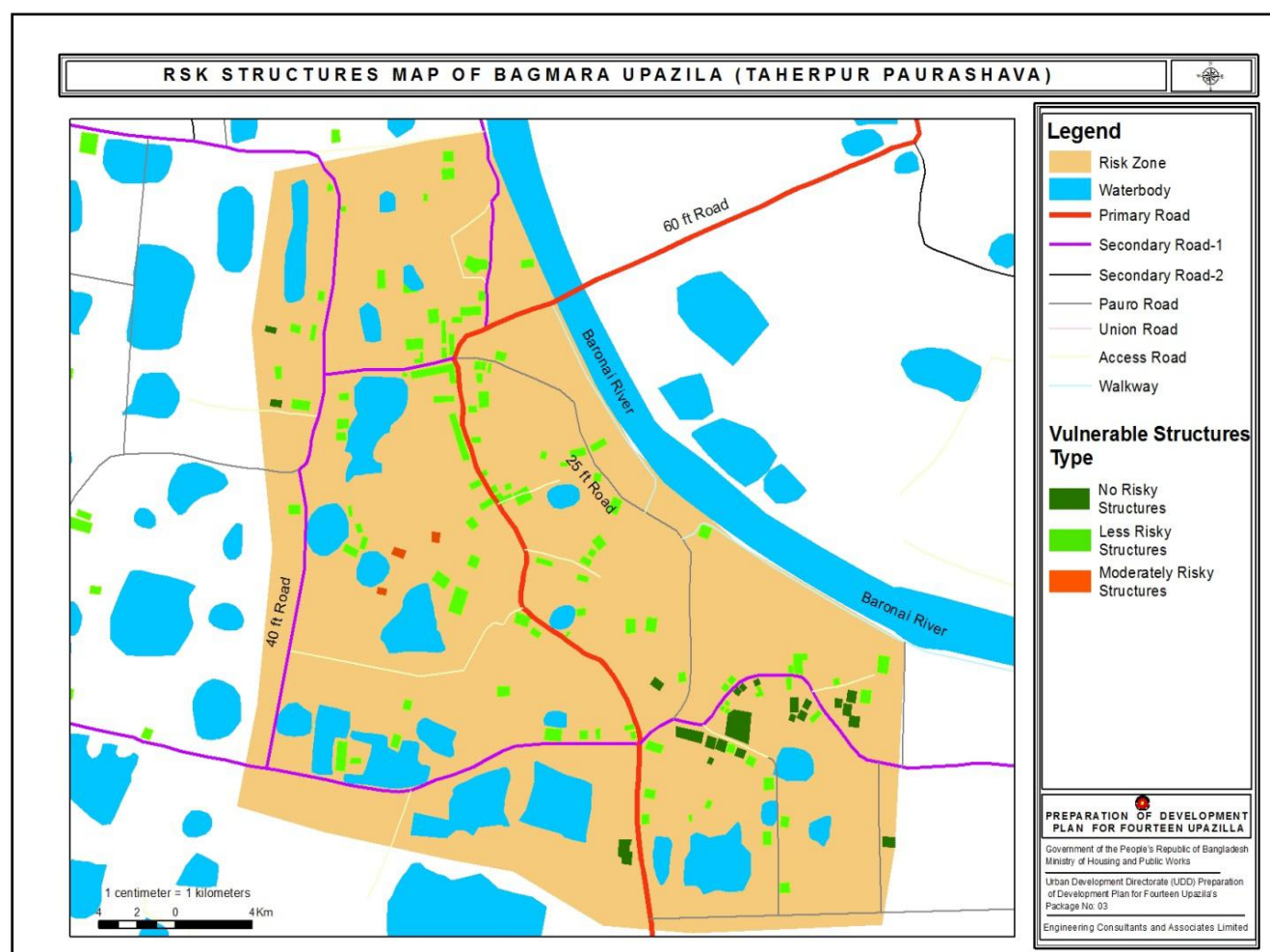
No of risky structures of Bwabaniganj Paurashava are shown in the **Table 13.14** with their structure use.

Table 13.8: Risky Structures in Bwabaniganj Paurashava

Structure Use	No of vulnerable Structure			Total
	Less Risky	Moderately Risky	Highly Risky	
Administrative	28	4	-	32

Structure Use	No of vulnerable Structure			Total
	Less Risky	Moderately Risky	Highly Risky	
Commercial Activities	67	1	1	69
Community Facilities	1	-	-	1
Educational & Research	27	3	-	30
Health Facilities	6	1	-	7
Industrial	3	-	-	3
Miscellaneous	7	1	-	8
Mixed Use	41	-	-	41
Non-government Office	6	-	-	6
Recreational Facilities	1	1	-	2
Religious Facilities	12	-	-	12
Residential & Homestead	257	22	6	285
Total	456	33	7	496

Source: Field Survey, 2016



Map 13.2: Risk Structures Map of Taherpur Paurashava

Table 13.9: Risky Structures in Taherpur Paurashava

Structure Use	No of vulnerable Structure			Total
	Less Risky	Moderately Risky	Highly Risky	
Administrative	3	-	-	3
Commercial Activities	28	-	-	28
Community Facilities	-	-	-	-
Educational & Research	4	-	-	4
Health Facilities	1	-	-	1
Industrial	-	-	-	-
Miscellaneous	1	-	-	1
Mixed Use	28	-	-	28
Non-government Office	-	-	-	-
Recreational Facilities	-	-	-	-
Religious Facilities	4	-	-	4
Residential & Homestead	68	3	-	71
Total	137	3	0	140

Source: Field Survey, 2016

13.3 Contingency Plan for Minimizing Earthquake Risk

BagmaraUpazila belongs in the earthquake zone I where the seismic coefficient is 0.08. So BagmaraUpazila is high sensitive to the hazardous threat of earthquake. In case of vulnerability, it has been found out that very little amount of structure in the BagmaraUpazila are highly vulnerable. **Map 13.3 and Map 13.2** shows contingency plan of BagmaraUpazila. There are about 496 problematic structures in Bagmara Upazila. All are found to be vulnerable and risky. For these structures a contingency plan has been prepared to make sure safety of the structures in case of earthquake.

Planning Assumptions

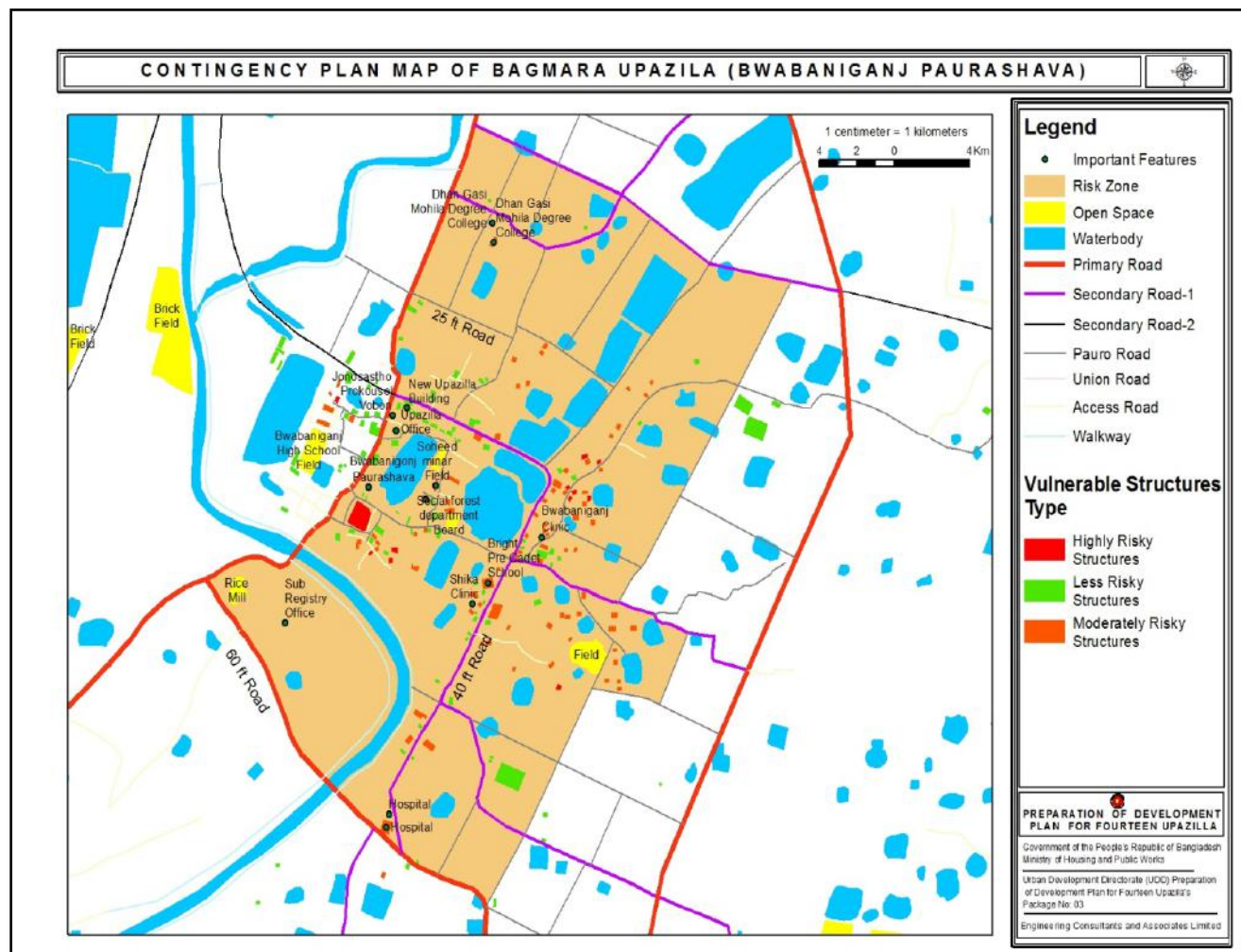
- Earthquakes are impact type events and provide no warning preventing any pre-event response activities
- There is likelihood of secondary effects following an earthquake or aftershocks which may include fire, flood, liquefactions, subsidence and release of hazardous and toxic chemicals
- Strong aftershocks will continue for several days resulting in further building collapse
- Access will be severely restricted due to debris, collapsed bridges etc.

Operational Constraints

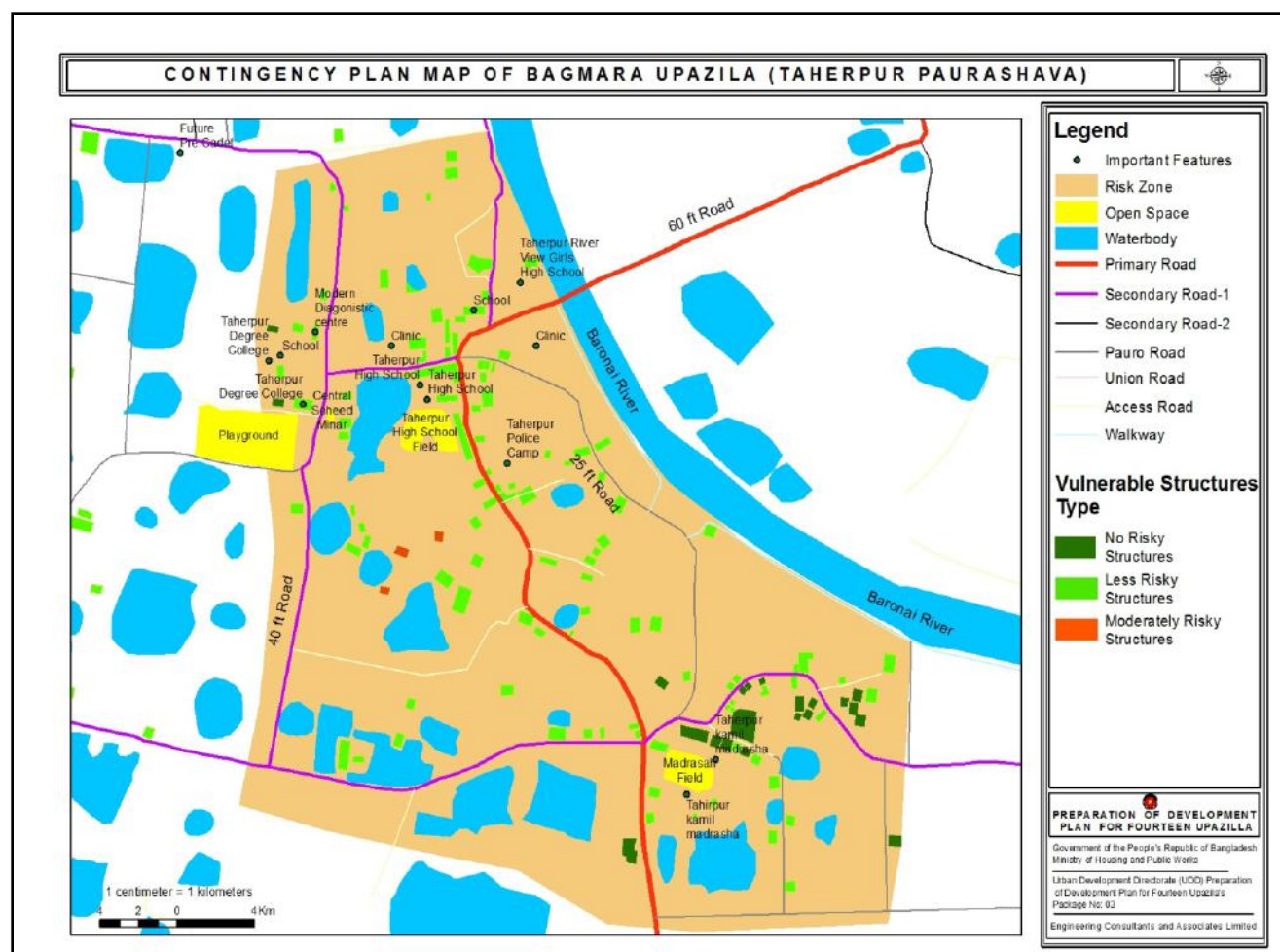
In order for the preparation of a successful contingency plan the first and foremost activity is to assess the disruptions and casualties which are likely to occur during the event as well as in the aftermath period. A pros and cons analysis of the operational constraints has been conducted for the earthquake hazard in Bagmara Upazila. A detailed list of the constraints is given below:

- Disruption in the communication system
- Disruption in the key supplies (electricity)

- Lack of response capacity (first responders dead or injured)
- Unavailability of decision-makers
- Disruption of infrastructure and transport system



Map 13.3: Contingency Plan Map of Bwabaniganj Paurashava



Map 13.4: Contingency Plan Map of Taherpur Paurashava

13.4 Sector wise Contingency Action Plan

Table 13.10: Sector Wise Contingency Action Plan

Sectors	Actions	Physical Planning
Health	<ul style="list-style-type: none"> Preparedness planning for Community Clinic Mobilization of doctors and medical teams 	<ul style="list-style-type: none"> Location of Clinic (Existing and Proposed) Connectivity with the Clinic
Food Security Cluster	<ul style="list-style-type: none"> Supply and distribution of Food and relief 	<ul style="list-style-type: none"> Location of Godown and Food Storage
Shelter	<ul style="list-style-type: none"> Identification of Shelter Place 	<ul style="list-style-type: none"> Location of Open Space and Safe Govt. Institution, multipurpose of Govt. School College
	<ul style="list-style-type: none"> Identification of the people needing shelter in camps 	<ul style="list-style-type: none"> Proximity of this place
WASH	<ul style="list-style-type: none"> Restoration of water supply and 	<ul style="list-style-type: none"> Identification of water hydrant and

Sectors	Actions	Physical Planning
	drainage	reservoir
Logistics	<ul style="list-style-type: none"> • Risk Assessment • Accommodations facilities for humanitarian workers (tents) 	<ul style="list-style-type: none"> • Accessibility to the vulnerable locations
Fire Service	<ul style="list-style-type: none"> • Preparedness planning for Fire Service 	<ul style="list-style-type: none"> • Location of Fire Service Station • Fire Service Route Planning
Child Protection	<ul style="list-style-type: none"> • Family training • Coordinate with other sectors 	
Early Recovery	<ul style="list-style-type: none"> • Governance • Debris Management 	<ul style="list-style-type: none"> • Waste Disposal Site locations

13.5 Physical Planning Approach

The above-mentioned action planning approach is being delineated into physical planning approach. Those physical planning approach has been later integrated into five broad categories. Those categories of contingency plan have been delineated below.

- **Road Widening and New Road Proposal:**

The existing road has been widened in the whole Bagmara Upazila. New proposals for road have been prepared. The width of these roads is determined considering the factor that in the time of disaster rescue team and other organization have proper accessibility to the affected area with safeguard tools. Besides this connectivity with the health facilities is also being considered so that affected population have least time to reach those facilities. Contingency plan focuses on the connectivity among, risky zone and health facilities, water hydrant, safe govt. institution and open space. Road width standard has been set with planning team recommendations which has been detailed in the plan.

- **Location of Health Facilities, Food Storage, Safe Govt. Institution:**

Twenty-four have been identified in the whole upazila. Besides these hospitals there are a lot of clinics in the whole upazila. There are two clinics and one health complexes near Bwabaniganj Paurashava risk zone and there are also two clinics and one diagnostic center in Taherpur Paurashava risk zone.

- **Locating Open Space:**

There are five large open spaces near Bwabaniganj Paurashava risk zone and there are also 3 large open spaces near Taherpur Paurashava. Moreover, there are also many agricultural lands beside the Paurashava risk zone and all other zones in the other union. In such case it can be concluded that ample open space is available if any disaster occurs.

- **Identifying water hydrant and reservoir and Supply system:**

Bagmara is rich in large amount of small and big ponds and beels. These water bodies can be used as water hydrant during the time of fire hazards.

Bagmara Upazila is situated on seismic zone I where earthquake coefficient is 0.08. Hence the probability of earthquake is really low with a greater return period. But there are some structures which are risky because of their vulnerability. The contingency plan has proper support to eliminate the earthquake risk

for those structures. Although the as per the plan road widening requires to effect on some the structures, but the total benefit for the whole Bagmara Upazila will be maximum against earthquake.

13.6 Lightning Protection System

The fundamental principle in the protection of life and property against lightning is to provide a means by which a lightning discharge can enter or leave the earth without resulting damage or loss. A low-impedance path that the discharge current will follow in preference to all alternative high impedance paths offered by building materials such as wood, brick, tile, stone, or concrete should be offered. When lightning follows the higher impedance paths, damage can be caused by the heat and mechanical forces generated during the passage of the discharge. It can be defined as below:

- A system of strike termination devices on the roof and other elevated locations
- A system of grounding electrodes
- A conductor system connecting the strike termination devices to the grounding electrodes

Items to be considered during Planning of Protection:

- The best time to design a lightning protection system for a structure is during the structure's design phase, and the best time to install the system can be during construction
- Conductors should be installed to offer the least impedance to the passage of stroke current between the strike termination devices and earth.
- Properly made ground connections are essential to the effective functioning of a lightning protection system
- In general, the extent of the grounding arrangements depends on the character of the soil, ranging from simple extension of the conductor into the ground where the soil is deep and of high conductivity to an elaborate buried network where the soil is very dry or of very poor conductivity.

There are some cases where the need for protection should be given serious consideration regardless of the out-come of the risk assessment. Examples are those applications where the following are factors:

- Large crowds;
- Continuity of critical services;
- High lightning flash frequency;
- Tall isolated structure.

As well as some other factors should take into account which are:

- Building environment
- Type of construction
- Structure occupancy
- Structure contents
- Lightning stroke consequences

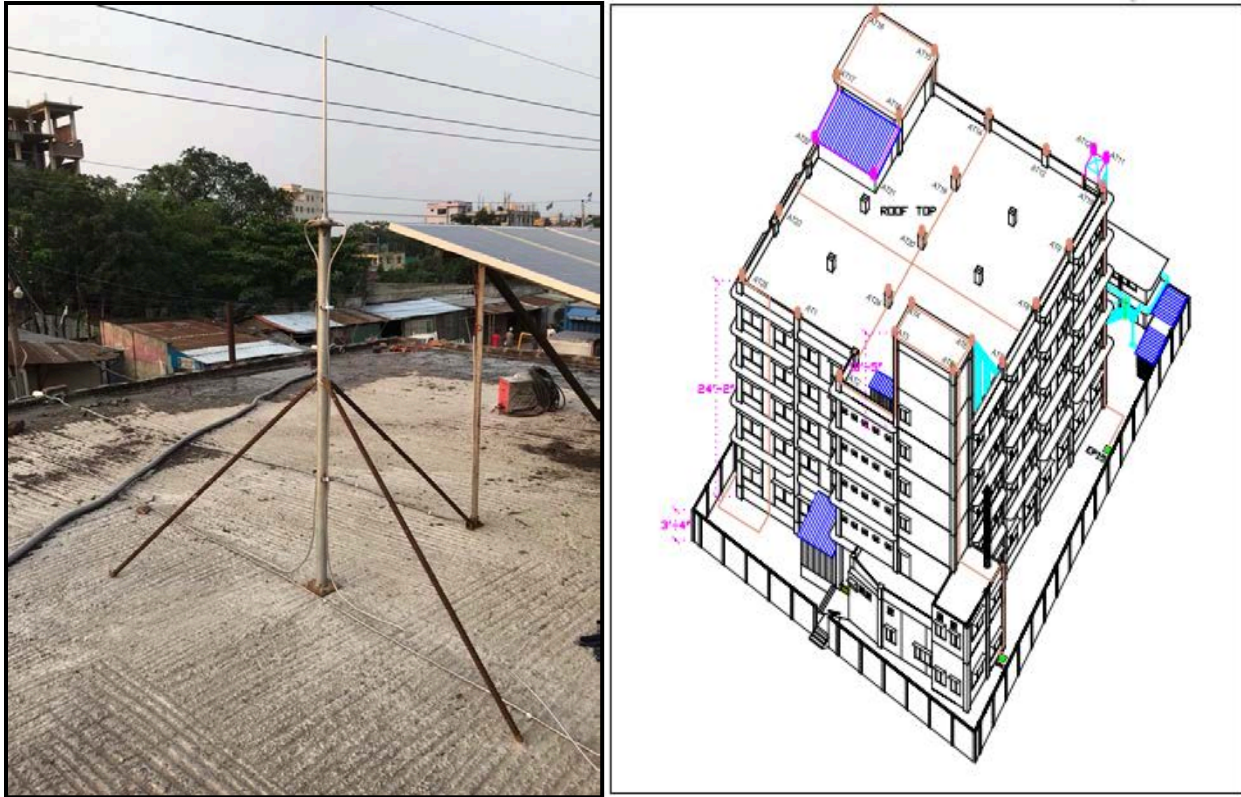


Figure 13.1: Lightning Protection Syste

Chapter 14

Urban Area Plan

14.1 Introduction

Urban Area Plan is the third stage of the current plan package. This plan is based on the framework of the Structure Plan prepared in the earlier phase. The Plan is intended to address those areas of the Structure Plan that are likely to face urban growth in the next 10 years.

14.2 Demarcation of the Planning Area and Plan Period

The total planning area is about 12.69 sq. km. in Bwabanigonj Paurashava and 11.04 sq. km. in Taherpur Paurashava in the structure plan. Total (9+9=18) wards are considered as the Urban Area. The Following **Table 14.1** shows planning area.

Table 14.1: Planning Area of Bwabanigonj and Taherpur Paurashava

BwabanigonjPaurashava	Area in Acre	Area in sq. km
Ward No-01	307	1.24
Ward No-02	364	1.47
Ward No-03	519	2.10
Ward No-04	253	1.02
Ward No-05	160	0.65
Ward No-06	398	1.61
Ward No-07	289	1.17
Ward No-08	466	1.89
Ward No-09	381	1.54
TaherpurPaurashava	Area in Acre	Area in sq. km
Ward No-01	34	0.14
Ward No-02	157	0.64
Ward No-03	127	0.52
Ward No-04	229	0.93
Ward No-05	228	0.92
Ward No-06	377	1.53
Ward No-07	533	2.16
Ward No-08	495	2.00
Ward No-09	543	2.20

(Source: Estimated by the Consultant in GIS file)

14.3 Land Use

The Urban Area Plan identifies approaches of planning existing and proposed land use. It is based on the land use policies, guidelines and proposals including land use zoning plan. In Bagmara, Urban area consists of two Paurashava: Bawabanigonj and Taherpur Paurashava.

17 types of land uses are found. It is clearly evident from the table that agricultural land use (66.28%) dominates the Bwabanigonj Paurashava area; followed by residential (21.59 %), water body (9.02%), circulation network (0.95%) and Commercial (1.27%).

In Taherpur the agricultural use (64.24%) plays major role to define the existing land use condition. On the other hand residential (22.50%), Circulation Network (0.81%), Commercial (1.18%) and Water bodies (10.02%) are the most dominant land uses after agricultural use.

Proposed land use is projected for the target year 2033. More land has been proposed than existing land uses like Residential (32.10%), Circulation Network (6.32%) in Bwabanigonj and in Taherpur Residential (40.58%), and Circulation Network (5.48%) land uses for accommodate target population according to planning standards. Following the planning standard, proposed land use has been calculated and shown in **Map 14.1 and Map 14.2**

Table 14.2: Existing and Proposed Land Use of Bwabanigonj Paurashava

Bwabanigonj Land use	Existing Land use		Proposed land use	
	Area in Acres	Percentage (%)	Area in Acres	Percentage (%)
Administrative	9.17	0.29	20.38	0.65
Agricultural	2064.47	66.28	1443.49	46.34
Commercial	39.69	1.27	42.32	1.36
Community Facilities	0.18	0.01	3.14	0.10
Education & Research	7.95	0.26	10.57	0.34
Health Facilities	0.61	0.02	1.97	0.06
Industrial	3.19	0.10	22.78	0.73
Mixed Use	1.53	0.05	54.28	1.74
NGO	0.20	0.01	0.20	0.01
Open Space	3.11	0.10	15.71	0.50
Recreational Facilities	0.14	0.00	1.39	0.04
Religious	1.21	0.04	3.16	0.10
Residential	672.41	21.59	999.91	32.10
Utility Facilities	0.07	0.00	9.33	0.30
Water bodies	280.87	9.02	285.44	9.16
Circulation Network	29.55	0.95	196.74	6.32
Transport and Communication	0.45	0.01	3.98	0.13
Total	3114.79	100.00	3114.79	100.00

(Source: Estimated by Consultants, 2018)

14.4 Major dimension in Land Use (Bhawaniganj Paurashava)

Residential

In Bhawaniganj Paurashava, Still a large number of lands in under the agriculture use. And the developed zone perimeter is within 1 kilometer among the core zone. By considering the future population growth and for planned residential housing area development the new residential area is proposed. New 54.57 acre land for residential purpose has estimated.

Circulation Network

In context of circulation network, only 196 acre land was used for circulation in urban area where the demand of road was high and a better linkage within the area did not develop. So a number of road is been proposed in the urban area. And the minimum width will be 20 ft.

Mixed use

The Paurashava development will be done in more compact way and the mixed use of land should be promoted in the paurashava. In this context a large number of land are proposed for mixed use. Mainly the ribbon development area, the landuse beside the major commercial zone and already build up area should be considered in this land use category. Approximately 54 acre land is proposed for mixed landuse. In this area the combination of multi categoried land such as; residential, commercial, education, health etc are allowed in vertical development.

Open Spaces & Recreation

In existing landuse there is a very few portion of land is preserved as open spaces. And the urban people has a very few recreational facility. In proposed plan, 4.8 acre land are proposed as the urban open space and 10.9 acre land is proposed as the recreational facility. Different Park, public gathering place, Children Park are proposed among this category.

Industrial

Many brick field are present In Bhawaniganj paurashava and some are developing in the paurashava area. But according to law its must be prohibited and this area will converted to another uses or other industrial activity. 22acre land is proposed for industrial purpose in the paurashava area. Agrobased industry, cottage industry and food processing zone will be developed in the industrial landuse.

Transport & Utility

In present condition no truck or bus terminal are present in the urban area. Even no bus bay or others transport related facility is enough in the paurashava. So 4.9 acre land is proposed for the development of transport related facility. In terms of utility service, a large waste disposal site and sludge treatment plant is proposed in paurashava area. Total 10 acre land is proposed for utility services.

Commercial & Community

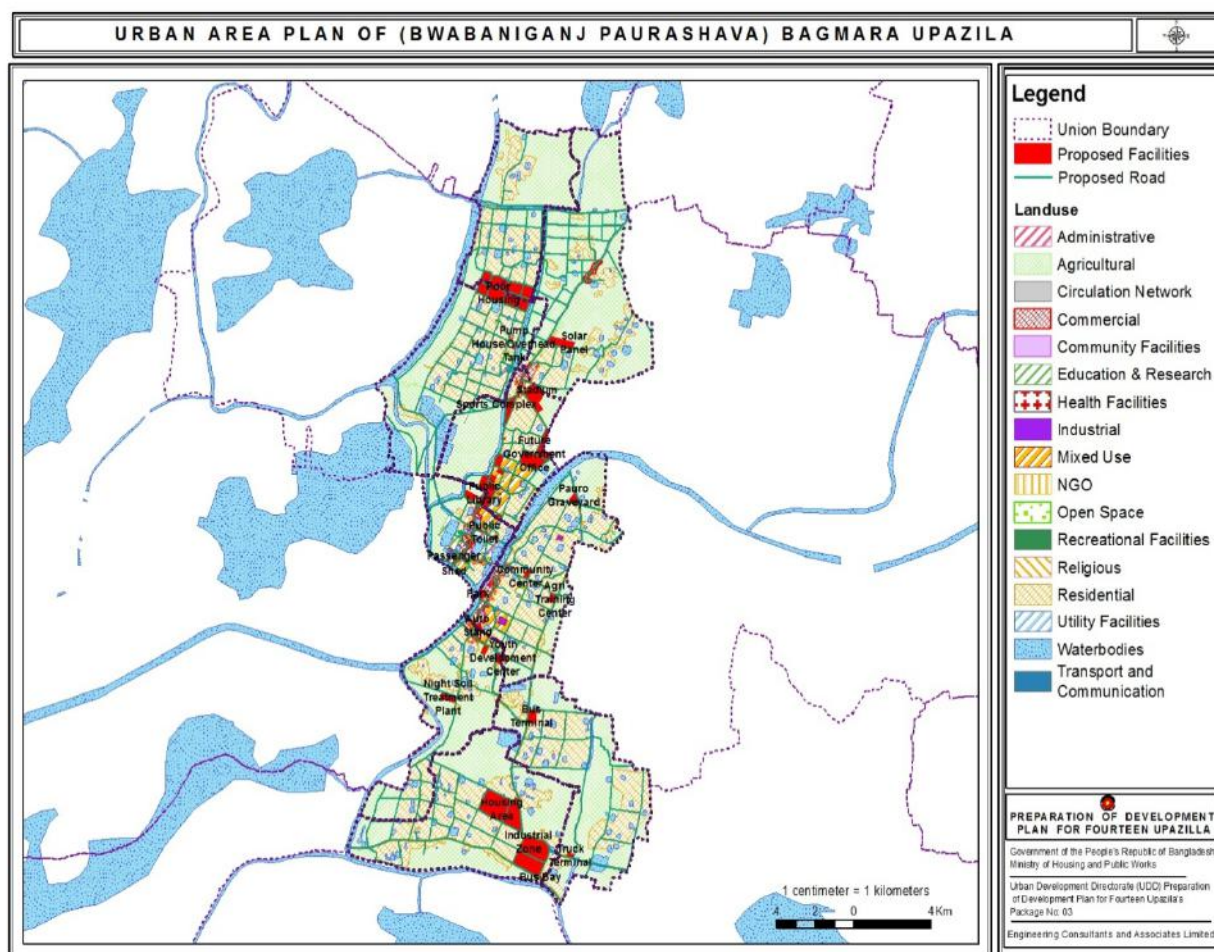
Around 2.7 acre land is been proposed for the commercial purpose. Beside this, the large a large number of mixed use land will be used for commercial development in vertical expansion. In other hand, for community services 3.7 acre land is proposed in terms of graveyard, community center, multi-purpose hall.

Education & Health

The education facility is enough according to population projection and future demand of the paurashava. So, no new land proposal is made for the education purpose. But for health purpose 1.7 acre land is proposed for new hospital and community clinic.

Agriculture

If the total area of Bhawaniganj paurashava considered, it can be defined as the pre matured urban area. As 66% land of the paurashava area is still in agriculture use. And the growth dimension is not making any direction to reduce the agriculture zone in many context. So after the urban fringe area a huge amount of land will remain beyond the influence of urban expansion or urban sprawl. For what in the proposed landuse, almost 46% of land is remain in the agriculture zone and will remain unchanged.



Map 14.1: Urban Area Plan of Bwabanigonj Paurashava

14.5 Major dimension in Land Use (Taherpur Paurashava)

Residential

In Taherpur Paurashava, Still a large number of land in under the agriculture use. And the developed zone perimeter is within 1 kilometer among the core zone. By considering the future population growth and for planned residential housing area development the new residential area is proposed within the inner part of the sewtia khal. New 97.8 acre land for residential purpose has estimated.

Circulation Network

In context of circulation network, in urban area the demand of road was high and a better linkage within the area did not develop. So a number of road is been proposed in the urban area. And the minimum width will be 20 ft. So about 149 acres land is proposed for road network development.

Mixed use

The Paurashava development will be done in more compact way and the mixed use of land should be promoted in the paurashava. In this context a large number of land are proposed for mixed use. Mainly the ribbon development area, the landuse beside the major commercial zone and already build up area should be considered in this land use category. Approximately 79 acre land is proposed for mixed landuse. In this area the combination of multi categoried land such as; residential, commercial, education, health etc are allowed in vertical development.

Open Spaces & Recreation

In existing landuse there is a very few portion of land is preserved as open spaces. And the urban people has a very few recreational facility. In proposed plan, 11.9 acre land are proposed as the urban open space and 4.24 acre land is proposed as the recreational facility. Different Park, public gathering place, Children Park are proposed among this category.

Industrial

Many brick field are present In Taherpur paurashava and some are developing in the paurashava area. But according to law its must be prohibited and this area will converted to another uses or other industrial activity. 18.80 acre land is proposed for industrial purpose in the paurashava area. Agrobased industry, cottage industry and food processing zone will be developed in the industrial landuse.

Transport & Utility

In present condition no truck or bus terminal are present in the urban area. Even no bus bay or others transport related facility is enough in the paurashava. So 1.12 acre land is proposed for the development of transport related facility. In terms of utility service, a large waste disposal site and sludge treatment plant is proposed in paurashava area. Total 5.6 acre land is proposed for utility services.

Commercial & Community

Around 7.78 acre land is been proposed for the commercial purpose. Beside this, the large a large number of mixed use land will be used for commercial development in vertical expansion. In other hand, for community services 1.84 acre land is proposed in terms of graveyard, community center, multi-purpose hall.

Education & Health

The education facility is enough according to population projection and future demand of the paurashava. So, no new land proposal is made for the education purpose. But for health purpose 2.4 acre land is proposed for new hospital and community clinic.

Agriculture

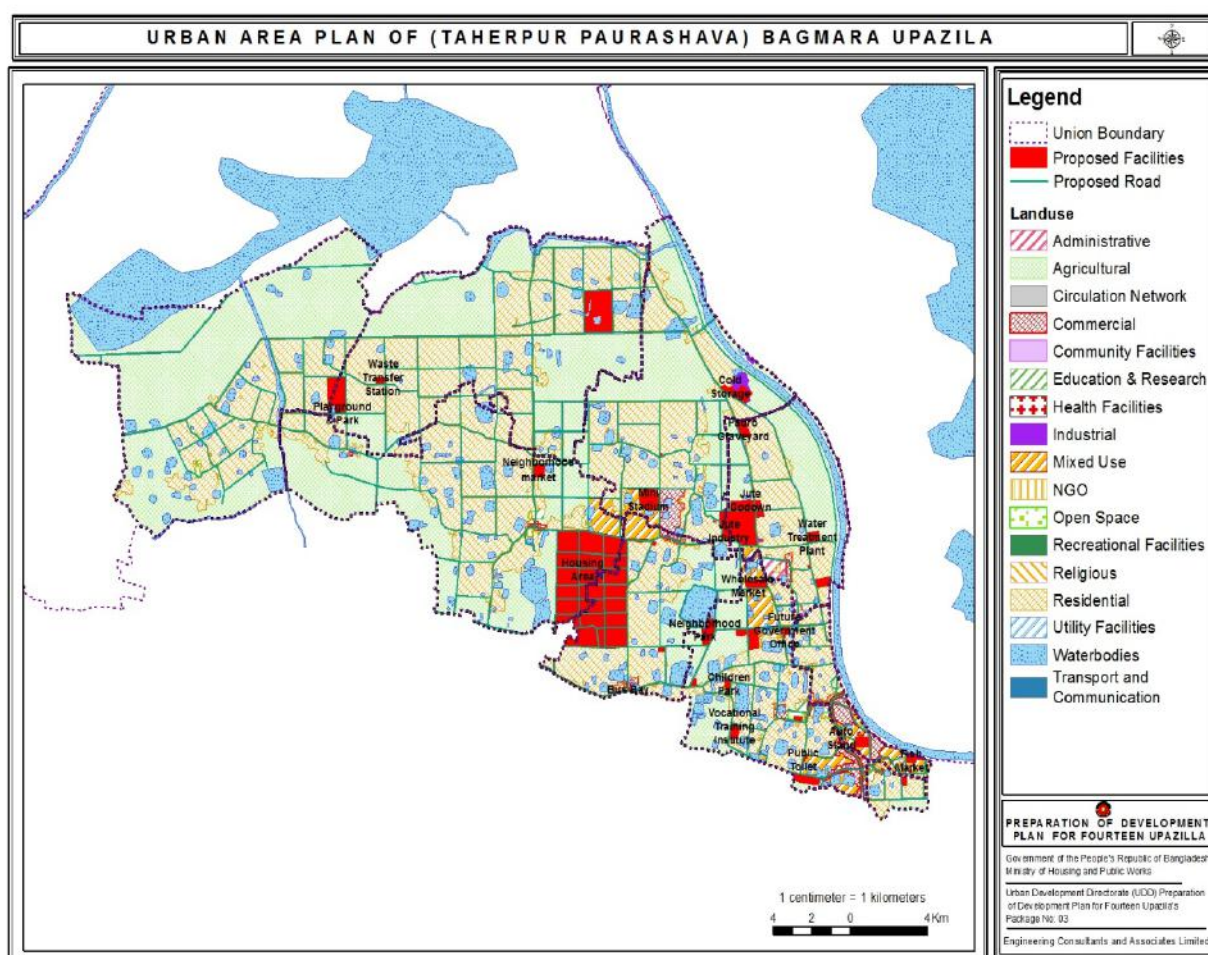
If the total area of Taherpur paurashava considered, it can be defined as the pre matured urban area. As 64% land of the paurashava area is still in agriculture use. And the growth dimension is not make any direction to reduce the agriculture zone in many context. So after the urban fringe area a huge amount of land will remain beyond the influence of urban expansion or urban sprawl. For what in the proposed landuse, almost 37% of land is remain in the agriculture zone and will remain unchanged.

Table 14.3: Existing and Proposed Land Use of Taherpur Paurashava

Taherpur Land use	Existing Land use		Proposed land use	
	Area in Acres	Percentage (%)	Area in Acres	Percentage (%)
Administrative	1.15	0.04	5.99	0.22
Agricultural	1756.04	64.24	1015.09	37.13
Commercial	32.32	1.18	41.32	1.51
Community Facilities	0.00	0.00	1.70	0.06
Education & Research	6.75	0.25	7.63	0.28

Taherpur Land use	Existing Land use		Proposed land use	
	Area in Acres	Percentage (%)	Area in Acres	Percentage (%)
Health Facilities	0.18	0.01	2.31	0.08
Industrial	6.23	0.23	33.50	1.23
Mixed Use	11.61	0.42	67.67	2.48
NGO	0.30	0.01	0.30	0.01
Open Space	4.40	0.16	19.01	0.70
Religious	3.06	0.11	2.74	0.10
Residential	615.15	22.50	1109.26	40.58
Utility Facilities	0.17	0.01	4.85	0.18
Water bodies	273.77	10.02	271.60	9.94
Circulation Network	22.15	0.81	149.69	5.48
Transport and Communication	0.25	0.01	0.86	0.03
Total	2733.53	100.00	2733.53	100.00

(Source: Estimated by Consultants, 2018)



Map 14.2: Urban Area Plan of Taherpur Paurashava

Chapter 15

Urban Services

15.1 Administrative Zone

Administrative zone covers all kinds of government offices and Non-Government Offices including existing and proposed uses in Tahirpur Paurashava and Bhawbaniganj Paurashava. The land of total 19.58 acres of land has been proposed for administration includes Fire Station in ward 2 along with youth development center in ward 6 and 7. Future Government Office has been proposed at ward no 4. **Table 15.1** shows the proposals to meet up the demand of projected people.

Table 15.1: Proposals for Administrative Facilities.

Ward No	Name	Area
Tahirpur Paurashava(Ward-02)	Fire Station	0.83
Tahirpur Paurashava(Ward-02)	Future Government Office	0.82
Bhawbaniganj Paurashava(Ward-07)	Youth Development Center	1.29
Bhawbaniganj Paurashava(Ward-06)	Youth Development Center	1.29
Bhawbaniganj Paurashava(Ward-04)	Future Government Office	15.35

Source: Estimated by the consultants, 2018.

15.2 Commercial Activities

In response to the requirement, total about 12.52 acres of land has been proposed for Planning. Neighbourhood Market, Shopping Complex, Pauro Market, Kitchen Market, Pouro Market etc. have been proposed at different wards in Tahirpur Paurashava and Bhawbaniganj Paurashava. **Table 15.2** shows the proposals of commercial land use.

Table 15.2: Proposals for Commercial Activities.

Ward No	Name	Area
Tahirpur Paurashava(Ward-08)	Neighborhood market	1.56
Tahirpur Paurashava(Ward-06)	Fish Market	0.38
Tahirpur Paurashava(Ward-03)	Fish Market	0.90
Tahirpur Paurashava(Ward-03)	Pauro Market	1.62
Tahirpur Paurashava(Ward-02)	Pauro Market	1.56
Tahirpur Paurashava(Ward-02)	Wholesale Market	1.82
Bhawbaniganj Paurashava(Ward-05)	Pauro Market	1.97
Bhawbaniganj Paurashava(Ward-04)	Shopping Complex	0.74
Bhawbaniganj Paurashava(Ward-04)	Pauro Market	1.97

Source: Estimated by the consultants, 2018.

15.3 Community and Religious Facilities

Community and Religious Facilities include Mosque, Eidgah, Community Centre and Graveyard etc. To accommodate unanticipated spatial requirement of Community and Religious Facilities, total about 12.84 acres of land has been proposed. Masjid Complex, Graveyard have been proposed in different wards of Tahirpur Paurashava and Bhawbaniganj Paurashava. **Table 15.3** and shows the proposals for of Community and Religious facilities.

Table 15.3: Proposals for Community and Religious Facilities

Ward No	Name	Area	Land use
Tahirpur Paurashava(Ward-06)	Pauro Graveyard	1.85	Community Facility
Tahirpur Paurashava(Ward-04)	Pauro Graveyard	1.85	Community Facility
Bhawbaniganj Paurashava(Ward-06)	Community Center	1.08	Community Facility
Bhawbaniganj Paurashava(Ward-06)	Pauro Graveyard	1.64	Community Facility
Bhawbaniganj Paurashava(Ward-05)	Central Eidgah	1.15	Religious Activity
Bhawbaniganj Paurashava(Ward-04)	Mosque Complex	1.07	Religious Facilities
Bhawbaniganj Paurashava(Ward-04)	Multi Purpose Hall	0.99	Community Facility
Bhawbaniganj Paurashava(Ward-04)	Central Eidgah	1.15	Religious Activity
Bhawbaniganj Paurashava(Ward-04)	Mosque Complex	1.07	Religious Facilities
Bhawbaniganj Paurashava(Ward-04)	Multi Purpose Hall	0.99	Community Facility

Source: Estimated by the consultants, 2018.

15.4 Education and Health Facilities

Educational zone refers all kind of educational institutes such as School, Colleges, Madrasha, School for Autistic Child, training centers for vocational and agricultural purposes etc. and Health Facilities includes Upazila Health complex, health center or maternity clinic. In the proposal, a land of 10.49 acre in total has been proposed for Education and Health services **Table 15.4.1** and **Table 15.4.2** shows proposals for education and health facilities.

Table 15.4: Proposals for Education & Research

Ward No	Name	Area
Bhawbaniganj Paurashava(Ward-04)	School for Autistic Child	0.61
Bhawbaniganj Paurashava(Ward-04)	Public Library	0.89
Bhawbaniganj Paurashava(Ward-05)	School for Autistic Child	0.61
Bhawbaniganj Paurashava(Ward-05)	Public Library	0.89
Bhawbaniganj Paurashava(Ward-06)	Agri Training Center	1.38
Bhawbaniganj Paurashava(Ward-07)	Agriculture Training Institute	0.68
Tahirpur Paurashava(Ward-02)	Vocational Training Institute	1.32

Source: Estimated by the consultants, 2018.

Table 15.5: Proposals for Health Facility

Ward No	Name	Area
Bhawbaniganj Paurashava(Ward-04)	Hospital	1.74
Tahirpur Paurashava(Ward-02)	Hospital	2.37

Source: Estimated by the consultants, 2018.

15.5 Industrial Zone

The plan needs to accommodate industries which have growth potentials related to the base of economy of Tahirpur Paurashava and Bhawbaniganj Paurashava. Due to the environmental and ecological condition, the plan discourages growth of heavy industries in the planning area. About 54.35 acres of land has been proposed for industrial development which includes Cold Storage,

Jute Industry, Jute Godown and Fish Processing Zone. **Table 15.5** shows proposals for Industrial Zone. **Table 15.6: Proposals for Industrial Zone**

Ward No	Name	Area
Bhawbaniganj Paurashava(Ward-09)	Industrial Zone	22.26
Tahirpur Paurashava(Ward-01)	Cold Storage	0.47
Tahirpur Paurashava(Ward-03)	Ice Factory	0.35
Tahirpur Paurashava(Ward-04)	Jute Industry	12.50
Tahirpur Paurashava(Ward-04)	Jute Godown	2.70
Tahirpur Paurashava(Ward-06)	Fish Processing Zone	2.17
Tahirpur Paurashava(Ward-06)	Jute Industry	12.50
Tahirpur Paurashava(Ward-06)	Ice Factory	0.33
Tahirpur Paurashava(Ward-06)	Cold Storage	0.37
Tahirpur Paurashava(Ward-06)	Ice Factory	0.33
Tahirpur Paurashava(Ward-06)	Cold Storage	0.37

Source: Estimated by the consultants, 2018.

15.6 Recreational Facilities and Open Space

Recreational facilities include playground, park, neighbourhood park, Stadium, etc. No Recreational facilities exist in urban area. Considering future need about 46.21 acre of land has been proposed for recreational purposes. **Table 15.6** shows the proposed lands to meet up the demand of projected people.

Table 15.7: Proposals for Open Space and Recreational Facilities

UNION	Name	Area
Bhawbaniganj Paurashava(Ward-04)	Public gathering Place; Playground	2.58
Bhawbaniganj Paurashava(Ward-05)	Park	1.21
Bhawbaniganj Paurashava(Ward-05)	Public gathering Place; Playground	2.58
Bhawbaniganj Paurashava(Ward-06)	Park	1.21
Bhawbaniganj Paurashava(Ward-07)	Children Park	1.03
Bhawbaniganj Paurashava(Ward-03)	Stadium	5.57
Bhawbaniganj Paurashava(Ward-04)	Neighborhood Park	3.74
Bhawbaniganj Paurashava(Ward-04)	Sports Complex	1.48
Bhawbaniganj Paurashava(Ward-04)	Park	2.04
Bhawbaniganj Paurashava(Ward-04)	Stadium	5.57
Bhawbaniganj Paurashava(Ward-04)	Sports Complex	1.48
Bhawbaniganj Paurashava(Ward-04)	Stadium	5.57
Tahirpur Paurashava(Ward-02)	Children Park	0.92
Tahirpur Paurashava(Ward-06)	Mini Stadium	4.01
Tahirpur Paurashava(Ward-07)	Playground & Park	0.00
Tahirpur Paurashava(Ward-09)	Playground & Park	0.00
Tahirpur Paurashava(Ward-02)	Neighborhood Park	2.92
Tahirpur Paurashava(Ward-04)	Neighborhood Park	1.38
Tahirpur Paurashava(Ward-05)	Neighborhood Park	2.92

Source: Estimated by the consultants, 2018.

15.7 Residential Area

A land of 181.31 acres in total has been proposed for future residential development at Tahirpur Paurashava 83.57 acres and Bhawbaniganj Paurashava 97.74 acres includes Poor Housing and Housing Area in both Paurashava. **Table 15.7** shows proposals for Housing Zones.

Table 15.8: Proposed Housing Area

UNION	Name	Area
Bhawbaniganj Paurashava(Ward-01)	Poor Housing	14.50
Bhawbaniganj Paurashava(Ward-02)	Poor Housing	16.09
Bhawbaniganj Paurashava(Ward-09)	Housing Area	52.98
Tahirpur Paurashava(Ward-05)	Housing Area	39.85
Tahirpur Paurashava(Ward-07)	Poor Housing	12.78
Tahirpur Paurashava(Ward-08)	Housing Area	45.11

Source: Estimated by the consultants, 2018.

15.8 Transportation and Communication Facilities

Transportation facilities include Bus / Truck Terminals, Other Vehicle Parking Space, Bus Bay, etc. Total 7.27 acres of land has been proposed including various facilities such as bus terminal, Auto stand and passenger shed etc. **Table 15.8** shows the proposed transportation proposals.

Table 15.9: Proposals for Transport Facilities.

Ward No	Name	Area
Bhawbaniganj Paurashava(Ward-05)	Passenger Shed	0.16
Bhawbaniganj Paurashava(Ward-05)	Passenger Shed	0.10
Bhawbaniganj Paurashava(Ward-06)	Auto Stand	0.85
Bhawbaniganj Paurashava(Ward-07)	Auto Stand	0.85
Bhawbaniganj Paurashava(Ward-08)	Bus Terminal	2.70
Bhawbaniganj Paurashava(Ward-08)	Truck Terminal	0.71
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21
Tahirpur Paurashava(Ward-02)	Mini Bus/Auto Stand	0.44
Tahirpur Paurashava(Ward-02)	Rickshaw/ Auto Stand	0.47
Tahirpur Paurashava(Ward-02)	Auto Stand	0.12
Tahirpur Paurashava(Ward-03)	Auto Stand	0.12
Tahirpur Paurashava(Ward-05)	Bus Bay	0.12
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21

Source: Estimated by the consultants, 2018.

15.9 Utility and Waste Management

Utility and Waste management includes Solid waste disposal site, waste transfer station, Solar Panel, Waste Transfer Station, Public Toilet, Electric Sub Station, Pump House, Overhead Tanks, Water Treatment Plant and fire service etc in Tahirpur Paurashava and Bhawbaniganj Paurashava. Total 16.29 acres of land has been proposed in the Paurashava. **Table 15.9** shows the proposal to meet up the demand of projected people.

Table 15.10: Proposals for Utility Services

Ward No	Name	Area
Bhawbaniganj Paurashava(Ward-02)	Pump House/Overhead Tank	0.41
Bhawbaniganj Paurashava(Ward-03)	Electric Sub Station	1.91
Bhawbaniganj Paurashava(Ward-03)	Solar Panel	2.55
Bhawbaniganj Paurashava(Ward-04)	Waste Transfer Station	0.15
Bhawbaniganj Paurashava(Ward-04)	Pump House/Overhead Tank	0.19
Bhawbaniganj Paurashava(Ward-04)	Public Toilet	0.17
Bhawbaniganj Paurashava(Ward-05)	Water Treatment Plant	1.87
Bhawbaniganj Paurashava(Ward-05)	Public Toilet	0.11
Bhawbaniganj Paurashava(Ward-05)	Waste Transfer Station	0.05
Bhawbaniganj Paurashava(Ward-05)	Public Toilet	0.05
Bhawbaniganj Paurashava(Ward-07)	Night Soil Treatment Plant	2.51
Bhawbaniganj Paurashava(Ward-09)	Pump House/Overhead Tank	0.38
Tahirpur Paurashava(Ward-01)	Public Toilet	0.09
Tahirpur Paurashava(Ward-02)	Waste Transfer Station	0.12
Tahirpur Paurashava(Ward-02)	Waste Transfer Station	0.18
Tahirpur Paurashava(Ward-02)	Public Toilet	0.10
Tahirpur Paurashava(Ward-02)	Waste Transfer Station	0.07
Tahirpur Paurashava(Ward-02)	Pump House/Overhead Tank	0.48
Tahirpur Paurashava(Ward-02)	Public Toilet	0.07
Tahirpur Paurashava(Ward-03)	Waste Transfer Station	0.12
Tahirpur Paurashava(Ward-03)	Public Toilet	0.10
Tahirpur Paurashava(Ward-03)	Waste Transfer Station	0.12
Tahirpur Paurashava(Ward-03)	Public Toilet	0.10
Tahirpur Paurashava(Ward-04)	Water Treatment Plant	1.45
Tahirpur Paurashava(Ward-04)	Electric Sub Station	0.71
Tahirpur Paurashava(Ward-04)	Solar Panel	0.58
Tahirpur Paurashava(Ward-04)	Waste Transfer Station	0.14
Tahirpur Paurashava(Ward-05)	Waste Transfer Station	0.13
Tahirpur Paurashava(Ward-05)	Waste Transfer Station	0.44
Tahirpur Paurashava(Ward-06)	Waste Transfer Station	0.09
Tahirpur Paurashava(Ward-07)	Waste Transfer Station	0.74
Tahirpur Paurashava(Ward-08)	Waste Transfer Station	0.05
Tahirpur Paurashava(Ward-09)	Waste Transfer Station	0.06

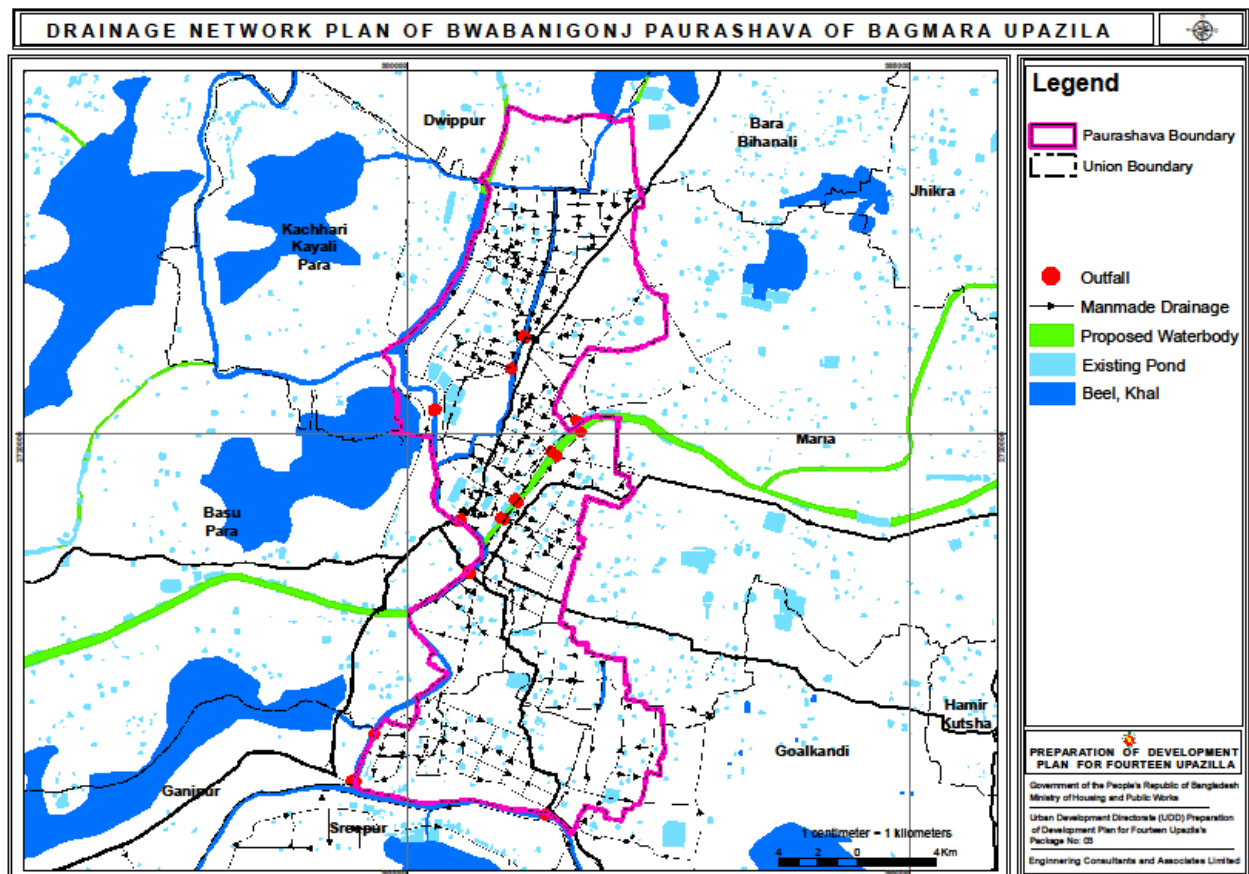
Source: Estimated by the consultants, 2018.

15.8 Drainage Plan

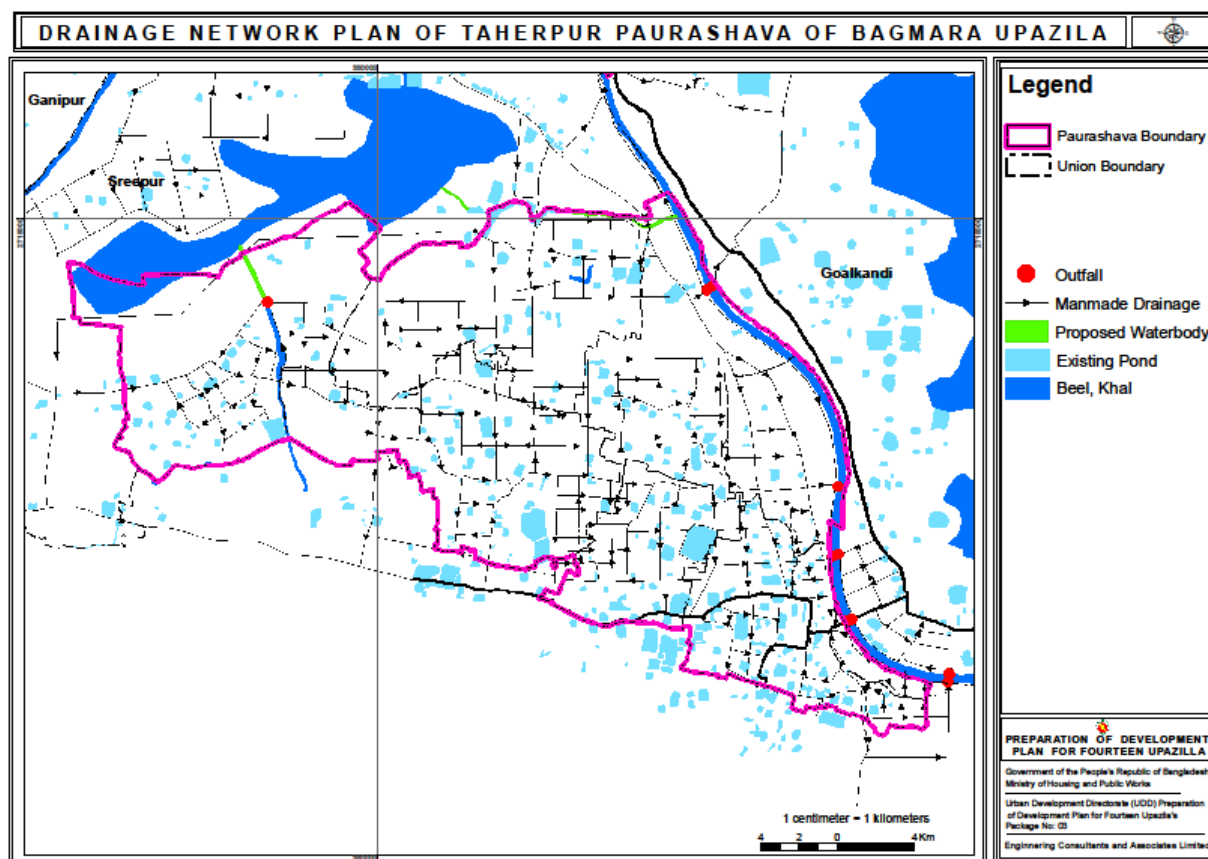
In urban area, Drainage problem can be the major obstacle for a build up city. So drainage plan should be implemented predominantly in the urban area for the wash water and for the waste generated in homestead. The primary drainage must be the natural channel within the paurashava area. The channel and river must be preserved and remain in a well network for the water flow. And the entire man made drainage outfall will go to these channels with the proper treatment in case of need.

In Bhawaniganj Paurashava the missing link within the Fokirni River and Atrai river channel must be linked. Beside this, the dry channel of the Atrai River must be excavated for a better drainage channel. These two river will be the major primary channel for the urban area as well as the upazila. For Taherpur Paurashava, Boronai River will perform the same duty for the drainage. A well functional river can be the best solution for drainage problem in any urban area.

Beside this, the man made drainage channel should be build up in urban area along with the new road network. The drainage outfall should be demarked according to contour line and for waste water it must be treated as the water will not create water pollution in river and canal water.



Map 15.1: Drainage Network Plan of Bhawaniganj Paurashava of Bagmara Upazila



Map 15.2: Drainage Network Plan of Taherpur Paurashava Bagmara Upazila

Chapter 16

Urban Detail Area Plan

16.1 Introduction

Detailed Area Plan provides the more detailed planning proposals for specific sub-areas of the city. The Urban Detail Area Plans are prepared as comprehensive implementation guides that incorporate the development policies, guidelines and framework set by the Structure Plan for different subareas of the Upazila. It provide planning proposals for specific sub-areas for the provision or improvement of road network, access roads, community facilities, utilities and services, streetscape, outdoor spaces, squares, outdoor furnishing, sign-symbols & billboard and a detail pattern of land uses. The Urban Detail Area Plan is supposed to face urban growth in the next 20 years. Since, the Detailed Area Plan is prepared at community scale, community participation in their planning and implementation can be an important concern, and in this procedure, the plan is more likely to be applied, appreciated and accompanied by the community. Development Plan for Bagmara Upazila includes an Urban Area Plan and this plan proposed an Urban Detail Area Plan for Bwabanigonj and Tahirpur Paurashava.

16.2 Bhawbaniganj Paurashava Detail Area Plan (Ward Wise)

The Bwabanigonj Paurashava is a total of 12.69 square kilometers or 3137 acres. The proposed facilities are analyzed and divided through the population density growth rate and existing available resources

- **Ward no 1**

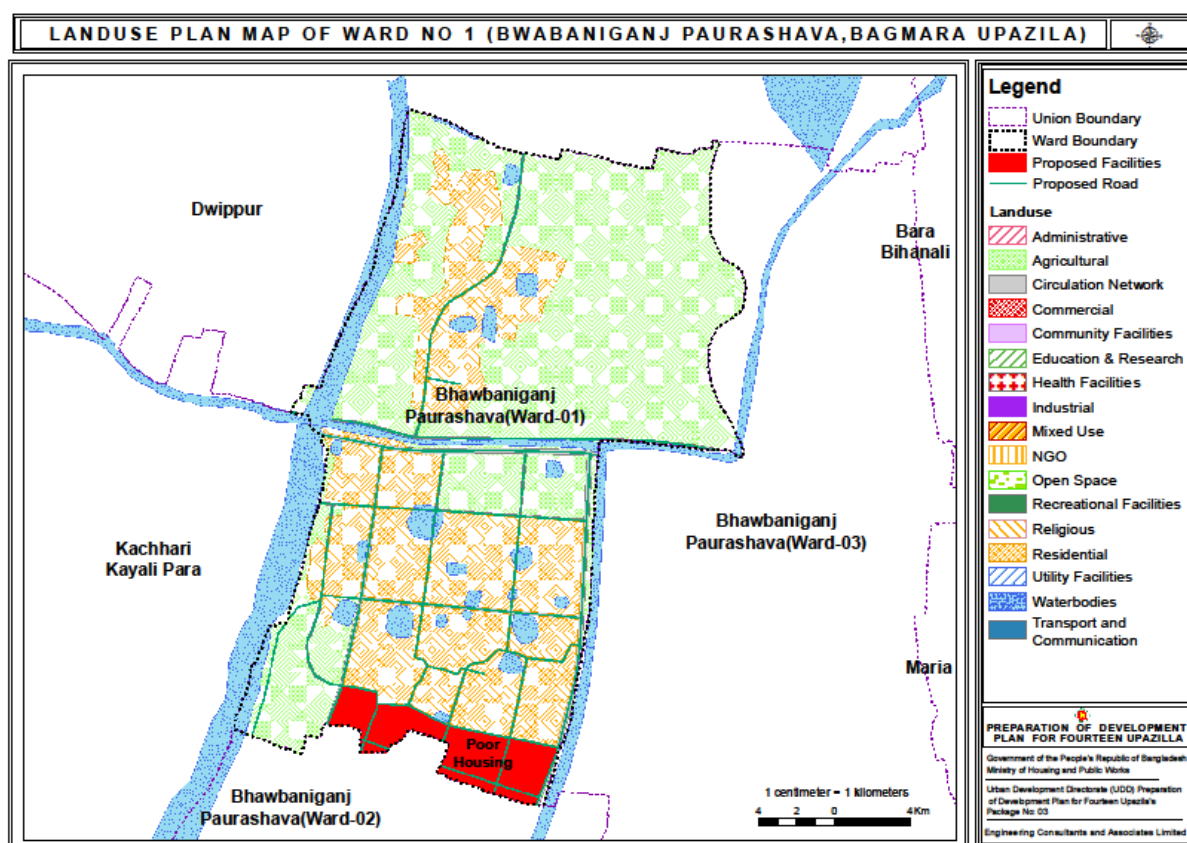
In ward no 1, of Bwabanigonj Paurashava is comprise of 1.24 square kilometers. According to the socio-economic condition of the area the first priority is Poor Housing on Residential Landuse.

Table 16.1: Proposed Facility in ward no 1.

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-01)	Poor Housing	14.50	Residential

Most of the land in Bhawbaniganj Paurashava is used for agricultural purpose. The network of river in three side of the Paurashava area provides a fertile land use and it sparks the agriculture based development. So the poor housing to provide proper shelter to the low income group is a sustainable approach throughout Urban Detail Area Plan.

The Poor Housing is proposed at the southern part of the Word on 1 because it is most adjacent to Poor Housing of the other Word of the Bhawbaniganj Paurashava.



Map 16.1: Landuse Plan Map of Ward No. 1 Bhawaniganj Paurashava, Bagmara Upazila

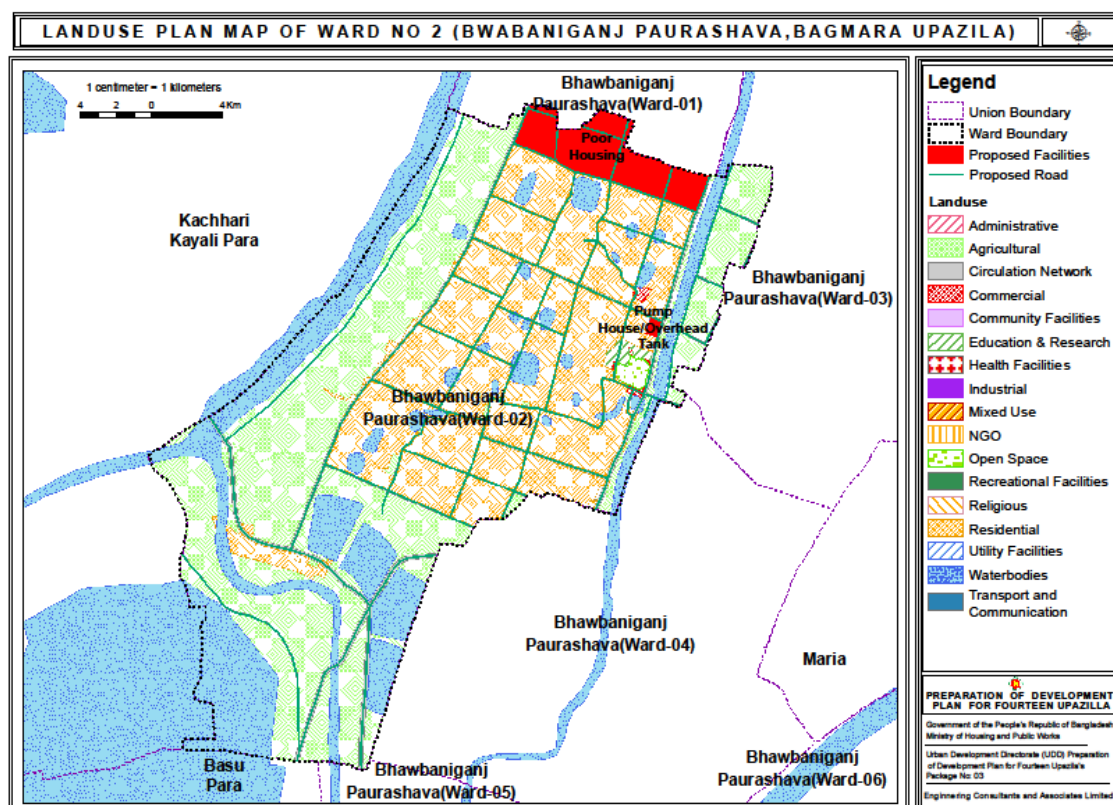
- Ward no 2

In ward no 2, of Bhawaniganj Paurashava is comprise of 1.47 square kilometers. In this ward significant landuse are agriculture and residential. A poor housing is proposed here which is joint with ward no 1. A pump house or overhead tank is proposed for considering local demand. The provision of poor housing is given at northern part of the ward.

Table 16.2: Proposed Facility in ward no 2.

Ward No	Facility Name	Area	Landuse
Bhawaniganj Paurashava(Ward-02)	Poor Housing	16.09	Residential
Bhawaniganj Paurashava(Ward-02)	Pump House/Overhead Tank	0.41	Utility Facility

The following Map will describe the landuse of the ward and provision of proposed facilities.



Map 16.2: Landuse Plan Map of Ward No. 2 Bhawaniganj Paurashava, Bagmara Upazila

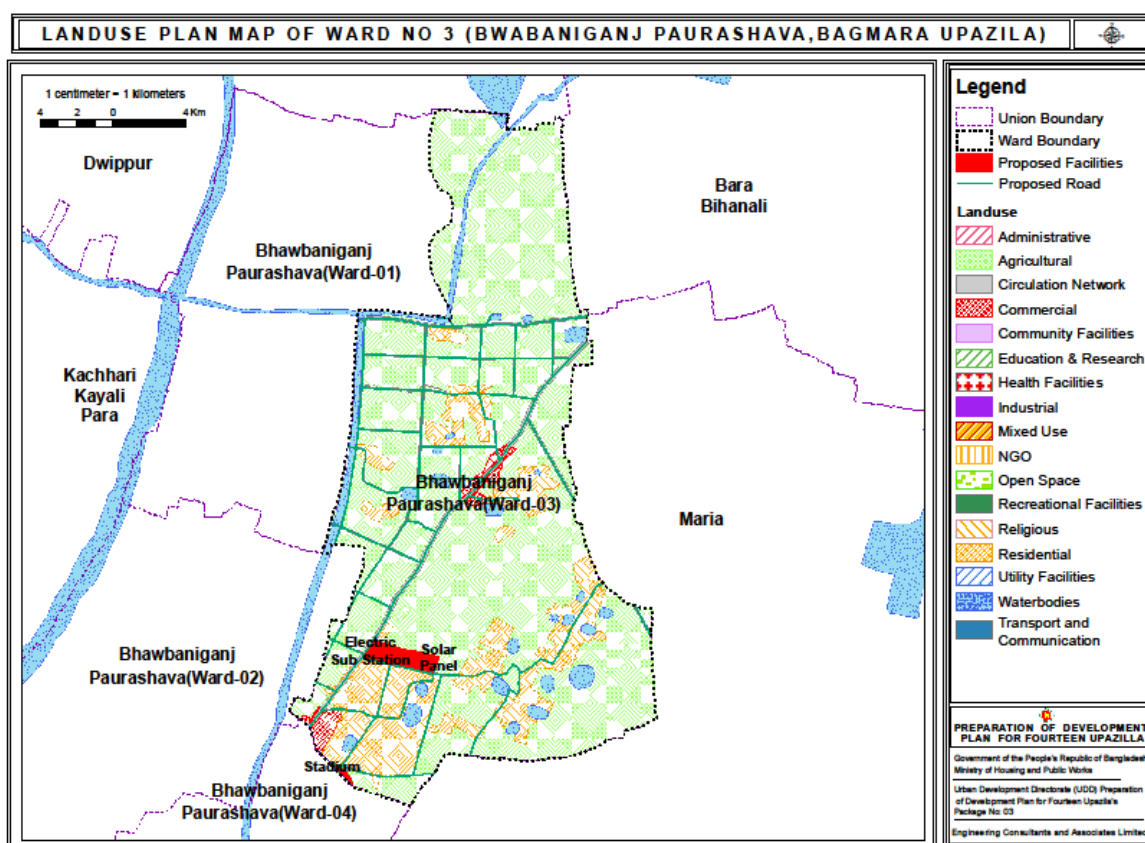
- Ward no 3

In ward no 3, has 2.1 square kilometers. This ward also comprises most of land as agriculture. Residential area developed through the ward in a scattered manner. Southern part of the ward is more congested. Considering the demand of the area a stadium is proposed at main residential area which consisting 1.91 acres of land. A solar panel and an Electric sub-station also proposed here (Table 16.3).

Table 16.3: Proposed Facility in ward no 3.

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-03)	Electric Sub Station	1.91	Utility Facility
Bhawbaniganj Paurashava(Ward-03)	Solar Panel	2.55	Utility Facility
Bhawbaniganj Paurashava(Ward-03)	Stadium	0.41	Recreational and Open Space

Following Map 16.3 presents the existing and proposed facilities of the ward.



Map 16.3: Landuse Plan Map of Ward No. 3 Bwabaniganj Paurashava, Bagmara Upazila

- Ward no 4

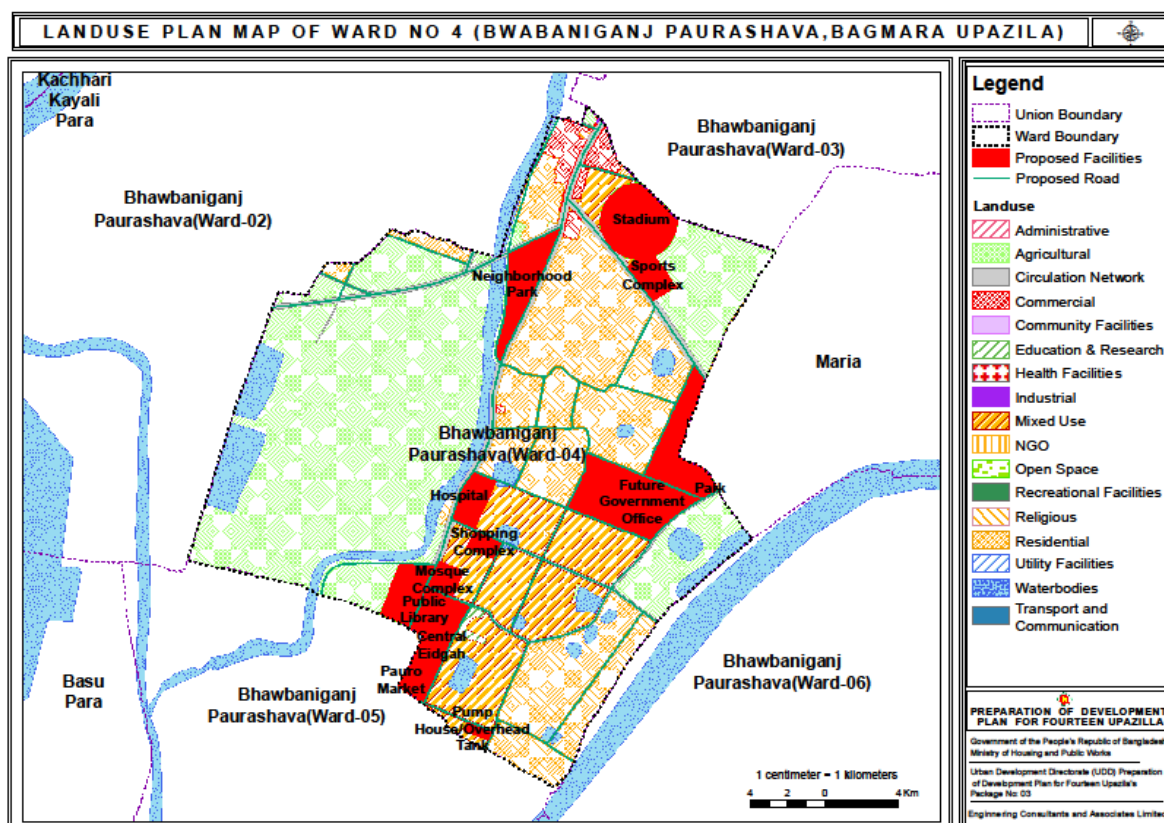
In ward no 4, of Bwabaniganj Paurashava is comprise of 1.02 square kilometers. The whole ward can be divided in two parts. One part is agriculture dominated which mainly remain unchanged and other part will be mixed use area. Map 16.4 shows the details picture of the ward with proposed facilities.

In ward no 4, for commercial purpose a shopping complex and a pauro market proposed here. 11.66 acres of land is allocated for future government office. There is proposed waste transfer station at core urban area. A multi-purpose hall is proposed to fulfill the service and demand of the ward. A hospital is proposed in the middle of the ward for health facilities. Total 12.95 acres of land is allocated for open space and recreation purpose in which a neighborhood park, a sports complex, a park, a stadium and a public gathering place are included. A central Eidgah, a public toilet, a public library and school for autistic child are also proposed here. Table 16.4 presents the list of proposed facilities in ward no 1.

Table 16.4: Proposed Facility in ward no 4.

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-04)	Shopping Complex	0.74	Commercial
Bhawbaniganj Paurashava(Ward-04)	Mosque Complex	1.07	Religious Facilities
Bhawbaniganj Paurashava(Ward-04)	Future Government Office	11.66	Administrative
Bhawbaniganj Paurashava(Ward-04)	Waste Transfer Station	0.15	Utility Facility
Bhawbaniganj Paurashava(Ward-04)	Hospital	1.74	Health Facilities
Bhawbaniganj Paurashava(Ward-04)	Pauro Market	1.22	Commercial

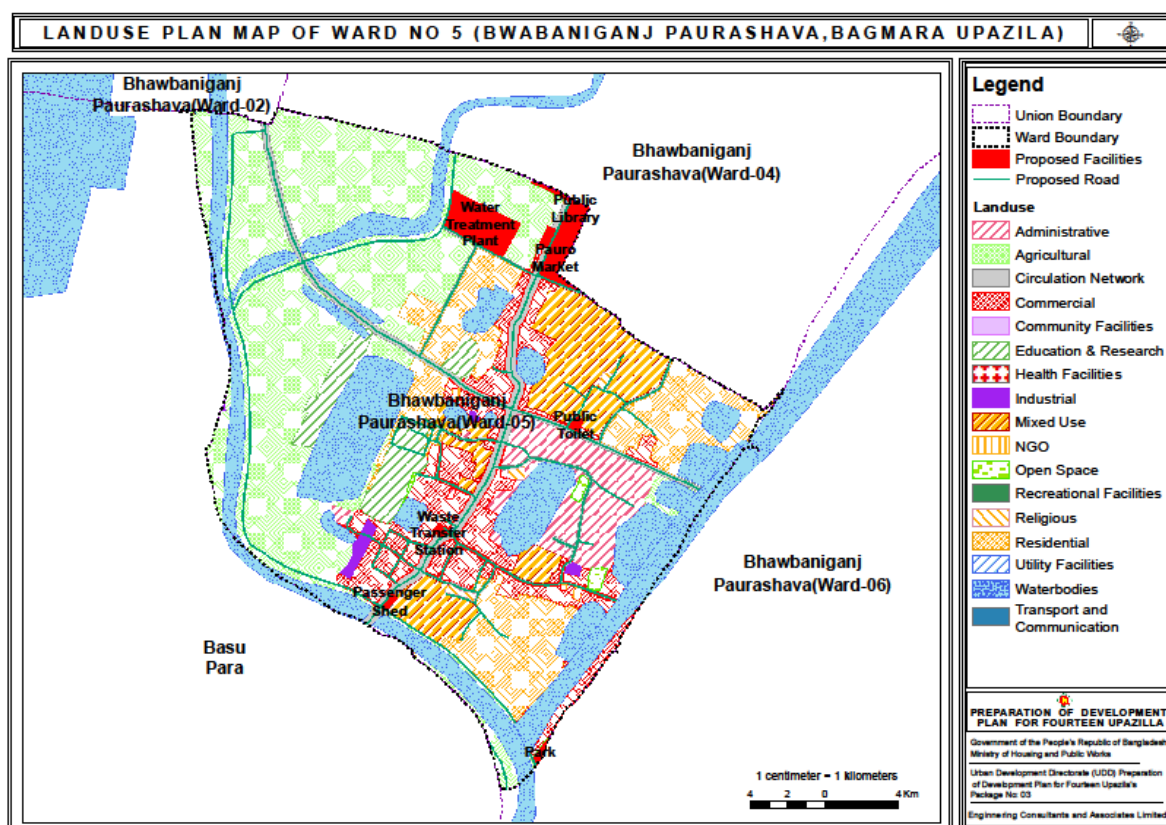
Bhawbaniganj Paurashava(Ward-04)	Neighborhood Park	3.74	Recreational and Open Space
Bhawbaniganj Paurashava(Ward-04)	Multi-Purpose Hall	0.99	Community Facility
Bhawbaniganj Paurashava(Ward-04)	Sports Complex	1.47	Recreational and Open Space
Bhawbaniganj Paurashava(Ward-04)	Park	0.12	Recreational and Open Space
Bhawbaniganj Paurashava(Ward-04)	Stadium	5.16	Recreational and Open Space
Bhawbaniganj Paurashava(Ward-04)	Public gathering Place; Playground	2.46	Open Space
Bhawbaniganj Paurashava(Ward-04)	Pump House/Overhead Tank	0.19	Utility Facility
Bhawbaniganj Paurashava(Ward-04)	Central Eidgah	1.11	Religious Activity
Bhawbaniganj Paurashava(Ward-04)	Public Toilet	0.17	Utility Facility
Bhawbaniganj Paurashava(Ward-04)	School for Autistic Child	0.33	Education & Research
Bhawbaniganj Paurashava(Ward-04)	Public Library	0.73	Education & Research



Map 16.4: Landuse Plan Map of Ward No. 4 Bhawbaniganj Paurashava, Bagmara Upazila

- Ward no 5**

In ward no 5, of Bhawbaniganj Paurashava is comprise of 0.65 square kilometers. It is also predominantly agricultural area and a narrow canal goes along one side of the ward. This agriculture land and water body will remain unchanged. **Map 16.5** depicts the urban area plan of ward no 5.



Map 16.5: Landuse Plan Map of Ward No. 5 Bhawaniganj Paurashava, Bagmara Upazila

Considering the nature of the ward and the demand of the people some utilities facilities are proposed. To maintain cleanliness of the ward a two public toilet and a waste transfer station are proposed in urban area plan. A water treatment plant is also needed. There also proposed some other facilities which are in **Table 16.5**.

Table 16.5: Proposed Facility in ward no five.

Ward No	Facility Name	Area	Landuse
Bhawaniganj Paurashava(Ward-05)	Pauro Market	0.75	Commercial
Bhawaniganj Paurashava(Ward-05)	Water Treatment Plant	1.87	Utility Facility
Bhawaniganj Paurashava(Ward-05)	Public Toilet	0.11	Utility Facility
Bhawaniganj Paurashava(Ward-05)	Waste Transfer Station	0.05	Utility Facility
Bhawaniganj Paurashava(Ward-05)	Public Toilet	0.05	Utility Facility
Bhawaniganj Paurashava(Ward-05)	Park	0.10	Open Space
Bhawaniganj Paurashava(Ward-05)	Public gathering Place; Playground	0.12	Open Space
Bhawaniganj Paurashava(Ward-05)	Passenger Shed	0.16	Transport and Communication
Bhawaniganj Paurashava(Ward-05)	Passenger Shed	0.10	Transport and Communication
Bhawaniganj Paurashava(Ward-05)	Central Eidgah	0.04	Religious Activity
Bhawaniganj Paurashava(Ward-05)	School for Autistic Child	0.28	Education & Research
Bhawaniganj Paurashava(Ward-05)	Public Library	0.15	Education & Research

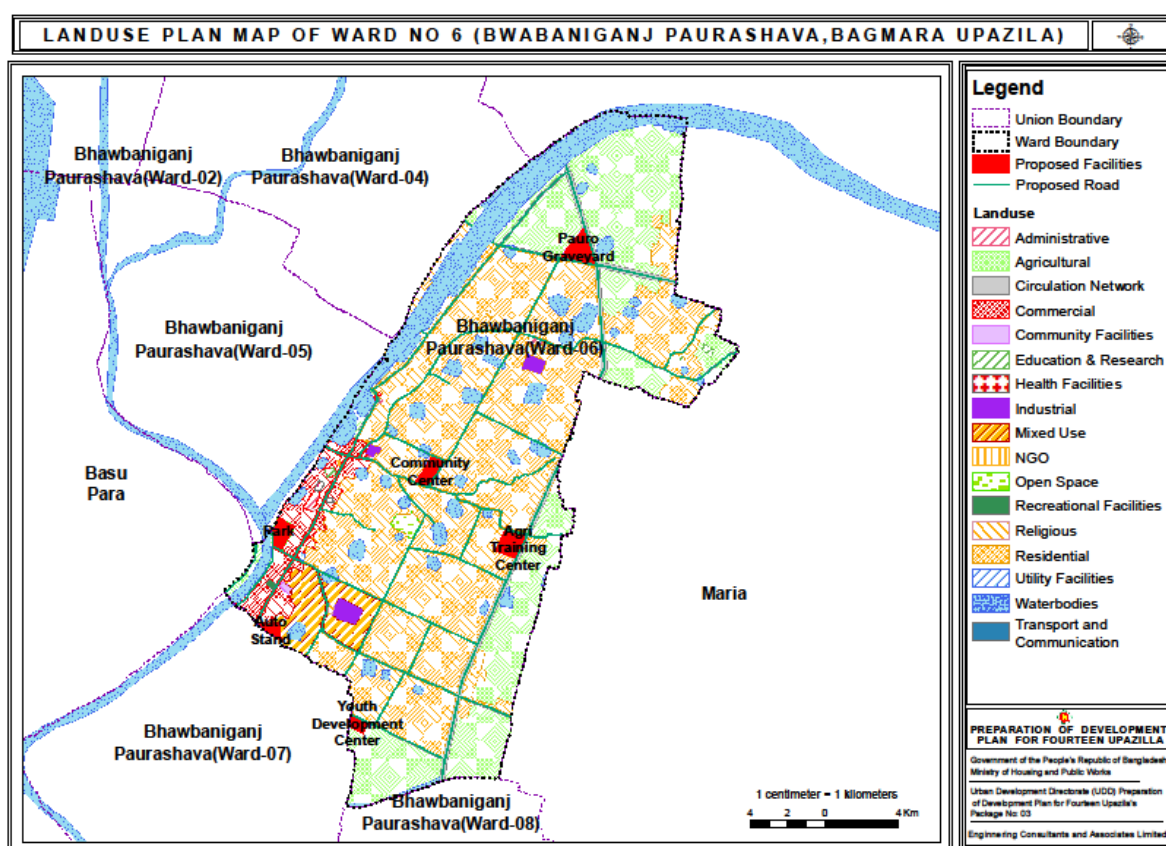
- Ward no 6

In ward no 6, of Bwabanigonj Paurashava is comprise of 1.61 square kilometers. It also has a large amount of agricultural land. An agri-training center is proposed here. A youth development center is also proposed for creating efficient manpower. A community center, a park, a graveyard and an auto stand are proposed here.

Table 16.6: Proposed Facility in ward no six.

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-06)	Agri Training Center	1.38	Education & Research
Bhawbaniganj Paurashava(Ward-06)	Auto Stand	0.53	Transport and Communication
Bhawbaniganj Paurashava(Ward-06)	Youth Development Center	0.54	Administrative
Bhawbaniganj Paurashava(Ward-06)	Community Center	1.08	Community Facility
Bhawbaniganj Paurashava(Ward-06)	Park	1.11	Open Space
Bhawbaniganj Paurashava(Ward-06)	Pauro Graveyard	1.64	Community Facility

Following **Map 16.6** presents the proposed urban area plan for ward no 6.

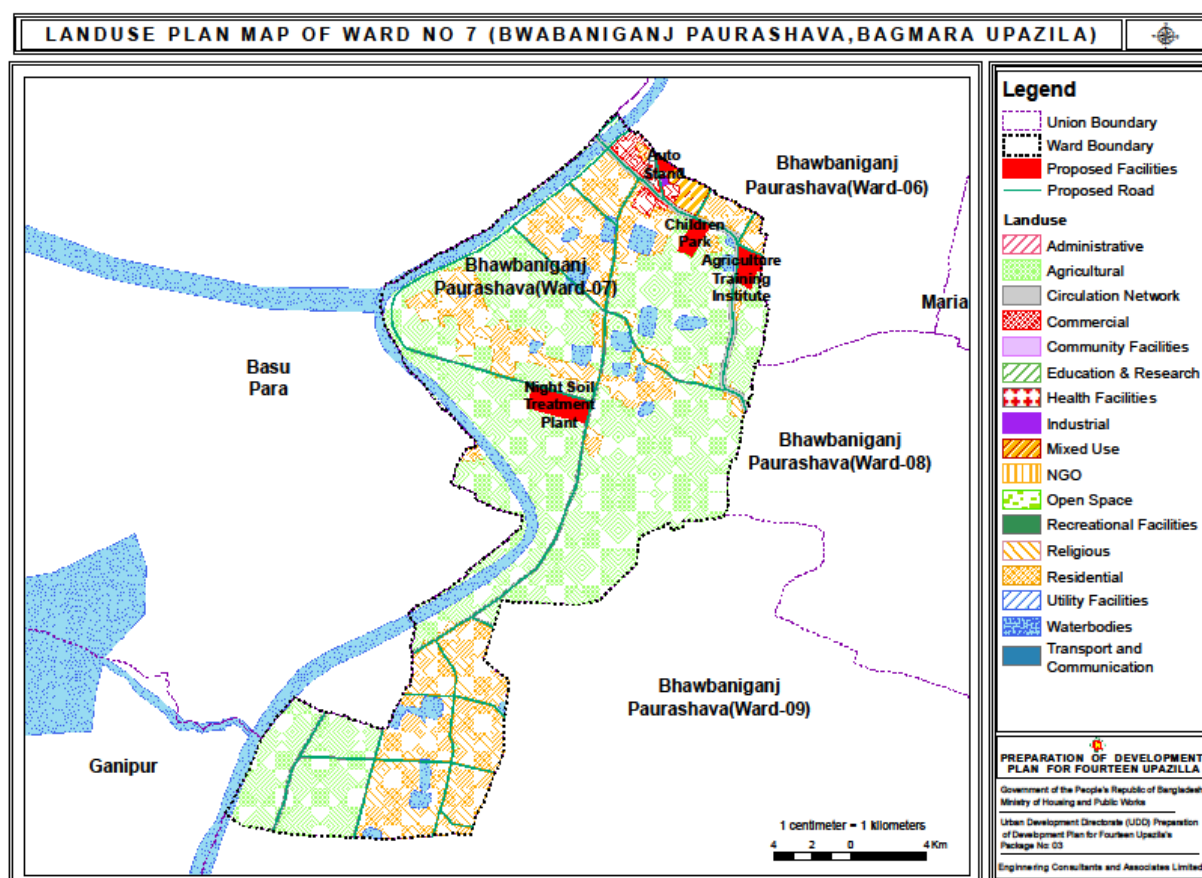


Map 16.6: Landuse Plan Map of Ward No. 6 Bwabanigonj Paurashava, Bagmara Upazila

- Ward no 7

In ward no 7, of Bwabanigonj Paurashava is comprise of 1.17 square kilometers. Main landuse is agriculture and residential of this ward. The Agricultural area will not be changed. According to the

socio-economic condition of the area the first priority is Poor Housing on Residential based Landuse. **Map 16.7** shows the detail urban area plan for ward no 7.



Map 16.7: Landuse Plan Map of Ward No. 7 Bhawaniganj Paurashava, Bagmara Upazila

In ward 7 a night soil treatment plant is proposed, an auto stand, a youth development center, a children park and an agriculture training institute are proposed for ward no 7.

Table 16.7: Proposed Facility in ward no 7.

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-07)	Night Soil Treatment Plant	2.51	Utility Facility
Bhawbaniganj Paurashava(Ward-07)	Auto Stand	0.32	Transport and Communication
Bhawbaniganj Paurashava(Ward-07)	Youth Development Center	0.75	Administrative
Bhawbaniganj Paurashava(Ward-07)	Children Park	1.03	Open Space
Bhawbaniganj Paurashava(Ward-07)	Agriculture Training Institute	0.68	Education & Research

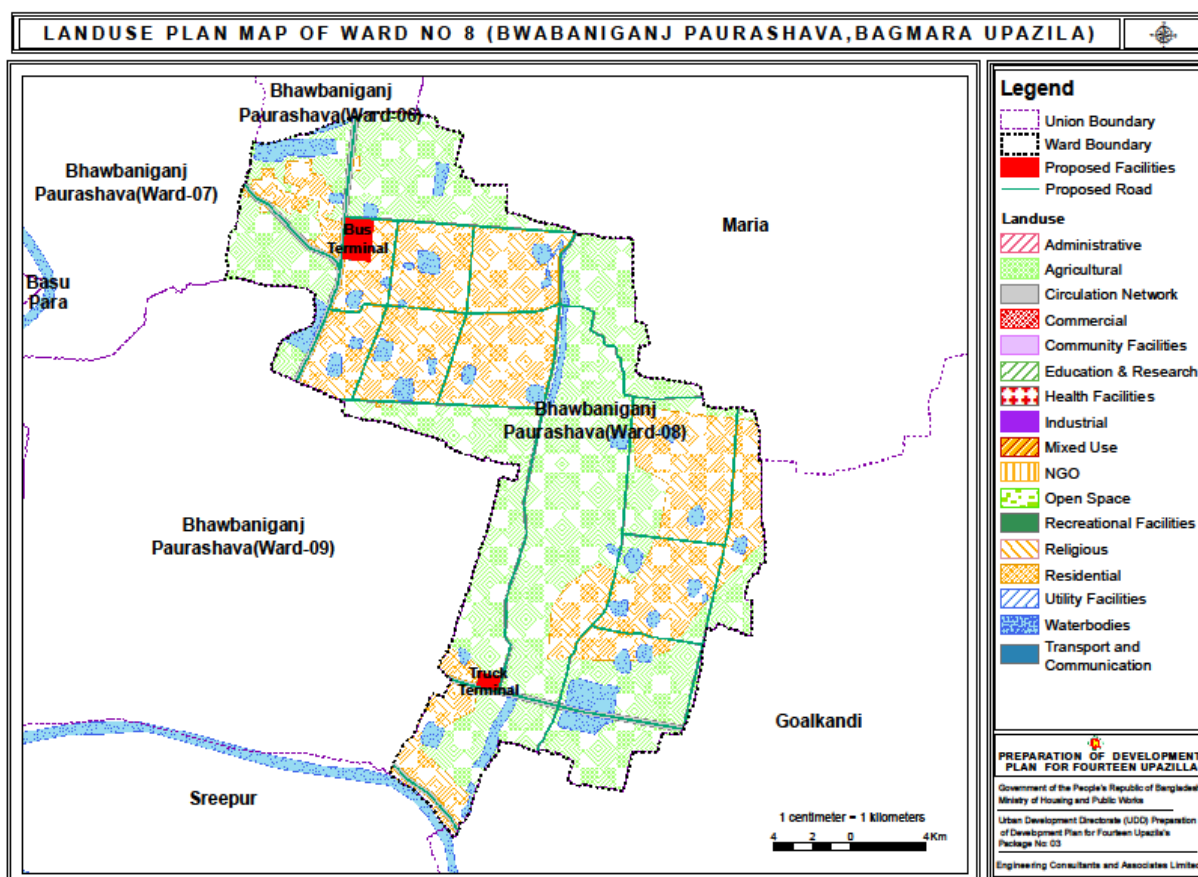
- Ward no 8**

In ward no 8, of Bhawaniganj Paurashava is covering 1.89 square kilometres of land. Most of the land in this ward is used for agricultural purpose. At northern part of the ward is pure residential land consisting 151.31 acres of land. To improve the communication facilities a bus and a truck terminal are proposed for this Ward (**Table 16.8**).

Table 16.8: Proposed Facility in ward no 8.

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-08)	Bus Terminal	2.70	Transport and Communication
Bhawbaniganj Paurashava(Ward-08)	Truck Terminal	0.71	Transport and Communication

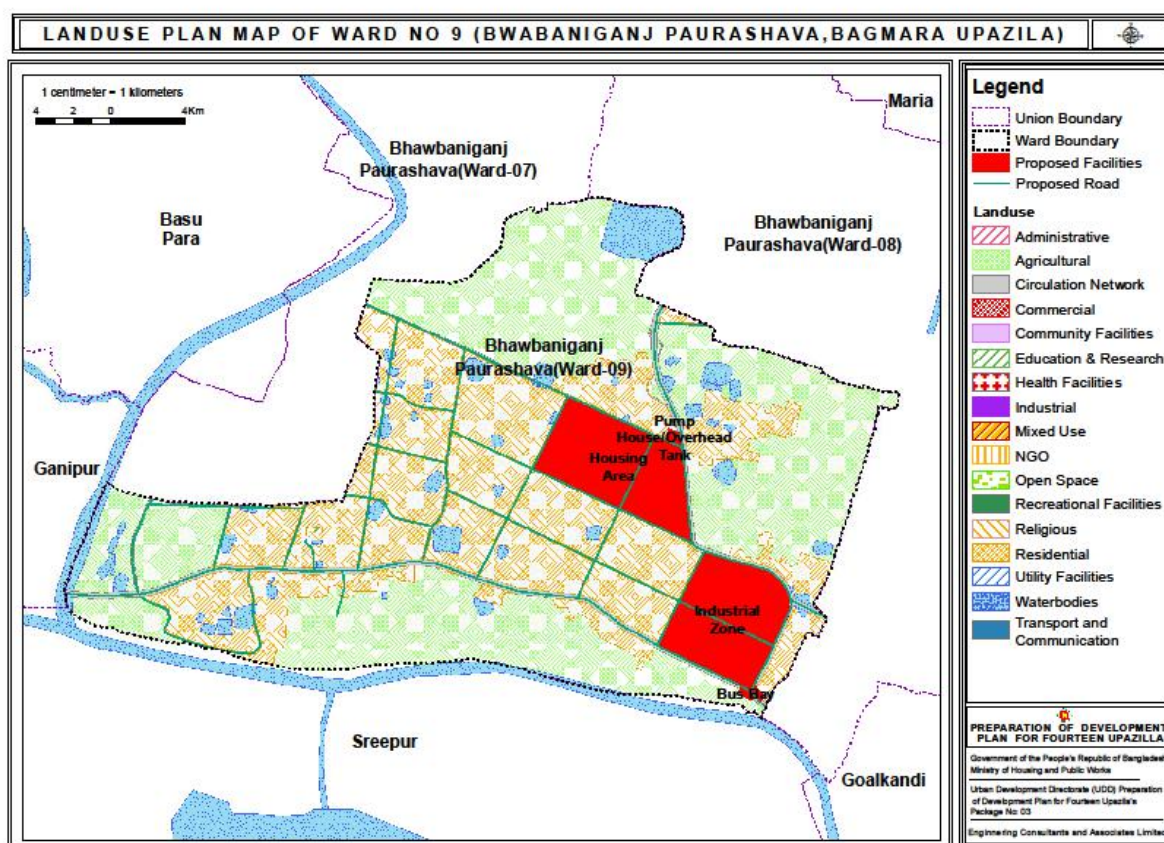
The agricultural land is consisting 209.90 acres of land and water body is consisting 28 acres of land. These areas will not be altered in any other landuse. There is 22.47 acres allocated land for circulation network in proposed landuse plan. **Map 16.8** depicts the proposed urban area plan for ward 8 of Bwabanigonj Paurashava.



Map 16.8: Landuse Plan Map of Ward No. 8 Bwabanigonj Paurashava, Bagmara Upazila

- Ward no 9

In ward no 9, of Bwabanigonj Paurashava is comprise of 1.54 square kilometers. More than 194 acres of land in this ward is agricultural land. The residential landuse is developed within 184 .38 acres of land. In proposed plan 23.98 acres land is allocated for housing area in the middle of the ward. 22.25 acres industrial zone has been proposed at south-east part of the ward. According to the socio-economic condition of the area the first priority is Housing on Residential Landuse. Following **Map16.9** presents the Urban Area Plan for Ward no 9.



Map 16.9: Landuse Plan Map of Ward No. 9 Bhawbanigonj Paurashava, Bagmara Upazila

Table 16.9 shows the lists of proposed facilities in ward no 9. In ward 9 two bus bay has been propose to provide the transport and communication facilities. A pump house or overhead tank is also needed to provide drinking water for the residents.

Table 16.9: Proposed Facility in ward no 9

Ward No	Facility Name	Area	Landuse
Bhawbaniganj Paurashava(Ward-09)	Industrial Zone	22.25	Industrial
Bhawbaniganj Paurashava(Ward-09)	Housing Area	23.98	Residential
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.21	Transport and Communication
Bhawbaniganj Paurashava(Ward-09)	Bus Bay	0.20	Transport and Communication
Bhawbaniganj Paurashava(Ward-09)	Pump House/Overhead Tank	0.38	Utility Facility

16.3 Taherpur Paurashava Detail Area Plan (ward Wise)

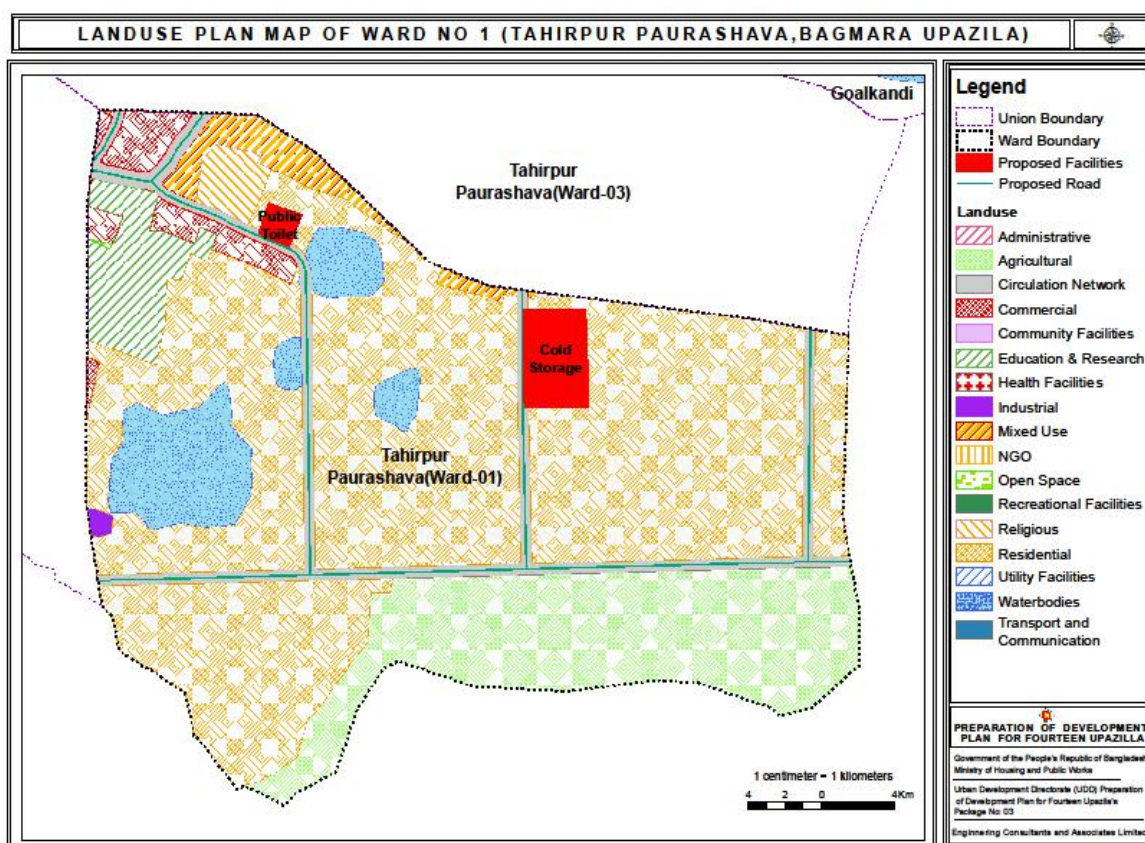
The Taherpur Paurashava is a total of 11.04 square kilometers. The proposed facilities are analyzed and divided through the population density growth rate and existing available resources with proposed landuse patterns. The network of river in three side of the Paurashava area provides a fertile land use and it sparks the agriculture based development. So the poor housing to provide proper shelter to the low income group is a sustainable approach throughout Urban Detail Area Plan.

- Ward no 1

Tahirpur Paurashava is comprised of 0.14 square kilometers. According to the socio-economic condition of the area the first priority is Poor Housing on Residential Landuse along with Agricultural lands and reserved lands for recreational purposes and for future development purposes. There also proposed some other facilities which are shown in **Table 16.10**.

Table 16.10: Proposed Facilities in Ward no 1

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-01)	Cold Storage	0.47	Industrial
Tahirpur Paurashava(Ward-01)	Public Toilet	0.09	Utility Facility



Map 16.10: Landuse Plan Map of Ward No. 1 Tahirpur Paurashava, Bagmara Upazila

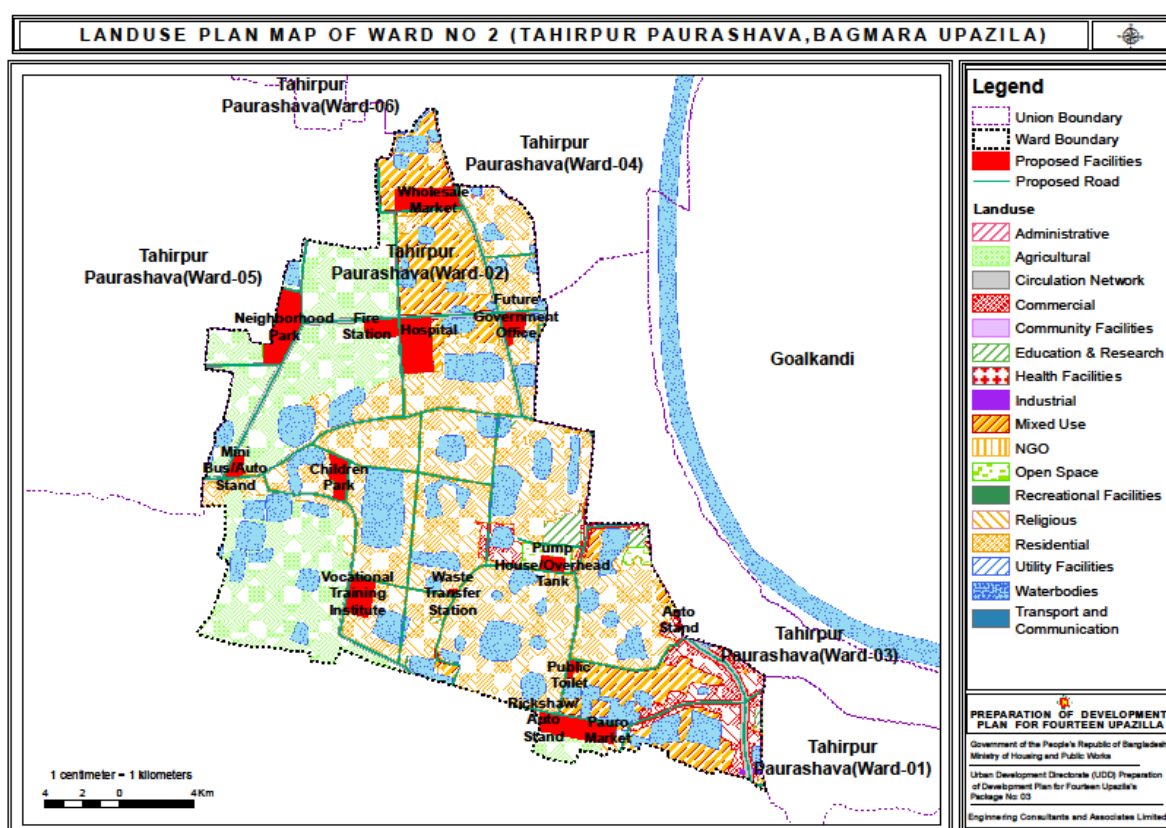
- Ward no 2

In this ward significant landuse are agriculture and residential. A poor housing is proposed here which is joint with ward no 1. A public toilet, Rickshaw\Auto stand is proposed for considering local demand. The provision of Neighborhood Park and Training institute is given at northern part of the ward. There also proposed some other facilities which are shown in **Table 16.11**.

Table 16.11: Propose Facilities in Ward no 2

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-02)	Waste Transfer Station	0.18	Utility Facility
Tahirpur Paurashava(Ward-02)	Public Toilet	0.05	Utility Facility
Tahirpur Paurashava(Ward-02)	Mini Bus/Auto Stand	0.44	Transport and Communication

Tahirpur Paurashava(Ward-02)	Rickshaw/ Auto Stand	0.44	Transport and Communication
Tahirpur Paurashava(Ward-02)	Pauro Market	1.56	Commercial
Tahirpur Paurashava(Ward-02)	Neighborhood Park	2.37	Recreational and Open Space
Tahirpur Paurashava(Ward-02)	Wholesale Market	1.82	Commercial
Tahirpur Paurashava(Ward-02)	Vocational Training Institute	1.32	Education & Research
Tahirpur Paurashava(Ward-02)	Hospital	2.37	Health Facilities
Tahirpur Paurashava(Ward-02)	Auto Stand	0.02	Transport and Communication
Tahirpur Paurashava(Ward-02)	Waste Transfer Station	0.07	Utility Facility
Tahirpur Paurashava(Ward-02)	Fire Station	0.83	Administrative
Tahirpur Paurashava(Ward-02)	Future Government Office	0.82	Administrative
Tahirpur Paurashava(Ward-02)	Children Park	0.92	Open Space
Tahirpur Paurashava(Ward-02)	Pump House/Overhead Tank	0.48	Utility Facility
Tahirpur Paurashava(Ward-02)	Public Toilet	0.07	Utility Facility



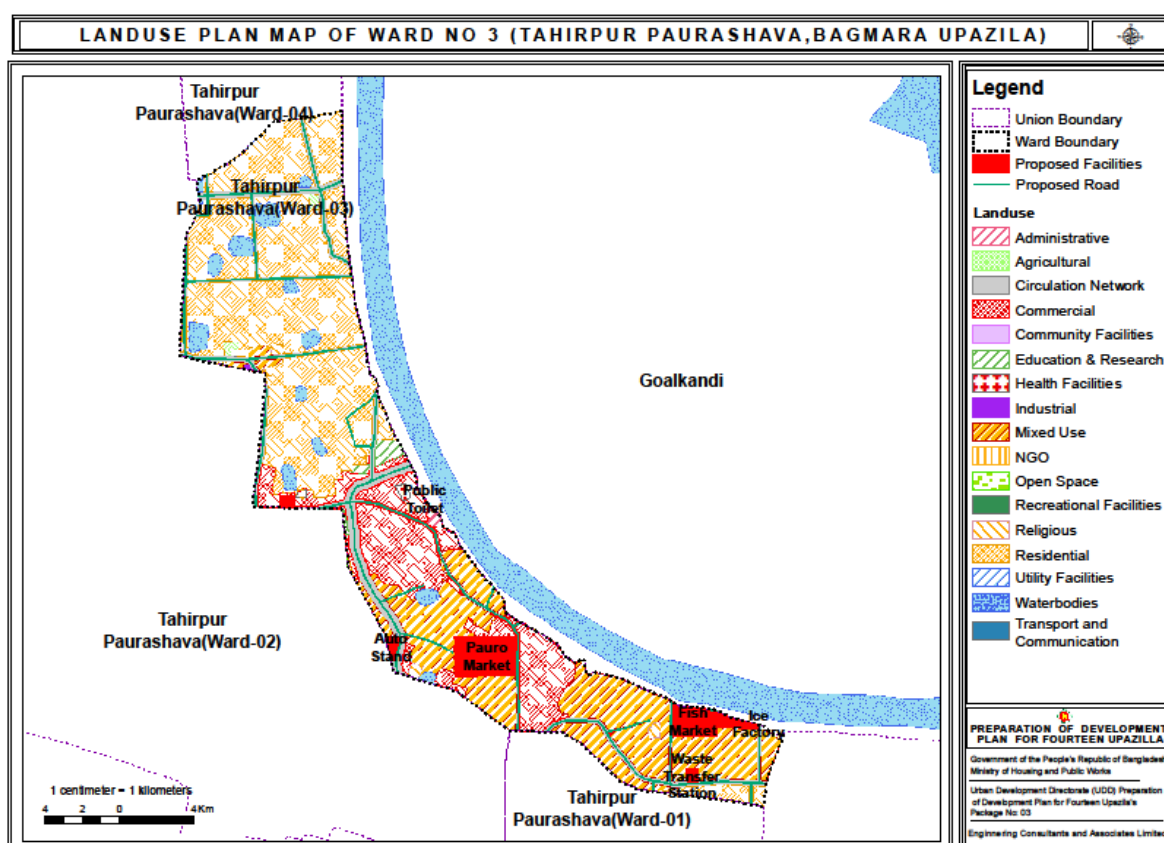
Map 16.11: Landuse Plan Map of Ward No. 2 Tahirpur Paurashava,Bagmara Upazila

- Ward no 3

Considering the nature of the ward and the demand of the people some utilities facilities are proposed. To maintain cleanliness of the ward a public toilet and a waste transfer station are proposed in urban area plan. A water treatment plant is also needed. There also proposed some other facilities which are shown in **Table 16.12**.

Table 16.12: Proposed Facilities in ward no 3

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-03)	Waste Transfer Station	0.11	Utility Facility
Tahirpur Paurashava(Ward-03)	Public Toilet	0.05	Utility Facility
Tahirpur Paurashava(Ward-03)	Fish Market	0.84	Commercial
Tahirpur Paurashava(Ward-03)	Ice Factory	0.27	Industrial
Tahirpur Paurashava(Ward-03)	Auto Stand	0.10	Transport and Communication
Tahirpur Paurashava(Ward-03)	Waste Transfer Station	0.12	Utility Facility
Tahirpur Paurashava(Ward-03)	Pauro Market	1.62	Commercial
Tahirpur Paurashava(Ward-03)	Public Toilet	0.00	Utility Facility

**Map 16.12: Landuse Plan Map of Ward No. 3 Tahirpur Paurashava, Bagmara Upazila**

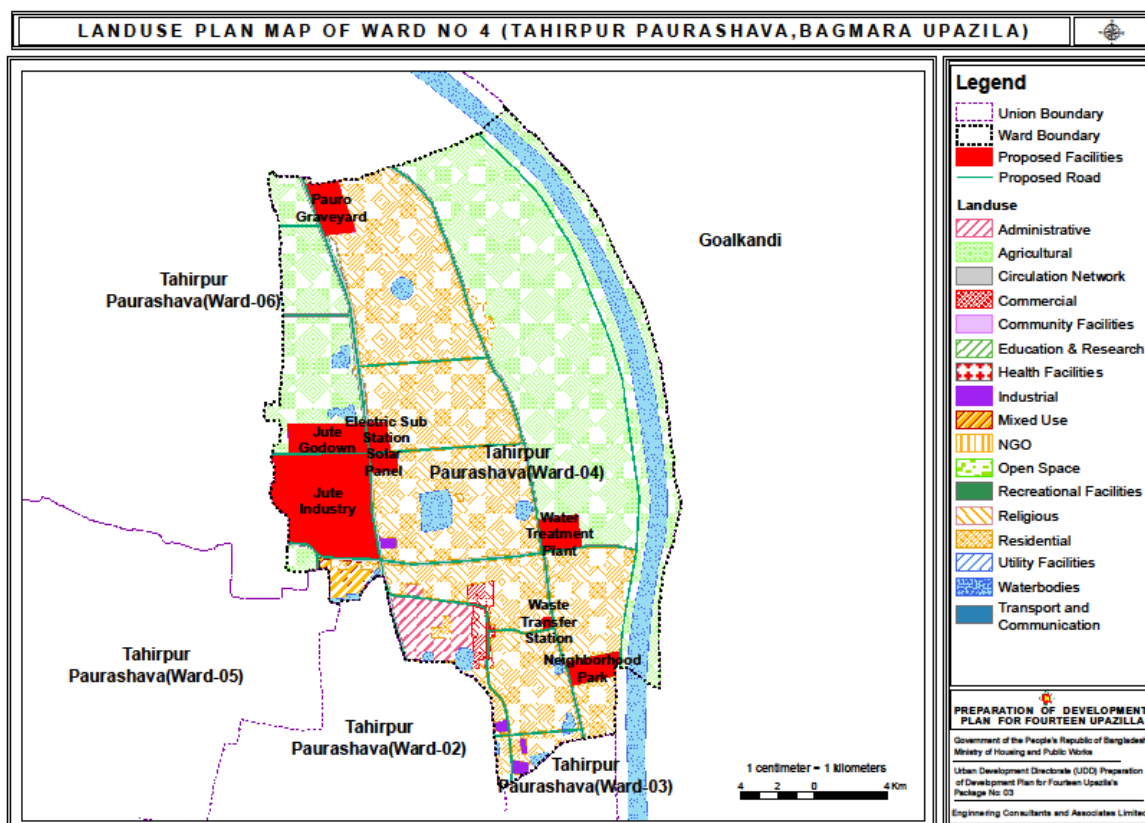
- Ward no 4

This ward also has a large amount of agricultural land. A jute industry and solar panel is proposed here. A Neighborhood Park is also proposed for recreational purposes. An electric sub-station, a park, a graveyard are proposed here. There also proposed some other facilities which are shown in **Table 16.13**.

Table 16.13: Proposed Facilities in Ward no 4

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-04)	Water Treatment Plant	1.45	Utility Facility
Tahirpur Paurashava(Ward-04)	Neighborhood Park	1.33	Recreational and Open Space
Tahirpur Paurashava(Ward-04)	Jute Industry	10.38	Industrial
Tahirpur Paurashava(Ward-04)	Jute Godown	2.70	Industrial

Tahirpur Paurashava(Ward-04)	Electric Sub Station	0.71	Utility Facility
Tahirpur Paurashava(Ward-04)	Solar Panel	0.58	Utility Facility
Tahirpur Paurashava(Ward-04)	Waste Transfer Station	0.14	Utility Facility
Tahirpur Paurashava(Ward-04)	Pauro Graveyard	1.85	Community Facility



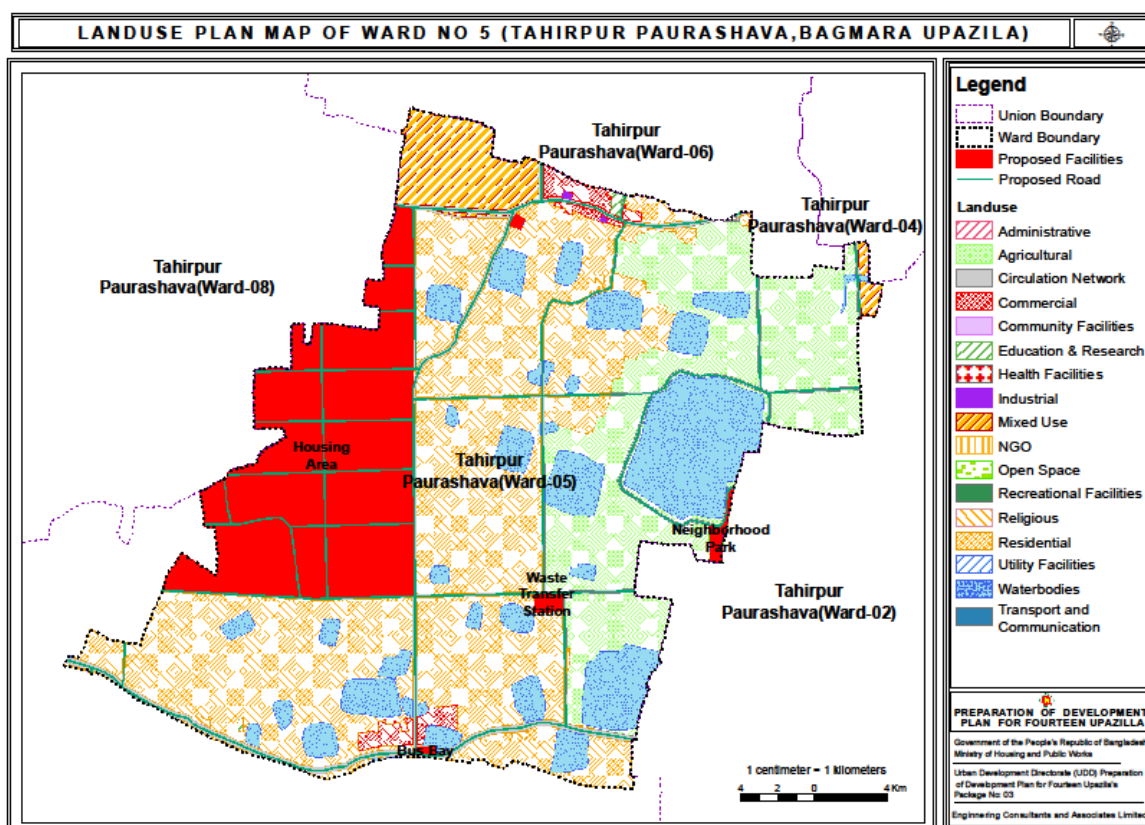
Map 16.13: Landuse Plan Map of Ward No. 4 Tahirpur Paurashava, Bagmara Upazila

- **Ward no 5**

In this ward Main landuse is for agricultural and residential purposes. The Agricultural area will not be changed. According to the socio-economic condition of the area the first priority is Housing on Residential based Landuse. Here water transfer station and a bus bay is proposed to serve the needs of the people of this ward. There also proposed some other facilities which are shown in **Table 16.14**

Table 16.14: Proposed Facilities in Ward no 5

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-05)	Housing Area	39.85	Residential
Tahirpur Paurashava(Ward-05)	Waste Transfer Station	0.13	Utility Facility
Tahirpur Paurashava(Ward-05)	Waste Transfer Station	0.44	Utility Facility
Tahirpur Paurashava(Ward-05)	Neighborhood Park	0.55	Recreational and Open Space
Tahirpur Paurashava(Ward-05)	Bus Bay	0.12	Transport and Communication



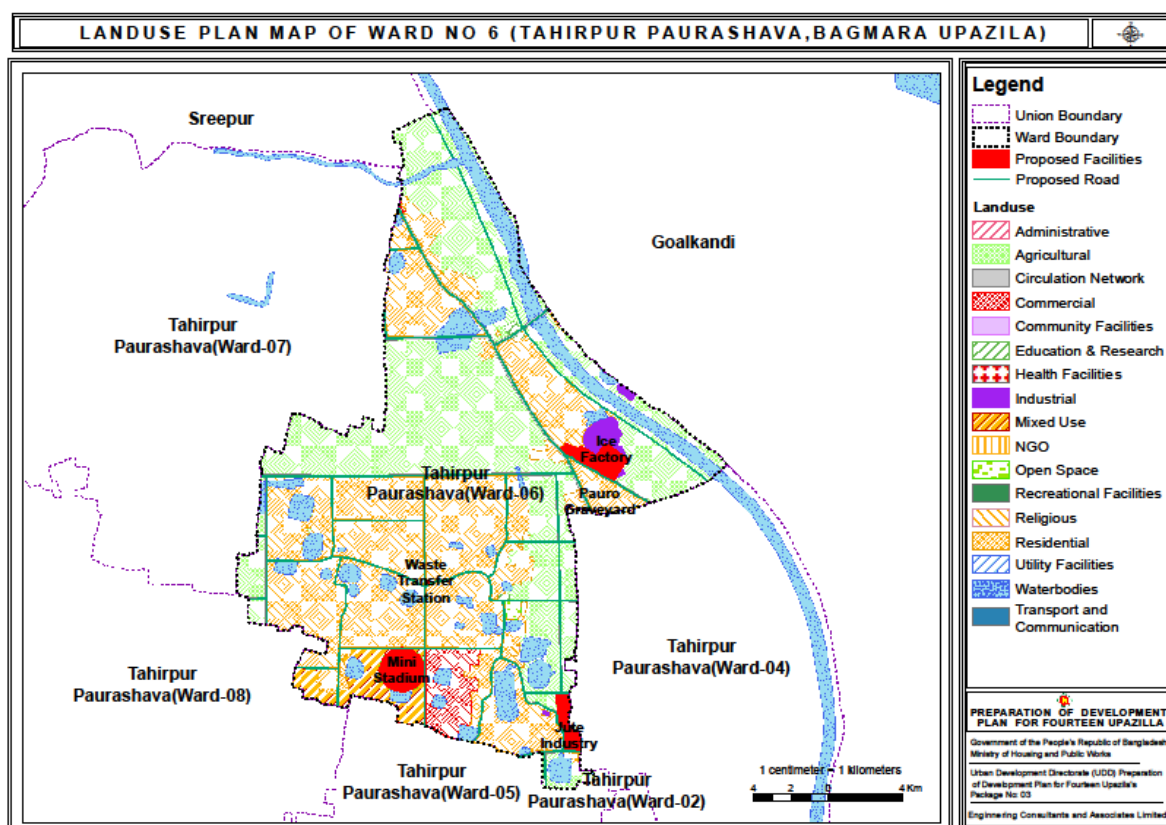
Map 16.14: Landuse Plan Map of Ward No. 6 Tahirpur Paurashava, Bagmara Upazila

- Ward no 6

The nature of the ward and the demand of the people some utilities facilities are proposed. To maintain cleanliness a waste transfer station are proposed in urban area plan. A Fish processing zone and a fish market is proposed to serve the daily needs of the people. There also proposed some other facilities which are shown in **Table 16.15**.

Table 16.15: Proposed Facilities in Ward no 6

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-06)	Fish Processing Zone	2.17	Industrial
Tahirpur Paurashava(Ward-06)	Jute Industry	2.12	Industrial
Tahirpur Paurashava(Ward-06)	Fish Mrket	0.38	Commercial
Tahirpur Paurashava(Ward-06)	Ice Factory	0.33	Industrial
Tahirpur Paurashava(Ward-06)	Cold Storage	0.37	Industrial
Tahirpur Paurashava(Ward-06)	Waste Transfer Station	0.09	Utility Facility
Tahirpur Paurashava(Ward-06)	Mini Stadium	4.01	Open Space
Tahirpur Paurashava(Ward-06)	Pauro Graveyard	0.00	Community Facility
Tahirpur Paurashava(Ward-06)	Ice Factory	0.00	Industrial
Tahirpur Paurashava(Ward-06)	Cold Storage	0.00	Industrial



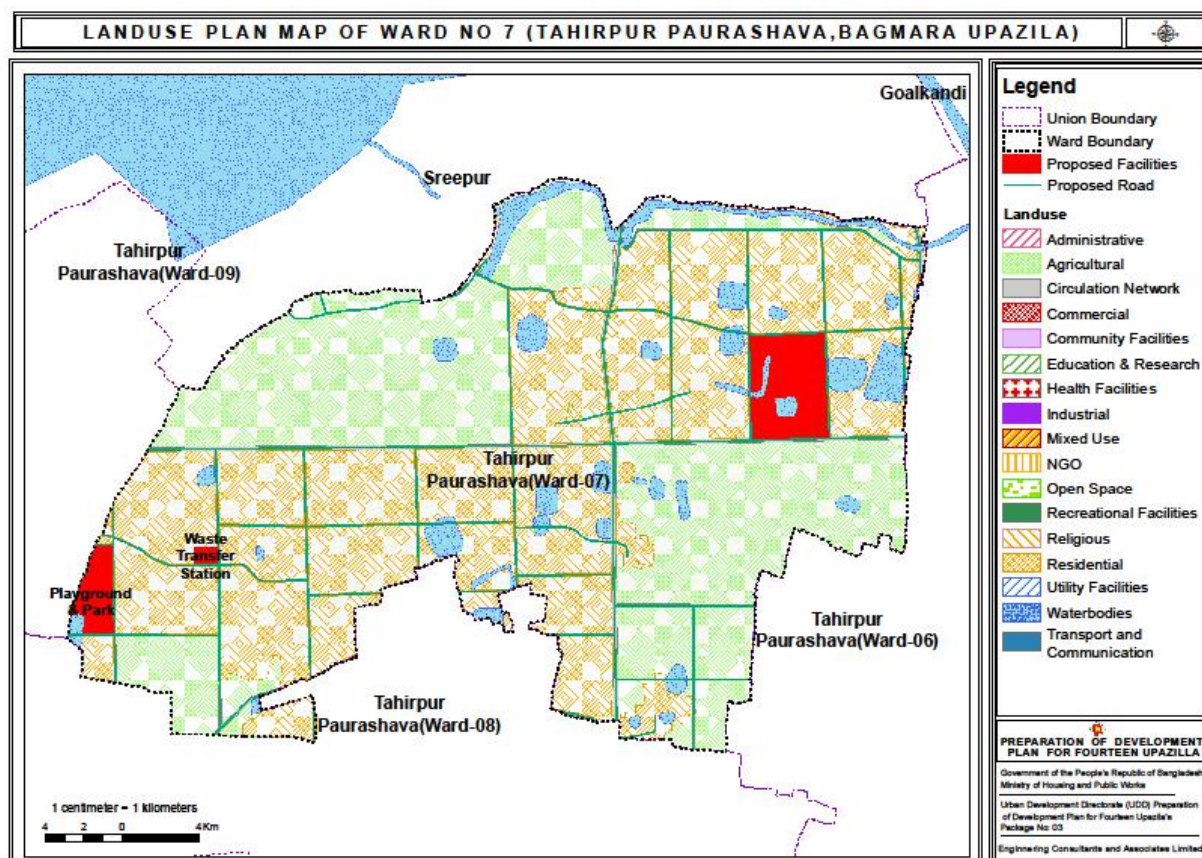
Map 16.15: Landuse Plan Map of Ward No. 6 Tahirpur Paurashava, Bagmara Upazila

- **Ward no 7**

In this particular ward there are provision for Water Transfer Station is needed and proposed for utility purposes. Though main planning concern is to develop the housing area along with required utility services. There is also provision for playground and parks for recreational purposes. There also proposed some other facilities which are shown in **Table 16.16**.

Table 16.16: Proposed Facilities in Ward no 7

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-07)	Waste Transfer Station	0.74	Utility Facility
Tahirpur Paurashava(Ward-07)	Housing Area	12.78	Residential
Tahirpur Paurashava(Ward-07)	Playground & Park	4.78	Open Space



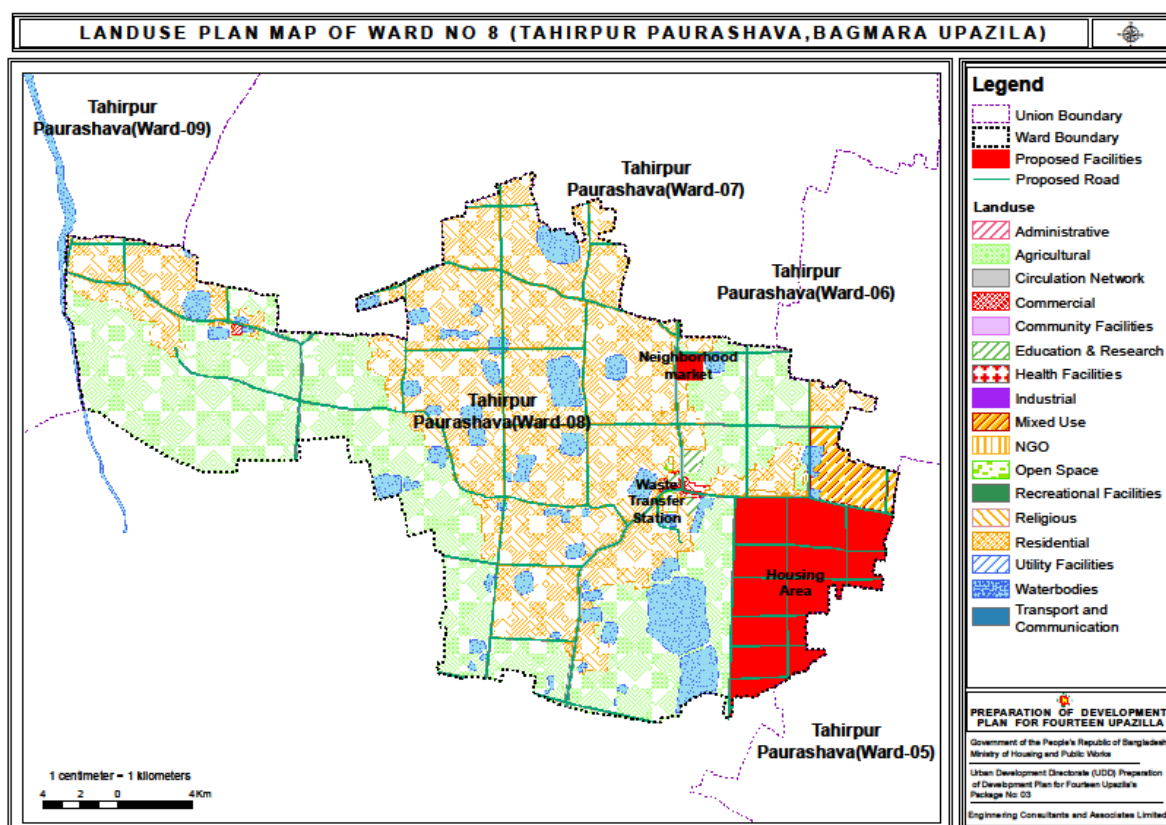
Map 16.16: Landuse Plan Map of Ward No. 7 Tahirpur Paurashava, Bagmara Upazila

- Ward no 8**

Out of 495 acres of land in Ward no 8 of Tahirpur Paurashava 171.38 acres of land is agricultural land. It is predominantly a residential area. Considering the nature of the area and the demand of the local people 45.11 acres of housing area has been proposed in the urban area plan. 39.96 acres of land is basically wet land, which will be remained unchanged. A neighborhood market is also proposed for local residents of the ward. To maintain waste that produced within the ward a waste transfer station has been proposed here. **Table 16.17** presents the list of proposed facilities in ward no 8.

Table 16.17: Proposed Facility in Ward No 8

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-08)	Housing Area	45.11	Residential
Tahirpur Paurashava(Ward-08)	Neighborhood market	1.56	Commercial
Tahirpur Paurashava(Ward-08)	Waste Transfer Station	0.05	Utility Facility



Map 16.17: Landuse Plan Map of Ward No. 8 Tahirpur Paurashava, Bagmara Upazila

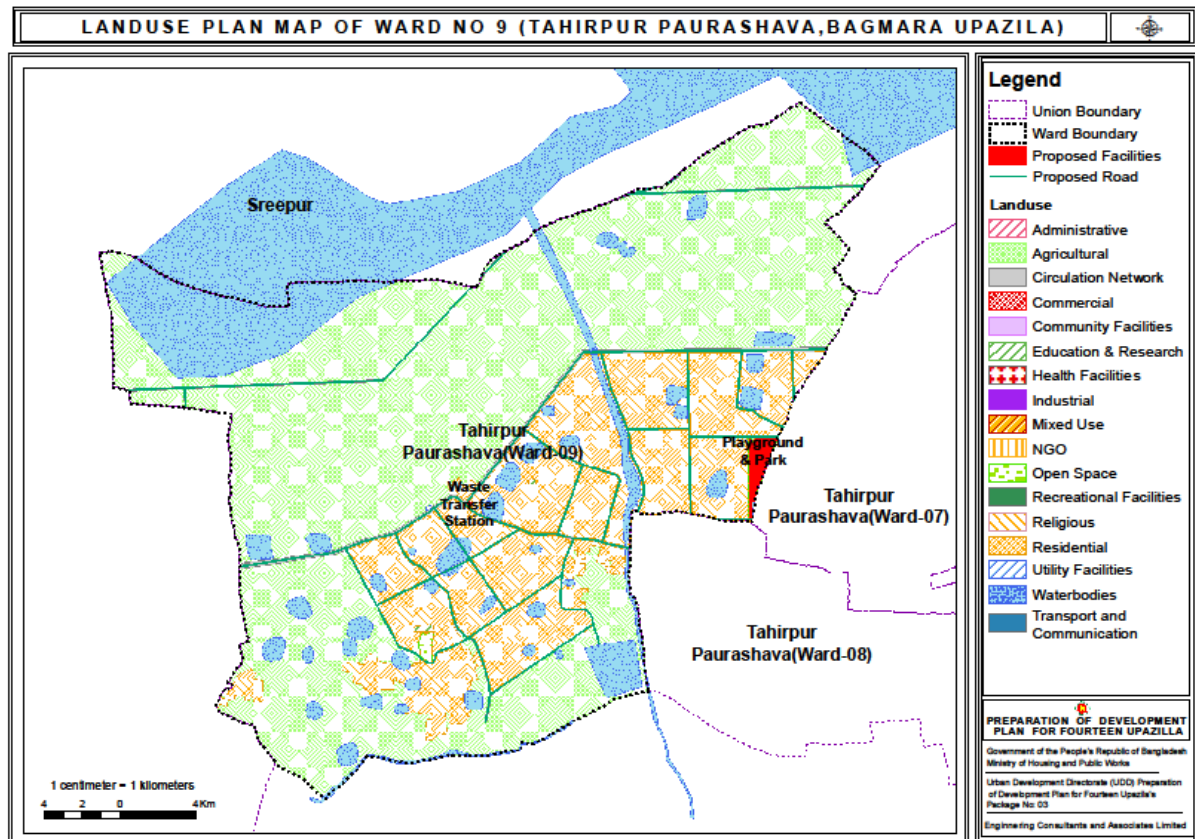
- Ward no 9

In Ward 9 Total land is 543 acres, out of this more than 332 acres of land is agricultural land. 65.37 acres of land in this ward is water body. In proposed landuse, residential development will be occurred within 134.06 acres of land.

To manage the waste of paura area a waste transfer station is proposed here. 2.23 acres of land has been allocated for open space (Table 16.18).

Table 16.18: Proposed Facility in Ward No 9

Ward No	Facility Name	Area	Landuse
Tahirpur Paurashava(Ward-09)	Waste Transfer Station	0.06	Utility Facility
Tahirpur Paurashava(Ward-09)	Playground & Park	2.23	Open Space



Map 16.18: Landuse Plan Map of Ward No. 9 Tahirpur Paurashava, Bagmara Upazila

Chapter 17

Rural Area Plan

17.1 Introduction

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas. Rural development concerns geographical areas in which primary production takes place and where populations are found in various densities. Total 16 unions are considered as the area of Rural Area Plan which covers an area about 84625 acres that is 342.47 sq.km.

17.2 Agriculture

The land of Bagmara Upazila under Rajshahi district is intensively used for agriculture, housing & settlements, fisheries and other infrastructural development. Bagmara Upazila gets high potentials for its land and agricultural production. The Upazila has 60642.98 acres of agricultural land. Most of the areas of this upazila are developed from transformed alluvial deposit by Padma and Atrai rivers. Most of the people of this Upazila are directly or indirectly dependent on agriculture. Major crops are: Paddy (Boro rice (HYV/Hybrid), T. Aush (HYV) and T. Aman (HYV/LIV), Jute, Wheat, Vegetables, Maize, Mustard, Groundnut, Felon and Pulses etc.

17.2.1 Cropping Pattern

In Bagmara Upazila maximum agriculture land is double and triple cropped and the highest percentage is double cropped area (25.81%) followed by triple cropped area (57.51%), single crop area (12.85%) and four cropped area 3.83% under Bagmara Upazila. **Map 17.2** depicted the cropping pattern of the Upazila.

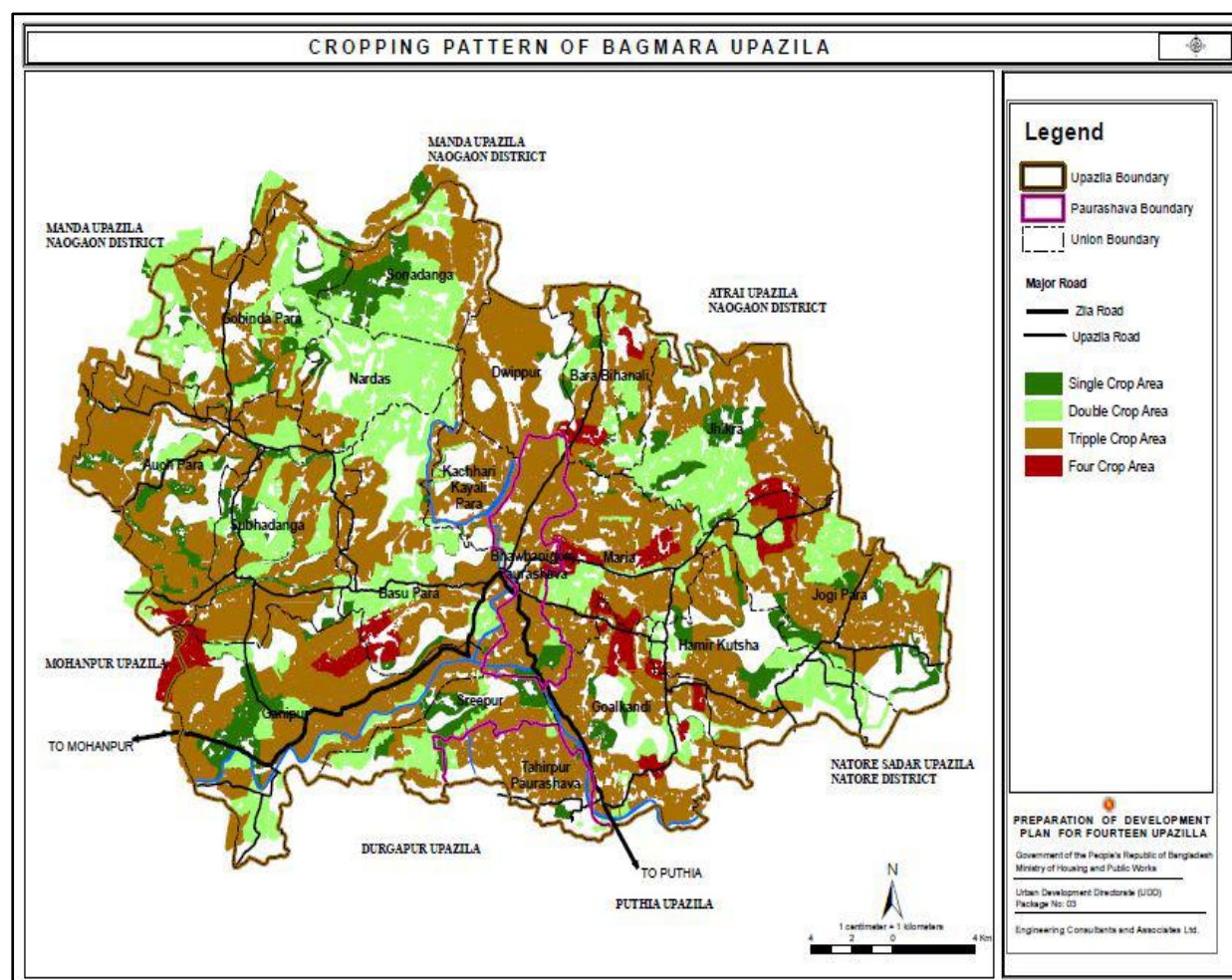
Table 17.1: Cropping Pattern of Bagmara Upazila

Cropping Pattern	Area in Acre	Area in Sq.km	Percentage
Single Cropping	7790.023111	31.525105	12.85%
Double Cropping	15651.78868	63.340542	25.81%
Triple Cropping	34876.84722	141.141593	57.51%
Four Cropping	2324.321155	9.406194	3.83%
Total	60642.98017	245.413434	100%

The major problems in cultivation are: Heavy rain, flood, drought, lack of quality seed, and decrease of agriculture land, river erosion, adverse weather condition, inadequate drainage facilities, Electricity power failure, increase insect and pest infestation and Change in rivers and canals morphology. The remedial measures are adapted from modern farming techniques, information on quality seed, observe weather conditions and follow weather forecast, follow fertilizer recommendation by soil testing, select best available seeds from market, integrated effort for industrial effluents and waste management, grow one leguminous crop (Pulses/Fodder etc.) between two cereal crops, re-excavation of canals, develop market infrastructures and road communication at local level and uninterrupted power supply to irrigation pumps.

There is no wholesale market and infrastructure for agriculture product under 16 Unions. There is a need to develop vegetables wholesale market and improvement of communication system different Unions to Upazila. Farmers need modern crop production technological training which will be helpful for crop diversification and proper utilization land and increase crop production. For improvement of

irrigation facilities katcha drain are to be made lined channel which will reduced irrigation water wastage and increase crop production. Fallow and grazing land has been converted into Banana, Papaya, orchard and vegetable cultivation. Electricity power supply should be ensured during Boro crop season. Ensuring planned and economic use of agriculture land, minimize agricultural land degradation and introducing regulatory measure like adopting land zoning law are necessary to protect the agriculture land.



Map 17.1: Cropping Pattern of Bagmara Upazila

17.2.2 Proposals for Agriculture Development

In Bagmara Upazila Six Agro-based industries (27.70 acres) at Auch Para, Ganipur, Hamir Kutsha, Jhikra, Maria, Subhadanga Union are proposed for enhance farmer's income and widening of market. Eight Cold Storage (2.94 acres) at Auch Para, Bara Bihanali, Gobinda Para, Jhikra and Tahirpur Paurashava for increase storage capacity. A silo covering with 8.51 acres area is proposed at Jogi Para. Besides these, Three Ice Factories, two Fish Processing Zones and two Jute Industries are proposed a suitable location to fulfil the demand of the area.

Table 17.2: List of Proposed Facility

Union	Name	Area
Auch Para	Agro based Industry	2.999191
Ganipur	Agro Based Industry	9.529804
Hamir Kutsha	Agro Based Industry	0.422772

Union	Name	Area
Jhikra	Agro Based Industry	6.24691
Maria	Agro Based Industry	2.546133
Subhadanga	Agro based Industry	5.957519
Auch Para	Cold Storage	0.258564
Bara Bihanali	Cold Storage	0.506275
Bara Bihanali	Cold Storage	0.323211
Gobinda Para	Cold Storage	0.72317
Jhikra	Cold Storage	0.290516
Tahirpur Paurashava(Ward-01)	Cold Storage	0.467347
Tahirpur Paurashava(Ward-06)	Cold Storage	0.374006
Tahirpur Paurashava(Ward-06)	Cold Storage	0.000223
Maria	Cottage Industry	2.731481
Maria	Cottage Industry	0.000158
Hamir Kutsha	Fish Processing Zone	4.309234
Tahirpur Paurashava(Ward-06)	Fish Processing Zone	2.171402
Goalkandi	Ice Factory	0.081301
Tahirpur Paurashava(Ward-03)	Ice Factory	0.273292
Tahirpur Paurashava(Ward-06)	Ice Factory	0.331734
Tahirpur Paurashava(Ward-06)	Ice Factory	0.000223
Tahirpur Paurashava(Ward-04)	Jute Godown	2.70281
Tahirpur Paurashava(Ward-04)	Jute Industry	10.38455
Tahirpur Paurashava(Ward-06)	Jute Industry	2.115243
Jogi Para	Silo	8.509543

17.3 Growth Centre and Hat Bazar

Growth centre may be defined as a service centre which has potential for future development. These centres provide goods and services to its own population as well as its surroundings. There are three growth centres in Auchpara, Shuvadanga and Ganipur union of Bagmara Upazila.

To sustain economic activity and economic development of rural area new growth center should be proposed at suitable location. New three growth center have been proposed respectively at Mordas, Maria and Jogipara union. Proposed Growth centers are well connected within the union as well as whole Upazila.

17.3.1 Existing and Proposed Hat Bazar and Growth Center

Hat, is an open-air market that serves as a trading venue for local people in rural area. Hat bazars are conducted on a regular basis, i.e. once, twice, or three times a week. At present 3 growths center and 52 major hat bazar develop in the Upazila. List of existing and proposed growth center and hat bazars is shown in **Table 17.3**

Table 17.3: Existing and Proposed Hat Bazar and Growth Center

Type	Remarks	Union
Hat Bazar	Mugaipara Hat	Auch Para
Hat Bazar	Khalgram Hat	Auch Para

Type	Remarks	Union
Growth Center	Hatgangopara Hat	Auch Para
Hat Bazar	Khuzipur Hat	Auch Para
Hat Bazar	Belgharia Bazar	Auch Para
Hat Bazar	Bara Behanali Hat	Bara Bihanali
Hat Bazar	Kalispur Hat	Bara Bihanali
Hat Bazar	Mohammadpur Bazar	Basu Para
Hat Bazar	Chakabari Hat	Basu Para
Hat Bazar	Matabhanga Bazar	Basu Para
Hat Bazar	Zatiganj Hat	Basu Para
Hat Bazar	Dwippur Hat	Dwippur
Hat Bazar	Jola Para Hat	Dwippur
Hat Bazar	Hasnipur Hat	Ganipur
Growth Center	Mohanganj Hat	Ganipur
Hat Bazar	Ekdala Hat	Ganipur
Hat Bazar	Khalimpur Bazar	Ganipur
Hat Bazar	Bagmara Hat	Ganipur
Hat Bazar	Porakoya Hat	Ganipur
Hat Bazar	Goalkandi Hat	Goalkandi
Hat Bazar	Kanopara Hat	Goalkandi
Hat Bazar	Banoil Bazar	Gobinda Para
Hat Bazar	Gobindapara Hat	Gobinda Para
Hat Bazar	Bothtoli Bazar	Gobinda Para
Hat Bazar	Damnash Hat	Gobinda Para
Hat Bazar	Aurjonpara Hat	Hamir Kutsha
Hat Bazar	Talgaria Hat	Hamir Kutsha
Hat Bazar	Hamir Kutsha	Hamir Kutsha
Hat Bazar	Uttar Sajuria Bazar	Hamir Kutsha
Hat Bazar	Kaliganj Bazar	Jhikra
Hat Bazar	Jhikara Hat	Jhikra
Hat Bazar	Modhakhali Hat	Jhikra
Hat Bazar	Ransibari Hat	Jhikra
Hat Bazar	Birkutsha Bazar	Jogi Para
Hat Bazar	Bhagnadi Hat	Jogi Para
Hat Bazar	Nakhopara Hat	Jogi Para
Hat Bazar	Aktan Bazar	Jogi Para
Hat Bazar	Bhatkhali Hat	Jogi Para
Hat Bazar	Jatapukur Hat	Jogi Para
Hat Bazar	Rosulpur Bazar	Jogi Para
Hat Bazar	Roynagar Bazar	Jogi Para
Hat Bazar	Pirganj Bazar	Kachhari Kayali Para
Hat Bazar	Shikdari Hat	Maria
Hat Bazar	Jatragachi	Maria
Hat Bazar	Madnagar Hat	Nardas

Type	Remarks	Union
Hat Bazar	Birkail Bazar	Nardas
Hat Bazar	Nardash Hat	Nardas
Hat Bazar	Bodar Hat	Nardas
Hat Bazar	Simla Bazar	Sonadanga
Hat Bazar	Mohabbatpur Bazar	Sreepur
Hat Bazar	Kutibari Hat	Sreepur
Growth Center	Mochmail Hat	Subhadanga
Hat Bazar	Baigacha hat	Subhadanga

Table 17.4: Existing and Proposed Growth Center and Hat Bazar.

Union	Existing		Proposed	
No of Growth Center	No of Hat Bazar	No of Growth Center	Proposed Growth Center	No of Rural Sells and Service Center (RSSC)
Auch Para	4	1	-	3
Bara Bihanali	2	-	-	1
Basu Para	4	-	-	5
Dwippur	2	-	-	2
Ganipur	5	1	-	2
Goalkandi	2	-	-	2
Gobinda Para	4	-	-	1
Hamir Kutsha	4	-	-	3
Jhikra	4	-	-	1
Jogi Para	8	-	1	-
Kachhari Kayali Para	1	-	-	1
Maria	2	-	1	2
Nardas	4	-	1	2
Sonadanga	1	-	-	1
Sreepur	2	-	-	1
Subhadanga	1	1	-	-
Total	50	3	-	27

17.3.2 Proposed RSSC and Markets

Rural Service Center is a place that provides certain functions and services to fulfill the basic demands of the local area. Rural Service Center has been proposed at every union and on average 2 to 5 total of 27 Rural Service Center (RSC) have been proposed at different union. Two Fish Markets have been proposed at Goalkandi and Hamir Kutsha union which contains area of 1.45 acres. Fifteen Neighborhood market (15.34 acres) have been proposed at Auch Para (3), Bara Bihanali, Basu Para (5), Dwippur (2), Ganipur (2), Goalkandi (2), Gobinda Para, Hamir Kutsha (3), Jhikra, Kacchhari Kayali Para, Maria (2), Nardas (2), and Sonadanga Unions. Wholesale market also proposed at Jogi Para and Sonadanga Union.

Table 17.5: Proposed RSSC and Market location in Bagmara Upazila.

Union	Name	Area
Auch Para	Neighborhood Market	0.793702

Union	Name	Area
Auch Para	RSSC	0.693569
Auch Para	RSSC	0.569863
Auch Para	RSSC	0.484755
Auch Para	Neighborhood Market	0.942906
Bara Bihanali	RSSC	0.359563
Bara Bihanali	Neighborhood Market	0.976011
Bara Bihanali	Neighborhood Market	0.568509
Basu Para	RSSC	0.454099
Basu Para	RSSC	0.428305
Basu Para	RSSC	0.293331
Dwippur	RSSC	0.722449
Dwippur	RSSC	0.009628
Ganipur	Neighborhood Market	0.859877
Ganipur	RSSC	0.402492
Ganipur	RSSC	0.399891
Goalkandi	Fish Market	0.059226
Goalkandi	Neighborhood Market	1.136179
Goalkandi	RSSC	0.735178
Goalkandi	RSSC	0.466006
Gobinda Para	RSSC	0.459622
Gobinda Para	Neighborhood Market	1.949576
Gobinda Para	RSSC	0.434958
Hamir Kutsha	Fish Market	1.3956
Hamir Kutsha	Neighborhood Market	1.107489
Hamir Kutsha	RSSC	0.479554
Hamir Kutsha	RSSC	0.405047
Jhikra	RSSC	0.386698
Jhikra	Neighborhood Market	0.911619
Jhikra	RSSC	0.46549
Jogi Para	Neighborhood Market	1.78904
Jogi Para	Wholesale Market	1.127597
Kachhari Kayali Para	Neighborhood Market	1.048563
Kachhari Kayali Para	RSSC	0.336391
Maria	Neighborhood Market	0.29389
Maria	Neighborhood Market	0.679736
Maria	RSSC	0.391805
Maria	RSSC	0.420846
Nardas	RSSC	0.491934
Nardas	RSSC	0.469635
Sonadanga	Wholesale Market	1.102364
Sonadanga	RSSC	0.281075
Sreepur	RSSC	0.319928
Sreepur	Neighborhood Market	1.264669

Union	Name	Area
Subhadanga	Neighborhood Market	1.015631

17.4 Rural Homestead and Other Facilities

To prevent unplanned development of the rural area, some important facilities have been proposed at different union. 8.34 acres area is proposed for administrative purpose at Auch Para, Jogi Para and Maria. Sixteen graveyard (20.47 acres) and Twenty Seven community clinic (10.89 acres) have been proposed at very union to fulfil the demand of the area. For recreational purpose Park, Playground, Public Gathering Place also have been proposed. For betterment of transportation service an Auto Stand, a Bus bay and a Bus Terminal has been proposed at Goalkandi Union. Waste disposal condition of this Union is unhealthy and unplanned. A waste Transfer Station (0.06) and a Public Toilet (0.10) are proposed for this union. A waste disposal site (7.66) is needed at Sreepur Union. The details proposals lists are presented in **Table 17.4**.

Table 17.6: List of proposed facilities in Rural Area

Land use category	Proposed facility	Area(in acre)	Union
Administrative	Food Go down	4.65	Auch Para, Jogi Para
	Future Government Office	3.69	Maria
Community Facility	Graveyard	20.47	Auch Para (2), Bara Bihanali, Basu Para, Dwippur, Ganipur, Goalkandi, Gobinda Para, Hamir Kutsha, Jhikra, Jogi Para, Kachhari Kayali Para, Maria, Nardas, Sonadanga, Subhadanga
Health Facility	Hospital	2.11	Auch Para
	Community Clinic	10.89	Auch Para (2), Bara Bihanali (2), Basu Para (3), Dwippur(2), Ganipur (2) Goalkandi, Gobinda Para (2), Hamir Kutsha (2), Jhikra (3), Jogi Para, Kachhari Kayali Para, Maria (3), Nardas (2), Sonadanga, Sreepur, Subhadanga
Education & Research	Vocational Training Institute	0.86	Auch Para
Open Space	Playground	2.44	Bara Bihanali
	Public Gathering Place; Playground	2.92	Maria
Recreational and Open Space	Park	3.66	Auch Para, Maria
	Neighbourhood Park	0.05	Goalkandi
	Central Park	3.83	Sreepur
Health Facility	Community Clinic	10.13	Atharobari (3), Borohit, Bagmara, Jatia (4), Mogtola, Rajibpur (2), Sarisa (2), Sohagi, Tarundia, Uchakhila (3)
Transport and	Auto Stand	0.44	Goalkandi

Land use category	Proposed facility	Area(in acre)	Union
Communication	Bus Bay	0.14	
	Bus Terminal	3.10	
Utility Facility	Solar Park	1.77	Auch Para, Jogi Para
	Waste Transfer Station	0.06	GoalKandi
	Public Toilet	0.10	
	Waste Disposal Site	7.66	Sreepur

17.5 Rural Transportation Plan

In rural area, there is no heavy pressure of vehicle in Bagmara Upazila. Even in some places there is no motorized vehicle at all in regular movement. In this circumstances, the road network and road width of the rural local road do not demand more space. But in some cases, in terms of hut bazaar and growth centers link road, and the major roads of the unions are need to be widen. For this some secondary roads of 30 ft are proposed in every union to serve the main vehicle movement in rural area. And the rural union roads should be at least 15 feet where the roads linked up with others road or supporting any kind of facility.

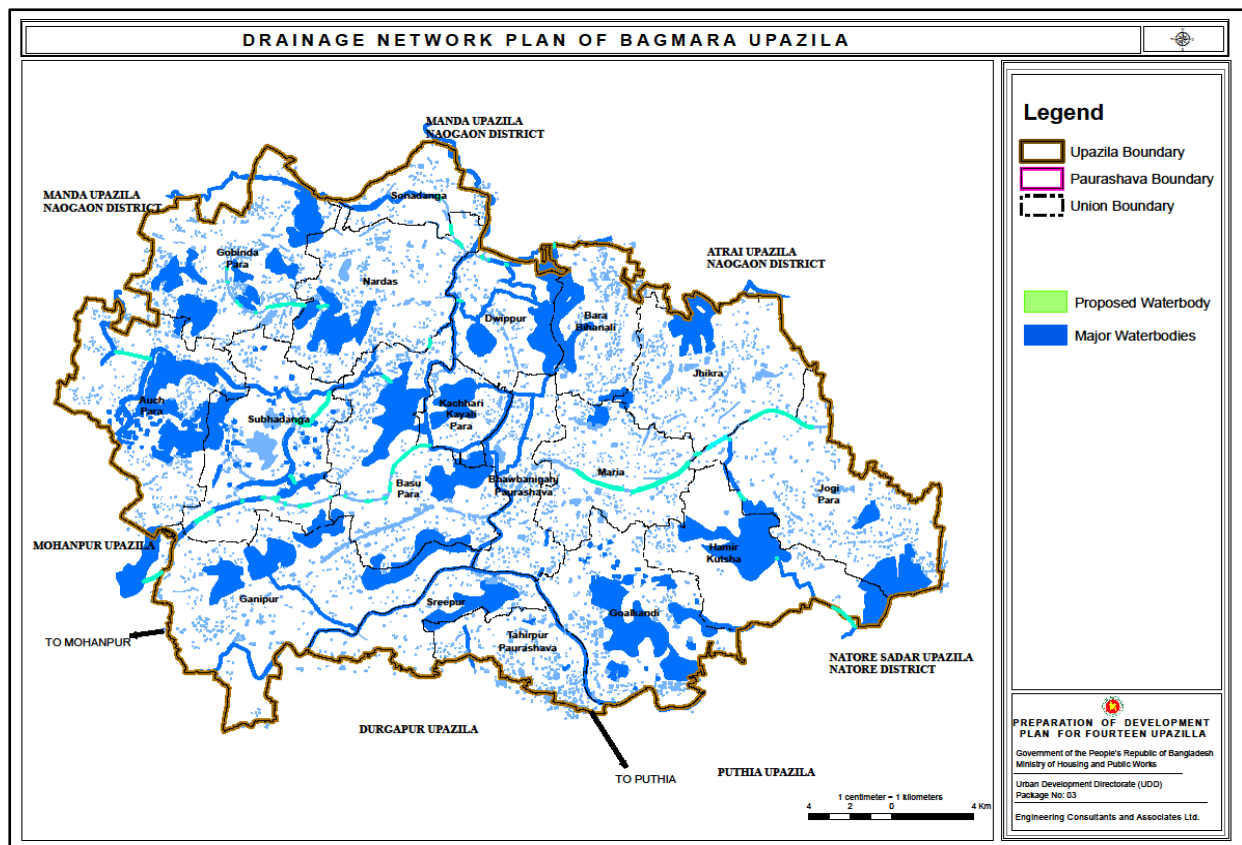
On other hand, other transport related facilities are also proposed in some unions. In terms of industrial development truck terminal and auto stand in growth center will be developed in small scale. But major bus terminal will be established beside urban area.

17.6 Rural Drainage & Environment Plan

In Bagmara Upazila, four major rivers named Gamini, Atrai, Fokirni and Boronai river is found through all over the Upazila. For a better drainage system all these rivers must be inter linked. And for reducing water congestion in agriculture land and flood problem the canals must be active to river channel. Beside this, all the beels having water all the year round must be preserved. The major beels list are here.

- Lakatti Beel- Kachari Koyalipara
- Likra Beel- Dwippur
- Pallarkati Beel- Basupara
- Joshir Beel-Goalkandi
- Kalar beel-Shuvadanga
- Hathkholar Beel, Gamar Beel, Harjor Beel- Gobindapara
- Nimar Beel-Auchpara
- Hatar Beel-Nardas

As Most of the river channel is illegally occupied by the power holder and in many cases the river channel is drying for lack of water. Only in rainy season the water is found in the channel. And no better linkage is found among the beels having water in drt season. So in drainage network proposal this dry channel of the rivers and canals will be excavated. All the illegal encroachment must be demolished and all the fish processing area with illegal dam must be omitted. And thee previous channel of the river according to mouza line will be re established.



Map 17.2: Natural Drainage Network Plan of Bagmara Upazila

Chapter 18

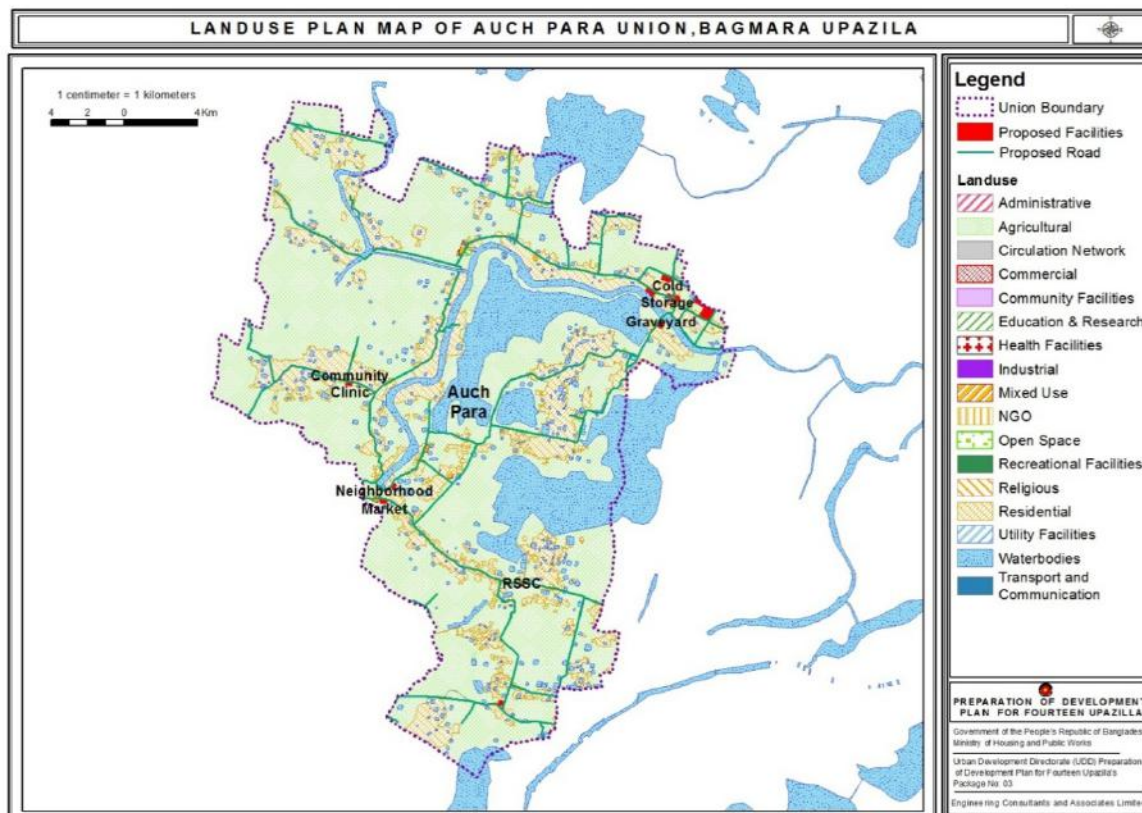
Rural Detail Area Plan

18.1 Introduction

Baghmara Upazila has sixteen Unions. All the Union are agriculture oriented. Eight major beels are exists here. In this chapter the union wise detail plan is presented. The aim of the proposed plan is to provide sustainable living while enhancing economic activities and protecting its nature. Considering the general character and quality of the union and what people care about, Union wise landuse id proposed here. Every union has its own characteristics and preference. This plan proposed some facilities for every union according to their functionality, character and local peoples' demand. Circulation network is very important for the development of these unions. Circulation pattern may boost the economic activities and ease the life of local people. In this chapter road network is also proposed for every Union.

18.2 Auch Para Union

In Auchpara Union there are two major beels in the middle of the union. One of them named “Nimar Beel” remains water all the year round. These beel areas and the adjacent agriculture zone must be remaining unchanged and can be used only for agriculture purpose. Beside this, the main developed zone will be remaining concentrated within the growth centre zone. All type of development and facilities and any kind of industry, commercial use will be developed here. And some other commercial activities will be developed in other hut bazaar zone what is demarked as “Hut-Bazaar” and “Growth Center” Zone in Structure Plan. **Map 18.1** shows proposed land use of Auch Para union.



Map 18.1: Land use Plan Map of Auch Para Union, Bagmara Upazila

In proposed landuse, the major percentage of land in this union is Agriculture. 4218.74 acre land has proposed for agriculture use. For the major two beels 1212 acre land is water body which can be used for agriculture purpose too. Beside this, 1138.32 acre land has proposed for rural homestead. And the growth center zone will be developed as commercial and mixed use zone. In terms of circulation network a major primary road will go through this union and will make a better linkage with adjacent upazila and linked the Auch para growth center with other unions of the upazila. Around 22 km Union Road, 6.45 km primary road and 12.84 km secondary road are proposed in this union.

Three RSSC and one Neighborhood market is proposed here to distribute the commercial facility among the union. One hospital of 2 acre and two community clinic is proposed for health facility. For recreational one park consisting 1.75 acre is proposed. For energy supply within the union and for industries a solar park has proposed. One Agro based industry consisting 3 acre is proposed here too by considering the agriculture nature and its development in the union.

Table 18.1: Proposed facilities in Auch Para Union

Union	Name	Area	Landuse
Auch Para	Agro based Industry	3.00	Industrial
Auch Para	Neighborhood Market	0.79	Commercial
Auch Para	Hospital	2.11	Health Facilities
Auch Para	Park	1.75	Recreational and Open Space
Auch Para	Graveyard	1.59	Community Facility
Auch Para	Vocational Training Institute	0.86	Education & Research
Auch Para	Cold Storage	0.26	Industrial
Auch Para	Food Godown	2.17	Administrative
Auch Para	Solar Park	0.99	Utility Facility
Auch Para	RSSC	0.69	Commercial
Auch Para	RSSC	0.57	Commercial
Auch Para	RSSC	0.48	Commercial
Auch Para	Community Clinic	0.48	Health Facilities
Auch Para	Community Clinic	0.35	Health Facilities
Auch Para	Neighborhood Market	0.94	Commercial
Auch Para	Graveyard	0.85	Community Facility

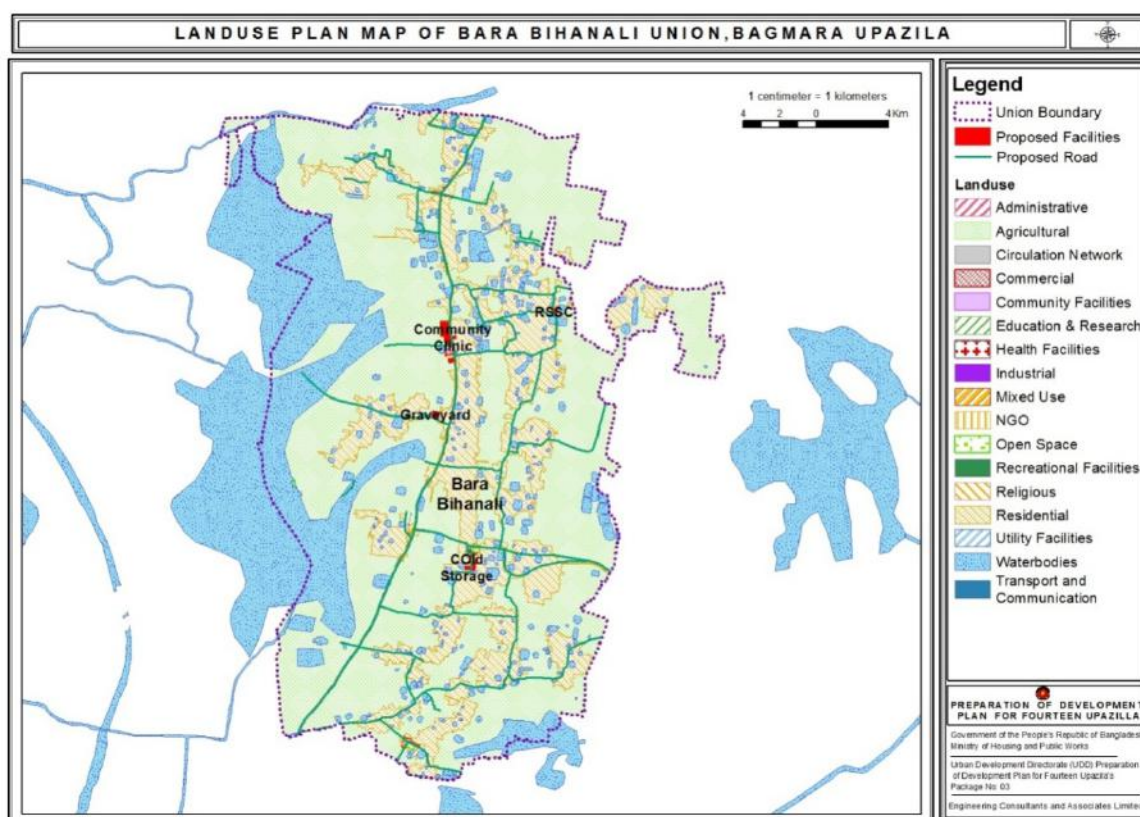
Table 18.2: Proposed Road network in Auch Para Union

Road Category	Union	Length (km)
Access Road	Auch Para	3.84
Primary Road	Auch Para	6.45
Secondary Road-1	Auch Para	3.83
Secondary Road-2	Auch Para	9.01
Union Road	Auch Para	21.51

18.3 Bara Bihanli Union

Out of 3812 acres of land, Bara Bihanali Union has 2155.19 acres of land for agriculture purpose. This 56.53% of land must be preserved only for agricultural activities. There are 611.78 acres waterbodies. The landuse must not be changed for any purpose except agriculture. The residential use with 698.74 acres, occupies 18.33% of total land. Some commercial and industrial use has been

proposed here. Some health facilities and community facilities has been also proposed for this Union. **Map 18.2** shows proposed land use of Bara Bihanli union.



Map 18.2: Land use Plan Map of Bara Bihanali Para Union, Bagmara Upazila

In proposed landuse, more than half of land has been earmarked for agricultural use. There also have provision of residential use in proposed landuse. Besides this, around 5 acres of land are kept for commercial use and 3 acres for open space. In proposed facilities there are a RSSC, two community clinics, two neighborhood markets, two cold-storages and a graveyard included to fulfill the local demand. **Table 18.3** is presented details about proposed facilities in Bara Bihanali Union.

Table 18.3: Proposed facilities in Bara Bihanli Union

Union	Name	Area	Landuse
Bara Bihanali	RSSC	0.36	Commercial
Bara Bihanali	Cold Storage	0.51	Industrial
Bara Bihanali	Neighborhood Market	0.98	Commercial
Bara Bihanali	Community Clinic	0.26	Health Facilities
Bara Bihanali	Neighborhood Market	0.57	Commercial
Bara Bihanali	Cold Storage	0.32	Industrial
Bara Bihanali	Community Clinic	0.09	Health Facilities
Bara Bihanali	Playground	2.44	Open Space
Bara Bihanali	Graveyard	0.82	Community Facility

To improve the accessibility of the Union a major primary road will go through this union and will make a better linkage with adjacent Upazila. There will be also a 3.27 km long access road and 1.71 km Secondary Road. Around 19 km Union Road is proposed in this union.

Table 18.4: Proposed Road network in Bara Bihanali Union

Road Category	Union	Length (km)
Access Road	Bara Bihanali	3.27
Primary Road	Bara Bihanali	5.65
Secondary Road-1	Bara Bihanali	1.71
Union Road	Bara Bihanali	19.98

18.4 Basu para Union

The prominent landuse of the Union is Agriculture. Out of total 7111 acres of land, more than 4018 acres of land is used as agriculture purpose. A Beel named “Pallarkati Beel” is located in the Union. Total 1509.20 acres land is waterbodies. These waterbodies and adjacent area must be unchanged.

In proposed landuse, more than 1473.46 acres of land has been earmarked for residential use which will occupy 20.72% of the total land. Total 2.30 acres land has been allocated for administrative purpose. To consider the main activities of the Union, three RSSC has been proposed. Three Community Clinics have proposed for the local people. A graveyard is also proposed here. List of the proposed facilities is given in **Table 18.5**.

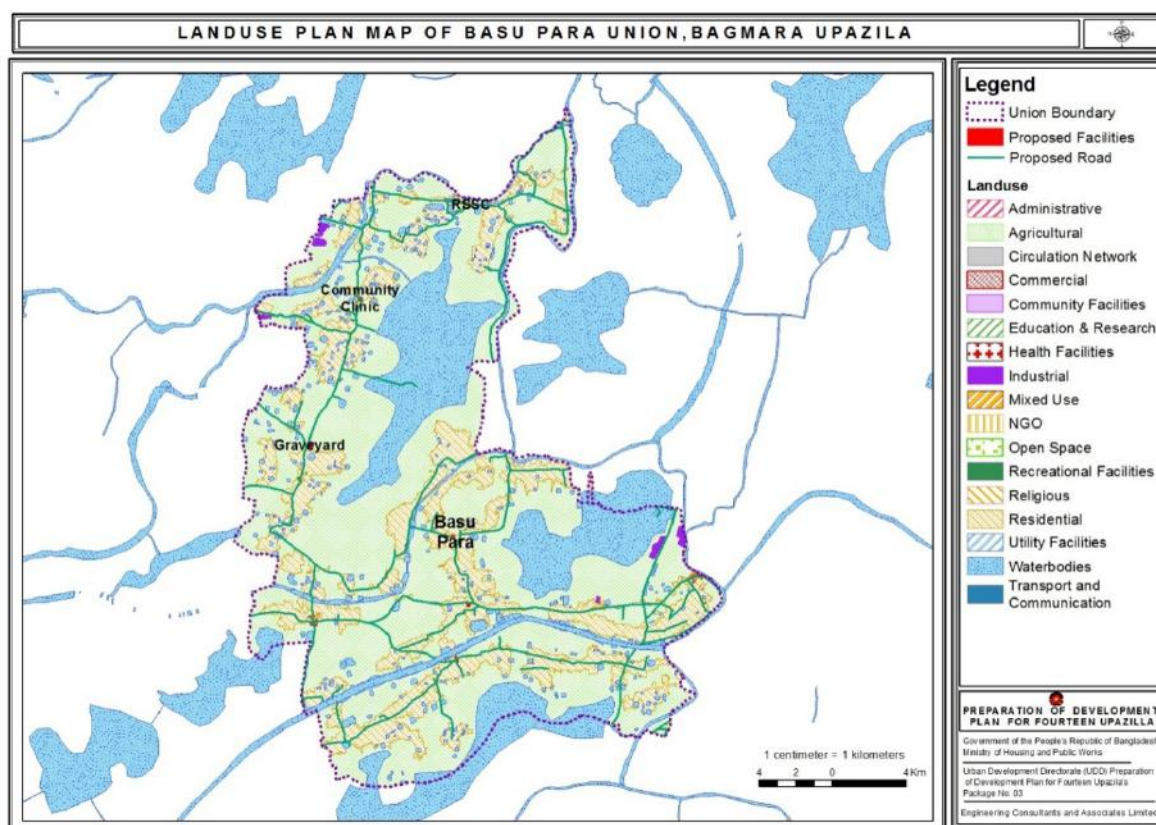
Table 18.5: Proposed Facilities in Basu Para Union

Union	Name	Area	Landuse
Basu Para	RSSC	0.45	Commercial
Basu Para	Community Clinic	0.55	Health Facilities
Basu Para	RSSC	0.43	Commercial
Basu Para	Community Clinic	0.54	Health Facilities
Basu Para	Graveyard	1.47	Community Facility
Basu Para	RSSC	0.29	Commercial
Basu Para	Community Clinic	0.24	Health Facilities

To improve the efficiency of transport network of the union, more roads are proposed which will consume almost 103.87 acres of land and 1.46 % of the total area. There are proposed 8.19 Km access road and 6.69 km long primary road. Two secondary road and total 24.76 km Union road also proposed in Basu Para. .89 km walkway will be created for pedestrian use. The following table will be describing more about the proposed circulation pattern.

Table 18.6: Proposed Road Network in Basu Para Union

Road Category	Union	Length (km)
Access Road	Basu Para	8.19
Paura Road	Basu Para	0.24
Primary Road	Basu Para	6.69
Secondary Road-1	Basu Para	2.96
Secondary Road-2	Basu Para	12.87
Union Road	Basu Para	24.76
Walkway	Basu Para	0.89



Map 18.3: Land use Plan Map of Basu Para Union, Bagmara Upazila

18.5 Dwippur Union

Dwippur Union has 3396 acres of land, in which agricultural land is around 2015 acres. This union has 778.10 acres of waterbodies. Conserving these agricultural area and waterbodies 579.22 acres land is proposed for residential development. Around 13 acres land is considered for industrial use. Other land area has been proposed for health facilities, community facilities, education and research and openspace at different suitable location. **Map 18.4** depicts details about the proposed landuse.

In terms of proposed facilities, there will be a Brick Field Zone at industrial zone. For developing commercial activities of the Union, two RSSC have been proposed consisting 0.73 acres land. Two community clinic and one graveyard are also proposed in Dwippur Union (**Table 18.7**).

Table 18.7: Proposed facilities in Dwippur Union

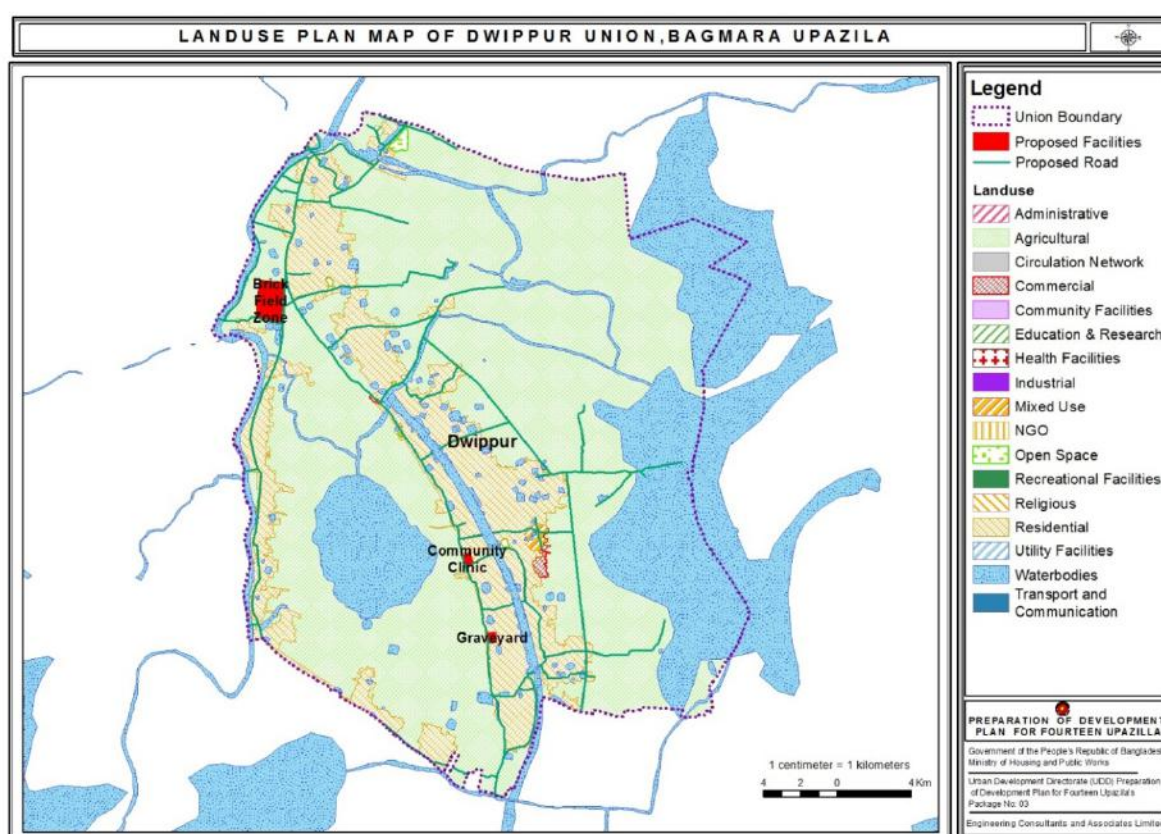
Union	Proposal Name	Area	Landuse
Dwippur	Brick Field Zone	13.98	Industrial
Dwippur	RSSC	0.72	Commercial
Dwippur	Community Clinic	0.50	Health Facilities
Dwippur	Graveyard	1.15	Community Facility
Dwippur	RSSC	0.01	Commercial
Dwippur	Community Clinic	0.01	Health Facilities

In terms of circulation network an Access Road has proposed in this union which makes a better accessibility. This access road will be 5.22 km long. A Paura Road and two secondary roads will be improved the movement pattern of the Union. Around 22 km Union Road is proposed in this union to

provide easy accessibility of local people within Union. The following **Table 18.8** will presents the details about proposed road network in Dwippur Union.

Table 18.8: Proposed Road network in Dwippur Union

Road Category	Union	Length (km)
Access Road	Dwippur	5.22
Paura Road	Dwippur	0.35
Secondary Road-1	Dwippur	3.78
Secondary Road-2	Dwippur	0.08
Union Road	Dwippur	22.19



Map 18.4: Land use Plan Map of Dwippur Union, Bagmara Upazila

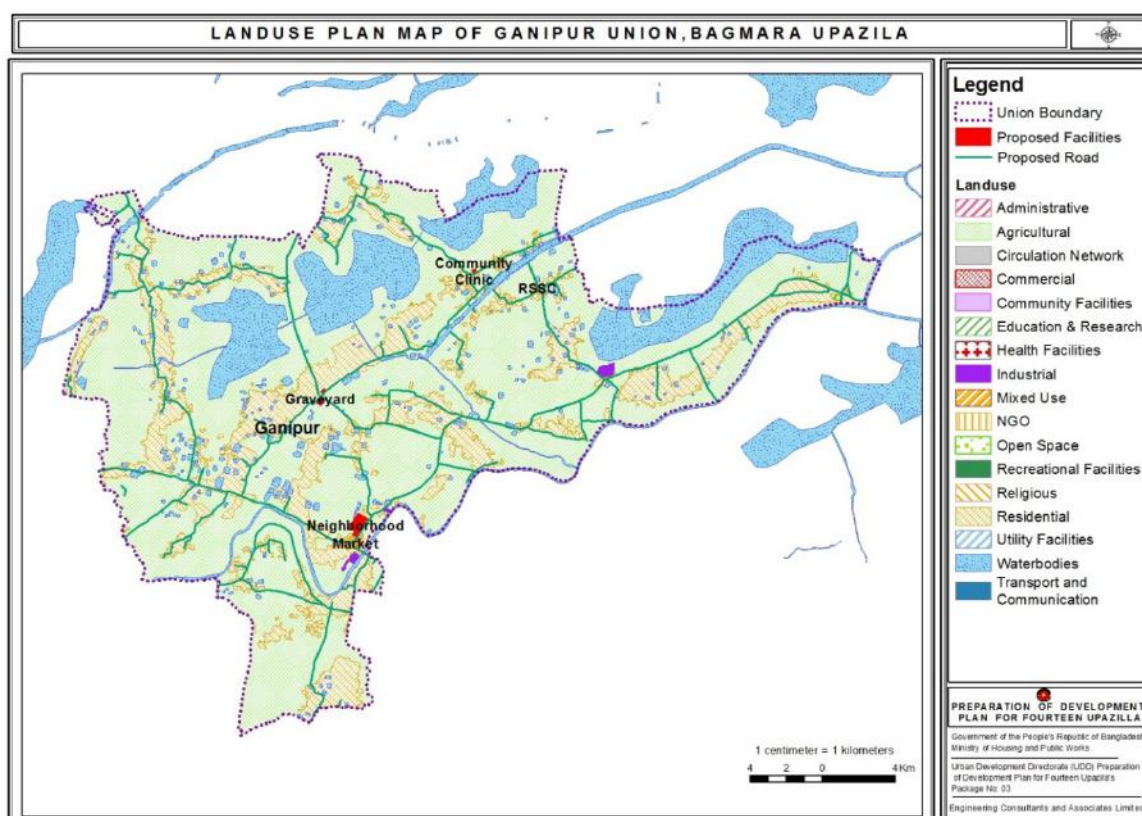
18.6 Ganipur Union

Maximum land coverage of Ganipur Union is agriculture based. Out of 8953 acres of land of this union, more than 5772.33 acres of land i.e. 64.47 % is used as agricultural purpose. The residential use with 1625.39 acres, occupies 18.15% of total land. There exist 1273.66 acres of water body, which should be conserved only for agro-based activities. In this proposal, **Map 18.5** shows proposed land use of Ganipur union.

In proposed landuse, 22.23 acres of land is for industrial use. To consider the agricultural nature of the Union an Agro Based Industry occupying 99.53 acres of land has been proposed. 3.32 acres land is proposed for commercial use. One Neighborhood Market and two RSSC are given here for the local economic activities. Total 0.83 acres area is proposed for health facilities. There also a graveyard is proposed as community facilities. The **Table 18.9** shows the details.

Table 18.9: Proposed facilities in Ganipur Union

Union	Proposal Name	Area	Landuse
Ganipur	Agro Based Industry	9.53	Industrial
Ganipur	Neighborhood Market	0.86	Commercial
Ganipur	RSSC	0.40	Commercial
Ganipur	RSSC	0.40	Commercial
Ganipur	Community Clinic	0.52	Health Facilities
Ganipur	Graveyard	1.97	Community Facility
Ganipur	Community Clinic	0.31	Health Facilities



Map 18.5: Land use Plan Map of Ganipur Union, Bagmara Upazila

To improve the efficiency of transport network of the union, 128.75 acres of land is occupied for circulation pattern. A main primary road will go through the union to create well connectivity within the Union and with adjacent Union. There is proposed one access road which is 13.04 km long. Two secondary road and more union road are proposed too for movement of local people with their goods. **Table 18.10** will give the detail information about proposed road network in Ganipur Union.

Table 18.10: Proposed Road Network in Auch Para Union

Road Category	Union	Length (km)
Access Road	Ganipur	13.04
Primary Road	Ganipur	11.96
Secondary Road-1	Ganipur	1.95
Secondary Road-2	Ganipur	13.89
Union Road	Ganipur	24.20

18.7 Goalkandi Union

Goalkand Union has 3482 acres of agricultural land. There is a major beel named “Joshir Beel”. These agricultural and beel area with its adjacent zone will be remain unchanged in their nature. In proposed landuse 1152.75 acres of land is for residential use. 11.73 acres of land is proposed for commercial purpose. In proposed facilities there are a fish market, a neighbourhood market and two RSSC at commercial landuse. Around 7 acres land has been proposed for industrial zone and 2.85 acres land has been allocated for education. More than 2 acres land is for mixed use development. Total 1.76 acre land has been allocated for administrative purpose. There also some acres of open space. **Map 18.6** shows proposed land use of Goalkandi Union.

In proposed facilities, a neighborhood park has been proposed in this union which will be within 0.05 acres. An Ice Factory is proposed at industrial area. A graveyard, a community clinic, a public toilet have been proposed too to facilitated the local people. The waste transfer station is also proposed at the union. **Table 18.11** shows the propose facilities in Goalkandi Union.

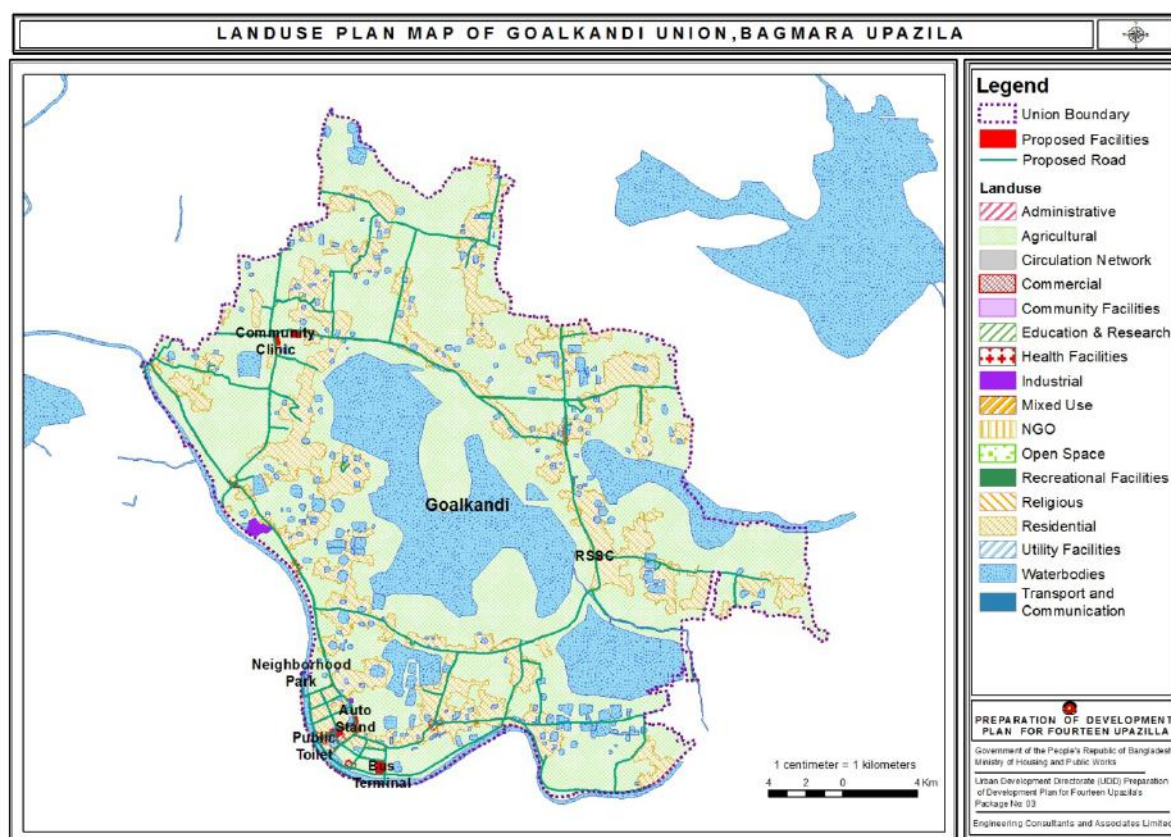
Table 18.11: Proposed facilities in Goalkandi Union

Union	Proposal Name	Area	Landuse
Goalkandi	Neighborhood Park	0.05	Recreational and Open Space
Goalkandi	Fish Market	0.06	Commercial
Goalkandi	Ice Factory	0.08	Industrial
Goalkandi	Neighborhood Market	1.14	Commercial
Goalkandi	Auto Stand	0.44	Transport and Communication
Goalkandi	Waste Transfer Station	0.06	Utility Facility
Goalkandi	Graveyard	2.00	Community Facility
Goalkandi	RSSC	0.74	Commercial
Goalkandi	Community Clinic	0.61	Health Facilities
Goalkandi	RSSC	0.47	Commercial
Goalkandi	Bus Bay	0.14	Transport and Communication
Goalkandi	Public Toilet	0.10	Utility Facility
Goalkandi	Bus Terminal	3.10	Transport and Communication

For improving communication status of the union one Access road (4.59 km long) and a Paura Road has been proposed. A 9.75 km long Primary Road will go through the union to linked with adjacent union. There also has been proposed two secondary road total 13.44 km. Some Union Road and Walkway is too proposed for betterment the internal activities.

Table 18.12: Proposed Road Network in Goalkandi Union

Road Category	Union	Length (km)
Access Road	Goalkandi	4.59
Paura Road	Goalkandi	0.39
Primary Road	Goalkandi	9.75
Secondary Road-1	Goalkandi	9.41
Secondary Road-2	Goalkandi	4.03
Union Road	Goalkandi	22.14
Walkway	Goalkandi	1.24



Map 18.6: Land use Plan Map of Goalkandi Union, Bagmara Upazila

18.8 Gobinda Para Union

In Gobinda Para Union there are three major beels in the union. These are “Hathkholar Beel”, “Gamar Beel” and “Harjor Beel”. These beel areas and the adjacent agriculture zone must be remaining unchanged and can be used only for agriculture purpose. Beside this, the main developed zone will be remaining concentrated within the growth centre zone. All type of development and facilities and any kind of industry, commercial use will be developed here. **Map 18.7** shows proposed land use of Gobinda Para union.

In proposed landuse, the major percentage of land in this union is Agriculture. 4370.73 acres land has proposed for agriculture use. For the major three beels the total land cover is 1293.98 acres which can be used for agriculture purpose too. Beside this, 909.29 acres land has proposed for residential purpose. More than 20 acres of land is allocated for industrial use. A cold Storage has been proposed in this area. The growth center zone will be developed as commercial and mixed use zone. Two RSSC and one Neighborhood market is proposed here to distribute the commercial facility among the union. Two community clinics are proposed for health facility. For community facilities there also proposed a graveyard consisting 2.50 acres of land. **Table 18.13** shows the details about the proposed facilities.

Table 18.13: Proposed facilities in Gobinda Para Union

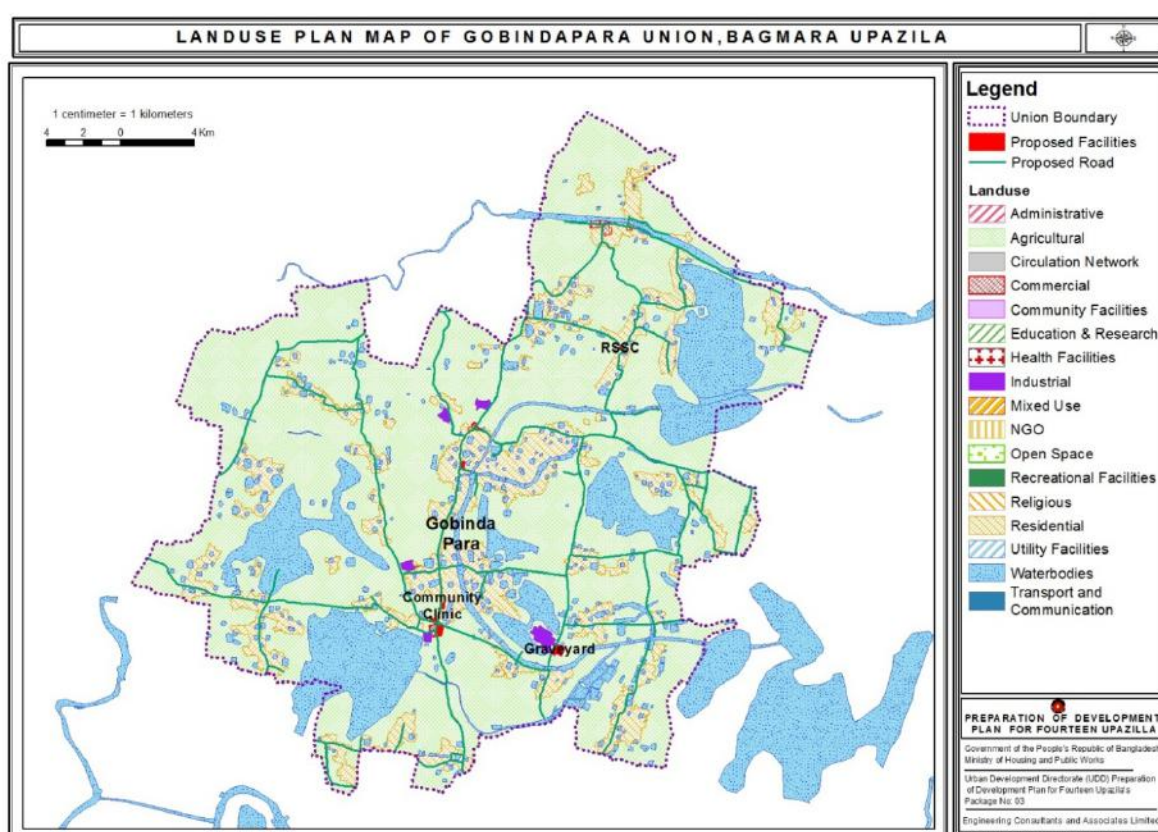
Union	Proposal Name	Area	Landuse
Gobinda Para	RSSC	0.46	Commercial
Gobinda Para	Community Clinic	0.40	Health Facilities
Gobinda Para	Neighborhood Market	1.95	Commercial
Gobinda Para	Community Clinic	0.48	Health Facilities

Gobinda Para	Cold Storage	0.72	Industrial
Gobinda Para	Graveyard	2.50	Community Facility
Gobinda Para	RSSC	0.43	Commercial

In terms of circulation network total 81.75 acres land is allocated for this. An Access nearly 5 km long has been proposed. There also two secondary roads are proposed for easy movement. Total 27.62 km road will be made as union road. The Table 18.14 will describe the proposed road network in Gobinda Para Union.

Table 18.14: Proposed Road Network in Gobinda Para Union

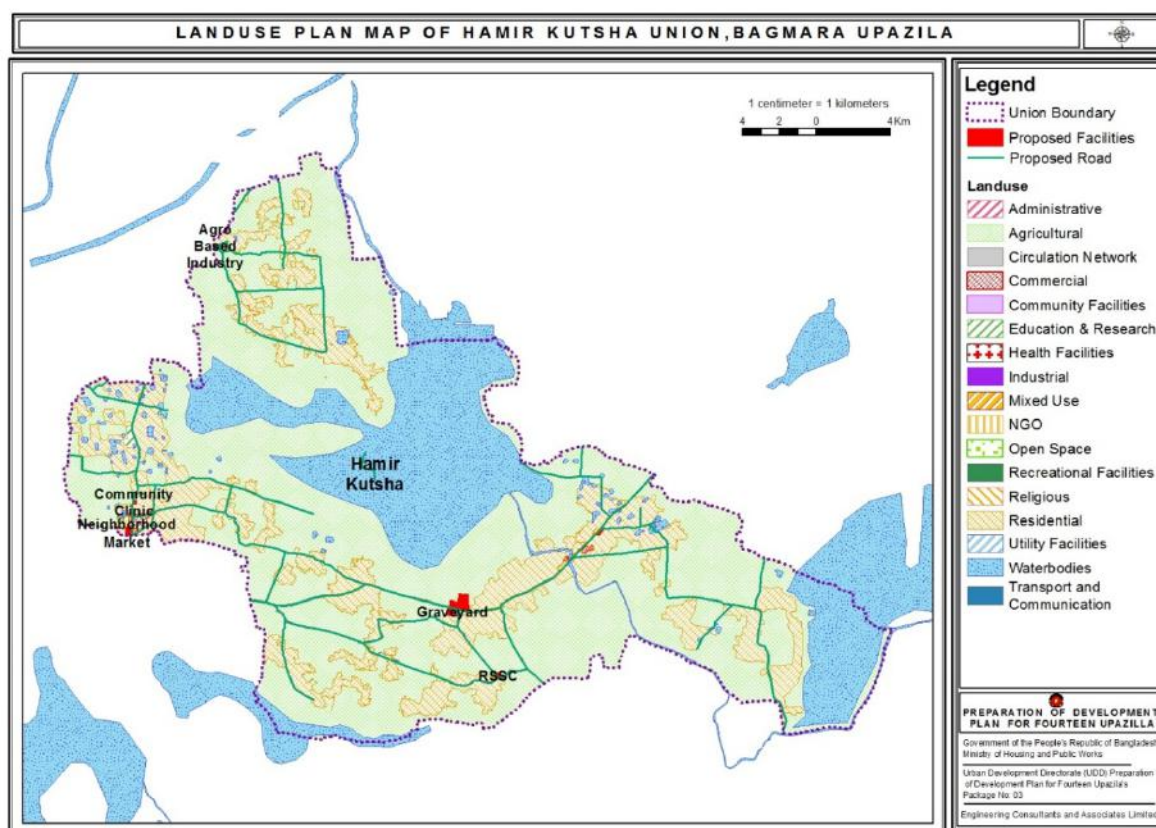
Road Category	Union	Length (km)
Access Road	Gobinda Para	5.37
Secondary Road-1	Gobinda Para	8.38
Secondary Road-2	Gobinda Para	9.71
Union Road	Gobinda Para	27.62



Map 18.7: Land use Plan Map of Gobinda Para Union, Bagmara Upazila

18.9 Hamir Kutsha Union

Maximum land coverage of Ganipur Union is agriculture based. Out of 5412 acres of land of this union, more than 3124 acres of land i.e. 57.63 % is used as agricultural purpose. There is exist 1174.20 acres of waterbodies. These agricultural and wetland should be conserved only for agro-based activities. The residential use with 1018.22 acres, occupies 18.81% of total land. **Map 18.8** shows proposed land use of Hamir Kutsha Union.



Map 11.8: Land use Plan Map of Hamir Kutsha Union, Bagmara Upazila

In this Union 11.57 acres of land is for commercial use. To improve the economy of the union two RSSC, a fish market a neighborhood market has been proposed. Considering the agricultural nature of the Union an Agro Based Industry and a Fish Processing Zone total occupying 4.73 acres of land has been proposed. One Neighborhood Market and two RSSC are given here for the local economic activities. Total 0.47 acres area is allocated for health facilities and two community clinics has been proposed. There also a graveyard is proposed as community facilities. The **Table 18.15** presents the details about proposed facilities.

Table 18.15: Proposed facilities in Hamir Kutsha Union

Union	Proposal Name	Area	Landuse
Hamir Kutsha	Agro Based Industry	0.42	Industrial
Hamir Kutsha	Fish Processing Zone	4.31	Industrial
Hamir Kutsha	Fish Market	1.40	Commercial
Hamir Kutsha	Neighborhood Market	1.11	Commercial
Hamir Kutsha	RSSC	0.48	Commercial
Hamir Kutsha	Community Clinic	0.29	Health Facilities
Hamir Kutsha	RSSC	0.41	Commercial
Hamir Kutsha	Community Clinic	0.29	Health Facilities
Hamir Kutsha	Graveyard	1.81	Community Facility

To improve the circulation pattern a major primary road which is 4.94 km long will go through the union. There is proposed an access road for easy accessibility to primary road and other facilities. There are two secondary roads and some union road for better movement within the union.

Table 18.16: Proposed Road Network in Hamir Kutsha Union

Road Category	Union	Length (km)
Access Road	Hamir Kutsha	3.65
Primary Road	Hamir Kutsha	4.94
Secondary Road-1	Hamir Kutsha	1.56
Secondary Road-2	Hamir Kutsha	4.41
Union Road	Hamir Kutsha	20.30

18.10 Jhikra Union

Out of total 6163 acres of land of Jhikra union, more than 4153 acres of land i.e. 67.38 % is used as agriculture purpose. The residential use with 891.49 acres, occupies 14.45 % of total land, water bodies 11.71 %. **Map 18.9** shows proposed land use of Jhikra union.

Total 1.16 acres land has been allocated for administrative purpose. Considering the agricultural activities of the union an agro based industry has been proposed consisting 6.25 acres of land. More than 2 acres of land is allocated for commercial purpose. Two RSSC, one Cold Storage has been proposed. There is the allocation of 0.81 acres land for education purpose. For health facilities 0.744 acres land has been proposed. Two community clinics have been indicated in the proposed facilities. There is proposed a graveyard to fulfill the local demand. The following **Table 17** presents the details about it.

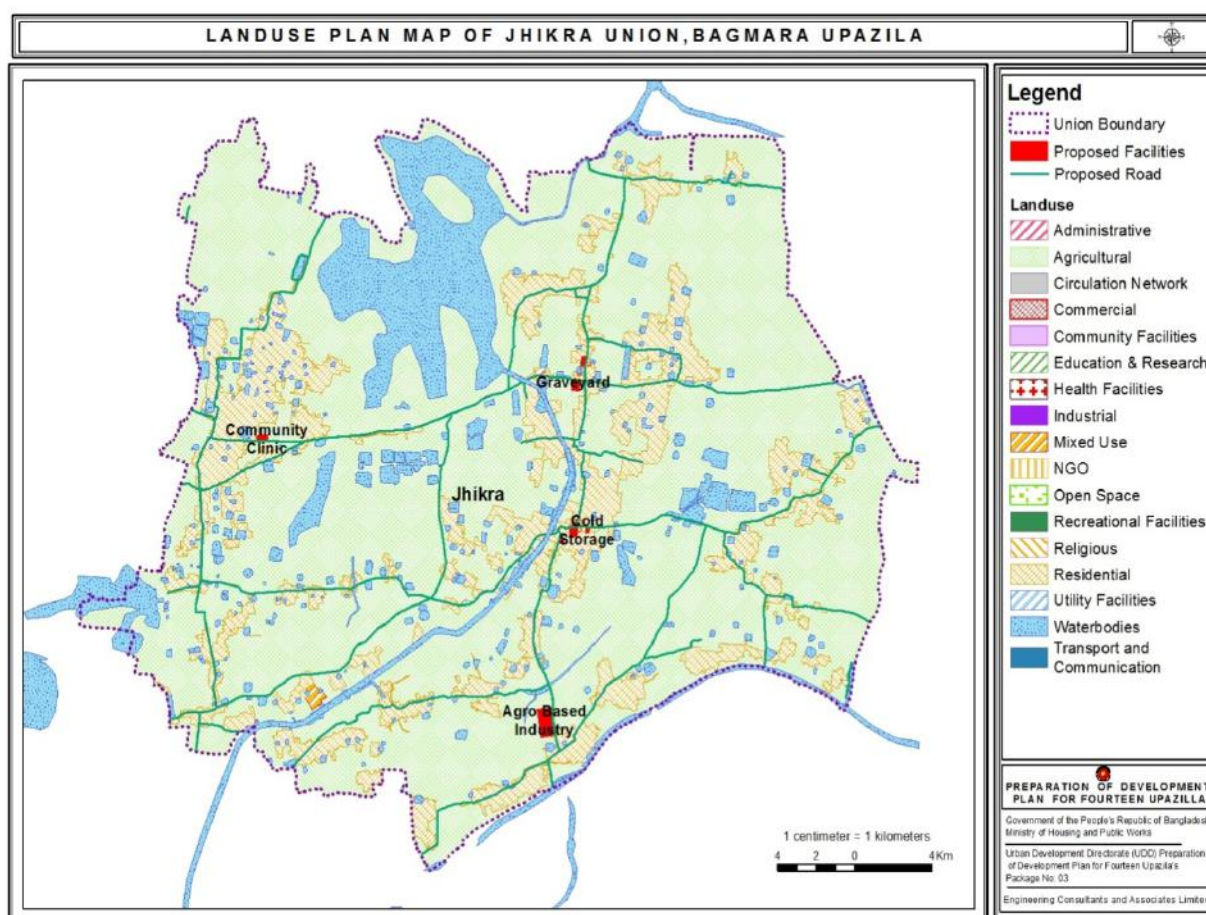
Table 18.17: Proposed facilities in Jhikra Union

Union	Proposal Name	Area	Landuse
Jhikra	Agro Based Industry	6.25	Industrial
Jhikra	Community Clinic	0.23	Health Facilities
Jhikra	RSSC	0.39	Commercial
Jhikra	Neighborhood Market	0.91	Commercial
Jhikra	Community Clinic	0.30	Health Facilities
Jhikra	Cold Storage	0.29	Industrial
Jhikra	RSSC	0.47	Commercial
Jhikra	Community Clinic	0.34	Health Facilities
Jhikra	Graveyard	1.05	Community Facility

In proposed landuse, more than 74 acres of land has been earmarked for circulation network. To improve the efficiency of transport network of the union, a 3.17 km long access road has been proposed here. Two secondary roads and some union road also have been proposed for internal accessibilities towards the local facilities. The list of proposed road network in Jhikra Union is given below (**Table 18.18**).

Table 18.18: Proposed Road Network in Jhikra Union

Road Category	Union	Length (km)
Access Road	Jhikra	3.17
Secondary Road-1	Jhikra	8.37
Secondary Road-2	Jhikra	11.54
Union Road	Jhikra	18.24



Map 18.9: Land use Plan Map of Jhikra Union, Bagmara Upazila

18.11 Jogipara Union

Jogipara Union has total 7022 acres of land. In which the major landuse is agriculture consisting 4653.63 acres. In proposed landuse the agricultural land is remain unchanged. The amount of waterbodies is 862.22 acres, no alteration is allowed in this landuse. 1421.31 acres land has been allocated in the proposed landuse map. For administrative purpose 4.85 acres of land has been allocated. Around 47 acres has been proposed for industrial use, 17 acres land for commercial use and 4 acres of land for education. Land of health facilities, open space, religious purpose has been also allocated. **Map 18.10** presents the proposed landuse of this Union.

In proposed facilities, a Brick field zone consisting 23.74 acres and a silo consisting 2.48 acres have been proposed. A food Godown is proposed at administrative area. A neighborhood market and a wholesale market have been proposed within total 2.94 acres of land. For this union a solar park (.78 acres) has been proposed too. A graveyard and a community clinic are needed to facilitate the local people. **Table 18.19** shows the propose facilities in Jogipara Union.

Table 18.19: Proposed facilities in Jogipara Union

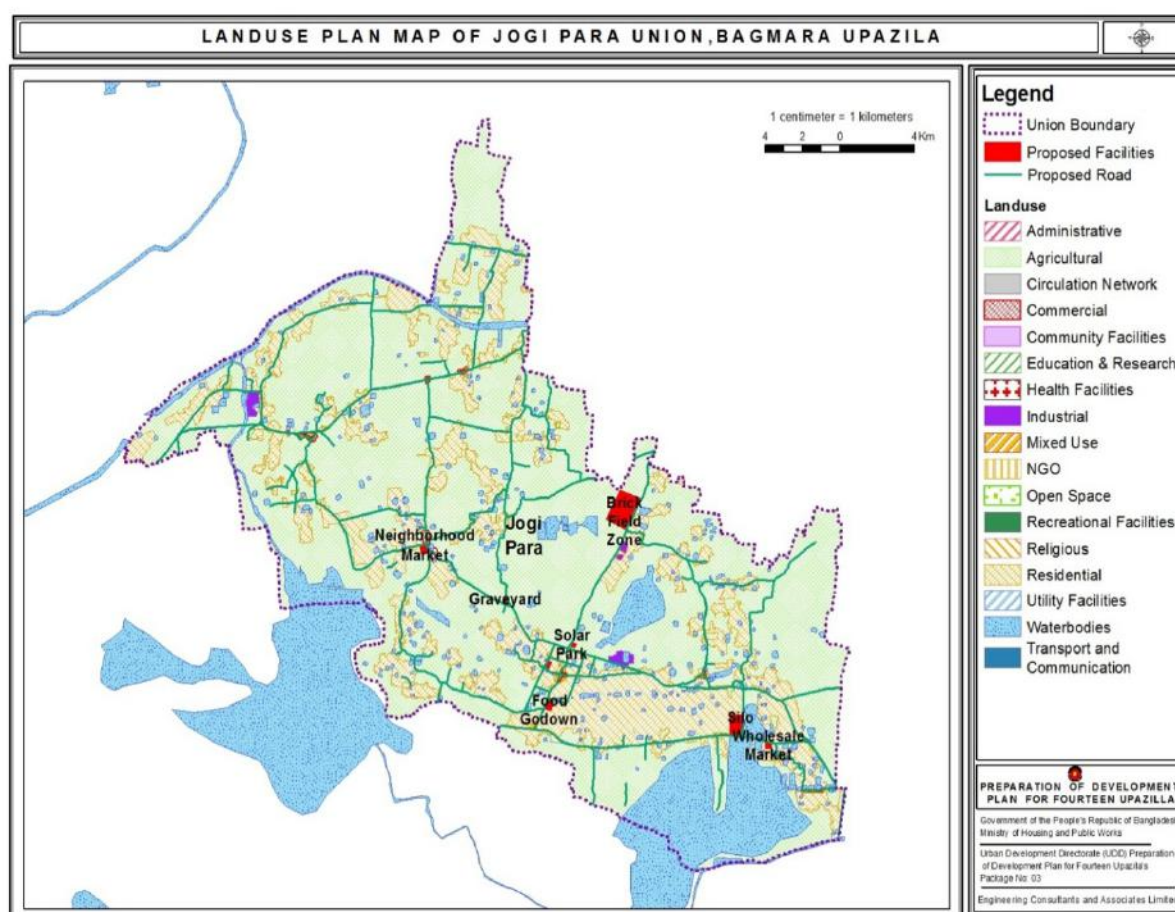
Union	Proposal Name	Area	Landuse
Jogi Para	Brick Field Zone	23.74	Industrial
Jogi Para	Community Clinic	1.09	Health Facilities
Jogi Para	Food Godown	2.48	Administrative
Jogi Para	Solar Park	0.78	Utility Facility

Jogi Para	Neighborhood Market	1.79	Commercial
Jogi Para	Silo	8.51	Industrial
Jogi Para	Wholesale Market	1.13	Commercial
Jogi Para	Graveyard	1.13	Community Facility

To improve the circulation pattern a major primary road which is 6.98 km long has been proposed union. There is proposed an access road for easy accessibility. Two secondary roads will also support the movement pattern within the union. Total 34.99 km long union road has been proposed also. Table 18.20 shows the details.

Table 18.20: Proposed Road Network in Jogipara Union

Road Category	Union	Length (km)
Access Road	Jogi Para	6.98
Primary Road	Jogi Para	9.22
Secondary Road-1	Jogi Para	4.47
Secondary Road-2	Jogi Para	10.26
Union Road	Jogi Para	34.99

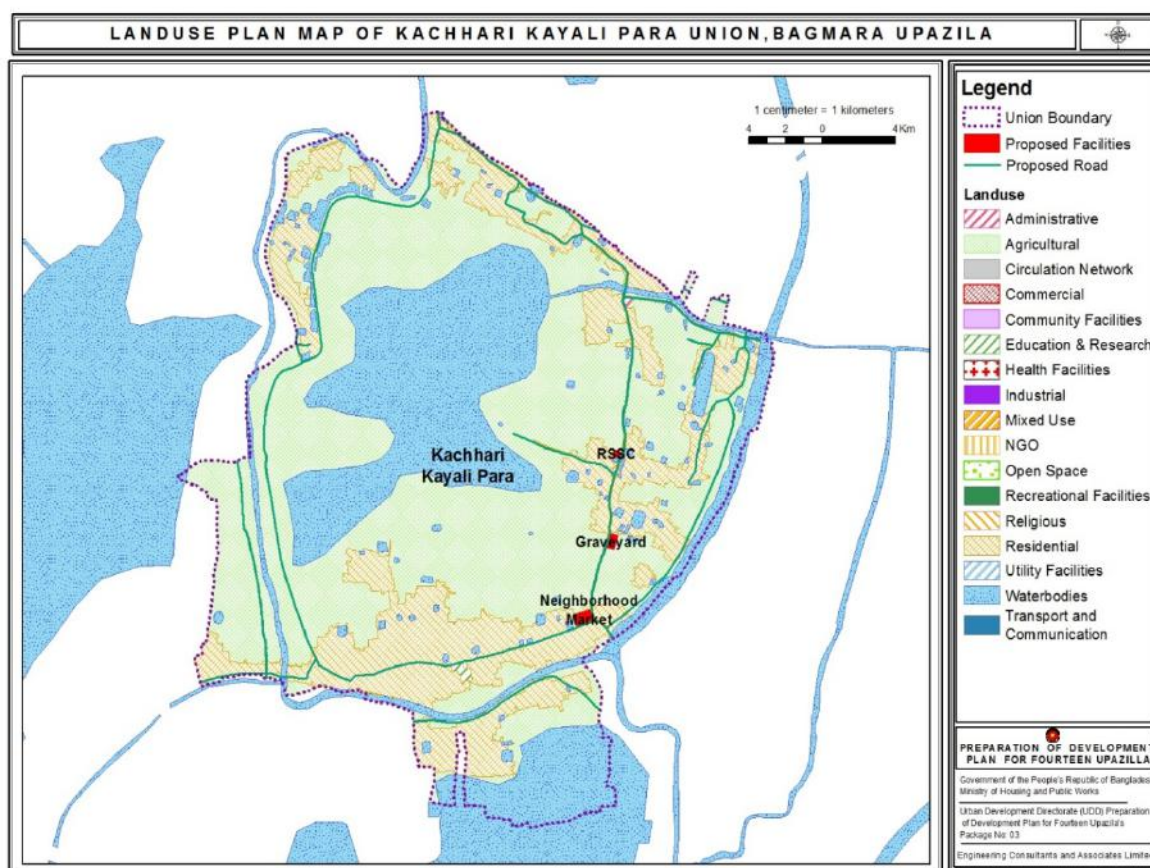


Map 18.10: Land use Plan Map of Jogi Para Union, Bagmara Upazila

18.12 Kachari Kayalipara Union

Maximum land coverage of Kachari Kayalipara Union is agriculture based. Out of 1425 acres of land of this union, more than 938.24 acres of land i.e. 65.84% is used as agricultural purpose. The Union

has 480.98 acres of waterbodies. The agricultural land and wetland should be conserved only for agricultural activities. The residential use with 379.06 acres, occupies 26.60 % of total land. There has been allocated 1.71 acres of land for educational use. In proposed landuse, 0.55 acres is for open space and 1.76 acres of land is for religious use. **Map 18.11** shows proposed land use of Kachari Kayalipara Union.



Map 18.11: Land use Plan Map of Kachhari Kayali Para Union, Bagmara Upazila

1.24 acres of land is allocated for commercial use in this Union. There is one neighborhood market and one RSSC for commercial purposed in proposed facilities. A community clinic and a graveyard have been also proposed.

Table 18.21: Proposed facilities in Kachari Kayalipara Union

Union	Proposal Name	Area	Landuse
Kachhari Kayali Para	Neighborhood Market	1.05	Commercial
Kachhari Kayali Para	Community Clinic	0.57	Health Facilities
Kachhari Kayali Para	RSSC	0.34	Commercial
Kachhari Kayali Para	Graveyard	0.90	Community Facility

For better circulation pattern the proposed landuse allocate 26.63 acres of land in this union. An access road has been proposed which will be 3.03 km long. A paura road has been also proposed with two secondary roads. Some Union road and walkway will support the local peoples' movements.

Table: 18.22: Proposed Road Network in Kachari Kayalipara Union

Road Category	Union	Length (km)
Access Road	Kachhari Kayali Para	3.03
Paura Road	Kachhari Kayali Para	0.03
Secondary Road-1	Kachhari Kayali Para	4.31
Secondary Road-2	Kachhari Kayali Para	1.16
Union Road	Kachhari Kayali Para	7.38
Walkway	Kachhari Kayali Para	1.47

18.13 Maria Union

In this Union total 3095.355 acres land is agriculture land and 412.29 acres land is waterbody. The landuse of these two will be not be altered by any other landuse. For residential development 1022.38 acres of land is allocated. Industrial zone will be created for the internal economic growth and employment. For this purpose 12.08 acres land has been proposed in which a agro-based industry and a cottage industry will be established. Two neighbourhood Market and two RSSC have been proposed within 5.62 acres of commercial landuse. For open space and recreational purpose there has been proposed around 4 acres land and around for health facilities 3 acres land has been allocated. There are two community clinics in proposed facilities. **Map 18.12** presents the proposed landuse of the Union and **Table 18.23** describes the details about proposed facilities in Maria Union.

Table 18.23: Proposed facilities in Maria Union

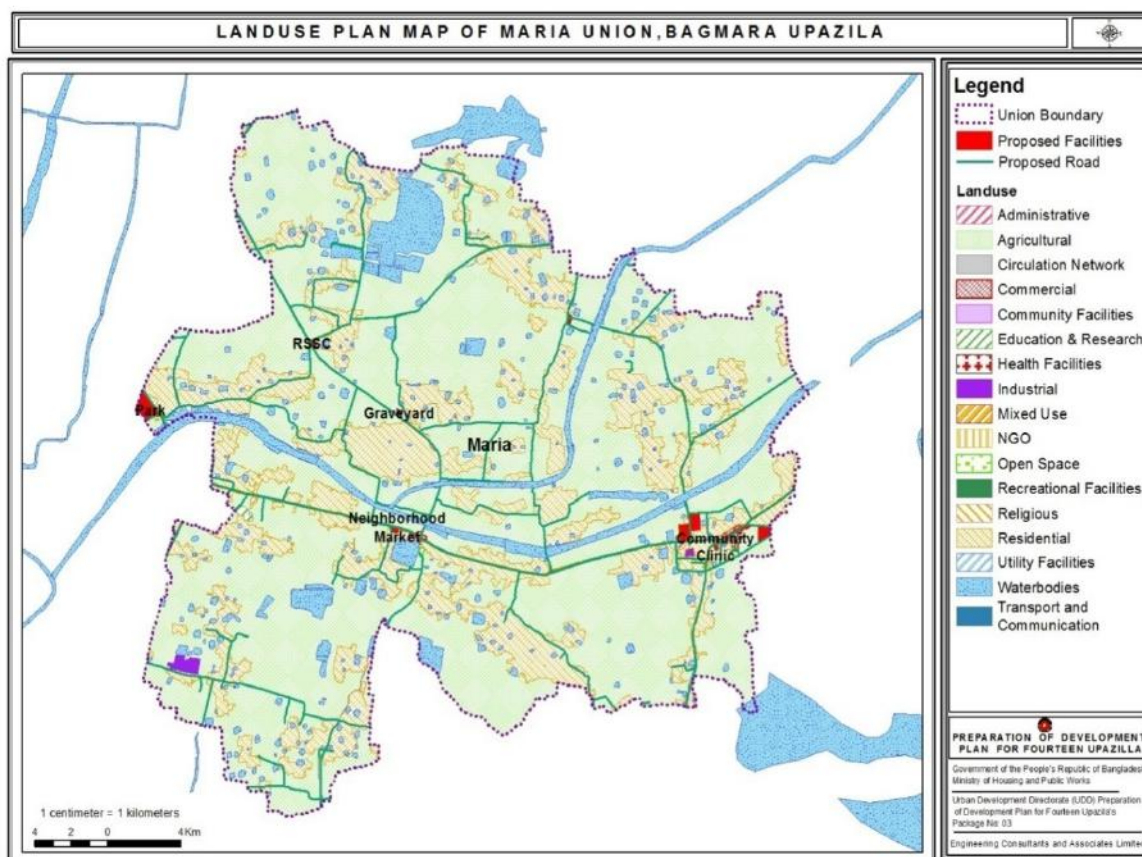
Union	Proposal Name	Area	Landuse
Maria	Future Government Office	3.69	Administrative
Maria	Park	1.91	Recreational and Open Space
Maria	Neighborhood Market	0.29	Commercial
Maria	Community Clinic	0.26	Health Facilities
Maria	Neighborhood Market	0.68	Commercial
Maria	Agro Based Industry	2.55	Industrial
Maria	Cottage Industry	2.73	Industrial
Maria	RSSC	0.39	Commercial
Maria	RSSC	0.42	Commercial
Maria	Community Clinic	0.15	Health Facilities
Maria	Public Gathering Place; Playground	2.92	Open Space
Maria	Graveyard	0.54	Community Facility

In terms of circulation pattern, 96.28 acres of land is allocated to improve the accessibility of the Union a major Primary Road which will be 5.81 km long is in the proposed road network. Without altering water body and agriculture land an 8.13 km long access road has been proposed, to improve traffic ability a paura road and two secondary roads have been given in the proposed road network.

Table 18.24: Proposed Road Network in Maria Union

Road Category	Union	Length (km)
Access Road	Maria	8.13
Paura Road	Maria	1.38
Primary Road	Maria	5.81

Secondary Road-1	Maria	8.06
Secondary Road-2	Maria	6.34
Union Road	Maria	18.70
Union Road	Maria	0.73



Map 18.12: Land use Plan Map of Maria Union, Bagmara Upazila

18.14 Nardas Union

In Nardas Union there is a major beel in the south-west part of the union. The name of the beel is “Hatar Beel”. This beel area and the adjacent agriculture zone must be remaining unchanged and can be used only for agriculture purpose. Beside this, the main developed zone will be remaining concentrated within the growth centre zone.

In proposed landuse, the major percentage of land in this union is Agriculture. 3887.51 acres of land has proposed for agriculture use. Beside this, 1055.04 acres land has proposed for rural homestead. And the growth center zone will be developed as commercial and mixed use zone. There is around 12 acres of proposed industrial land. Two RSSC is proposed here to distribute the commercial facility among the union. Two community clinics are proposed for health facility. Following **Table 18.25** describes about proposed facilities in Nardas Union.

Table 18.25: Proposed facilities in Nardas Union

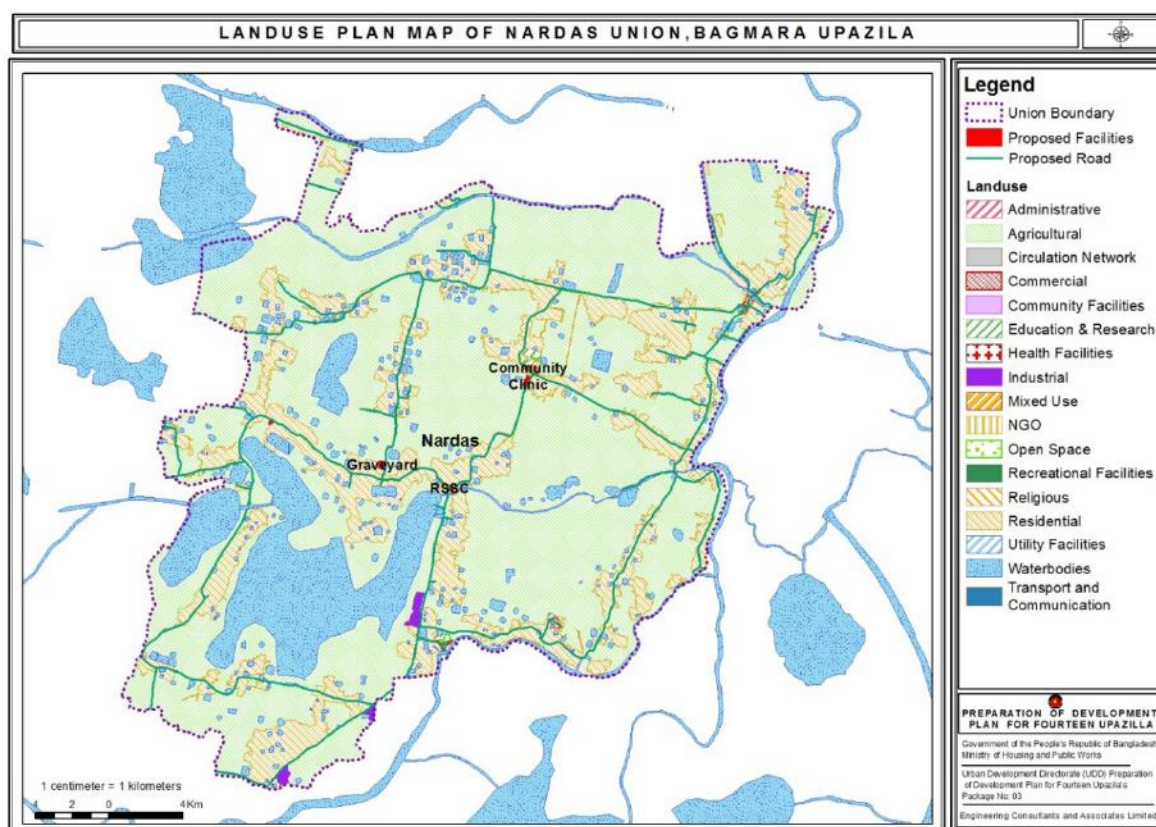
Union	Proposal Name	Area	Landuse
Nardas	Community Clinic	0.33	Health Facilities
Nardas	RSSC	0.49	Commercial
Nardas	Community Clinic	0.59	Health Facilities

Nardas	RSSC	0.47	Commercial
Nardas	Graveyard	1.06	Community Facility

In terms of circulation network an access road is proposed in this union. Around 22 km Union Road, 6.45 km primary road and 12.84 km secondary road are proposed in this union. Two secondary roads total 10.01 km long has also been proposed for better movement. Some union roads are proposed too for easy accessibility within the Union.

Table 18.26: Proposed Road Network in Nardas Union

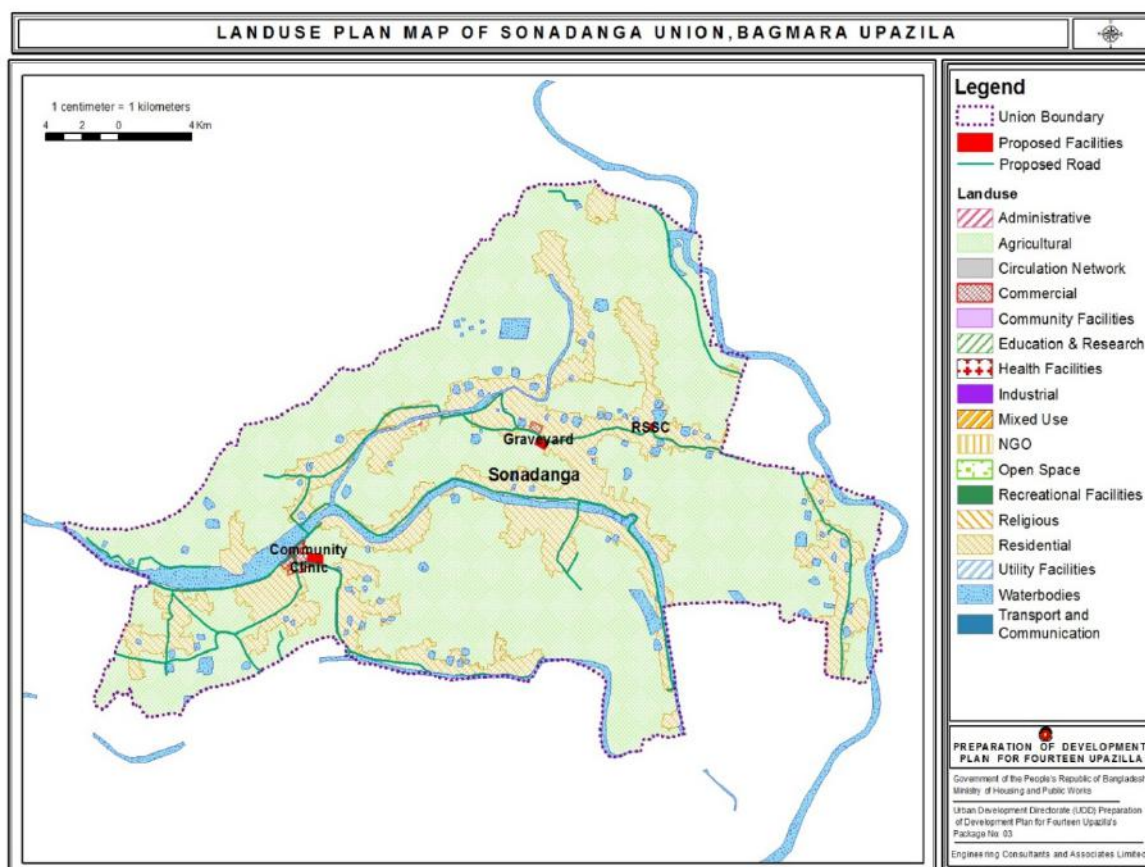
Road Category	Union	Length (km)
Access Road	Nardas	4.92
Secondary Road-1	Nardas	4.33
Secondary Road-2	Nardas	9.68
Union Road	Nardas	24.73



Map 18.13: Land use Plan Map of Nardas Union, Bagmara Upazila

18.15 Sonadanga Union

Sonadanga is a small Union. Out of 2593 acres of land, more than 1481 acres of land i.e. 57.12% is used as agriculture purpose. A narrow channel goes through southern part of the Union. Total 150.53 acres of land is waterbodies in this union. For residential purpose 438.50 acres land has been allocated in this proposal. For market or other commercial activities more than 5 acres land is proposed. **Map 18.14** shows proposed land use of Sonadanga Union.



Map 11.14: Land use Plan Map of Sonadanga Union, Bagmara Upazila

In proposed facilities, a wholesale market and a RSSC have been proposed for local commercial activities. A community Clinic is too proposed as heath facilities. A graveyard is also here to meet the local peoples' demand (Table 18.27).

Table 18.27: Proposed facilities in Sonadanga Union

Union	Proposal Name	Area	Landuse
Sonadanga	Wholesale Market	1.10	Commercial
Sonadanga	RSSC	0.28	Commercial
Sonadanga	Community Clinic	0.28	Health Facilities
Sonadanga	Graveyard	1.03	Community Facility

To improve the movability an access road has been proposed. Two secondary roads have been also proposed to support local people. Some Union road has been proposed too.

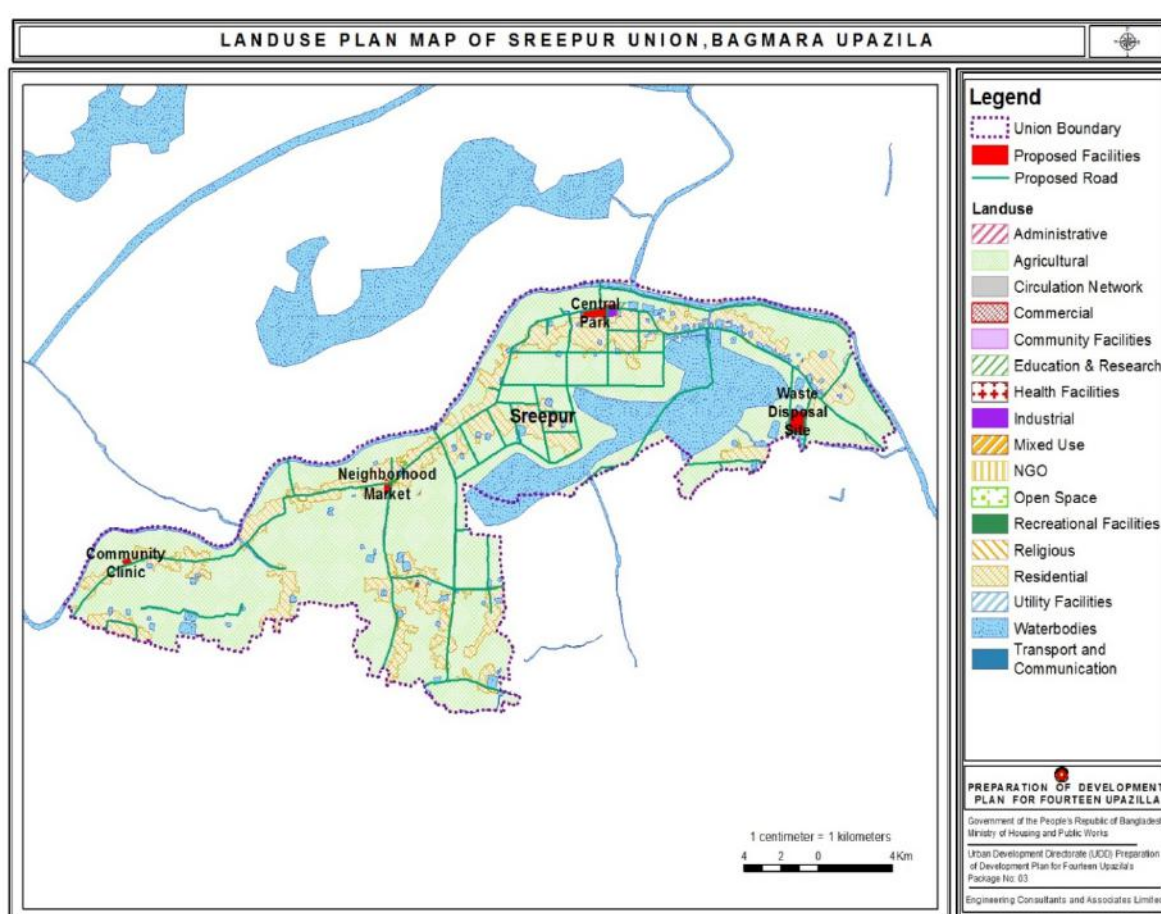
Table 18.28: Proposed Road Network in Sonadanga Union

Road Category	Union	Length (km)
Access Road	Sonadanga	3.07
Secondary Road-1	Sonadanga	1.82
Secondary Road-2	Sonadanga	3.53
Union Road	Sonadanga	9.94

18.16 Sreepur Union

Sreepur Union is also a small Union. It has total 2789 acres of land, in which 1853.41 acres of land i.e. 66.45 % is used as agriculture purpose. In proposed landuse, the residential use with 480.13 acres, occupies 17.21% of total land, water bodies 16.31 %, commercial use 0.08%, and circulation 2.30 %, education 0.13%. Around 2 acres land is for industrial use and 4 acres of land is for open space allocated in proposed landuse. **Map 18.15** shows proposed land use of Sreepur union.

There is no waste disposal site in this union. In proposed facilities, a waste disposal site is proposed consisting 7.66 acres of land. A neighborhood market and a RSSC have been proposed, which will fulfill the local demand. A community Clinic having 0.47 acres of land is also proposed. 3.83 acres Central Park is proposed too for the recreational purpose of local people. Table 18.16.1 presents the list of proposed facilities.



Map 18.15: Land use Plan Map of Sreepur Union, Bagmara Upazila

Table 18.29: Proposed facilities in Sreepur Union

Union	Proposal Name	Area	Landuse
Sreepur	Waste Disposal Site	7.66	Utility Facility
Sreepur	Central Park	3.83	Recreational and Open Space
Sreepur	RSSC	0.32	Commercial
Sreepur	Community Clinic	0.47	Health Facilities
Sreepur	Neighborhood Market	1.26	Commercial

Total 64.41 acres land has been allocated for circulation network to improve communication system of the union. In this regards, an access road 2.70 km long and a paura road 4.07 km long have been proposed. Two secondary roads, some union roads and walkway have been proposed too for easy movement of local people. The following **Table 18.30** shows the proposed road network.

Table 18.30: Proposed Road Network in Sreepur Union

Road Category	Union	Length (km)
Access Road	Sreepur	2.70
Paura Road	Sreepur	4.07
Secondary Road-1	Sreepur	7.58
Secondary Road-2	Sreepur	6.87
Union Road	Sreepur	13.67
Walkway	Sreepur	3.20

18.17 Subhadanga Union

Subhadanga Union has 6034 acres of land, in which agricultural land is around 4353 acres. This union has 972 acres of waterbodies. A major beel named “Klar Beel” remains water all the year around. Conserving these agricultural area and waterbodies 884.14 acres land is proposed for residential development. Around 12 acres land is allocated for industrial use in proposed landuse. For open space 1.47 acres, for commercial purpose 2.48 acres, for educational purpose 0.65 acres and for administrative purpose 0.50 acres of land have been proposed. **Map 18.16** depicts details about the proposed landuse.

In terms of proposed facilities, there will be an Agro based Industry consisting 5.95 acres of land. For developing commercial activities of the Union, a neighborhood market has been proposed consisting 1.02 acres land. A community clinic and a graveyard are also proposed in Subhadanga Union (**Table 18.31**).

Table 18.31: Proposed facilities in Subhadanga Union

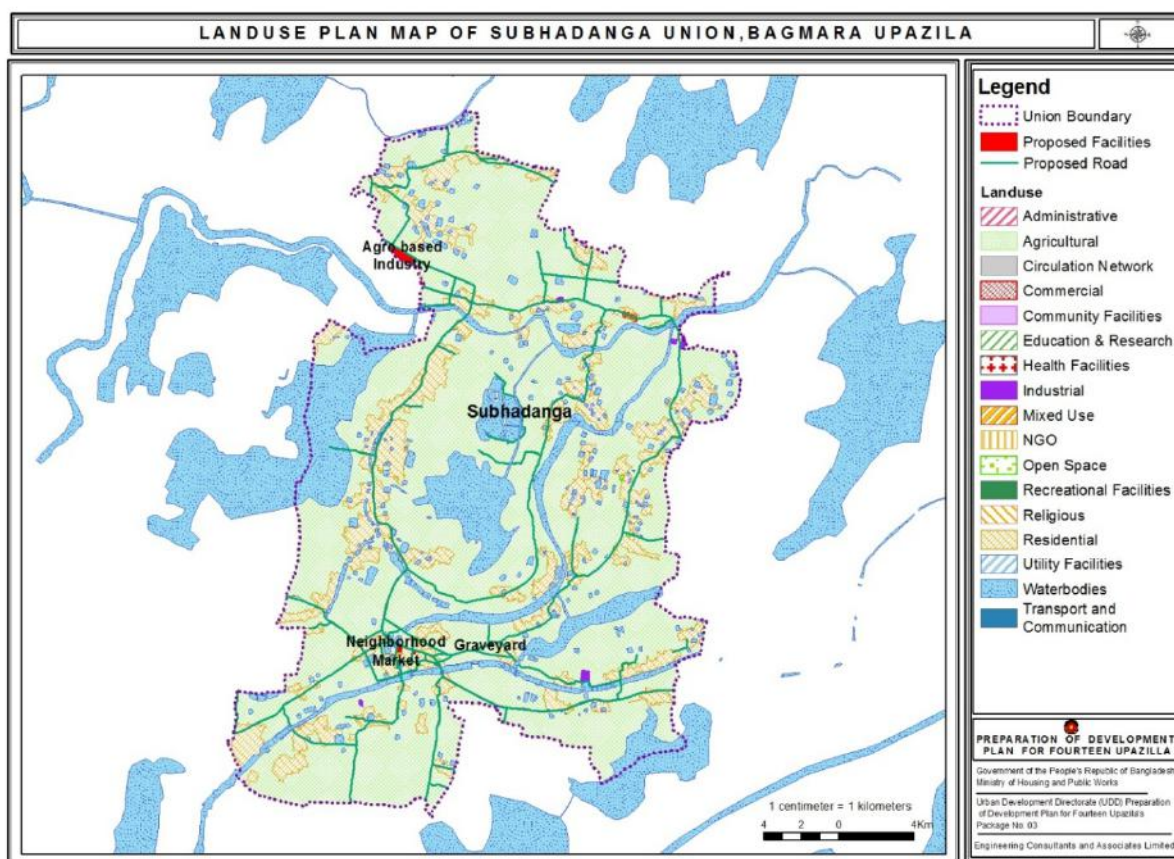
Union	Proposal Name	Area	Landuse
Subhadanga	Community Clinic	0.36	Health Facilities
Subhadanga	Neighborhood Market	1.02	Commercial
Subhadanga	Agro based Industry	5.96	Industrial
Subhadanga	Graveyard	0.60	Community Facility

For improving communication condition of the union one Access road (5.98 km long) has been proposed. 8.35 km long Primary Road will go through the union to link with adjacent union. There also is proposed two secondary road total 8.68 km. Some Union Road is too proposed for betterment the internal accessibility. **Table 18.32** shows the list of proposed road network.

For improving communication status of the union one Access road (4.59 km long) and a Paura Road has been proposed. A 9.75 km long Primary Road will go through the union to linked with adjacent union. There also has been proposed two secondary road total 13.44 km. Some Union Road and Walkway is too proposed for betterment the internal activities.

Table 18.32: Proposed Road Network in Subhadanga Union

Road Category	Union	Length (km)
Access Road	Subhadanga	5.98
Primary Road	Subhadanga	8.35
Secondary Road-1	Subhadanga	1.32
Secondary Road-2	Subhadanga	7.36
Union Road	Subhadanga	28.44



Map 11.16: Land use Plan Map of Subhadanga Union, Bagmara Upazila

Chapter 19

Action Area Plan

19.1 Introduction

Action Area Plan is the last component of the Development Plan. This plan will enroll at 5 years interval. This plan is prepared under the frame of Structure Plan, Urban Area Plan and Rural Area Plan.

19.2 Purpose of Action Area Plan

In the Structure Plan broad policies for future development have been formulated. The next step is to interpret these broad policies in terms of geographical locations. Action Area Plan contains a description of the proposed sequence and related activities for the implementation of the development plan to ensure the planned development of the project area. It describes land use in specific location, prepare architectural layout plans, building control mechanism. Action Area plan embodies components of the plan, geographical coverage, time frame for implementation, responsibility of plan implementation and coordination among components and implementation agencies.

19.3 Duration and Phasing of Development

Action Area Plan have prepared for the areas within the Upazila where action is required immediately. For preparing the priority list of Action Area Plan, all the development proposals have been arranged according to four phases.

Table 19.1: Duration and phases of Action Area Plan.

Phases	Duration
First Phase	2013-2018
Second Phase	2018-2023
Third Phase	2023-2028
Fourth Phase	2028-2033

19.4 Phasing of Action Area Plan

According to the demand of Consultation meeting and potentiality of the Upazila, development proposals are phasing in action area plan. The list of development Projects is given below with appropriate phasing in **Table 19.2**.

Table 19.2: Priority Projects of Bagmara Upazila.

Phase	Activity
First Phase 2013-2018	Development of Neighborhood Park at Taherpur Paurashava
	Development of Poor housing at Bwabanigonj Paurashava
	Development of Shopping Complex at Bwabanigonj Paurashava
	Development of Pauro Market at Bwabanigonj Paurashava
Second Phase 2018-2023	Development of Water Treatment Plant at Taherpur Paurashava
	Development of Waste Disposal Site at Sreepur Union
	Development of Waste Transfer Station at Taherpur Paurashava

Phase	Activity
	Conservation of Birkutsha Raj Bari at Jogi Para Union
	Development of Community Zone at Maria Union
	Development of Future Government Office at Bwabanigonj Paurashava
Third Phase 2023-2028	Development of Bus Terminal at Bwabanigonj Paurashava
	Development of Mini Bus/Auto Stand at Taherpur Paurashava
	Development of Industrial Zone at Bwabanigonj Paurashava
	Development of Night Soil Treatment Plant at Bwabanigonj Paurashava
	Development of Electric Sub-Station at Taherpur Paurashava
Fourth Phase 2028-2033	Development of Fish Processing Zone at Taherpur Paurashava
	Development of Brick Field Zone at Dwippur Union
	Development of Cottage Industry at Maria Union
	Development of Wholesale Market at Sonadanga union

Source: Estimated by the consultant, 2017.

19.5 Action Area Plan

19.5.1 Development of Neighborhood Park at Taherpur Paurashava

Name of the Project: Development of Neighborhood Park at Taherpur Paurashava.

Location: Taherpur Paurashava

Area: 1.378 acres

Priority Phase: First Phase (2013-2018).

Project Description: This area is proposed to grow within the plan period (2033). This area provides the required area for proposed public facilities like recreational facilities etc. This New Urban area will be developed at Taherpur Paurashava. Layout Plan of Neighborhood Park at Taherpur Paurashava is shown in **Fig 19.1**.

Impact Assessment

- Increase of recreational facilities
- Increase the quality of life style
- Expand local business
- Enhanced property values

Implementing Authority: Paurashava

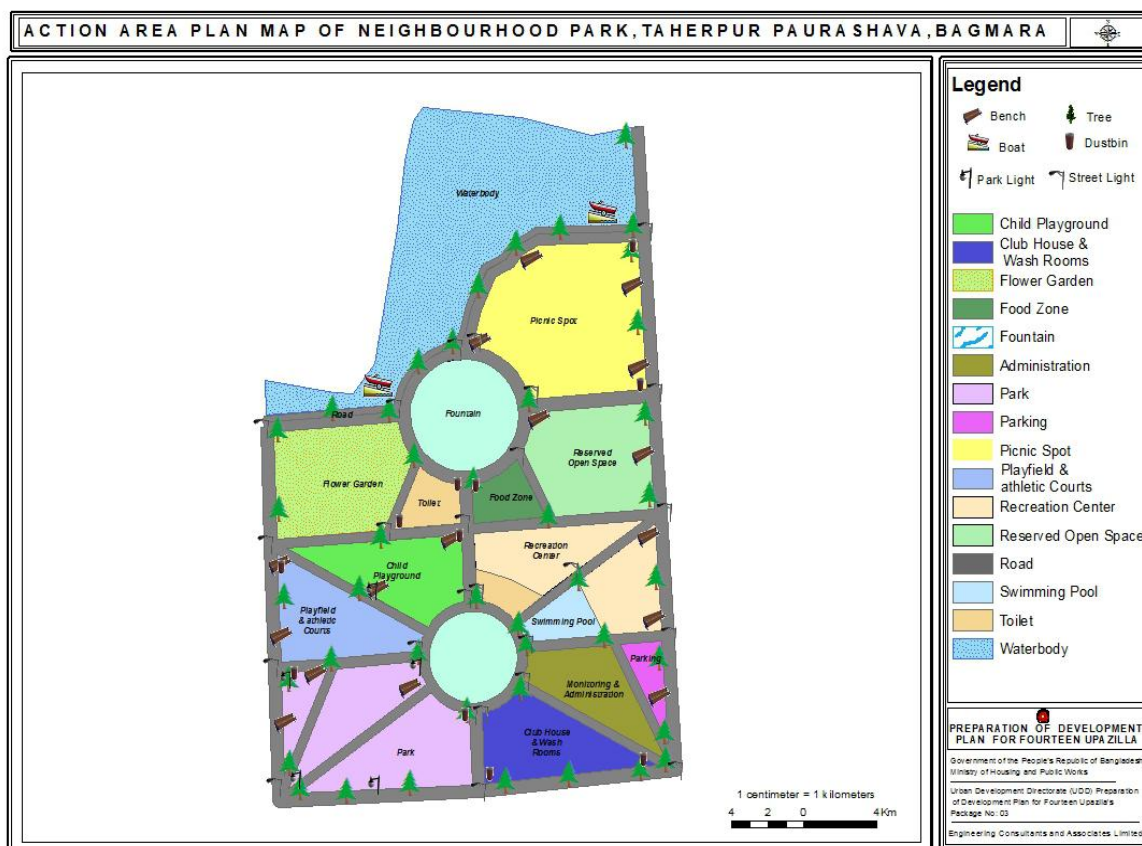
Source of Fund: GOB

Cost Breakup:

Table 19.3: Cost Breakup of Neighborhood Park

Description of Item	Unit	Quantity	Total cost
Land Acquisition	Acre	1.37	2,20,000

Land Development	L/S	1.37	50,00000
Total			52,20,000



Map 19.1: Action Area Plan of Neighborhood Park, Taherpur Paurashava, Bagmara

Table 19.4: Component of Neighborhood Park

Landuse	Area_Acre
Park	0.26
Toilet	0.04
Flower Garden	0.19
Reserved Open Space	0.17
Food Zone	0.04
Child Playground	0.12
Recreation Center	0.16
Swimming Pool	0.04
Monitoring & Administration	0.10
Club House & Wash Rooms	0.13
Playfield & athletic Courts	0.12
Fountain	0.09
Fountain	0.10
Picnic Spot	0.30
Waterbody	0.56
Parking	0.03

Toilet	0.02
Road	0.80

19.5.2 Conservation of Birkutsha Raj Bari at Jogi Para Union.

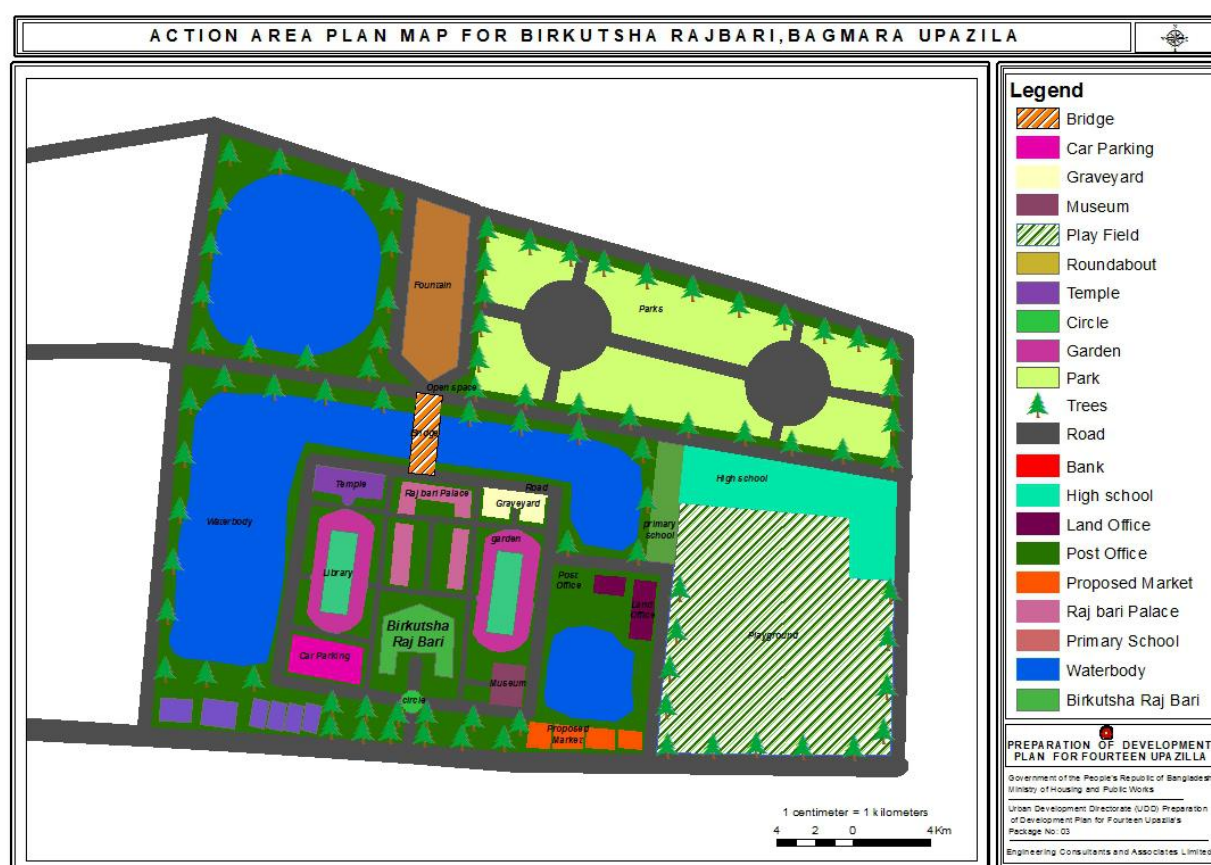
Name of the Project: Conservation of Birkutsha Raj Bari

Location: Jogi Para Union

Area: 8.5 acres

Implementation Period: Second Phase (2018-2023).

Project Description: The project is located at Jogi Para Union of 8.5 acres. A culture is a way of life of a group of people. The culture of Bangladesh refers to the way of life of the people of Bangladesh. An extensive landscape is proposed considering the visitors convenience. Layout plan of the project area is shown in **Fig 19.2**.



Map 19.2: Action Area Plan Map for Birkutsha Raj Bari, Bagmara Upazila

Table 19.5: Component of Birkutsha Raj Bari Zone

Name	Area (acre)
Birkutsha Rajbari(Existing)	0.08
Bridge	0.05
Car Parking	0.06

circle	0.01
Fountain	0.19
garden	0.18
Graveyard	0.04
High school	0.28
Land Office	0.04
Library	0.09
Museum	0.03
Open space	1.61
Parks	0.84
Playground	1.09
Post Office	0.01
primary school	0.07
Proposed Market	0.05
Raj bari Palace	0.08
Road	2.23
Temple	0.04
Waterbody	1.67

Implementing Authority: Government

Source of Fund: GOB

Cost Breakup:

Table 19.6: Cost Breakup of Birkutsha Raj Bari Zone

Description of Item	Unit	Quantity	Total cost
Land Acquisition	Acre	8.5	17000000
Land Development	L/S	8.5	105000000
Total			12,20,00000

19.5.3 Community Zone at Maria Union.

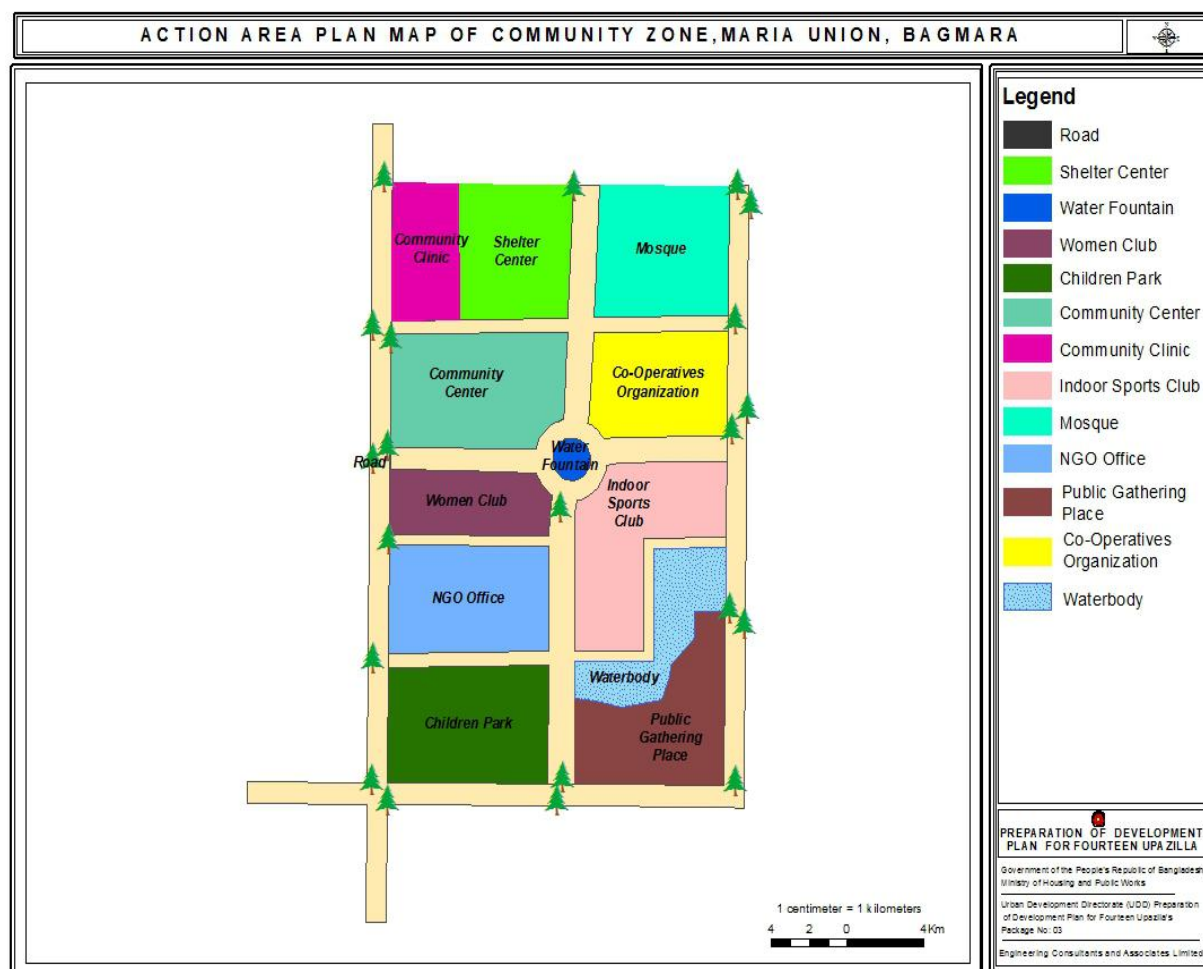
Name of the Project: Development of Community Zone at Maria Union

Location: Maria Union

Area: 5.16 acres

Implementation Period: Second Phase (2023-2028).

Project Description: The project is located at Maria Union of 5.16 acres. As a new growth center is proposed in Maria union; a community zone will serve the locality with a regular development. A community zone can segregate all the essential sectors which serve a community properly. So at a new growth center a community zone is needed for community facilities. Layout plan of the project area is shown in **Fig 19.3**.

**Map 19.3: Action Area Plan Map of Community Zone, Maria Union, Bagmara****Table 19.7: Component of Community Zone**

Name	area
Indoor Sports Club	0.41
Women Club	0.23
Children Park	0.42
Mosque	0.39
NGO Office	0.38
Community Center	0.44
Shelter Center	0.34
Co-Operatives Organization	0.32
Water Fountain	0.03
Road	0.78
Public Gathering Place	0.37
Road	0.86
Community Clinic	0.21
Waterbody	0.23

Implementing Authority: Government

Source of Fund: GOB

Cost Breakup:

Table 19.8: Cost Breakup of Community Zone

Description of Item	Unit	Quantity	Total cost
Land Acquisition	Acre	5.16	10320000
Land Development	L/S	5.16	355000000
Total			36,53,20000

19.6 Proposed Development Project list

Table 19.9: Development Project list

Categories	Name of the Project	Implementing Agency
Administrative	Development of Future Government Office At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Fire Station At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Youth Development Center At Bhawbaniganj Paurashava (Ward-07)	DC Office
	Development of Youth Development Center At Bhawbaniganj Paurashava (Ward-06)	DC Office
	Development of Food Godown At Auch Para	Private
	Development of Food Godown At Jogi Para	Private
	Development of Future Government Office At Maria	DC Office
	Development of Future Government Office At Bhawbaniganj Paurashava (Ward-04)	Paurashava
Commercial	Development of RSSC At Sonadanga	Upazila Parishad
	Development of RSSC At Basu Para	Upazila Parishad
	Development of Neighborhood Market At Maria	Paurashava
	Development of RSSC At Sreepur	Upazila Parishad
	Development of RSSC At Kachhari Kayali Para	Upazila Parishad
	Development of RSSC At Bara Bihanali	Upazila Parishad
	Development of Fish Mrket At Tahirpur Paurashava (Ward-06)	Paurashava
	Development of RSSC At Jhikra	Upazila Parishad
	Development of RSSC At Maria	Upazila Parishad
	Development of RSSC At Ganipur	Upazila Parishad
	Development of RSSC At Ganipur	Upazila Parishad
	Development of RSSC At Hamir Kutsha	Upazila Parishad
	Development of RSSC At Maria	Upazila Parishad
	Development of RSSC At Basu Para	Upazila Parishad
	Development of RSSC At Gobinda Para	Upazila Parishad
	Development of RSSC At Basu Para	Upazila Parishad
	Development of RSSC At Gobinda Para	Upazila Parishad
	Development of RSSC At Jhikra	Upazila Parishad

Categories	Name of the Project	Implementing Agency
Commercial	Development of RSSC At Goalkandi	Upazila Parishad
	Development of RSSC At Nardas	Upazila Parishad
	Development of RSSC At Hamir Kutsha	Upazila Parishad
	Development of RSSC At Auch Para	Upazila Parishad
	Development of RSSC At Nardas	Upazila Parishad
	Development of Neighborhood Market At Bara Bihanali	Paurashava
	Development of RSSC At Auch Para	Upazila Parishad
	Development of Neighborhood Market At Maria	Paurashava
	Development of RSSC At Auch Para	Upazila Parishad
	Development of RSSC At Dwippur	Upazila Parishad
	Development of RSSC At Dwippur	Upazila Parishad
	Development of RSSC At Goalkandi	Upazila Parishad
	Development of Shopping Complex At Bhawbaniganj Paurashava (Ward-04)	Private
	Development of Neighborhood Market At Auch Para	Paurashava
	Development of Neighborhood Market At Ganipur	Paurashava
	Development of Fish Market At Tahirpur Paurashava (Ward-03)	Paurashava
	Development of Fish Market At Goalkandi	Paurashava
	Development of Neighborhood Market At Jhikra	Paurashava
	Development of Neighborhood Market At Auch Para	Paurashava
	Development of Neighborhood Market At Bara Bihanali	Paurashava
	Development of Neighborhood Market At Subhadanga	Paurashava
	Development of Neighborhood Market At Kachhari Kayali Para	Paurashava
	Development of Wholesale Market At Sonadanga	Paurashava
	Development of Neighborhood Market At Hamir Kutsha	Paurashava
	Development of Wholesale Market At Jogi Para	Paurashava
	Development of Neighborhood Market At Goalkandi	Paurashava
	Development of Neighborhood Market At Sreepur	Paurashava
	Development of Fish Market At Hamir Kutsha	Paurashava
	Development of Pauro Market At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Neighborhood market At Tahirpur Paurashava (Ward-08)	Paurashava
	Development of Pauro Market At Tahirpur Paurashava (Ward-03)	Paurashava
	Development of Neighborhood Market At Jogi Para	Paurashava
	Development of Wholesale Market At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Neighborhood Market At Gobinda Para	Paurashava
	Development of Pauro Market At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Pauro Market At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Graveyard At Maria	PPP
	Development of Graveyard At Subhadanga	PPP

Categories	Name of the Project	Implementing Agency
Community Facility	Development of Graveyard At Bara Bihanali	PPP
	Development of Graveyard At Auch Para	PPP
	Development of Graveyard At Kachhari Kayali Para	PPP
	Development of Multi Purpose Hall At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Multi Purpose Hall At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Graveyard At Sonadanga	PPP
	Development of Graveyard At Jhikra	PPP
	Development of Graveyard At Nardas	PPP
	Development of Community Center At Bhawbaniganj Paurashava (Ward-06)	Paurashava
	Development of Graveyard At Jogi Para	PPP
	Development of Graveyard At Dwippur	PPP
	Development of Graveyard At Basu Para	PPP
	Development of Graveyard At Auch Para	PPP
	Development of Pauro Graveyard At Bhawbaniganj Paurashava (Ward-06)	Paurashava
	Development of Graveyard At Hamir Kutsha	PPP
	Development of Pauro Graveyard At Tahirpur Paurashava (Ward-06)	Paurashava
	Development of Graveyard At Ganipur	PPP
	Development of Pauro Graveyard At Tahirpur Paurashava (Ward-04)	Paurashava
	Development of Graveyard At Goalkandi	PPP
	Development of Graveyard At Gobinda Para	PPP
Education & Research	Development of School for Autistic Child At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of School for Autistic Child At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Agriculture Training Institute At Bhawbaniganj Paurashava (Ward-07)	Paurashava
	Development of Vocational Training Institute At Auch Para	Paurashava
	Development of Public Library At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Public Library At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Vocational Training Institute At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Agri Training Center At Bhawbaniganj Paurashava (Ward-06)	Paurashava
	Development of Community Clinic At Bara Bihanali	DPHE
	Development of Community Clinic At Maria	DPHE
	Development of Community Clinic At Maria	DPHE
	Development of Community Clinic At Jhikra	DPHE
	Development of Community Clinic At Basu Para	DPHE
	Development of Community Clinic At Bara Bihanali	DPHE

Categories	Name of the Project	Implementing Agency
Health Facilities	Development of Community Clinic At Sonadanga	DPHE
	Development of Community Clinic At Hamir Kutsha	DPHE
	Development of Community Clinic At Hamir Kutsha	DPHE
	Development of Community Clinic At Jhikra	DPHE
	Development of Community Clinic At Ganipur	DPHE
	Development of Community Clinic At Nardas	DPHE
	Development of Community Clinic At Jhikra	DPHE
	Development of Community Clinic At Auch Para	DPHE
	Development of Community Clinic At Subhadanga	DPHE
	Development of Community Clinic At Gobinda Para	DPHE
	Development of Community Clinic At Sreepur	DPHE
	Development of Community Clinic At Auch Para	DPHE
	Development of Community Clinic At Gobinda Para	DPHE
	Development of Community Clinic At Dwippur	DPHE
	Development of Community Clinic At Dwippur	DPHE
	Development of Community Clinic At Ganipur	DPHE
	Development of Community Clinic At Basu Para	DPHE
	Development of Community Clinic At Basu Para	DPHE
	Development of Community Clinic At Kachhari Kayali Para	DPHE
	Development of Community Clinic At Nardas	DPHE
	Development of Community Clinic At Goalkandi	DPHE
	Development of Community Clinic At Jogi Para	DPHE
	Development of Hospital At Bhawbaniganj Paurashava (Ward-04)	DPHE
	Development of Hospital At Auch Para	DPHE
	Development of Hospital At Tahirpur Paurashava (Ward-02)	DPHE
Industrial	Development of Cold Storage At Bara Bihanali	Private
	Development of Cold Storage At Auch Para	Private
	Development of Cold Storage At Jhikra	Private
	Development of Ice Factory At Tahirpur Paurashava (Ward-06)	Private
	Development of Ice Factory At Tahirpur Paurashava (Ward-06)	Private
	Development of Ice Factory At Tahirpur Paurashava (Ward-03)	Private
	Development of Ice Factory At Goalkandi	Private
	Development of Cold Storage At Tahirpur Paurashava (Ward-06)	Private
	Development of Cold Storage At Tahirpur Paurashava (Ward-06)	Private
	Development of Cold Storage At Tahirpur Paurashava (Ward-01)	Private
	Development of Cold Storage At Bara Bihanali	Private
	Development of Cold Storage At Gobinda Para	Private
	Development of Fish Processing Zone At Tahirpur Paurashava (Ward-06)	BEZA
	Development of Jute Godown At Tahirpur Paurashava	Private

Categories	Name of the Project	Implementing Agency
	(Ward-04)	
	Development of Cottage Industry At Maria	BEZA
	Development of Cottage Industry At Maria	BEZA
	Development of Agro Based Industry At Maria	BEZA
	Development of Agro Based Industry At Hamir Kutsha	BEZA
	Development of Fish Processing Zone At Hamir Kutsha	BEZA
	Development of Agro Based Industry At Jhikra	BEZA
	Development of Silo At Jogi Para	BEZA
	Development of Agro based Industry At Subhadanga	BEZA
	Development of Agro based Industry At Auch Para	BEZA
	Development of Agro Based Industry At Ganipur	BEZA
	Development of Jute Industry At Tahirpur Paurashava (Ward-06)	BEZA
	Development of Jute Industry At Tahirpur Paurashava (Ward-04)	BEZA
	Development of Brick Field Zone At Dwippur	BEZA
	Development of Industrial Zone At Bhawbaniganj Paurashava (Ward-09)	BEZA
	Development of Industrial Zone At Bhawbaniganj Paurashava (Ward-09)	BEZA
	Development of Brick Field Zone At Jogi Para	BEZA
Open Space	Development of Playground & Park At Tahirpur Paurashava (Ward-09)	Paurashava
	Development of Playground & Park At Tahirpur Paurashava (Ward-07)	Paurashava
	Development of Children Park At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Children Park At Bhawbaniganj Paurashava (Ward-07)	Paurashava
	Development of Park At Bhawbaniganj Paurashava (Ward-06)	Paurashava
	Development of Park At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Playground At Bara Bihanali	Paurashava
	Development of Public gathering Place; Playground At Bhawbaniganj Paurashava(Ward-05)	Paurashava
	Development of Public gathering Place; Playground At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Public Gathering Place; Playground At Maria	Paurashava
	Development of Public Gathering Place; Playground At Maria	Paurashava
	Development of Mini Stadium At Tahirpur Paurashava (Ward-06)	Paurashava
Recreational and	Development of Neighborhood Park At Tahirpur Paurashava (Ward-04)	Paurashava
	Development of Neighborhood Park At Goalkandi	Paurashava

Categories	Name of the Project	Implementing Agency
Open Space Recreational and Open Space	Development of Sports Complex At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Sports Complex At Bhawbaniganj Paurashava(Ward-04)	Paurashava
	Development of Park At Auch Para	Private
	Development of Park At Maria	Private
	Development of Park At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Neighborhood Park At Tahirpur Paurashava (Ward-05)	Paurashava
	Development of Neighborhood Park At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Neighborhood Park At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Central Park At Sreepur	Paurashava
	Development of Stadium At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Stadium At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Stadium At Bhawbaniganj Paurashava (Ward-03)	Paurashava
	Development of Birkutsha Rajbari	Paurashava
Religious Activity	Development of Central Eidgah At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Central Eidgah At Bhawbaniganj Paurashava (Ward-04)	Paurashava
Religious Facilities	Development of Mosque Complex At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Mosque Complex At Bhawbaniganj Paurashava (Ward-04)	Paurashava
Residential	Development of At Housing Tahirpur Paurashava (Ward-07)	BPC
	Development of Poor Housing At Bhawbaniganj Paurashava (Ward-01)	BPC
	Development of Poor Housing At Bhawbaniganj Paurashava (Ward-02)	BPC
	Development of Housing Area At Bhawbaniganj Paurashava (Ward-09)	BPC
	Development of Housing Area At Tahirpur Paurashava (Ward-05)	BPC
	Development of Housing Area At Tahirpur Paurashava (Ward-08)	BPC
	Development of Passenger Shed At Bhawbaniganj Paurashava (Ward-05)	BRTA
	Development of Bus Bay At Tahirpur Paurashava (Ward-05)	BRTA
	Development of Auto Stand At Tahirpur Paurashava (Ward-	BRTA

Categories	Name of the Project	Implementing Agency
Transport and Communication	03)	
	Development of Auto Stand At Tahirpur Paurashava (Ward-02)	BRTA
	Development of Bus Bay At Goalkandi	BRTA
	Development of Passenger Shed At Bhawbaniganj Paurashava (Ward-05)	BRTA
	Development of Bus Bay At Bhawbaniganj Paurashava (Ward-09)	BRTA
	Development of Bus Bay At Bhawbaniganj Paurashava (Ward-09)	BRTA
	Development of Bus Bay At Bhawbaniganj Paurashava (Ward-09)	BRTA
	Development of Auto Stand At Goalkandi	BRTA
	Development of Mini Bus/Auto Stand At Tahirpur Paurashava (Ward-02)	BRTA
	Development of Rickshaw/ Auto Stand At Tahirpur Paurashava (Ward-02)	BRTA
	Development of Truck Terminal At Bhawbaniganj Paurashava (Ward-08)	BRTA
	Development of Auto Stand At Bhawbaniganj Paurashava (Ward-07)	BRTA
	Development of Auto Stand At Bhawbaniganj Paurashava (Ward-06)	BRTA
	Development of Bus Terminal At Bhawbaniganj Paurashava (Ward-08)	BRTA
	Development of Bus Terminal At Goalkandi	BRTA
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-08)	Paurashava
	Development of Waste Transfer Station At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Public Toilet At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Waste Transfer Station At Goalkandi	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-09)	Paurashava
	Development of Public Toilet At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-06)	Paurashava
	Development of Public Toilet At Tahirpur Paurashava (Ward-01)	Paurashava
	Development of Public Toilet At Tahirpur Paurashava (Ward-03)	Paurashava
	Development of Public Toilet At Goalkandi	PPP
	Development of Public Toilet At Tahirpur	Paurashava

Categories	Name of the Project	Implementing Agency
Utility Facility	Paurashava(Ward-03)	
	Development of Public Toilet At Tahirpur Paurashava(Ward-02)	Paurashava
	Development of Public Toilet At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-03)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-03)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-05)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-04)	Paurashava
	Development of Waste Transfer Station At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Public Toilet At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Pump House/Overhead Tank At Bhawbaniganj Paurashava (Ward-04)	Paurashava
	Development of Pump House/Overhead Tank At Bhawbaniganj Paurashava (Ward-09)	Paurashava
	Development of Pump House/Overhead Tank At Bhawbaniganj Paurashava (Ward-02)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-05)	Paurashava
	Development of Pump House/Overhead Tank At Tahirpur Paurashava (Ward-02)	Paurashava
	Development of Solar Panel At Tahirpur Paurashava (Ward-04)	Paurashava
	Development of Electric Sub Station At Tahirpur Paurashava (Ward-04)	Paurashava
	Development of Waste Transfer Station At Tahirpur Paurashava (Ward-07)	Paurashava
	Development of Solar Park At Jogi Para	Paurashava
	Development of Solar Park At Auch Para	Paurashava
	Development of Water Treatment Plant At Tahirpur Paurashava (Ward-04)	Paurashava
	Development of Water Treatment Plant At Bhawbaniganj Paurashava (Ward-05)	Paurashava
	Development of Electric Sub Station At Bhawbaniganj Paurashava (Ward-03)	Paurashava
	Development of Night Soil Treatment Plant At Bhawbaniganj Paurashava (Ward-07)	Paurashava

Categories	Name of the Project	Implementing Agency
	Development of Solar Panel At Bhawbaniganj Paurashava (Ward-03)	Paurashava
	Development of Waste Disposal Site At Sreepur	Paurashava

Chapter 20

Plan Implementation

20.1 Introduction

Plan Implementation is the most crucial task of the stakeholders. This chapter will highlight the various measures needed to be taken in order to execute the plan proposals. Effective implementation of a plan is the most important part of the total planning process.

20.2 Plan Custodians

It is necessary that all the stakeholders should be involved in carrying out the implementation of the plan proposals. Planning proposals are essentially much time bounded, therefore, execution of the proposals should move ahead once the government formally approves the plan. Bagmara Upazila will be the main custodian of the total plan package. It will also be responsible for monitoring and implementation of the development projects by other development as well as UNO.

20.3 Periodic Review and Updating

The plan package needs to be updated regularly to make it respond to the spatial changes over time. The aim of the review will be to analyze the status of implementation of plan provisions, the changing physical growth pattern, infrastructure development and the trend of public and private physical development including growth direction. It is necessary that the entire plan document should be reviewed every 4th year of the plan period and will come into execution from 5th years. For regular updating and changes and plan implementation monitoring, the Upazila should immediately set up a planning section with a number of planner and staff.

20.4 Legal Aspects

The drive to establish strong urban local governance in the Upazila is yet not to be legalized. The governance programs at present are operated project wise based on the formulated policies of the implementation agencies of the national government. There are national policies for most of the sectors. The relevant sector policies are consulted in this project for the preparation of Development Plan. These sector policies will be important for adopting measures of executing development projects as indicated in the plan documents. For further details of the policies and strategies, the implementing agencies may consult the national policy documents for any sector.

20.5 Resource Mobilization

Resource mobilization will be one of the most challenging tasks in implementing the plan package. Though the development proposals are said to be executed by a large number of development agencies, but it is beyond doubt that the Upazila will have to shoulder heaviest burdens. Upazila is dependent on the government for executing its development projects as it is unable to collect sufficient revenue from its tax and non-tax resources. Assessment and collection of taxes by local government is poor. It is found that local governments for various reasons are unable to collect appreciable amount of revenue that can be used for funding their development projects. Local government can contract private sector companies on commission basis to collect revenue. Local government should introduce betterment fee to raise its revenue. Necessary rules and regulations will have to be formulated for this purpose. Its fees for insurance of land use clearance and fees for approval of building plans should also be raised by following the Building Construction Rules. Local

government agencies should take up and implement commercial area development projects smartly and competitively with private developers to raise its income and finance its development projects.

20.6 Capacity building

The plan package imposes a large number of development projects on Bagmara Upazila for implementation. Bagmara Upazila is not only the custodian of the plan, it will also directly implement much of the development projects. Besides, it will also be responsible for monitoring and implementation of the development projects by other urban development and service giving agencies. To raise working capability, training programs should be arranged and modern office and working equipment should be installed.

20.7 Role of Urban Development Directorate (UDD)

UDD is not directly involved with Upazila development plan and UDD is currently doing Upazilas master Plan. The role of UDD should expand to monitor and evaluate the development plans of Upazilas directly in order to make it more practical and fruitful. UDD can provide technical services for effective implementation of the plan.

20.8 Good Governance in Legal Provisions.

There is hardly any act / Ordinance where the elements of good governance area clearly visible .The consultant have identified some acts, where some elements of good governance can be traced. The implementation of Plan will be legally guided by the Local Government Acts of all Local Government Units within the Upazila - (i) Local Government (Upazila Parishad) Act, 2009; (ii) Local Government (Paurashava) Act, 2009; and (iii) Local Government (Union Parishad) Act, 2009. The constitution of Peoples republic of Bangladesh clearly spells out that the government should work to minimize the gap between urban and rural areas. A Planned Upazila development in that pursuit can provide necessary service to improve quality of life in both urban and rural areas within the Upazila.

20.9 Lack of Automation

Most works in the Upazila are done manually. Such practice delays works and deprives the citizens from services. Modern office and working equipment should be installed. Use of modern technology will increase efficiency in planning and record keeping, finally expedite decision making process.

20.10 Staffing and Training

As a traditional system of Upazila, professionals are appointed directly by the ministry of local government and other staffs are appointed locally through the approval of the ministry after advertisement on the newspaper. In Bagmara Upazila revenue income is too low and that's why it is not capable to pay the salary of all the officials. This is the main reasons for under staffing of the Upazila. There is no proper arrangement for staff training. As a result, the staffs are mostly unskilled. They cannot deliver proper service to the citizens. Besides, most of them are not qualified enough to render proper services.

20.11 Monitoring and Evaluation

Monitoring and evaluation is a very important part of plan implementation. It measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can betake to put execution on the track. After expiry of any plan, evaluation is made about the errors and omissions. Such evaluation helps take corrective measures in the next plan.

20.12 Plan Review Committee

Ministry of Housing & Public Works will provide administrative orders regarding the specific land use change and it will be included during review of the plan on specific interval as stated in the plan. If there is any land use change required on any plot for Government/Non-Government/Private Intervention/Project/Land Acquisition on General Welfare that is not in consistent to the proposed land use or it's permitted, conditionally permitted, restricted or special use stated in the Gazetted plan, it must be approved by the Ministry of Housing and Public Works through the following Plan Review Committee:

Plan Review Committee Formation

1. Secretary, Ministry of Housing & Public Works- Chairman
2. Upazila Nirbahi Officer (UNO) of concerned Upazila- Member
3. Mayor of Concerned Pourashava- Member
4. Upazila Engineer of Concerned Upazila- Member
5. Director, UDD- Member
6. Concerned Senior Planner, UDD-Member
7. Deputy Secretary, Ministry of Housing & Public Works, Member- Secretary

ToR:

1. Plan Review Committee will meet on need basis.
2. Any decisions taken by the committee will be Gazetted by the Ministry of Housing & Public Works.
3. Plan Review Committee can Co-opt any member if necessary.

Chapter21

Conclusion

The development of urban and rural areas is the inevitable destiny of the human civilization especially in most densely populated country. Major and minor cities including secondary towns in Bangladesh are densely populated. Therefore, development plan for secondary towns along with cities is utmost essential. Final plan of Bagmara Upazila will give a guideline to develop the area according to the demand of local people. The plan consists of a written statement of objectives and a map or series of maps. The motto of development plan of a urban or rural areas are to provide planned development, renewal of absolute areas; preserving, improving and extending amenities; provision for better utility services, waste recovery and disposal facilities; zoning of areas for residential, commercial, industrial, agricultural, forestry, flood plains; provision of accommodation for travellers and provision of services for the community etc. However, the five-tier plan devised in this report will be effective tools for planned development of most of the areas in Bagmara. The planned township and integrated rural development will require infrastructure and service facilities that can be done by the proper utilization of such urban and rural area plan. This in turn will make a positive impact on economic growth, social progress and environmental sustainability in the whole region. Bagmara Upazila must avail this opportunity for its progress in future by implementing the Development Plan done by UDD under the Ministry of Housing and Public Works.

ANNEX-A
National Agriculture Policy 1999

Policy	Five Tier Plan	Key Issues
National Agriculture Policy 1999	Sub-regional Plan	<ul style="list-style-type: none"> Groundwater irrigation programmes will be coordinated at the national level. National Agricultural Research Institutes will give priority to region-wise research on irrigate and rain-fed cultivation and also Research on improving quality and utility of various crops.
	Structure Plan	<ul style="list-style-type: none"> Location specific (including hill tracts) suitable crops will be identified with respect to technological and economic parameters and appropriate strategies will be pursued for cultivating those crops. Measures will be taken to minimize post-harvest losses by introducing appropriate technologies. With a view to transforming crop production system into a profitable and sustainable sector, a two-dimensional agricultural research management programme will be followed. Government, private sector agencies and NGOs involved in agriculture sector will in principle agree to exchange information among them. Special development programmes will be taken with a view to increasing production of potential crops suitable for the coastal areas and the hill tracts. ensure a profitable and sustainable agricultural production system and raise the purchasing power by increasing real income of the farmers The Seed Certification Agency will take membership of the International Seed Testing Association (ISTA) so that the opportunities for exporting internationally standard seeds are created
	Action Area Plan	<ul style="list-style-type: none"> Reservoirs will be built-up to tap water from the year-round stream flow in hilly areas and appropriate infrastructure will be developed for irrigation as well as fish culture. Pest surveillance and monitoring system will be strengthened. Salt tolerant crop varieties will be developed and extended along with possible measures to resist salinity. Irrigation programmes will be undertaken following proper strategy according to the availability of surface and groundwater. Number of agricultural education institutions will be increased up to the required level. take supportive programmes for inter-cropping in a field instead of single cropping; Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis.

Climate Change Strategy 2009

Policy	Five Tier Plan	Key Issues
Climate Change Strategy 2009	Sub-regional Plan	<ul style="list-style-type: none"> Model climate change scenarios for Bangladesh by applying global climate change models and methodologies at regional and national levels Regional and international cooperation is essential in order to build necessary capacity and resilience Strengthen the government's capacity and that of civil society partners and communities to manage natural disasters To review energy and technology policies and incentives to promote efficient production, consumption, distribution and use of energy

		<ul style="list-style-type: none"> To build the capacity of the country to meet the challenge of climate change over the next 20-25 years.
	Structure Plan	<ul style="list-style-type: none"> Repair and rehabilitate existing infrastructure (e.g., coastal embankments, river embankments and drainage systems, urban drainage systems) and ensure effective operation and maintenance systems Undertake strategic planning of future infrastructure needs and future patterns of urbanization and socio-economic development; and the changing hydrology of the country, because of climate change Strengthen cyclone, storm surge and flood early warning systems to enable more accurate short, medium and long-term forecasts.
	Urban Area Plan	<ul style="list-style-type: none"> New urban areas must be built to be climate resilient. Flood protection and drainage schemes to protect urban areas from rainwater and river flooding during the monsoon season
	Action Area Plan	<ul style="list-style-type: none"> Monitor changes in water quality and quantity available for drinking and forecast future changes due to climate change flood management schemes to raise the agricultural productivity of many thousands of km² of low-lying rural areas and to protect them from extremely damaging severe floods Monitor and research the impacts of climate change on ecosystems and biodiversity Model the likely hydrological impacts of climate change on the Ganges-Brahmaputra-Meghna system to assess future system discharges and river levels <p>The Climate Change Action Plan is built on six pillars:</p> <ul style="list-style-type: none"> ➤ Food Security, Social Protection and Health ➤ Comprehensive disaster management ➤ Infrastructure to ensure existing and maintainences. ➤ Research and Knowledge Management ➤ Migration and low carbon development ➤ Capacity Building and institutional strengthening

Disaster Management Act 2012

Policy	Five Tier Plan	Key Issues
Disaster Management Act 2012	Sub-regional Plan	<ul style="list-style-type: none"> National Disaster Management Council should provide <ul style="list-style-type: none"> ➤ strategic guidelines concerned to policies and plans about disaster management; ➤ Implementation progress review of government projects and programs taken to face the disaster and rehabilitation The government may give order to accomplish special activities to be done on emergency basis by concern ministry, division, directorate, office, government and semi-government organization and committees formed under this Act.
	Action Area Plan	<p>The following requirements will need assistance:</p> <ul style="list-style-type: none"> Unusable or destroyed disaster protection infrasturcture for essential services. Extensive death or disaster like any unnatural event or any such natural event.

National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues		
National Plan for Disaster Management 2008-2015	Sub-regional Plan	Strategic Goal	Action Agenda for 2008-2015	Supporting Agency/ dept.
		Strengthening Institutional Mechanisms	Identify national, regional, sub-regional and local institutional mechanisms including informal systems and undertake an audit to validate roles and linkages	Ministry of Establishment /Ministry of Law, Justice and Parliamentary Affairs/ Cabinet Division/ Sectoral Ministries/NGOs Affairs Bureau/NGOs / Development Partners
		Strengthening Emergency Response Systems	Use SAARC, RCC and other available frameworks and platforms to establish regional networks for real time data/information sharing	Armed Forces Division; Ministry of Post and Telecommunication; MoHA/ MoFA/ SMRC NGO Affairs Bureau/ NGOs Development Partners
		Developing and Strengthening regional and global Networks	Identify key regional collaborating organizations and develop systems for coordination, and knowledge sharing. Use SAARC, ASEAN and RCC platforms to establish regional networks for real time data/information sharing as well as sharing of new knowledge and technology.	Relevant Ministries/ Departments, NGO Affairs Bureau, NGOs, Academic Institutions MoFDM/MoD/ / MoWR/ MoP&T/NGO Affairs Bureau/NGOs/ / Regional and International Organisations
	Structure Plan	<ul style="list-style-type: none"> Developing and strengthening networks of relevant national, regional and international organizations. To mitigate the impacts of floods, the government has been developing and implementing various measures to better equip the country to deal with floods. 		
		<ul style="list-style-type: none"> Strengthening disaster management and risk reduction capacity The plan followed by the strategic plan and operational plan of the different directorate of the ministry. Purpose of the Corporate Plan includes <ul style="list-style-type: none"> Articulate the Ministry's long-term Strategic Focus. Detail a road-map for the development of internal Strategic Plans for the Disaster Management Bureau (DMB), Directorate of Relief and Rehabilitation (DRR), Director-General of Food (DGoF) and the Policy Programme and Partnership Development Unit (PPPDU). Provide a framework within which to report performance and success in achieving goals and strategies 		

National Plan for Disaster Management 2008-2015

Policy	Five Tier Plan	Key Issues
		<ul style="list-style-type: none"> Different stakeholders in a multi-sectoral approach, including the development sector, should address the strategic goals and priorities for action. <p>STRATEGIC GOALS OF THE PLAN The strategic goals of the plan are drawn from the SAARC Disaster Management Framework</p> <ul style="list-style-type: none"> Goal 1: Professionalising the Disaster Management System Goal 2: Mainstreaming Risk Reduction Goal 3: Strengthening Institutional Mechanisms Goal 4: Empowering at Risk Communities Goal 5: Expanding Risk Reduction Programming Goal 6: Strengthening Emergency Response Systems Goal 7: Developing and Strengthening Network
	Action Area Plan	<ul style="list-style-type: none"> to develop a Tsunami early warning system and mass awareness of Tsunami threat at the coastal areas

Population Policy 2004

Policy	Five Tier Plan	Key Issues
Population Policy 2004	Sub-regional Plan	<ul style="list-style-type: none"> Ministry of Planning/Planning Commission will be responsible for <ul style="list-style-type: none"> policy planning, integration of population variables in the relevant sectoral plans and programs, as well as Co-ordination of adequate resource allocation to concerned ministries. <p>The Population Policy proposals can broadly be divided into four sectors,</p> <ul style="list-style-type: none"> human resources development, decentralization of population activities, participation of NGOs and private sector in population planning, building of planned family
	Structure Plan	<ul style="list-style-type: none"> Roads and communication systems should be linked with the growth centers; along with health, education housing and other welfare services created in those places
	Rural Area Plan	<ul style="list-style-type: none"> to mitigate the push factors from rural areas by ensuring rural employment opportunities in agriculture and agro-based industries for slowing down the rate of migration from rural areas Support the programs for re-excavation of canals and ponds in rural area and to undertake measures against soil and river erosion.
	Action Area Plan	<ul style="list-style-type: none"> A detailed time-bound integrated Action Plan shall be prepared to implement this policy with specific measurable indicators to monitor progress Satellite towns and growth centers should be established with adequate facilities to provide alternative destinations to rural migrants.

National policy for safe water supply and sanitation 1998

Policy	Five Tier Plan	Key Issues
National policy for safe water supply and sanitation 1998	Sub-regional Plan	<p>The overall works to be done-</p> <ul style="list-style-type: none"> ➤ Power to formulate international and regional agreement ➤ Formulation of National Disaster Management Policy. ➤ Declaration as distress zone • Drainage system in the cities and municipalities will be integrated with the overall drainage system with the coordination of Ministry of Water Resources. • Department of Environment will be consulted on solid waste management.
	Structure Plan	<ul style="list-style-type: none"> • A comprehensive strategic plan of operations shall be prepared • Within a specified period legislation will be enacted making use of sanitary latrine compulsory. • Support poverty alleviating strategies for improved quality of life
	Urban Area Plan	<ul style="list-style-type: none"> • Ensuring storm-water drainage in urban areas. • Making safe drinking water available to each household in the urban areas. • Adoption of necessary measures in urban areas to prevent contamination of ground and surface water by solid and liquid wastes. • To prevent contamination of ground and surface water by solid and liquid wastes. • The City Corporations or Paurasabhas shall be responsible for solid waste collection, disposal and their management.
	Rural Area Plan	<ul style="list-style-type: none"> • Ensuring the use of waste for the production of organic fertilizer (compost) in the rural areas. • Ensuring the installation of one sanitary latrine in each household in the rural areas • To improve public health standard through inculcating the habit of proper use of sanitary latrines.
	Action Area Plan	<ul style="list-style-type: none"> • Paurasabhas and WASAs will take actions to prevent the wastage of water. • Necessary measures shall also be taken to prevent contamination and damage of tube wells during natural disaster.

The Building Construction Act, 1952

Policy	Five Tier Plan	Key Issues
The Building Construction Act, 1952	Structure Plan	<p>In order to power to make Bangladesh National Building Code , the following requirements are:</p> <ul style="list-style-type: none"> ❖ general building requirements, control and regulation; ❖ fire protection; ❖ building materials; ❖ structural design; ❖ construction practices and safety; ❖ building services; ❖ alteration, addition to and change of use of existing building; ❖ sign and outdoor display;
	Urban Area Plan	<p>This act includes as follows:</p> <ul style="list-style-type: none"> • Restriction on construction of building and excavation of tank • Restriction on improper use of lands and building • Direction for removal of construction, etc • Power of removal of temporary building

		<ul style="list-style-type: none"> • Power of removal of building under construction
	Action Area Plan	<ul style="list-style-type: none"> • Restriction on cutting of hills • Direction for stopping cutting or razing of hill • Power of seizure and arrest without warrant

National Water policy 1999

Policy	Five Tier Plan	Key Issues
National Water policy 1999	Sub-regional Plan	<p>This plan will guide water management Institutions at the national, regional, and local levels in the formulation and implementation of policies and plans for improved water management and investment.</p> <ul style="list-style-type: none"> • The Government will exercise its water allocation power in identified scarcity zones on the basis of specified priorities • The Government may empower the local government or any local body to exercise its right to allocate water in scarcity zones during periods of severe drought • To environmental protection, restoration and enhancement measures consistent with the National Environmental Management Action Plan (NEMAP) and the National Water Management Plan (NWMP) • For sustaining rechargeable shallow groundwater aquifers. The Government will regulate the extraction of water in the identified scarcity zones with full public knowledge.
	Structure Plan	<ul style="list-style-type: none"> • Water development plans will make adequate provision in control structure for allowing fish migration and breeding. • Brackish aquaculture will be confined to specific zones designated by the Government
	Urban Area Plan	<ul style="list-style-type: none"> • Preserve natural depressions and water bodies in major urban areas for recharge of underground aquifers and rainwater management • Improve efficiency of resource utilization through conjunctive use of all forms of surface water and groundwater for irrigation and urban water supply.
	Rural Area Plan	<ul style="list-style-type: none"> • To develop different flood proofing measures such as raising of platform for homesteads, market places, educational institutions, community centers etc and adjusting the cropping pattern to suit the flood regime.
	Action Area Plan	<ul style="list-style-type: none"> • The contingency plan will include action to limit the use of groundwater according to priorities. • To assist the process of building public support

Industrial Policy 2005

Policy	Five Tier Plan	Key Issues
Industrial Policy 2005	Sub-regional Plan	<ul style="list-style-type: none"> • Establishment of Special Economic Zone based on the Importance of Industries, • Availability of Inputs and Regional Facilities • To reduce poverty and generate employment opportunities • The government has taken an initiative to formulate a separate SME policy to provide entrepreneurs with necessary guidance and strategic support in respect of the establishment of SME industries all over the country.
	Structure Plan	<ul style="list-style-type: none"> • Develop planned industrial areas by establishing Special Economic Zones in areas with vast economic potentials, and utilizing local resources • Cluster villages can be set up in especial economic zones for industries

Policy	Five Tier Plan	Key Issues
		<ul style="list-style-type: none"> Provide structural and other facilities to establish and develop compact industrial areas.
	Action Area Plan	<ul style="list-style-type: none"> Necessary action will be taken to update the relevant legislation and The establishment of a separate bank under public or private initiative will be considered

Burning Bricks Act 1989

Policy	Five Tier Plan	Key Issues
Burning Bricks Act 1989	Action Area Plan	<p>The conditions of the act as follows</p> <ul style="list-style-type: none"> ❖ Supremacy of the Act. ❖ Licence for burning bricks ❖ Prohibition of burning bricks with firewood ❖ Inspection ❖ Punishment ❖ Filing suit ❖ .Power to make rules

National Urban Sector Policy 2011

Policy	Five Tier Plan	Key Issues
National Urban Sector Policy 2011	Sub-regional Plan	<ul style="list-style-type: none"> In order to make urban plans flexible and adaptable to changing circumstances, following three levels of planning activity are required <ul style="list-style-type: none"> ❖ structure planning, ❖ local planning and ❖ action planning Associations at local and regional levels can form partnerships in local economic development which are then connected to national and international opportunities. Formulation of Urban, Rural and Regional Planning Act (i.e., Physical Planning Act) facilitate economic development, employment generation, reduction of inequality and poverty eradication through appropriate regulatory frameworks and infrastructure provisions
	Structure Plan	<ul style="list-style-type: none"> Regional development planning at district level would pave the way for practical application of bottom-up planning approach as present planning activities in Bangladesh are too much centralized. Detailed plan for specific sections of urban area as identified in the structure plan can be prepared for rapid development or for special projects and improvements. urban planning and management strategies including: <ul style="list-style-type: none"> ❖ Regulatory frameworks ❖ Appropriate by-laws, standards and norms, ❖ Planning guidelines should be developed and adopted. ❖ Informal and home-based income-generating activities Specific responsibilities for provision of services in urban areas will be formulated for government agencies and Encouraging community participation in maintaining law and order. Develop and implement urban management strategies and governance arrangements for enhancing complementary roles of urban and rural areas in sustainable development

National Urban Sector Policy 2011

Policy	Five Tier Plan	Key Issues
		<ul style="list-style-type: none"> local level rural plans can be prepared at the union level while the local level urban plan can be prepared at the Paurashava level
	Urban Area Plan	<ul style="list-style-type: none"> Protect hills in urban areas, specially Meherpur, Sylhet, Khagrachari, Cox's Bazar etc. Protect peri-urban areas from unplanned development. Promote hierarchical structure of educational institutions, such as from the kindergartens to universities, at appropriate locations with catchment areas/zones in urban areas. The local government body should design and implement regular survey of deprived groups in urban areas to keep track of numbers, origin and location of street children and other disadvantaged groups or individuals. Promote hierarchal distribution of recreational places in all urban areas with planned coverage as per physical planning rules. Plan for adequate number, size and location of graveyards and provision for burning ghats in all urban areas. Conserve natural water bodies, forests if they exist in and around urban areas as public recreation open spaces. Government will enact law and adopt prevention measures through police and special system for crime prevention and personal safety in urban areas.
	Action Area Plan	<ul style="list-style-type: none"> Paurashava and City Corporation Ordinance/acts should be amended so that the women ward commissioners can participate fully and equally in the decision-making processes and activities of urban local bodies. Union plans can be integrated at the upazila level to prepare the upazila plan.

National Fisheries Policy 1998

Policy	Five Tier Plan	Key Issues
National Fisheries Policy 1998	Sub-regional Plan	<ul style="list-style-type: none"> To save the marine resources from further decline strict measures will be taken against increase in mechanized or non-mechanised boats engaged in fish harvest in the marine zones. Development of the fisheries research infrastructure, extension, training, demonstration and other activities influencing fisheries programme shall be run by both private and public sector agencies. The Ministry of Fisheries and Livestock will control all development, , and other management aspects of fisheries resources and fish habitats and Ministry of Land will be involved in taking effective steps in this respect All water bodies of the country will be identified and their primary use as areas of fish production ensured. To ensure high quality of exportable fish and shrimp products, laboratory facilities for Quality Control will be expanded and modernised. Appropriate preventive measures will be taken against dumping of hazardous chemicals and nuclear wastes into the sea.
	Structure Plan	<ul style="list-style-type: none"> Integrated rice cum fish culture shall be extended through the release of fish fry in the beels, haors and other floodplains, especially in the areas encircled by dams in flood control and irrigation projects. Fish culture will be encouraged in all ponds, dighis and other water bodies. Biodiversity will be maintained in all natural water bodies and in marine environment.

	Action Area Plan	<ul style="list-style-type: none"> • Priority will be given to fish culture in the low-lying lands of the country where 50 cm or more of water is retained or can be retained during rainy season for more than three months. • discharge of harmful municipal and industrial wastes directly into the water bodies will be considered a punishable crime and measures will be taken to control and limit the use of harmful chemical fertilisers, insecticides • Union based demonstration farms will be established with the assistance of the private sector, for the dissemination of aquaculture technologies. • After mapping of soil quality of potential aquaculture regions, a manual describing appropriate use of lime and fertiliser in fish ponds shall be developed and distributed.
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Bangladesh National Building Code 1993

Policy	Five Tier Plan	Key Issues				
Bangladesh National Building Code 1993	Urban Area Plan	The BNBC code has ten parts comprising different aspects of building construction and services.				
		<table><thead><tr><th>Parts</th><th>Components</th></tr></thead><tbody><tr><td>1. General introduction to the code</td><td><ul style="list-style-type: none">• Definitions• Symbols</td></tr><tr><td>2. Adminstrative requirements necessary for enforcement of the code</td><td><ul style="list-style-type: none">• Seismic zoning• Design earthquake forces for primary framing systems• Selection of lateral force method• Seismic Dead Load• Design Base Shear• Seismic zone coefficient• Structure Importance coefficients• Structure period• Response Modification coefficient for structural systems• Site coefficient• Vertical distribution of lateral force• Combination of structural systems• Ground motion• Response spectrum Analysis• Seismic laterak forces on components and equipment supported by structures• Horizontal force coefficient• Seismic lateral forces on nonbuilding structures• Horizontal force coefficient• Coefficient for nonbuilding structures• Combination of loads and stress increase for allowable stress design method• Combinations of load for strength design method</td></tr></tbody></table>	Parts	Components	1. General introduction to the code	<ul style="list-style-type: none">• Definitions• Symbols
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		<ol style="list-style-type: none"> 3. General Planning and architectural requirements of buildings based on classification in accordance with occupancy, fire resistance 4. The requirements for fire prevention and protection measures 5. The standard materials to be used in building construction 6. Requirements governing structural design that ensure safety and serviceability of buildings <ul style="list-style-type: none"> • Earth quake resistant Design • Strengthening of Masonry Buildings for Earthquake Seismic • Band Reinforcement • Strengthening of Corner and Junctions • Vertical Reinforcement for Brick and Hollow Block Masonry • provisions for high wind regions • Special Splice Requirements for Columns • special provision for seismic design • Detailing of Reinforced Concrete Structures • Analysis and Proportioning of Structural Members • Detailing of Reinforced Concrete Structures • Structural Walls and Diaphragms • Shear Strength Requirements • Frame Members not Proportioned to Resist Forces Induced by Earthquake Motion • Requirements for Special Moment Frames (SMF) 7. Ensuring safety of life during construction and minimization of construction hazards 8. Standards of minimum requirements for the various services
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Seventh Five Year Plan (FY2016 – FY2020)

National Land Use Policy 2001

Policy	Five Tier Plan	Key Issues
National Land Use Policy 2001	Sub-regional Plan	<ul style="list-style-type: none"> • Execution of coordinated land conservation projects aimed at prevention of desertification in the northern region. • Take up effective programmes aimed at preventing weathering of land, conservation of land fertility, • Development and conservation of land in coastal areas. • identification of zones for land uses by Paurashavas and other places of Upazilas

Policy	Five Tier Plan	Key Issues
	Structure Plan	<ul style="list-style-type: none"> Formulation, categorization and effective implementation of land use plan in order to ensure planned occupancy and / or use of land. Payment of compensation to those who will be affected by land weathering and land acquisition for the purpose of development agencies and/ or by the government. Regular monitoring, survey and research on desertification in the northern region, land reclamation, prevention of weathering of land, mixed use of land, conservation and protection of coastal area land and condition of watershed areas.
	Urban Area Plan	<ul style="list-style-type: none"> Construct service roads along the main roads of the country so as to ensure safe movement of traffic as well as set aside 10 feet to 20 feet of land for plantation trees on the both sides of roads.
	Action Area Plan	<ul style="list-style-type: none"> Prevention of destroying the hilly landscape by earth cutting, excavation and removal of land. Appropriate measures to be taken against indiscriminate collection of earth and stone from hilly areas and disturbance ecological balance. Emphasis on watershed management Entrust the responsibility of maintaining small ponds by the owners and large water bodies such as river, channels, haor, baor and beel by the community people and the Government. use of embankments for controlling flood as roads as far as possible planned tree plantation on the embankments encouragement to construct multi-storied buildings instead of single storied in the rural and urban areas so as to ensure optimum use land for residential purposes

Housing Policy 2008 (Draft)

Pol icy	Five Tier Plan	Key Issues
Housing Policy 2008 (Draft)	Sub-regional Plan	<ul style="list-style-type: none"> সরকার গৃহায়ন প্রক্রিয়া বাস্তবায়নকালে উজ্জ্বল পরিস্থিতিসমূহ পর্যালোচনা করবে এবং এ সংক্রান্ত পদ্ধতিগত বাধা-বিপত্তিগুলো অপসারণে সক্রিয় ভূমিকা পালন করবে। বস্তিবাসীদের বা কোন নিম্নবিত্ত বসতি স্থানান্তর করার সিদ্ধান্ত অপরিহার্য বিবেচিত হলে প্রয়োজনীয় সামগ্রিক আর্থসামাজিক তথ্যাবলীর সমন্বয়ে বিশেষজ্ঞ দ্বারা প্রণীত একটি উপযোগিতা সমীক্ষাজাতীয় গৃহায়ন কল্পপত্রের মতামতের জন্য দাখিল করা হবে। বস্তি এলাকা যেখানে আবাসিক এলাকার পরিবেশ ও অবকাঠামোর উন্নয়ন, গৃহের ও সেবা-সুবিধার ক্রমোন্নয়ন এবং যখন যেখানে সম্ভব সেখানে বাসিন্দাদের বসবাসে অধিকার প্রদানের ব্যবস্থা নেয়া হবে।
	Structure Plan	<ul style="list-style-type: none"> একটি আধুনিক আবাসিক ভূমি তথ্যপদ্ধতি তৈরী করা হবে। জমির সরবরাহ বৃদ্ধি, যথোপযুক্ত ও সময়োপযোগী ব্যবহার নিশ্চিতকরণ এবং ফতকাবাজী রোধ করার লক্ষ্যে জমি ফেলে রাখাকে অলাভজনক ও নিরুৎসাহিত করার ব্যবস্থা নেয়া হবে। গৃহায়নের জন্য ভূমি ও অবকাঠামো উন্নয়ন এবং সার্বিকভাবে গ্রামীণ ঘরবাড়ীর মান উন্নয়নকে সম্পদ ও কর্মসংস্থান সৃষ্টির কার্যক্রমের সঙ্গে সম্পৃক্ত করা হবে।

Housing Policy 2008 (Draft)

Pol icy	Five Tier Plan	Key Issues
	Urban Area Plan	<ul style="list-style-type: none"> দেশের সকল পল্লী ও শহরাঞ্চলের জন্য সমভাবে প্রযোজ্য এই নীতির আওতায় গৃহনির্মাণে সরকার ক্রমান্বয়ে সহায়তাকারী ভূমিকা নিবে। নগর ও গ্রামীণ এলাকায় অব্যবহৃত খাস ও পতিতজমি ও জেগে উঠা চর নিয়ে আলাদা ‘ভূমিবাংক’ সৃষ্টিকরে তাকে সমৃদ্ধ করা হবে। উচ্চবিত্তের আবাসনের জন্য ভূমি ও ইমারত এবং শিল্প -বাণিজ্য জাতীয় অনাবাসিক ভূমি মুনাফা মূল্যে বরাদ্দ করে প্রাপ্ত মুনাফা দিয়ে নিম্নবিত্তের সুবিধা দিতে ভর্তুকি দেয়া হবে। একটি সমন্বিত আঞ্চলিক উন্নয়ন পরিকল্পনার আওতায় ছোট ও মাঝারি শহরের সংগে সংলগ্ন গ্রামাঞ্চল ও হাটবাজারের সংযোগ গড়ে তোলে , এগুলোতে অর্থনৈতিক ক্রিয়াকাণ্ড ও কর্মসংস্থানের সুযোগ বৃদ্ধি করা হবে ও সামাজিক ও সাংস্কৃতিকভাবে আকর্ষণীয় করে গড়ে তোলা হবে। দেশের সব কয়টি নগর এলাকার মহাপরিকল্পনা প্রণয়ন সমাপ্ত করে তদনুযায়ী অবকাঠামো নির্মাণ ও ব্যবহার নিশ্চিত করা হবে। নগর অঞ্চলে অনুমোদনবিহীন এবং ব্যক্তিমালিকানাধীন বস্তী গজিয়ে ওঠা রোধ করার উদ্দেশ্যে বিভিন্ন বিধিমালা কঠোরভাবে প্রয়োগ করা হবে। <p>স্থায়ী/অস্থায়ী, কাঁচা/পাকা প্রকৃতির যেকোন বসতিতে এ্যাম্বুলেন্স , অগ্নিনির্বাপক গাড়ী ও অত্যাাবশ্যকীয় যানবাহন চলাচল নিশ্চিত করা হবে।</p>
	Rural Area Plan	<ul style="list-style-type: none"> গ্রামাঞ্চলে অধিক হারে কর্মসংস্থান , রসদের প্রাপ্তি ও গৃহায়ন ও সেবাসুবিধা বৃদ্ধি করে অভিবাসনজনিত গৃহায়ন চাহিদা হাসকরণ। পল্লীর জনগণের জন্য উপযুক্ত নিরমান উপকরণ সহজলভ্য করা হবে । একইসাথে পরিবেশ সংরক্ষণ , অবাধ বৃক্ষনিধন , ইটভাটার জ্বালানী, ইত্যাদি নিয়ন্ত্রণ করার প্রয়োজনীয় ব্যবস্থা নেয়া হবে। <p>গ্রামীণ গৃহায়নঃ</p> <ul style="list-style-type: none"> কৃষিজমির উপর বাড়ীঘর নির্মাণের প্রবণতা নিরুৎসাহিত করা হবে । গ্রামাঞ্চলে পরিকল্পিত নিবিড় আবাসন সৃষ্টির উৎসাহ ও নির্দেশনা দেয়া হবে । গ্রামীণ গৃহায়নের জন্য খাসজমির প্রাপ্যতা সাপেক্ষে ‘আদর্শগ্রাম’/‘গুচ্ছগ্রাম’ কর্মসূচীর অনুরূপ কার্যক্রম বিস্তারিত করা হবে। <p>গ্রামীণ জনগণের গৃহনির্মাণ, মেরামত, পরিবর্তন, পরিবর্ধন ও অন্যান্য গৃহসংক্রান্ত ছোটখাটো প্রয়োজন বিনাসুদে বা সহজশর্তে ছোটছোট ঋণের ব্যবস্থা করা হবে।</p>

National Forest Policy 1994

Policy	Five Tier Plan	Key Issues
National Forest Policy 1994 জাতীয়বননীতি, ১৯৯৪	Sub-regional Plan	<ul style="list-style-type: none"> To fulfill national responsibilities and commitments by implementing various efforts and government ratified agreements relating to global warming, desertification and the control of trade and commerce of wild birds and animals; To encourage effective use and utilization of forest products at various stages of processing ;
	Structure Plan	To aforest about, 20% of the total area of the country by initiating various aforestation programmes in forest lands, fallow lands, lands not useful for agriculture, hinter lands and other possible areas to meet the basic needs of the present and future generations and to ensure greater contribution of the forestry sector to economic development.
	Rural Area Plan	<ul style="list-style-type: none"> To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources; To encourage effective use and utilization of forest products at various stages of processing ; To provide for and implement aforestation programmes on both public and private lands.

Policy	Five Tier Plan	Key Issues
	Action Area Plan	<ul style="list-style-type: none"> To prevent illegal occupation of forest lands, illegal tree felling and hunting of wild animals through the promotion of participation of local people

National Environment Policy 1992

Policy	Five Tier Plan	Key Issues
National Environment Policy 1992	Sub-regional Plan	<p>Key elements of the policy statement are:</p> <ul style="list-style-type: none"> Maintain ecological balance and overall physical development progress of the country through protection and development of different sectors. Protection from natural disaster is one of them; Identification and regulation all type of activities which pollutes and degrade the environment; Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects; and Ensuring sustainable use of natural resources.

National Tourism Policy 1992

Policy	Five Tier Plan	Key Issues
National Tourism Policy 1992	Sub-regional Plan	<ul style="list-style-type: none"> The policy identified tourism as a multidimensional industry and spelt out the necessity to have an effective coordination among various government ministries, departments, agencies and civil society bodies. In line with the policy, the Bangladeshi Government provides incentives to attract private sector partners. The incentives include tax-holiday, loans, concession rates for taxes and duties and in specific cases, allotment of land etc.
	Action Area Plan	<p>Its main objectives are:</p> <ul style="list-style-type: none"> To create interest in tourism among the people. To preserve, protect, develop and maintain tourism resources. To take steps for poverty-alleviation through creating employment. To build a positive image of the country abroad. To open up a recognized sector for private capital investment. To arrange entertainment and recreation. To strengthen national solidarity and integrity

Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues
Private Residential Land Development Rule 2004	Urban Area Plan	<ul style="list-style-type: none"> প্রকল্প বাস্তবায়নের সময় পার্শ্ববর্তী এলাকায় যাহাতে কোন ধরনের জলাবদ্ধতা সৃষ্টি বা পরিবেশের ভারসাম্য নষ্ট না হয় উহা নিশ্চিতকরন। বিভিন্ন ইউটিলিটি সার্ভিস এর রক্ষণাবেক্ষণের জন্য সংরক্ষিত জায়গা সংশ্লিষ্ট সংস্থার নিয়ম -নীতি অনুসরণে হস্তান্তর যা সেই সকল বরাদ্দ ও হস্তান্তর যা সেই সকল বরাদ্দ প্রকল্প এলাকার উন্নয়নের সময় পানি এবং বিদ্যুৎ সরবরাহ সুবিধা বা ব্যবস্থা না থাকিলে উদ্যোক্তার নিজস্ব খরচে অন্তর্বর্তীকালীন পানি এবং ব্যবস্থাকরণ। নগর পরিকল্পনার দৃষ্টিকোণ হইতে প্রকল্প এলাকার প্রতিটি বাড়ীর অবস্থান , ব্লক , সেক্টর, পার্শ্ববর্তী বাড়ীর অবস্থান (Block/Sector/Zone/Neighbourhood) এ নিরূপিত জনসংখ্যার বিবেচনায় বিস্তারিত ভূমি ব্যবহার সিডিউল প্রস্তুত করিয়ালে-লেআউট প্ল্যানের প্রদর্শন করিতে হইবে। <p>➤ Sectoral/ Block/Zonal/ Neighbourhood Plan including detailed sub-division of</p>

Private Residential Land Development Rule 2004

Policy	Five Tier Plan	Key Issues																																				
		<div>lands;</div> <div><div>➤ Road Network Plan;</div><div>➤ Drainage Plan;</div><div>➤ Utility Services Plan of Water Supply, Sewerage System(Treatment & Final Disposal),Solid Waste Collectoin & Disposal, Gas Supply, Electricity Supply,Telephone Facilities,etc.</div><div>➤ Traffic Circulation Plan;</div></div> <div>Space Standards for Urban Community Facilities in acres by Population size</div> <table><tr><th>Community Facilities</th><th>Facility per 1000 Population</th></tr><tr><td>EDUCATION</td><td></td></tr><tr><td>Nursery</td><td>0.08</td></tr><tr><td>Primary School</td><td>0.08</td></tr><tr><td>Secondary School</td><td>0.10</td></tr><tr><td>College*</td><td>0.08</td></tr><tr><td>HEALTH</td><td></td></tr><tr><td>Small Clinic*</td><td>0.04</td></tr><tr><td>Hospital*</td><td>0.04</td></tr><tr><td>COMMUNITY ORGANIZATION</td><td></td></tr><tr><td>Community Center/Mosque</td><td>0.04</td></tr><tr><td>RECRATION</td><td></td></tr><tr><td>Play-Ground/Play-field</td><td>0.08</td></tr><tr><td>Park</td><td>0.12</td></tr><tr><td>COMMERCIAL</td><td></td></tr><tr><td>Corner Shop/Market/Kutchabazar*</td><td>0.04</td></tr><tr><td>ResidentialRoads**</td><td>0.34</td></tr><tr><td>Total Area forcommunityFacilities(minimun)</td><td>1.00</td></tr></table>	Community Facilities	Facility per 1000 Population	EDUCATION		Nursery	0.08	Primary School	0.08	Secondary School	0.10	College*	0.08	HEALTH		Small Clinic*	0.04	Hospital*	0.04	COMMUNITY ORGANIZATION		Community Center/Mosque	0.04	RECRATION		Play-Ground/Play-field	0.08	Park	0.12	COMMERCIAL		Corner Shop/Market/Kutchabazar*	0.04	ResidentialRoads**	0.34	Total Area forcommunityFacilities(minimun)	1.00
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ResidentialRoads**	0.34																																					
Total Area forcommunityFacilities(minimun)	1.00																																					
	Action Area Plan	<div><div><div>• প্রকল্প এলাকা ঢাকা সিটি কর্পোরেশন ও ঢাকা ওয়াসার আওতার বাহিরে হইলে সেই ক্ষেত্রে উদ্যোক্তাদের নিজস্ব খরচে Waste Water & Sewerage Treatment Plant Composting Plant ইত্যাদি নির্মাণের ব্যবস্থাকরণ;</div><div>• The Building Construction Act,1952(E.B. Act // of 1953) এবং প্রচলিত ইমারত বিধিমালা অনুসারে অনুমোদন গ্রহণ করিয়া সরকার কর্তৃক অনুমোদিত বিল্ডিং কোড অনুযায়ী প্রকল্পের বাস্তবায়ন এবং ইমারত নির্মাণকরণ;</div><div>• প্রকল্প এলাকায় বসতবাড়ী আছে এমন সকল ক্ষতিগ্রস্থকে পুনর্বাসনের ব্যবস্থা করিতে হইবে।</div><div>• প্রকল্প এলাকার আয়তন ও জনসংখ্যা নির্ধারন সংক্রান্ত শর্ত:<div><div>➤ বেসরকারী আবাসিক প্রকল্প গ্রহণের ক্ষেত্রে ঢাকা সিটি কর্পোরেশন এলাকার অভ্যন্তরে ন্যূনতম ৫ (পাঁচ) একর এবং সিটি কর্পোরেশন বা পৌর এলাকা বাহিরে ন্যূনতম ১০(দশ) একর জমির প্রয়োজন হইবে।</div><div>➤ বেসরকারী আবাসিক প্রকল্পে প্রতি একরে সর্বোচ্চ জনসংখ্যার ঘনত্ব (Gross Density) হইবে ৩৫০ জন।</div></div></div><div>• প্রকল্প এলাকার ৩০ (ত্রিশ) ভাগ জমির সম্পূর্ণ ভাবে অবিক্রয়যোগ্য বলিয়া গণ্য হইবে এবং এই জমি প্রকল্প এলাকার বসবাসকারীদের প্রয়োজনীয় নাগরিক সুযোগ-সুবিধা প্রদানসহ বিভিন্ন ইউটিলিটি সার্ভিসেসের জন্য সংরক্ষিত থাকবে।</div><div>• বেসরকারী আবাসিক প্রকল্প এলাকার মৌজা ম্যাপের উপর আধুনিক পদ্ধতিতে জরীপ (GPS bases Survey) করিয়া existing topographical Survey Map প্রস্তুত করিতে হইবে</div><div>• সড়ক যোগাযোগ ব্যবস্থার বিন্যাস , প্রকল্প এলাকার আয়তন , জনসংখ্যা এবং আশে -পাশের Traffic Circulation বিবেচনায় রাখিতে হইবে, প্রকল্পের প্রধান সড়কের (Main/Primary Road) প্রশস্ততা (Right of Way or ROW) ন্যূনতম ৬০ ফুট, মাধ্যমিক সড়কের (Secondary Road) প্রশস্ততা (ROW) ন্যূনতম ৪০ ফুট এবং অভ্যন্তরীণ বা সংযোগসড়কের (Internal/Access/Residential Roads) প্রশস্ততা (ROW) ন্যূনতম ২৫ ফুট হইতে হইবে।</div></div><div>প্রকল্প এলাকায় নিরূপিত জনসংখ্যার ভিত্তিতে প্রয়োজনীয় প্রাইমারী স্কুলের সংখ্যা নির্ধারণ , হাইস্কুলের সংখ্যা নির্ধারণ , প্রয়োজনীয় কলেজ নির্ধারণ প্রয়োজনীয় কলেজ এবং স্থাপনের ব্যবস্থা করিতে হইবে।</div></div>																																				

Building Construction Rules 1996

Policy	Five Tier Plan	Key Issues
	Urban Area Plan	<p>Density Control- Density Control is considered as an important development control tool. It includes the number of units, people allowed per parcel of plot size, unit limitation, height of the building etc. In the Government and Semi Government institutions, building permission is hardly obtained and therefore, density control rules and regulations are not in practice.</p> <p>Payment of Betterment fee- For every town planning scheme for an existing town, some owners of the property will be affected and as such they will have to be paid some amount as compensation.</p> <p>Control of private housing estates Large numbers of pockets of urban infill and privately owned low lying peripheral lands have been developed by private companies. In some cases small scale real estate development permission is obtained occasionally but deviations from the approved plan are most common practice of the developers.</p>
	Action Area Plan	According to the Building Construction Rules (1996), the maximum height of a building will not be more than the summation of front side road width and the mandatory open space between road and building site.

Coastal Zone Policy 2005

Policy	Five Tier Plan	Key Issues
	Structure plan	<ul style="list-style-type: none"> Coastal Development Strategy (CDS) shall be developed and adopted in line with national strategy documents as a commonly agreed framework document; Rigid enforcement of conservation regulations will affect the livelihoods of many people and such conservation efforts will be linked, as far as possible, with alternative opportunities of employment Conservation and enhancement of critical ecosystems
	Urban Area Plan	<ul style="list-style-type: none"> Actions will be designed to reach the poorest and the remote rural areas (including the cycloneprone coastal regions, chars and river erosion affected areas), which are vulnerable to adverse ecological processes and those with high concentrations of socially disadvantaged
	Action Area Plan	<ul style="list-style-type: none"> Khas land will be distributed among the landless and a more transparent process of land settlement will be ensured; An effective program for land reclamation will be developed A Coastal Development Strategy (CDS) shall be developed and adopted in line with national strategy documents as a commonly agreed framework document

Climate Change Policies

Policy	Five Tier Plan	Key Issues
Climate Change Policies	Structure plan	<ul style="list-style-type: none"> According to the Intergovernmental Panel on Climate Change (IPCC), to keep global warming below 2 °C, emissions of carbon dioxide (CO₂) and other greenhouse gases (GHGs) must be halved by 2050 (compared with 1990 levels). Developed countries will need to reduce more – between 80

Policy	Five Tier Plan	Key Issues
		<p>% and 95 % by 2050; advanced developing countries with large emissions (e.g. China, India and Brazil) will have to limit their emission growth.</p> <ul style="list-style-type: none"> Agreed in 1997, the UNFCCC's Kyoto Protocol is a first step towards achieving more substantial global emission reductions. It sets binding emission targets for developed countries that have ratified it, such as the EU Member States, and limits the emission increases of the remaining countries for the first commitment period from 2008 to 2012. The 15 pre-2004 EU Member States (the EU-15) have a joint emission reduction target of 8 % below 1990 levels. Through the internal EU "burden-sharing agreement", some EU Member States are permitted increases in emissions, while others must decrease them. Most Member States that joined the EU after 1 May 2004 have targets of -6 % to -8 % from their base years (mostly 1990). EU emissions represent about 10 % of total global emissions. The United States, which has a large share of total global GHG emissions, has not ratified the protocol. China and several other countries with large GHG emissions do not have binding emission targets under the protocol. Countries are expected to meet their target mainly through domestic policies and measures. They may meet part of their emission reduction targets by investing in emission-reducing projects in developing countries (the Clean Development Mechanism (CDM)) or in developed ones (Joint Implementation (JI)). The CDM is also meant to support sustainable development, e.g. by financing renewable energy projects. The Cancún Agreements, adopted at the UN Climate Conference in Mexico (December 2010), include a comprehensive finance, technology and capacity-building support package to help developing nations adapt to climate change and adopt sustainable paths to low-emission economies. The agreements also include a time schedule for reviewing the objective of keeping the average global temperature rise below 2 °C. The agreements confirm that developed countries will mobilise USD 100 billion in climate funding for developing countries annually by 2020, and establish a Green Climate Fund through which much of the funding will be channelled. The 'Durban Platform for Enhanced Action', adopted at the UN conference in South Africa (Dec 2011) agreed a roadmap towards a new legal framework by 2015, applicable to all Parties to the UN climate convention. It also foresees a second commitment period of the Kyoto Protocol, starting in 2013. Agreement was also reached on the design and governance arrangements for the new Green Climate Fund.

The United Nations Framework Convention on Climate Change

Policy	Five Tier Plan	Key Issues
The United Nations Framework Convention on Climate Change	Structure plan	<ol style="list-style-type: none"> The 2015 Paris Agreement represents a historic turning point in global cooperation on addressing climate change and its global goal of limiting warming to well below 2 °C or 1.5 °C provide direction and help to frame climate change action. Given the gap between the emission level implied by the aggregate effect of countries' national plans enshrined in their intended nationally determined contributions and the level consistent with limiting warming to well below 2 °C or 1.5 °C, urgent pre-2020 mitigation action is needed to reduce climate risks in the 21st century and beyond and increase the prospects for effective adaptation. While greater levels of mitigation can reduce the need for additional adaptation efforts, failure to mitigate can

Policy	Five Tier Plan	Key Issues
		<p>result in higher adaptation costs or in adaptation options being no longer available or being financially non-viable.</p> <ol style="list-style-type: none"> Addressing global climate change goes hand in hand with ensuring sustainable development. Reducing poverty as well as securing food, water, health, energy and livelihoods are contingent on our mitigation and adaptation efforts. National climate change policies will be most effective if linked to broader sustainable development strategies, including those geared towards the attainment of the United Nations Sustainable Development Goals enshrined in the 2030 Agenda for Sustainable Development. Through the process of preparing national contributions and their implementation, countries demonstrate that they are increasingly introducing national policies and related instruments for low emission and climate resilient development. This rise is driven by increased mainstreaming of climate change in national and sectoral development priorities and increased collaborative climate action between Parties and non-Party stakeholders. All key economic sectors and areas are being addressed as laid out in this year's report. Financial support, technology development and transfer as well as capacity-building at scale continue to be urgently needed. Successful planning and implementation of adaptation and mitigation measures requires very large investments. As such, in many developing countries, financial, technological and capacity-building support is critical. Developed country Parties should continue to seek to scale up their level of support to developing country Parties, with a concrete road map to achieve the collective mobilization goal of jointly providing USD 100 billion annually by 2020 for climate mitigation and adaptation. It is also critical to further explore ways to increase private sector financial investments. Institutions need strengthening to enable them to plan for and implement adaptation and mitigation in an effective and sustainable fashion. Institutions and stakeholder groups at all levels of government, as well as civil society, are more likely to engage in climate action when they have the necessary human, technical and financial capacity. The UNFCCC process offers a platform to scale up cooperative action. Evidence continues to prove that cooperative initiatives are important to enhance climate action as such initiatives can facilitate access to support and knowledge. The UNFCCC process, including the technical examination processes and the Non-state Actor Zone for Climate Action platform, supports the incubation and fully fledged development of cooperative action by facilitating solution oriented dialogue, knowledge-sharing and learning between cooperative initiatives and government leaders and encouraging the scaling up of existing and the establishment of new initiatives.

The Sendai Framework for Disaster Risk Reduction 2015-2030

Policy	Five Tier Plan	Key Issues
The Sendai Framework for Disaster Risk Reduction 2015-2030	Structure plan	<p>Priority 1: Understanding disaster risk.</p> <p>Priority 2: Strengthening disaster risk governance to manage disaster risk.</p> <p>Priority 3: Investing in disaster risk reduction for resilience.</p> <p>Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.</p>

	Urban Area Plan	Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.
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Priorities of the 2017 G20 Summit (Agenda3)

Policy	Five Tier Plan	Key Issues
Quito Implementation Plan for the New Urban Agenda	Structure plan	<p>The United Nations resolves to implement the New Urban Agenda as a key instrument for national, sub-national and local governments and all relevant stakeholders to achieve sustainable urban development.</p> <p>1. The Transformative Commitments for Sustainable Urban Development</p> <p>The transformative commitments for sustainable urban development are grounded in social, economic and environmental dimensions, which are seen as integrated and indivisible.</p> <p><i>a. Sustainable Urban Development for Social Inclusion and Ending Poverty</i> Land tenure, the value of public space, and the sustainable leverage of natural and cultural heritage are among the issues that this section elaborates.</p> <p><i>b. Sustainable and Inclusive Urban Prosperity and Opportunities for All</i> The profound impact of housing on economic transformation, access to knowledge, skills, and education, and the promotion of investments, innovations and entrepreneurship are part of the scope of concern.</p> <p><i>c. Environmentally Sustainable and Resilient Urban Development</i> Climate change, unsustainable consumption, slum upgrading, energy efficiency and the social and ecological function of land are some of the topics of concern.</p> <p>2. Effective Implementation</p> <p>An enabling policy framework is required at the national, sub-national and local levels. Integrated and complimentary processes and actors, such as participatory planning, regional development banks, coordination of urban and rural development strategies, and international cooperation will assist the implementation of the New Urban Agenda, along with system-wide coordination of the UN.</p> <p><i>a. Building the Urban Governance Structure: Establishing a Supportive Framework</i> Inclusive, implementable and participatory policies will ensure effective implementation of the New Urban Framework. Local and municipal governments are a particular focus, with support for capacity, reliable financing mechanisms and management structures. The cooperation of all levels of government will be fostered.</p> <p><i>b. Planning and Managing Urban Spatial Development</i> Integrated planning will aim to balance short-term needs with long-term desired outcomes. Among the issues addressed are food security, the interrelationships of cities and territories, mixed social and economic uses, and quality public spaces. Road safety, affordable, accessible and sustainable urban mobility, water management and climate risk are also specific focus points. Culture will be included as a priority component of urban plans and strategies.</p>

Policy	Five Tier Plan	Key Issues
		<p>c. Means of Implementation</p> <p>The complexity of the agenda requires many actors and a variety of means, along with an enabling environment. Capacity development, cooperation, mobilization of financial resources, alongside political and legal frameworks, are all part of the core means. The New Urban Agenda advocates building on the legacy of Habitat III and the lessons learnt from its preparatory process.</p> <p>3. Follow-up and Review</p> <p>This will be done to track progress, assess impact, ensure effective and timely implementation, accountability and transparency. The United Nations Human Settlements Programme (UN-Habitat) is recognized as a focal point for sustainable urbanization. Quantitative and qualitative analysis, regular assessments, along with meetings and conferences, will support follow-up and review of the New Urban Agenda. The New Urban Agenda's and the 2030 Agenda for Sustainable Development's follow-up and review must have effective linkages to ensure coherence in their implementation.</p>

Sustainable Development Goals

Policy	Five Tier Plan	Key Issues
Sustainable Development Goals	Sub Regional Plan	<ul style="list-style-type: none"> Goal 1. End poverty in all its forms everywhere Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture Goal 3. Ensure healthy lives and promote well being for all at all ages Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all Goal 5. Achieve gender equality and empower all women and girls Goal 6. Ensure availability and sustainable management of water and sanitation for all Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
	Structure plan	<ul style="list-style-type: none"> Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation Goal 12. Ensure sustainable consumption and production patterns Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
	Urban Area Plan	<ul style="list-style-type: none"> Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
	Rural Area Plan	<ul style="list-style-type: none"> Goal 10. Reduce inequality within and among countries Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
	Action Area Plan	<ul style="list-style-type: none"> Goal 13. Take urgent action to combat climate change and its impacts

ANNEX-B

Agriculture Sector

Policy	Key Issues
National Agriculture Policy 1999	<ul style="list-style-type: none"> To grow more profitable crops as an alternative to only rice-rice cropping pattern. reduce excessive dependence on any single crop Salt tolerant crop varieties will be developed Special development programmes will be taken with a view to increasing production of potential crops suitable for the coastal areas and the hill tracts. Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops preserve existing bio-diversity of different crops encourage farmers in providing supplementary irrigation during drought with a view to increasing cropping intensity and yield take supportive programmes for inter-cropping in a field instead of single cropping Modern cultivation practices will be followed
Climate Change Strategy 2009	<ul style="list-style-type: none"> Develop climate change resilient cropping systems (e.g. agricultural research to develop crop varieties, which are tolerant of flooding, drought and salinity irrigation schemes to enable farmers to grow a dry season rice crop in areas subject to heavy monsoon flooding and in other parts of the country, including drought-prone areas agricultural research programmes to develop saline, drought and flood-adapted high yielding varieties of rice and other crops
National Plan for Disaster Management 2008-2015	<ul style="list-style-type: none"> Develop and establish policy and planning frameworks to incorporate all hazard risk reduction perspectives into Agriculture, livestock with the support agency Ministry of Agriculture, Agriculture cannot be practiced without irrigation so irrigation is must.
Population Policy 2004	<ul style="list-style-type: none"> discourage housing in the villages and cities by destroying agricultural lands;
Safe Water Supply and Sanitation 1998	<ul style="list-style-type: none"> To ensure the use of waste for the production of organic fertilizer (compost) in the rural areas.
National Water policy 1999	<ul style="list-style-type: none"> Strengthen crop diversification programmes Encourage and promote continued development of minor Irrigation
Industrial Policy 2005	<ul style="list-style-type: none"> To establish agro-based industries as well as to raise agricultural production. Prioritize the expansion and development of agro-based and agricultural processing industries Take steps to preserve and market agro-based goods hygienically by processing in frozen, pasteurized, canned or dry form
National Urban Sector Policy 2011	<ul style="list-style-type: none"> Protect productive agricultural lands by limiting the intrusion of non-agricultural uses
Seventh Five Year Plan	<ul style="list-style-type: none"> develop technologies of crops develop the capacity of agriculture to effectively respond to market signals New technology generation for vulnerable areas e.g. stress tolerant varieties and management practices, quality improvement of major crop varieties Promote adoption of modern agricultural practices in dry land, wetland, hills.
National Environment Policy 1992	<ul style="list-style-type: none"> Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects; and Ensuring sustainable use of natural resources.

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
National Agriculture Policy 1999	<ul style="list-style-type: none"> Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis. Activities of the government, private organization and NGOs involved in agricultural development will be brought under a well-organized monitoring system and will be coordinated from the national to field level. The Ministry of Agriculture will have a contingency plan for taking up emergency agricultural rehabilitation programmes (ARP) to recover from the crop losses due to any natural disaster at both the farmers' and national levels.
Climate Change Strategy 2009	<ul style="list-style-type: none"> Implement drinking water and sanitation programmes in areas at risk from climate change (e.g., coastal areas, flood-and drought-prone areas) to ensure food security, social protection and health for the poorest and most vulnerable in society, including women and children agricultural research programmes to develop saline, drought and flood-adapted high yielding varieties of rice and other crops, based on the traditional varieties evolved over centuries by Bangladeshi farmers comprehensive disaster management projects, involving community-based programmes and early warning systems for floods and cyclones
Disaster Management Act 2012	<ul style="list-style-type: none"> National Disaster Management Council should provide necessary guidelines to all concern about law, policy and plan implementation on disaster management The government may establish a 'National Disaster Management Research and Training Institute' to take relevant programs including research on the effects of disaster and climate change and increasing capability of disaster management method. Formulation of National Disaster Management Policy and National and Local Disaster Management Plan and also National Disaster Response Coordination Group, National, local, level disaster management committee
National Plan for Disaster Management 2008-2015	<ul style="list-style-type: none"> Restoration of emergency services, such as water supply, gas supply, power, telecommunication, road links To ensure socioeconomic development of the country through food security, relief and disaster management programmes. <p>Health</p> <ul style="list-style-type: none"> Improve maternal health Combat HIV/AIDS, malaria and other diseases Reduce child mortality Maintaining and strengthening the National Food Security System <p>Education</p> <ul style="list-style-type: none"> Achieve universal primary education Promote gender equality and empower women <p>Environment</p> <ul style="list-style-type: none"> Ensure environmental sustainability launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries <p>Economy</p> <ul style="list-style-type: none"> Develop a global partnership for development to take measures for prevention and mitigation of disasters by government agencies, NGOs, CBOs and the private sector within the district, capacity building and preparedness measures to be taken by government agencies, NGOs, CBOs and the private sector Make provision in the national budget for funding of activities related to Disaster Reduction

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	<ul style="list-style-type: none"> • Ensure an effective system within Government to link and co-ordinate the processes of planning and the management of sustainable development, environmental management and disaster reduction. • The government in coordination with NGOs and International Organizations has done a commendable job in responding to the cyclone emergency situation and assisting the affected population • Non-structural mitigation measures such as community disaster preparedness, training advocacy and public awareness must be given a high priority
Population Policy 2004	<ul style="list-style-type: none"> • Health • Improve maternal health with emphasis on reduction of maternal mortality • Reduce RTIs/STIs and prevent spread of HIV/AIDS • Establishment of Union level Health and Family Welfare Centers, wherever needed and appointment of a doctor in these centers • Ensure and support gender equity and empower women • provide food and social security and shelter for the disadvantaged including the elderly, destitute, physically and mentally retarded persons; • Ensure availability, access to safe and arsenic free water. • Strengthen training activities in order to develop skilled manpower like nurses, paramedics, field workers and skilled birth attendants so that maternal and child mortality can be reduced • Environment • Support measures for environmental sustainability with emphasis on access to safe drinking water.; • Education • Provide formal and non-formal education to both in-school and out-of-school adolescent boys and girls; • Provide adolescent RH and life skills education as well as counseling for parents, teachers and service providers • Impart education and skill training to the young men and women to become competent and skillful • Social Consciousness • Ensure Early Childhood Development (ECD) program • Eliminate all forms of violence and sexual abuse, including trafficking of women and children; • Promote male participation in household responsibilities; • Create equal opportunity for both boys and girls in education, nutrition and health services. • Ensuring rural employment opportunities in agriculture and agro-based industries. • Ministry of Health and Family Welfare shall be the lead Ministry for overseeing family planning, maternal and child health and reproductive health care services. • Ministry of Primary and Mass Education and Ministry of Education may ensure improved quality and completion of primary and secondary education levels. • Ministry of Agriculture may make useful efforts to motivate farm population on small family norm through its extension workers. • Ministry of Information will be encouraged • Ministry of Local Government, Rural Development and Co-operatives strengthen institutional capacity and resources of the women's development related institutions. • Engage NGO in awareness creation activities regarding the benefits of delayed marriage and

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	<p>delayed birth, health and nutrition issues as well as of STIs, RTIs, HIV/AIDS;</p> <ul style="list-style-type: none"> • Ensure coordination and intimate linkages of the NGOs and private sector with the Ministry of Health and Family Welfare and other relevant ministries and institutions and avoid duality
Safe Water Supply and Sanitation 1998	<ul style="list-style-type: none"> ❖ Health <ul style="list-style-type: none"> • To ensure that all people have access to safe water and sanitation services at an affordable cost. • Removal of arsenic from drinking water and supply of arsenic free water from alternate sources in arsenic affected areas. ❖ Social Consequences <ul style="list-style-type: none"> • Bringing about behavioural changes regarding use of water and sanitation; • Promotion of various technology options will be sustainable for both water supply and sanitation keeping the needs of specific areas and socio-economic groups of people. ❖ Environment Consequences <ul style="list-style-type: none"> • To preserve environmental quality and to mitigate arsenic contamination research and field surveys are being carried out. • Use of organic waste material for compost and bio-gas will be promoted • The City Corporations or Paurasabhas shall be responsible for solid waste collection, disposal and their management • The government is encouraging and supporting the involvement of other partners, such as non-governmental organizations (NGOs) market- oriented business organizations and similar private organizations in water and sanitation development. • Private sector and NGO investment will be encouraged in manufacturing, sale and distribution of different types of tube wells, sanitary latrines etc • During natural disaster WASAs and relevant agencies shall take appropriate measures for providing safe drinking water • Building capacity in local governments and communities to deal more effectively with problems relating to water supply and sanitation; • Water Supply, Sewerage Authorities (WASAs) shall be responsible for sustainable water supply in the metropolitan areas where WASAs exist. • Drainage system in the cities and municipalities will be integrated with the overall drainage system with the coordination of Ministry of Water Resources. <p>Behavioral development and changes in user communities shall be brought about through social mobilization and hygiene education in coordination with the Ministries of Health, Education, Social Welfare, Information, Women & Children Affairs and DPHE, NGOs, CBOs, local government bodies and other related agencies</p>
National Water policy 1999	<ul style="list-style-type: none"> ❖ Social Consequences <ul style="list-style-type: none"> • Recreational activities at or around water bodies will be allowed ❖ Environment Consequences <ul style="list-style-type: none"> • Natural water bodies such as heels, haors, and baors will be preserved for maintaining the aquatic environment and facilitating drainage • Mandate local governments to create awareness among the people in checking water pollution and wastage • Mandate relevant public water and sewerage institutions to provide necessary drainage and sanitation, including treatment of domestic wastewater and sewage • Empower, and hold responsible, municipalities and urban water and sewerage institutions to regulate the use of water for preventing wastage and pollution by human action
	<ul style="list-style-type: none"> • Alleviation of poverty through creation of job opportunities and finding options for

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	<p>diversified livelihoods would be the major principles of all economic activities.</p> <ul style="list-style-type: none"> • Economic opportunities based on local resources will be explored to enhance income of the people;
Industrial Policy 2005	<ul style="list-style-type: none"> • Social Consequences • Provide special facilities as well as infrastructural support to Cottage and Small and Medium Enterprises (SME) • establish more backward linkage industries in order to accelerate the export of high value-added garments • SMEs will be established on a greater scale across the country in order to bring about poverty alleviation, unemployment reduction and creating more employment opportunity so that national economic growth can be attained • Provide financial, technical, technological and infrastructural facilities in order to inspire setting up and developing agro-based industries. • For setting up industries, The Board of Investment will provide one-stop service in the following fields so that investors get infrastructure facilities quickly when setting up industries: <ul style="list-style-type: none"> • (a) Electric and gas connections; • (b) Water and sewerage connections; • (c) Telecommunications facilities; • (d) Customs clearance of imported machineries, spare parts and raw materials; • (e) Clearance from environmental agencies; and • (f) Other necessary facilities and services for speedy setting up and running of industries
National Urban Sector Policy 2011	<ul style="list-style-type: none"> ❖ Social Consequences <ul style="list-style-type: none"> • assure health, safety and security of all citizens through multifaceted initiatives to reduce crime and violence; • ensure social justice and inclusion by measures designed to increase the security of poor people through their access to varied livelihood opportunities, secure tenure and basic affordable services • Strengthen local government bodies by increasing efficiency through adequate and trained manpower. • Each Paurashava should have a Paurashava Development Committee and there should be a Ward Committee in each ward of a City Corporation.
Seventh Five Year Plan	<ul style="list-style-type: none"> ❖ Education <ul style="list-style-type: none"> ➤ The religious education at primary level will be well organized & systemic. Islamic ideals, values culture will be disseminated and flourished among the students at primary schools. ➤ Achieving 100 percent net enrolment rate for primary and secondary education ❖ Health <ul style="list-style-type: none"> ➤ Creating Medicare facilities by creating a permanent infrastructural facilities for each Centre. ➤ Providing free Medicare service will be given to the poor and disadvantaged people. ➤ Safe drinking water for all and Proportion of urban population with access to sanitary latrines to be increased to 100 percent. ❖ Culture <ul style="list-style-type: none"> ➤ Preserve and present national history, culture and heritage ➤ Preserve and promote language arts and culture of small ethnic group communities within the framework of national unity; ➤ Access to education, language, and culture: Recreation

PRA, Socio-Economic and Formal-Informal Economic Sector

Policy	Key Issues
	<ul style="list-style-type: none"> ➤ Development and establishment of five new initiatives such as eco-parks, recreational garden along river or bay and botanical gardens, safari park, national park etc Such activities will be continued under this Seventh Five Year Plan. ➤ Regional botanical garden will also be setup for uniform biodiversity conservation in the country. <p>Water and Sanitation</p> <ul style="list-style-type: none"> <input type="checkbox"/> Safe drinking water for all <input type="checkbox"/> Proportion of urban population with access to sanitary latrines to be increased to 100 percent <input type="checkbox"/> Proportion of rural population with access to sanitary latrines to be raised to 90 percent
National Environment Policy 1992	<p>Key elements of the policy statement are:</p> <p>Maintain ecological balance and overall physical development progress of the country through protection and development of different sectors. Protection from natural disaster is one of them; Identification and regulation all type of activities which pollutes and degrade the environment;</p>
National Tourism Policy 1992	<p>In the Tourism Policy, status of tourism industry in Bangladesh was described, aims and objectives were defined and implementation strategies were suggested. The National Tourism Policy of Bangladesh was declared in 1992. Its main objectives are:</p> <ul style="list-style-type: none"> • To create interest in tourism among the people. • To preserve, protect, develop and maintain tourism resources. • To take steps for poverty-alleviation through creating employment. • To build a positive image of the country abroad. • To open up a recognized sector for private capital investment. • To arrange entertainment and recreation
Housing Policy 2008 (Draft)	<ul style="list-style-type: none"> • ভাসমান ও সাময়িক ব্যবহারকারীদের জন্য পানীয় জল ও পয়ঃনিষ্কাশনের ব্যবস্থা সম্বলিত রাত্রিকালীন আশ্রয় এবং গন-শৌচাগার নির্মাণ করা হবে। • সরকারী, আধা-সরকারী এবং বেসরকারী সকল প্রকার আবাসন প্রকল্প পানি, বিদ্যুত, পয়ঃ, গ্যাস, বর্জ্যনিষ্কাশন, ড্রেনেজ ইত্যাদি সেবামূলক কার্যক্রমের জন্য পর্যাপ্ত জায়গা রাখা হবে। • পরিবারহীন বৃদ্ধদের গৃহায়নে শহর ও গ্রামাঞ্চলে প্রয়োজনীয় সংখ্যক ‘বৃদ্ধনিবাস’ নির্মাণ করা হবে। • পল্লী অঞ্চলের আবাসন ব্যবস্থার লক্ষ্যে পরিকল্পনা প্রণয়ন, অর্থের যোগান নিশ্চিতকরণ, বাস্তবায়ন, তদারক ও পর্যবেক্ষণ সংক্রান্ত সার্বিক দায়িত্ব পালনের লক্ষ্যে স্থানীয় পর্যায়ের সংগঠনগুলোকে জাতীয় গৃহায়ন কতৃপক্ষের সহায়তায় শক্তিশালী করাসহ উপযুক্ত প্রাথমিক কাঠামো, জনবল ও সম্পদ সৃষ্টি করা হবে। • লাগসই ও সহজবোধ্য প্রযুক্তি, পরিবেশবান্ধব সামগ্রী উৎপাদন, বাজারজাতকরণ ও ব্যবহার, স্বাস্থ্যসম্মত গৃহায়ন ও পরিবেশ উন্নয়ন ইত্যাদি বিষয়ে এনজিও, এলাকাভিত্তিক বেসরকারী সংস্থা, সেবা সংস্থাসমূহের কর্মচারী ও মাঠকর্মী এবং ব্যক্তির জ্ঞান ও সামর্থ্য বৃদ্ধির জন্য প্রয়োজনীয় তথ্যপুস্তিকা, প্রচার এবং কর্মশালার আয়োজন করা হবে। • সকল গ্রাম আবাসিক ভূমি ও আবাদী ভূমি চিহ্নিত করে সে অনুসারে বিভিন্ন অবকাঠামো গড়ে তোলা হবে। এক্ষেত্রে বেসরকারী উদ্যোক্তাদের অংশগ্রহণকে উৎসাহিত করা হবে।
Forest Policy 1994	<ul style="list-style-type: none"> • Buffer zones attached to protected areas may be allocated for tree farming and agroforestry on a long term lease basis • Industries located in rural areas, particularly those cottage and small scale labour intensive industries which contribute to the local economy and process wood and other forest based raw materials, will be promoted by the State • To enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals; • To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources

Geology Sector

Policy	Key Issues
Climate Change Strategy 2009	<ul style="list-style-type: none"> Afforestation and reforestation can protect land from soil erosion and landslides, particularly in hilly areas.
National Plan for Disaster Management 2008-2015	<ul style="list-style-type: none"> Incorporate Tsunami Risks in land use planning in Coastal Zone Development Plans developed by Ministry of Water Resources Ministry of Water Resources, Disaster Management Bureau, DRR Prepare an Institutional Resource Map of Coastal Zone by Disaster Management Bureau and CDMP
Private Residential Land Development Rule 2004	<ul style="list-style-type: none"> ভূতত্ত্ব জরিপঅধিদপ্তর হইতে প্রকল্প এলাকার বন্যা নিয়ন্ত্রন ও পানিনিষ্কাশন সুবিধা প্রদান সংক্রান্ত ছাড়পত্র সংগ্রহ।

Transport Sector

Policy	Key Issues
Population Policy 2004	<ul style="list-style-type: none"> Roads and communication systems should be linked with the growth centers disallow air polluting vehicles Reduce vehicular pollution by implementing appropriate laws
Coastal Zone Policy	<ul style="list-style-type: none"> development of communication network with islands for passengers and freight traffic; An integrated network of communication including highways, major roads, rural roads, railways and waterways will be developed development of two existing seaports and installation of a communication network between main river ports, ghat and inland container ports and depots; Initiatives of establishing deep sea port; development of communication network with islands for passengers and freight traffic; ensuring shipping security for passengers and freight;

Hydrology Sector

Policy	Key Issues
Population Policy 2004	<ul style="list-style-type: none"> Support the programs for re-excavation of canals and ponds in rural area and to undertake measures against soil and river erosion
National Water policy 1999	<ul style="list-style-type: none"> replacement of open drains and construction of sewers Dredging and other suitable measures would be undertaken, Develop and disseminate appropriate technologies for conjunctive use of rainwater ground water and surface water Develop and promote water management techniques to prevent wastage and generate efficiency of water and energy use Investigate thoroughly important flood control and management issues, such as the efficacy of coastal polders, for guiding future policy on structural Interventions Haors that naturally dry up during the winter will be developed for dry season agriculture

Hydrology Sector	
Policy	Key Issues
National Urban Sector Policy 2011	<ul style="list-style-type: none"> • protect, preserve and enhance the urban environment, particularly water bodies; • Conserve natural water bodies.
National Fisheries Policy 1998	<ul style="list-style-type: none"> • Proper arrangement will be initiated to develop water control and drainage system for sustainable fish production in the baor. • Arrangements will be made to conserve the ecological balance within the polders and embankments in which a suitable environment shall be created for rice and shrimp production. • To ensure high quality of exportable fish and shrimp products, laboratory facilities for Quality Control will be expanded and modernised.
Private Residential Land Development Rule 2004	<ul style="list-style-type: none"> • প্রকল্প এলাকায় ভূমির উচ্চতা বন্যার পানি -প্রবাহ সীমার উপর (Highest Flood Level) এর উপরে রাখার জন্য প্রয়োজনীয় ব্যবস্থা গ্রহণ; • প্রকল্প এলাকায় কোন খাল, বিল, নদী, নালা বা অন্য কোন জলাশয় থাকিলে উহার পানিপ্রবাহে বিঘ্নসৃষ্টি না করিয়া প্রবাহিত পানি যাহাতে প্রকল্পের শেষপ্রাপ্ত হইয়া ক্ষেত্রমত খাল, বিল, নদী, নালা বা জলাধার পর্যন্ত প্রবাহিত হইতে পারে, উহা নিশ্চিতকরণ; • বাংলাদেশ পানি উন্নয়ন বোর্ড হইতে প্রকল্প এলাকার বন্যা নিয়ন্ত্রণ ও পানিনিষ্কাশন সুবিধা প্রদান সংক্রান্ত ছাড়পত্র সংগ্রহ

Physical, Landuse and Topographic Features Sector

Policy	Key Issues
National Agriculture Policy 1999	<ul style="list-style-type: none"> • Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops. • Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.
Climate Change Strategy 2009	<ul style="list-style-type: none"> • Flood management embankments, coastal polders and cyclone shelters have been built
National Plan for Disaster Management 2008-2015	<ul style="list-style-type: none"> • restoration of damaged public infrastructure, resumption of educational institutions, • restoration of livelihood, rehabilitation of affected people, especially the disabled, and elderly women and children • Map out critical vulnerable infrastructure and communities within the high risk zones
Building Construction Rules 1996	<ul style="list-style-type: none"> • Land use planning Rules- It is based on land use policies including Local Plans, such as residential density, road standard, provision of infrastructure and services. • Control of public estates-Different government agencies have developed some housing, commercial and industrial estates in different urban areas and they have leased them out. • Non-compliance of development control by some government and semi-government agencies- According to Building Construction Act, 1952 (amended in 1996, followed by Paurashava) each public building needs approval from the concerned development agencies. • Control of private housing estates • Control of informal Development • Density Control- At present, Paurashava follows Building Construction Rule, 1952 (amended in 1996) which restricts the height of Building in respect of adjacent road. • Taxation • Payment of Betterment fee •
National Water policy 1999	<ul style="list-style-type: none"> • replacement of open drains and • construction of sewers to the interest of public health

Physical, Landuse and Topographic Features Sector

Policy	Key Issues																		
Industrial Policy 2005	<ul style="list-style-type: none"> By creating special economic zones, cluster villages can be established quickly for running industrial enterprises. Provide structural and other facilities to establish and develop compact industrial areas. Develop planned industrial areas by establishing Special Economic Zones in areas with vast economic potentials, and utilizing local resources. 																		
Burning Bricks Act 1989	<ul style="list-style-type: none"> No person may burn bricks without a licence. No person may use firewood for burning bricks. No suit shall be filed in any court against offences under this Act without the written accusation of the chairman of the Upazila Parishad 																		
National Urban Sector Policy 2011	<ul style="list-style-type: none"> Allocating khas land/acquired land for housing the poor Protect hills in urban areas, specially Chittagong, Sylhet, Khagrachari, Cox's Bazar etc.; Protect peri-urban areas from unplanned development. Manage floodplains by controlling uses of land within hydrologically defined areas subject to floods of a designated frequency; Promote hierarchical structure of educational institutions, such as from the kindergartens to universities, at appropriate locations with catchment areas/zones in urban areas. Preserve open space by designating land areas for a variety of purposes such as recreation, future use, green belt etc 																		
Coastal Zone Policy 2005	<ul style="list-style-type: none"> Enforcement of existing legal coverage will be facilitated with adequate logistics and support, to relevant agencies. 																		
National Fisheries Policy 1998	<ul style="list-style-type: none"> To increase production and to conserve biodiversity, part or the whole water bodies/jalmohals shall be converted into fish sanctuaries Emphasis will be given for extension of rice-cum-fish culture. Biodiversity will be maintained in all natural water bodies and in marine environment. Chemicals harmful to the environment will not be used in fish and shrimp culture 																		
Seventh Five Year Plan	<ul style="list-style-type: none"> Coastal pollution & marine resource management Crop Zoning and Land Use Planning: 																		
Private Residential Land Development Rule 2004	<p>Building Height According to the Building Construction Rules (1996), the maximum height of a building will not be more than the summation of front side road width and the mandatory open space between road and building site. According to the law, the following decisions can be summarized</p> <table border="1"> <thead> <tr> <th>Distance between Front side road and space of the building</th><th>Building's Highest Height (meter)</th></tr> </thead> <tbody> <tr> <td>7. 60-10.59 m</td><td>9.5 m</td></tr> <tr> <td>10. 60-13.59m</td><td>12. 50m</td></tr> <tr> <td>13. 60-16.59m</td><td>15.50m</td></tr> </tbody> </table> <p>According to the rules, the building's height doesn't less than the above values, if the width of adjacent road of the site tends to the following conditions, the estimated building's height will be the correspondent value according to the following table.</p> <table border="1"> <thead> <tr> <th>Width of the Road of Adjacent Site</th><th>Building's Highest Height (meter)</th></tr> </thead> <tbody> <tr> <td>4.55-7.59m</td><td>18.50m</td></tr> <tr> <td>7.60-10.66m</td><td>27. 50m</td></tr> <tr> <td>10. 67-15.24m</td><td>42.50m</td></tr> <tr> <td>15.25-22.99m</td><td>60.50m</td></tr> </tbody> </table> <p>Here is also one condition, if the width of the Road of the adjacent Site is 23.50 or more then there is no limit of the height of the building.</p>	Distance between Front side road and space of the building	Building's Highest Height (meter)	7. 60-10.59 m	9.5 m	10. 60-13.59m	12. 50m	13. 60-16.59m	15.50m	Width of the Road of Adjacent Site	Building's Highest Height (meter)	4.55-7.59m	18.50m	7.60-10.66m	27. 50m	10. 67-15.24m	42.50m	15.25-22.99m	60.50m
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Physical, Landuse and Topographic Features Sector

Policy	Key Issues
The Building Construction Act, 1952	<p>Density Control: Section 12(1) of Building Construction Rules, 1996 sets a formula for building height determination based on the width of the front road. This rule imposes a limit on the building height as long as the front road is less than 75 ft. (22.87 meter). Indirectly this limits the number of family or the size of population in a building. Setback rule of the building and approval system of the building plan also prescribed in the Building Construction Rules.</p> <p>Raging of Hill: Section 3(3) of the Act presents regulation on the raging of hill. In the Act it is prescribed that anybody is not authorized for raging of hill without approval from the concerned authority. Development Authority and Deputy Commissioner is the concerned authority.</p>

ANNEX-C
Population Projection

Table 4.3: Projected Population in Urban Areas (Bwabanigonj Paurashava)

Bwabanigonj Paurashava	Year s	Projected Population According to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	64 +	
Ward No-01	2011 (Base)	136	143	171	114	165	194	475	100	43	93	1634
	2018	149	156	187	125	180	212	519	109	47	102	1786
	2023	158	167	199	133	192	226	553	116	50	108	1903
	2028	169	178	212	142	205	241	590	124	53	115	2028
	2033	185	194	232	155	224	263	645	136	58	126	2217
Ward No-02	2011 (Base)	135	166	145	130	188	168	491	100	48	93	1664
	2018	148	181	159	142	206	184	537	109	52	102	1819
	2023	157	193	169	151	219	196	572	116	56	108	1938
	2028	168	206	180	161	233	209	610	124	60	115	2066
	2033	183	225	197	176	255	228	666	136	65	126	2258
Ward No-03	2011 (Base)	163	205	198	141	162	199	579	130	71	89	1937
	2018	178	224	216	154	177	218	633	142	78	97	2117
	2023	190	239	231	164	189	232	674	151	83	104	2256
	2028	202	254	246	175	201	247	719	161	88	110	2405
	2033	221	278	269	191	220	270	786	176	96	121	2628
Ward No-04	2011 (Base)	125	170	152	183	140	178	433	101	43	82	1607
	2018	137	186	166	200	153	195	473	110	47	90	1757
	2023	146	198	177	213	163	207	504	118	50	96	1872
	2028	155	211	189	227	174	221	538	125	53	102	1995
	2033	170	231	206	248	190	242	588	137	58	111	2181
Ward No-05	2011 (Base)	195	192	171	212	213	207	675	142	47	83	2137
	2018	213	210	187	232	233	226	738	155	51	91	2336
	2023	227	224	199	247	248	241	786	165	55	97	2489
	2028	242	238	212	263	264	257	838	176	58	103	2653
	2033	265	261	232	288	289	281	916	193	64	113	2900
Ward No-06	2011 (Base)	250	305	315	268	247	329	902	143	73	79	2911
	2018	273	333	344	293	270	360	986	156	80	86	3182
	2023	291	355	367	312	288	383	1051	167	85	92	3391
	2028	310	379	391	333	307	408	1120	178	91	98	3614
	2033	339	414	427	364	335	446	1224	194	99	107	3950
Ward No-07	2011 (Base)	173	202	260	183	193	243	630	128	65	91	2168

)											
	2018	189	221	284	200	211	266	689	140	71	99	2370
	2023	202	235	303	213	225	283	734	149	76	106	2525
	2028	215	251	323	227	240	302	782	159	81	113	2691
	2033	235	274	353	248	262	330	855	174	88	123	2942
Ward No-08	2011 (Base)	126	150	161	125	179	177	552	124	55	104	1753
	2018	138	164	176	137	196	193	603	136	60	114	1916
	2023	147	175	188	146	209	206	643	144	64	121	2042
	2028	156	186	200	155	222	220	685	154	68	129	2176
	2033	171	204	218	170	243	240	749	168	75	141	2379
Ward No-09	2011 (Base)	153	208	230	167	191	236	617	167	70	105	2144
	2018	167	227	251	183	209	258	674	183	77	115	2344
	2023	178	242	268	195	222	275	719	195	82	122	2498
	2028	190	258	286	207	237	293	766	207	87	130	2662
	2033	208	282	312	227	259	320	837	227	95	142	2909

Source: Projected by Planning Team Based on BBS, 2011.

Table 4.4: Projected Population in Urban Areas (Taherpaurashava)

Taherpaurashava	Years	Projected Population According to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	64 +	
Ward No-01	2011 (Base)	97	136	172	174	160	148	476	115	35	84	1597
	2018	106	149	188	190	175	162	520	126	38	92	1746
	2023	113	158	200	203	186	172	554	134	41	98	1860
	2028	120	169	214	216	199	184	591	143	43	104	1982
	2033	132	185	233	236	217	201	646	156	47	114	2167
Ward No-02	2011 (Base)	193	265	307	270	217	275	770	185	53	111	2646
	2018	211	290	336	295	237	301	842	202	58	121	2892
	2023	225	309	358	315	253	320	897	216	62	129	3082
	2028	240	329	381	335	269	341	956	230	66	138	3285
	2033	262	360	417	366	294	373	1045	251	72	151	3591
Ward No-03	2011 (Base)	123	144	163	166	156	177	532	122	50	82	1715
	2018	134	157	178	181	171	193	582	133	55	90	1875
	2023	143	168	190	193	182	206	620	142	58	96	1998
	2028	153	179	202	206	194	220	660	151	62	102	2129
	2033	167	195	221	225	212	240	722	166	68	111	2327
Ward No-04	2011 (Base)	131	172	190	172	166	175	494	103	54	95	1752
	2018	143	188	208	188	181	191	540	113	59	104	1915
	2023	153	200	221	200	193	204	575	120	63	111	2041
	2028	163	214	236	214	206	217	613	128	67	118	2175
	2033	178	233	258	233	225	237	670	140	73	129	2377

Ward No-05	2011 (Base)	141	197	220	146	180	180	460	115	40	126	1805
	2018	154	215	240	160	197	197	503	126	44	138	1973
	2023	164	229	256	170	210	210	536	134	47	147	2103
	2028	175	245	273	181	223	223	571	143	50	156	2241
	2033	191	267	299	198	244	244	624	156	54	171	2449
Ward No-06	2011 (Base)	145	182	218	135	160	207	499	108	52	67	1773
	2018	159	199	238	148	175	226	545	118	57	73	1938
	2023	169	212	254	157	186	241	581	126	61	78	2065
	2028	180	226	271	168	199	257	619	134	65	83	2201
	2033	197	247	296	183	217	281	677	147	71	91	2406
Ward No-07	2011 (Base)	154	242	259	166	199	292	690	183	59	130	2374
	2018	168	265	283	181	218	319	754	200	64	142	2595
	2023	179	282	302	193	232	340	804	213	69	151	2765
	2028	191	300	322	206	247	362	857	227	73	161	2947
	2033	209	328	351	225	270	396	936	248	80	176	3221
Ward No-08	2011 (Base)	185	255	270	180	247	272	774	151	65	122	2521
	2018	202	279	295	197	270	297	846	165	71	133	2756
	2023	216	297	315	210	288	317	902	176	76	142	2937
	2028	230	317	335	223	307	338	961	187	81	151	3130
	2033	251	346	366	244	335	369	1050	205	88	166	3421
Ward No-09	2011 (Base)	129	165	160	157	165	188	545	118	47	87	1761
	2018	141	180	175	172	180	206	596	129	51	95	1925
	2023	150	192	186	183	192	219	635	137	55	101	2051
	2028	160	205	199	195	205	233	677	146	58	108	2186
	2033	175	224	217	213	224	255	740	160	64	118	2390

Source: Projected by Planning Team Based on BBS, 2011.

Table 4.5: Projected Population in Rural Areas

Bagmara Unions	Years	Projected Population According to the Age Group										Total
		0-4	5-9	10-14	15-19	20-24	25-29	30-49	50-59	60-64	64+	
Auch Para Union	2011 (Base)	1973	2771	2717	2024	2481	2825	8085	1731	747	1331	26685
	2018			2970	2212	2712	3088	8838	1892	817		29170
		2157	3029								1455	
	2023			3165	2358	2890	3291	9418	2016	870		31085
		2298	3228								1550	
	2028			3373	2513	3080	3507	10037	2149	927		33126
Bara Bihanali Union	2011 (Base)	1008	1309	1294	935	1018	1213	3821	880	377	716	12571
	2018			1414	1022	1113	1326	4177	962	412	783	13742
		1102	1431									
	2023			1507	1089	1186	1413	4451	1025	439	834	14644
		1174	1525									
	2028			1606	1161	1264	1506	4743	1092	468	889	15605
Bara Bihanali Union		1251	1625									
	2033			1756	1269	1381	1646	5185	1194	512	972	17058
		1368	1776									

Basu Para Union	2011 (Base)	2134	2509	2481	2239	2427	2644	8167	1943	836	1563	26943
	2018	2333	2743	2712	2447	2653	2890	8927	2124	914	1709	29452
	2023	2486	2923	2890	2608	2827	3080	9514	2263	974	1821	31386
	2028	2649	3115	3080	2779	3013	3282	10138	2412	1038	1940	33446
	2033	2896	3405	3367	3038	3293	3588	11082	2637	1134	2121	36561
Dwippur Union	2011 (Base)	809	1006	967	731	838	987	2966	700	286	562	9852
	2018	884	1100	1057	799	916	1079	3242	765	313	614	10769
	2023	942	1172	1126	852	976	1150	3455	815	333	655	11476
	2028	1004	1249	1200	907	1040	1225	3682	869	355	698	12230
	2033	1098	1365	1312	992	1137	1339	4025	950	388	763	13369
Goalkandi Union	2011 (Base)	1845	2645	2427	1651	1942	2477	7428	1723	777	1360	24275
	2018	2017	2891	2653	1805	2123	2708	8120	1883	849	1487	26535
	2023	2149	3081	2827	1923	2262	2885	8653	2007	905	1584	28278
	2028	2290	3283	3013	2050	2411	3075	9221	2139	965	1688	30134
	2033	2504	3589	3293	2240	2635	3361	10080	2338	1054	1845	32940
Gobinda Para Union	2011 (Base)	1749	2361	2247	1681	1953	2406	6699	1545	704	1362	22707
	2018	1912	2581	2456	1838	2135	2630	7323	1689	770	1489	24821
	2023	2037	2750	2618	1958	2275	2803	7804	1800	820	1587	26451
	2028	2171	2931	2789	2087	2424	2987	8316	1918	874	1691	28188
	2033	2373	3204	3049	2281	2650	3265	9090	2097	955	1848	30813
Ganipur Union	2011 (Base)	2694	3606	3645	2585	3461	4081	11120	2440	1017	1820	36469
	2018	2945	3942	3984	2826	3783	4461	12155	2667	1112	1989	39865
	2023	3138	4201	4246	3011	4032	4754	12954	2842	1185	2120	42482
	2028	3344	4476	4525	3209	4296	5066	13804	3029	1262	2259	45272
	2033	3656	4893	4946	3508	4696	5538	15089	3311	1380	2470	49487
HamirKuts ha Union	2011 (Base)	1568	2083	2083	1568	1508	1884	5986	1369	617	1151	19817
	2018	1714	2277	2277	1714	1648	2059	6543	1496	674	1258	21662
	2023	1827	2426	2426	1827	1757	2195	6973	1595	719	1341	23085
	2028	1946	2586	2586	1946	1872	2339	7431	1699	766	1429	24600
	2033	2128	2827	2827	2128	2046	2557	8123	1858	837	1562	26891
Jhikra Union	2011 (Base)	1916	2467	2159	1563	1873	2334	6409	1410	661	1234	22026
	2018	2094	2697	2360	1709	2047	2551	7006	1541	723	1349	24077

	2023	2232	2874	2515	1821	2182	2719	7466	1642	770	1437	25658
	2028	2378	3062	2680	1940	2325	2897	7956	1750	821	1532	27343
	2033	2600	3348	2930	2121	2542	3167	8697	1913	897	1674	29889
Jogi Para Union	2011 (Base)	2111	2757	2632	1763	1987	2409	7175	1763	769	1464	24830
	2018	2308	3014	2877	1927	2172	2633	7843	1927	841	1600	27142
	2023	2459	3212	3066	2054	2315	2806	8358	2054	896	1705	28924
	2028	2621	3422	3267	2189	2467	2990	8907	2189	955	1817	30823
	2033	2865	3741	3572	2392	2696	3269	9736	2392	1044	1987	33693
KachhariKalyani Para Union	2011 (Base)	645	765	735	555	630	765	2185	555	225	449	7509
	2018	705	836	803	607	689	836	2388	607	246	491	8208
	2023	751	891	856	647	734	891	2545	647	262	523	8747
	2028	801	950	912	689	782	950	2712	689	279	557	9321
	2033	875	1038	997	753	855	1038	2965	753	305	609	10189
Maria Union	2011 (Base)	1617	2046	2007	1422	1501	1948	5730	1384	623	1209	19487
	2018	1768	2237	2194	1554	1641	2129	6264	1513	681	1322	21302
	2023	1884	2383	2338	1656	1748	2269	6675	1612	726	1408	22700
	2028	2007	2540	2491	1765	1863	2418	7113	1718	773	1501	24191
	2033	2194	2776	2723	1930	2037	2643	7775	1878	845	1641	26443
Nardas Union	2011 (Base)	1582	1913	1855	1407	1660	1972	5820	1445	644	1230	19528
	2018	1729	2091	2028	1538	1815	2156	6362	1580	704	1345	21346
	2023	1843	2228	2161	1639	1934	2297	6780	1683	750	1433	22748
	2028	1964	2375	2303	1747	2061	2448	7225	1794	799	1527	24242
	2033	2147	2596	2517	1909	2253	2676	7898	1961	874	1669	26499
Sonadanga Union	2011 (Base)	731	957	817	617	747	913	2415	643	287	557	8684
	2018	799	1046	893	674	817	998	2640	703	314	609	9493
	2023	852	1115	952	719	870	1064	2813	749	334	649	10116
	2028	907	1188	1014	766	927	1133	2998	798	356	691	10780
	2033	992	1299	1109	837	1014	1239	3277	873	389	756	11784
Sreepur Union	2011 (Base)	896	1154	1177	943	1036	1248	3606	800	305	624	11789
	2018	979	1261	1287	1031	1132	1364	3942	874	333	682	12887
	2023	1044	1344	1371	1098	1207	1454	4201	932	355	727	13733
	2028	1112	1433	1461	1171	1286	1549	4476	993	379	775	14635
	2033	1216	1566	1597	1280	1406	1693	4893	1086	414	847	15997
Subhadanga Union	2011 (Base)	1840	2506	2403	2019	2454	2812	7855	1687	714	1303	25593

	2018	2011	2739	2627	2207	2683	3074	8586	1844	780	1424	27976
	2023	2143	2919	2799	2352	2859	3276	9150	1965	832	1518	29813
	2028	2284	3111	2983	2506	3046	3491	9751	2094	886	1618	31770
	2033	2497	3401	3261	2740	3330	3816	10659	2289	969	1768	34729

Source: Projected by Planning Team Based on BBS, 2011.

ANNEX-D
Permitted Landuse

Major Land use Category	Sub-Land use Category	Sub-Land use Category
Residential	Residential Area	Planned Residential Area
		Govt. Quarters
		Private Housing
		Rest/Guest/Circuit House
		Banglow
		Mess
		Orphanage/Old Home
	Unplanned Residential Area	Rural Homestead
Commercial	Hotel	Residential Hotel/ Hotel & Restaurant
	Wholesale Shop	Wholesale Rice Market
		Wholesale Vegetables Market
		Wholesale Fish Market
		Wholesale Grocery Goods Market
		Wholesale Fruit Market
	Retail Shop	Book Stall
		Cloths Shop
		Paper & Magazine
		Stationery Shop
		Shoe Shop
		Bag & Leather Goods
		Cosmetics
		Spectacles
		Electronic Goods
		Audio Video Cassette
		Utensils/Crockery
		Sports Goods
		Computer Goods
		Motor Car Parts
		Jewelry shops
		Show Room/Electric/Mobile
		Furniture Shop
		Department Store
		Mobile Sales Center
		Hardware Goods
		Sweet Shop
		Bakery Shop
		Gift Shop
		Press & Printing
		Grocery Shop
		Iron & Steel Shops
		Shopping Center/Mall
		Super Market
		Rubber Stamps
		Phone-Fax-Photocopy
		Cycle Store
		Studio/Colour Lab
		Drug/Pharmacy
		Pottery shop
	Show Room	Electronics
		Sports and Athletics
	Market/Bazaar	Kitchen Market
		Katcha Bazar
	Cold Storage	
	Others Godown	

Major Land use Category	Sub-Land use Category	Sub-Land use Category
Mixed Use		Residential -Commercial
		Residential - Office
		Commercial -Industrial
		Two or more use
Transportation	Road	R & H Road/LGED Road
		Primary Road/ Major Through fare
		Secondary Road (Pucca)
		Secondary Road (Kutchha)
		Local Road (Pucca)
		Local Road (Kutchha)
		Access Road (Pucca)
		Access Road (Kutchha)
		Footpath (Paved)
		Footpath (Unpaved)
		Walkway
		Embankment cum Road
	Transport Terminal	Bus terminal / Truck terminal / Tempo stand / Rickshaw stand / Railway station etc.
	Rail way	Broad gauge
		Meter gauge
	Water way	River
Industrial **	Food Manufacturing Industry	Dairy Products
		Fish & Sea Food
		Soft Drink
		Bakery Product
	Textile & Garments	Cotton Textile
		Jute Textile
		Silk & Artificial Textile
		Dyeing Industry
		Knitting Industry
		Hosiery Products
		Readymade Garments
	Chemical industry	Compressed Natural Gas
		Fertilizers
		Insecticides Industry
		Soap & Detergent
		Paints & Varnishes
	Pharmaceuticals Industry	Medicine and Drugs Company
	Paper Mills	Paper Product (all kind)
		Newspaper
	Plastic and Rubber Industry	Rubber Footwear
		Cycle & Tyre Tube
		PVC Product
		Glass Product
		Bricks Kiln/Fields
		Cement
	Metal Industry	Iron & Steel
		Bland & Knives
		Heating & Lighting
		Plumbing Equipment
		Machinery Equipment
		Wire & Cables
		Electric Lamps
		Electrical Apparatus
	Agro based Industry	Fruits & Vegetables
		Oil Products
		Edible Salt

Major Land use Category	Sub-Land use Category	Sub-Land use Category
		Molasses
		Atta, Maida and Suji (Flour Mill)
		Spice Industry
		Rice Mill
		Boiler (Rice)
	Cottage Industry	Handicrafts
		Pottery
		Carpets
		Fabrics
		Sewing/Hand loom Products
	Others Industry	Wooden Furniture
		Cane Furniture
		Steel Furniture
		Ship Building
		Lime Stone
		Sports & Athletics
Educational	Kindergarten and Nursery	
	Primary School	
	Primary & High School	
	High School	
	High School & College	
	College	
	Private University	
	Medical College	Public Medical College
		Private Medical College
	Engineering College/University	Public/ Private
	Vocational Training Institute	Public/ Private
	Computer Training Institute	Public/ Private
	Dakhil Madrasa	Public/ Private
	Alim Madrasa	Public/ Private
	Fazil Madrasa	Public/ Private
	Kamil Madrasa	Public/ Private
	Hafezia Madrasa	Public/ Private
	Tutorial/ Coaching Center	Public/ Private
	Government Training Institute	Public/ Private
	Library	Public/ Private
	Museum	Public/ Private
	Social Welfare Institution	Public/ Private
Health	Medical Facilities	Govt. Hospital / Pvt Hospital /Maternity/ Children Hospital / Clinic/ Diagnostic Center
Administrative	Government Office	Paurashava Office
		LGED Office
		Upazila Headquarter
		Union Parishad Office
		Settlement Office
		Post office
		Bank
		Public Works Department Office
		R&H Office
		DPHE Office
		Statistical Bureau Office
		PDB Office
		BWDB Office
		Other Government Office

Major Land use Category	Sub-Land use Category	Sub-Land use Category
	Non-government Office	Private Bank/ Insurance Company
		Mercantile & Cooperatives
		Private company/Different types of NGO/CBO/Club
		Construction Office
		Commercial Group Office
		Trading Corporation Office
		Law Chamber
		Doctors Chamber
		Political Party Office
		Professional's Association
		Labor Union
	Defense and security	Cantonment/BDR/Navy
		Police Station
		Ansar Camp
		Jailkhana
Recreational	Indoor Recreation	Cinema Hall
		Theater Hall
		Museum & Art gallery
		Auditorium /Community Center/Town Hall
	Other Recreation	Park/Playground/Amusement Park/Theme Park
		Stadium/ Gymnasium/Swimming Pool
Places of Worship	Religious	Tennis Complex
		Mosque
		Eidgah / Mazar/ Dargha
		Temple
		Church
		Pagoda
	Graveyard	Graveyard
		Cemetery
		Cremation place
Public Utility		TV Station
		Radio Station
		T&T Board
		Power Supply Station
		Solid Waste Dumping Site
		Water Pump House
		Overhead Tank
		Solid Waste Transfer Station
Open spaces	Reserve Open Space	Historic Sites
	Open Area	Forest Land/Urban Green
		Ecological park/sites
		River Bank
		Monument
		Shahid Minar
		Embankment
Water bodies	Pond	
	Tank	
	Beels	
	Lakes	
	River	
	Khals	
	Streams	
	Drain	

** Only Green and Orange-A, B category Industries are permitted to be developed in Industrial Zone, attached in Appendix-3.

ANNEX-E
Public Hearing Comments

1. Public Hearing Comments of Bagmara Upazila

Serial no.	Notebook Serial no.	Name	Location and Address	Comments	Actions taken by Consultants
01.	02	Abdul Jabbar	Bwabanigonj	Reconstruction of college road junction	15 feet wide college road has been proposed near Bwabanigonj in kulibari mouza.
02.	04	Shamim Osman	Chowgasi	Need water drainage system, wards no- 4 and 5 Mouza no-(72-73).	10 feet wide drainage system has been proposed in ward no 4 and 5.
03.	05	Mohammed Shakil	Mohangonj	Need passenger shade beside Mohongonj road.	14 feet wide Mohongonj to Rajshahi road has been proposed and two passenger shade has been designed in development plan.
04.	06	Md. Tushar Ali	Bwabanigonj, municipality	Need permanent burial ground at Baghmara Upzilla	3.07 acres permanent graveyard has been proposed in sain para mouza under Basu para union. Not only that, 6 others graveyard have in proposed in the whole Bagmara upazila.
05.	07	Md. Salam Uddin	Bwabanigonj, municipality	Need Park	One park has been proposed in ward no 4, Bwabanigonj Paurashava with an area of 2.03 acres.
06.	08	Md. Ibrahim	Bwabanigonj, municipality	Need Youth Development Training Centre	Youth Development Center has been proposed in ward no 6 & 7 in Bwabanigonj Paurashava under Chandpara and Suryapur Mauza with an area of 2.09 acres.
07.	09	Abdul Jalil	Uttar Ekdala	Need permanent waste dumping place	7.66 acres waste disposal site has been proposed in Srepur Union.
08.	10	Md Uzzal	Nordas	Need electricity	Electric substation has been proposed in Bwabanigonj Paurashava ward no-1 under kasaba mauza with an area of 1.9 acres.
09.	11	Md. Shakil	Dewolia	Need paka road, Deulia purbo para.	Pucca road has been proposed in Dewlia purbo Para.
10.	12	Sree Horan	Uttar Ekdala	Need cremation ground (shoshan ghat)	Shoshan ghat has been proposed in Bwabanigonj Paurashava.
11.	13	Shobuj Ali	Bwabanigonj	Need playground	Sports complex has been proposed in ward no 3, Bwabanigonj Paurashava under Paharpur Mauza with an area of 1.47 acres.

12.	14	Md. Hatem	Dangasi	Primary school is needed at Dangachi village.	Primary School has been proposed in Dhangasi village.
13.	15	Sree Dipok	Borokoa, Borobihanoli Union	Need playground	Sports complex has been proposed in Bwabanigonj Paurashava instead of Playground.
	16	Md. Monzu	Dorga maria	School playground or playground need	School playground has been proposed in final plan.
14.	17	Md Mamun	Dangasi, Bwabanigonj	Need Eidgah ground	A central Eidgah has been proposed in Bwabanigonj Paurashava.
15.	18	Md. Nayem	Bagmara	Stadium is needed	A stadium is proposed in ward no 3 in Bwabanigonj Paurashava with an area of 5.56 acres.
	19	Md. Mamunur Rashid	Dangasi	Graveyard needed	7 graveyard has been proposed in different places in Bagmara Upazila.
16.	21	Md. Jakirul	Dwogasi	Water supply station is needed	Water Treatment Plant has been proposed in Taherpur Paurashava ward no 4 in Muthrapur Mauza with an area of 1.45 acres.
17.	22	Munir Hosain	Dwogasi	Dustbin is needed	7 waste transfer station has been proposed in whole Bagmara Upazila.
18.	23	Md. Imtias Israk	Bwabanigonj	Solar panel light system	Solar panel light system has been proposed in ward no 3 under Paharpur Mauza at Bwabanigonj Paurashava with an area of 2.55 acres.
19.	25	Md. Altab	Bwabanigonj	Drainage system is needed	Drainage System has been proposed in whole Bwabanigonj Paurashava.
20.	26	Abdul Malake	Hadaet para	Drainage system is needed	Drainage System has been proposed in Bagmara Upazila.
	28	Md. Montu shake	Dwogasi	Graveyard need	7 graveyard has been proposed in different places in Bagmara Upazila.
21.	31	Md. Rajon	Bwabanigonj	Mini Stadium is needed	A stadium is proposed in ward no 3 in Bwabanigonj Paurashava with an area of 5.56 acres.
22.	32	Md. Rajon	Bwabanigonj	Park is needed	One park has been proposed in ward no 4, Bwabanigonj Paurashava with an area of 2.03 acres.
23.	33	Md. Omit	Bwabanigonj	Government library is needed	Government library has been proposed in Bwabanigonj Paurashava.
24.	40	Uzzal	Bwabanigonj	Drain, cremation ground repair and need road light, river dam.	Proposal of drain and providing road road lighting in Bwabanigonj Paurashava.
25.	42	Md. Ariful Islam	Hadaetpara	Need drainage system, road light, tube-well, burial ground.	Drainge system, road light, deep tube well, and graveyard have been proposed in final development plan of Bagmara upazila.
26.	44	Md. Razzak	Shahapara	Development of road and road light.	Proposal have been given on the development of road and road light.

27.	46	Md. Moshiur Rahaman	Bwabanigonj	Community center is needed	Proposal of a Community center has been given on Chandpara and Surjyapur Mauza in Bwabanigonj Paurashava with an area of 0.85 Acres.
28.	47	Md. Tuku	Bwabanigonj	Government hospital is needed	A hospital is proposed in Dogachi Mauza at Bwabanigonj Paurashava ward no 4 with an area covering 1.74 acres.
29.	48	Md. Jwell	Bwabanigonj	Playground, fire brigade, road light are needed.	Playground and providing street lighting have been proposed in Bwabanigonj Paurashava.
30.	52	Md. Ibrahim	Taherpur	Public toilet and road is needed.	Public Toilet is proposed in Taherpur paschim Mauza at taherpur Paurashava ward no 2, with an area of 0.09 acre.
31.	53	Md. Bablur Rahman	Kismat bihan ali poshchim para	Mosque and Madrasah is needed.	Several mosque and Madrasah has been proposed in Bagmara upazila.
32.	54	Md. Shamsul Mollah	Kismat bihan ali poshchim para	Development of road and govt. water supply station is needed.	Water Treatment Plant has been proposed in Taherpur Paurashava ward no 4 in Muthrapur Mauza with an area of 1.45 acres.
33.	56	Md. Shahin Alam	Bil Bari	Govt. water supply station and drain is needed.	Water Treatment Plant has been proposed in Taherpur Paurashava ward no 4 in Muthrapur Mauza with an area of 1.45 acres. And also there is proposal for drainage system.
34.	57	Md. Kalam	Bil Bari	Health complex and road is needed.	Total 27 Community Clinic has been proposed in whole Bagmara upazila.
35.	61	Md. Mahabubur Rahman	Bwabanigonj	Community center and fire brigade is needed	Proposal of a Community center has been given on Chandpara and Surjyapur Mauza in Bwabanigonj Paurashava with an area of 0.85 Acres. Fire Brigade and Civil Defense Station is already remained in nearby Maria union.
36.	62	Md. Delwar Hossain	Bwabanigonj	Park and mini stadium is needed	One park has been proposed in ward no 4, Bwabanigonj Paurashava with an area of 2.03 acres. A stadium is proposed in ward no 3 in Bwabanigonj Paurashava with an area of 5.56 acres.
37.	65	Md. Jillur Rahman	Bwabanigonj	Road reconstruction, supply water, community center, citizen opportunity are needed.	Road reconstruction, supply water, community center have been included in the plan.
38.	66	Md. Rabiul Islam	Uttar Shajuria	Community clinic, electricity and road light are needed.	Community clinic, electricity and road light have been included in the proposal.
39.	69	Md. Abdur Rahim	Dewolia Poshchim para	Govt. water supply station and drainage system is needed.	Water Treatment Plant has been proposed in Taherpur Paurashava ward no 4 in Muthrapur Mauza with an area of 1.45 acres. And also there is proposal for drainage system.

40.	71	Jubaear	Paharpur	Networking tower and stadium is needed.	A stadium is proposed in ward no 3 in Bwabanigonj Paurashava with an area of 5.56 acres. Proposals of different mobile networking tower have been given in the Development Plan.
41.	78	Md. Fazle Rabbi	Ananto para	Road reconstruction is needed from Taktopara to Anantapara and development of Bhabaniganj bazar.	Increase of the existing road from Taktopara to Anantapara has been proposed, And Proposals are also given for the Development of the Bwabanigonj Bazar area.

2. Public Hearing Comments of Bwabaniganj Paurashava

Serial No.	Notebook Serial No.	Name and designation	Location	Comments	Actions taken by Consultants
01.	02.	Md. Ismail Hossain	2 no ward	Ward no-2 1. Construction of main road from Uttar akdala math to Mahonpur rasta. 2. Construction of road in village. 3. Ensure pure water facilities. 4. Developed Water drainage system. 5. Lighting facilities. 6. Repair playground and club at Uttar Ekdala.	<ul style="list-style-type: none"> ➤ Roads have been proposed from Uttar Akdala to Mohonpur. ➤ Water Treatment plant has been proposed in Bwabanigonj 172 000 Mauza with an area of 1.86 acres. ➤ A water drainage line has been proposed in whole Paurashava area. ➤ Street lighting facilities has been proposed. ➤ Playground and club has been proposed at Bwabanigonj Paurashava area.
02.	03	Md. Anisur	6. no ward	Ward no-6 1. Reconstruction of road from Gudaun to Brack mor 2. Lighting facilities. 3. Developed Water drainage system. 4. Construction of road in villege. 5. Public toilet is needed.	<ul style="list-style-type: none"> ➤ Increasing the width of the road Godown mor to Govt. college has been proposed. ➤ A water drainage line has been proposed in whole Paurashava area. ➤ Street lighting facilities has been proposed. ➤ New village roads have been proposed in Paura area. ➤ Proposals have been given for public toilet in Bwabanigonj.

03.	04.	Md. Jillur Rahaman	8 no ward	Ward no-8 1. Switch gate is needed for agriculture and excavation of canal is needed 2. Gas line facilities is needed for industry 3. Reconstruction of road 4. Lighting facilities. 5. Public toilet is needed.	<ul style="list-style-type: none"> ➤ Sluice gate is proposed for agriculture and excavation of canal in Bwabanigonj Paurashava. ➤ Gas line facilities have been proposed. ➤ Street lighting facilities has been proposed. ➤ New village roads have been proposed in Paura area. ➤ Proposals have been given for public toilet in Bwabanigonj.
04.	05.	Md. Fayaz Uddin	7 no. ward	1. children park 2. Passenger shade. 3. Supply pure drinking water. 4. Agricultural training center 5. House facility for homeless people	<ul style="list-style-type: none"> ➤ A children park has been proposed in Paurashava area. ➤ 2 Passenger shade is proposed along the road side in Bwabanigonj Paurashava. ➤ For pure drinking water, Water Treatment plant has been proposed in Bwabanigonj 172 000 Mauza with an area of 1.86 acres. ➤ Agri training center has been proposed at Chandpara mauza under ward no 6 , Bwabanigonj paurashava with an area of 1.38 acre.
05	06.	Mossammot Shahanara Woman Councilor (4,5,6 no ward)	5 no ward	Ward no-5 1. Govt. graveyard, public toilet, and project to prevent river erosion is to be needed. 2. Eid gah ground is to be needed. 3. School is needed for autistic child.	<ul style="list-style-type: none"> ➤ Proposals have been given for Govt. graveyard and public toilet in Bwabanigonj Paurashava. ➤ A central Eidgah is proposed in Bwabanigonj Paurashava area. ➤ A school is proposed for autistic child in Bwabanigonj paurashava.
06	07.	Md. Rohidul Islam	Bwabanigonj Pourashova	1. Govt. graveyard 2. Eid gah ground is to be needed. 3. Seepage system is needed. 4. Employments for educated unemployed women and youth.	<ul style="list-style-type: none"> ➤ Proposals have been given for Govt. graveyard. ➤ A central Eidgah is proposed in Bwabanigonj Paurashava area. ➤ A youth Development center has been proposed at ward no 6 in Chandpara and Surjyapur mauza with an area of 2.09 acres.
07	08	Runa Bibi Woman Councilor (1,2,3 no ward)	Bwabanigonj Pourashova	1. Development of road 2. Supply pure drinking water 3. Public toilet is to be needed	<ul style="list-style-type: none"> ➤ Increasing the width of the road has been proposed in Bwabanigonj Paurashava area. ➤ For pure drinking water, Water Treatment plant has been proposed in Bwabanigonj 172 000 Mauza with an area of 1.86 acres.

					➤ Proposals have been given for public toilet in Bwabanigonj Paurashava.
08	09	Md. Abdul Malek Mayor,	Bwabanigonj Pourashova	<ol style="list-style-type: none"> 1. Construction of Bridge over Fakirni river at Bhabanigang Degree Collage for removing traffic jam. 2. Large cremation is needed at Bhola Tola. 3. Developed burial ground is needed 4. Stadium is needed 5. Children Park is to be needed. 6. Buss/truck terminal is to be established at Chanpara. 7. Solar panel is needed at Chanpara. 8. Construction of public toilet every ward at Bhabanigang. 9. Prevention of Fakirni river bank erosion for sustain haose. 10. Construction of wider road from Taherpur to Naogon 11. Construction of public toilet center of the Bhabanigang. 12. Crippler hospitals is needed at Suryopara. 13. Construction Vatenari training center. 14. Very essential for construction of oldage home. 15. Permanent residence is needed at kosba and Chanpara. 	<ul style="list-style-type: none"> ➤ A bridge is proposed over Fakirni river at Bwabanigonj Degree College for removing traffic jam. ➤ A large cremation has been proposed in Bwabanigonj Paurashava. ➤ Proposals have been given for burial ground. ➤ A stadium is proposed in ward no 3 in Bwabanigonj Paurashava with an area of 5.56 acres. ➤ A children park has been proposed in Paurashava area. ➤ A bus terminal has been proposed at Dargamaria Mauza in ward no 8 with an area of 2.43 acres. ➤ Solar Panel is proposed at paharpur Mauza in Ward no 3 with an area of 2.55 acres. ➤ Proposals of public toilet for every ward has been included in the plan. ➤ Proposals have been given for the construction of wider road from Taherpur to Naogon. ➤ Proposals have been given for the Construction of public toilet center of the Bhabanigang. ➤ Proposal of a hospital is given at Bwabanigonj Paurashava ward no 4 under dogachi Mauza with an area of 1.74 acres. ➤ A veterinary training centre has been proposed in Bwabanigonj Paurashava. ➤ Proposal of a housing area is given at Bwabanigonj Paurashava ward no 9 under karnipara Mauza with an area of 23.98 acres. ➤ Proposal of an industrial area is given at Bwabanigonj Paurashava ward no 9 under karnipara Mauza with an area of 22.25 acres. ➤ A solar Panel has been proposed for the Development of Irrigation system at Paharpur Mauza in Bwabanigonj Paurashava ward no 3 with an area of 2.55 acres. ➤ A fish processing zone has been proposed in Bwabanigonj Paurashava. ➤ Proposals for an Open University for developing education system in Bwabanigonj Paurashava is included in the final plan.

				<p>16. Need to build an industry at Surjopara, konipar, Dagafaria.</p> <p>17. Irrigation system developed by solar panel.</p> <p>18. Construct fish hatchery for fish processing at Bhabaniganj and Chanpara.</p> <p>19. Build an Open University for developing education system.</p> <p>20. Construct a bridge/culvert for transporting agricultural at Bilsoti and Matikata.</p>	<p>➤ Proposals have been given for several bridges and culverts in Bwabanigonj Paurashava.</p>
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3. Public Hearing Comments of Taherpur Paurashava

Serial No.	Notebook Serial No.	Name and designation	Location	Comments	Actions taken by Consultants
01.	02.	Md. Rais uddin Councilor	9. no ward	Nine Waste transfer stations build in nine Wards.	➤ Seven waste Transfer stations have been proposed in Taherpur Paurashava area.
02.	04.	Bulbul Ahammed Councilor	3. no ward	Changing Municipal Market.	➤ Neighborhood Market has been proposed in Jamgram Mauza under Taherpur Paurashava ward no 8 with an area of 1.56 acres.
03.	06.	Hafizul Islam Councilor	7 no ward	Managing Fish Processing Zone in large area.	➤ Fish Processing Zone has been proposed in Taherpur Paurashava Ward no 6 at Sultanpur Mauza with an area of 1.77 acres.
04.	07.	Md. Aubali Shordar Councilor	2 No. ward	Construct Bypass road from Walton-mor to Bachiapara.	➤ Bypass road has been proposed from Walton Mor to Bachiapara.
05.	08.	Md, Abdul Rahim Professor Mohila College	Mohila college	Vocational training center is in the right place but another is needed at Zamgram village.	➤ Vocational Training Training Institute has been proposed in Taherpur Paschim Mauza under Taherpur Paurashava ward no 2 with an area of 2.49 acres.
06.	09.	Ashraful Islam	Jamgram	Vocational training center is needed at Zamgram village.	➤ Vocational Training Training Institute has been proposed in Taherpur Paschim Mauza under Taherpur Paurashava ward no 2 with an area of 2.49 acres.
07.	11.	Abdul Zalil Councilor	4 no ward	Several public toilet is essential at the market place in 1, 2, &3 No Ward.	➤ Several Public Toilet have been proposed in Taherpur Paurashava.
08.	13.	Shamima Akhtar Beauty Councilor	7,8.9 no ward	Park situated in right place.	➤ There is no need to change the place of the park.
09.	14.	Doctor Yeasin	2 no ward	1. Essential for construct a Medical and Maternity center. 2. Need nine Community Clinic in nine wards.	➤ A hospital have been Proposed in Taherpur Paschim Mauza under Taherpur Paurashava ward no 2 with an area of 1.8 acres. ➤ 5 Community clinic has been proposed in Taherpur Paurashava.
10.	15.	Md Hasanuzzaman Primary teacher	2 no ward	Fire Brigade	➤ Fire Brigade and Civil Defence station has been proposed in Taherpur Paurashava.

11.	16.	Md. Ayubali Shorkar	2. No ward	Need to manage drainage system	➤ Drainage system has been proposed in Taherpur paurashava area.
12.	18.	Taposh Kumar pintu councilor	9. no ward	Construct a bridge over Barnoy river in 1No Ward.	➤ Already there exists a bridge on Baranoi River. So no need to propose another bridge at the same river.
13.	19.	Abdur Rahim Principle	Mohila college	Environmental Office is needed preservation of agricultural product and meat processing	➤ As all the administrative building are situated on Bwabanigonj paurashava, so the proposal of Environmental office will be on that area.
14.	20.	Moksad Mollah	Taherpur	Construction of central graveyard in each Ward.	➤ A central graveyard has been proposed in Taherpur paurashava.
15.	21.	Abul kalam Azad Mayor	Taherpur.	A stadium and children park is needed.	➤ Already A stadium has been proposed in Bwabanigonj Paurashava. So there is no need to propose another stadium in same upazila. ➤ A children park has been proposed in Taherpur upazila.

ANNEX-F

Comments on Bagmara Upazila Draft Plan TMC

Name	Designation	Comments
Dr. Khurshid Jabin Hossain Toufiq	Director, Urban Development Directorate	<ul style="list-style-type: none"> • Need to establish a total water network • Define conflict zone • Merge two paurashava area • Need a bypass to Puthia • Need a proposal of solar park • Need to create a eco sensitive zone • Establish an urban network • Cold storage by the side of Taherpur Bazar

Comments on Bagmara Upazila Final Plan TMC

Name of Proposed Facilities	Status
River dredging and make a connection to Atrai river	Connection has been addressed
Make a connection among beels and rivers	Connection has been addressed
Union wise recreational facilities	Have been proposed

Comments on Bagmara Upazila Final Plan Workshop

Name	Designation	Comments
Md. Enamul Haque	Engineer, Member of Parliament, Rajshahi-4	<ul style="list-style-type: none"> • Need drainage map in details • Detailed landuse policy
	Chairman, Sonadanga	<ul style="list-style-type: none"> • Natural conservation at rural area • Need cold storage
	Chairman, Auchpara	<ul style="list-style-type: none"> • No widen road at east bagmara and west bagmara
	Chairman, Gobindapara	<ul style="list-style-type: none"> • River excavation • Supply of pure drinking water • Establishment of dam
	President, Bonik Somiti	<ul style="list-style-type: none"> • Bypass at bwabaniganj bazaar
	Chairman, Kachari kayalipara	<ul style="list-style-type: none"> • Flood Control • Dam repair • Excavation of river
Hatem Ali	Principal, Bwabaniganj College	<ul style="list-style-type: none"> • Plan for border area people of upazila boundary

ANNEX-G
Plot Schedule of proposed facility

Sl. No.	Name	Area (Acres)	Plot No.	MAUZA_JL_S	Location
Bagmara Union					
1.	Agro Based Industry	2.98	645, 646, 651-667, 691-703, 771-773, 776-777, 786	Ganga Para_054_001	Auchpara
2.	Cold Storage	0.26	441, 443, 448, 451-454, 457-459	Ganga Para_054_001	Auchpara
3.	Community Clinic	0.48	728, 729, 735-737, 742, 747, 749-752, 780-782, 786	Pala Para_026_000	Auchpara
4.	Community Clinic	0.35	1211, 1219-1222, 1233	Mugai Para_067_001	Auchpara
5.	Food Godown	2.17	701-704, 707, 708, 716-722, 754-756, 766-771, 773-777, 786	Ganga Para_054_001	Auchpara
6.	Graveyard	1.60	1, 468-471, 493-495, 531-537, 549-553, 556, 561	Majhpara_061_000	Auchpara
7.	Graveyard	0.85	1164-1173, 1179-1185, 1190	Khalgram_059_002	Auchpara
8.	Hospital	2.11	308, 313-319, 327, 406-409, 420	Ganga Para_054_001	Auchpara
9.	Neighborhood Market	0.79	450, 461, 462, 526, 527, 555, 560-565, 567, 816	Ganga Para_054_001	Auchpara
10.	Neighborhood Market	0.94	1107, 1109, 1117, 1118, 1121-1125, 1127, 1128, 1227-1233	Khalgram_059_002	Auchpara
11.	Park	1.75	382-385, 396-398, 816, 924-927, 935, 936, 941-945, 947, 948	Ganga Para_054_001	Auchpara
12.	RSSC	0.69	1211, 1219, 1220, 1232-1241, 1243, 1244, 1297	Mugai Para_067_001	Auchpara

13.	RSSC	0.57	5701-5711, 5727-5729, 5735, 5765, 5857	Konda_065_002	Auchpara
14.	RSSC	0.48	735, 737-739, 742-750, 786, 787, 801-803	Pala Para_026_000	Auchpara
15.	Solar Park	0.99	710-717, 733-745, 750, 815	Ganga Para_054_001	Auchpara
16.	Vocational Training Institute	0.86	705-707, 743-759, 765, 766, 815	Ganga Para_054_001	Auchpara
17.	Cold Storage	0.51	10, 11, 13-15, 17, 18	Bara Bihanali_193_001	Bara Bihanali
18.	Cold Storage	0.19	6336, 6447, 6455, 6460, 6461	Bara Bihanali_193_002	Bara Bihanali
19.	Community Clinic	0.26	1670-1672, 1675, 1677, 1678	Sindurlang_187_000	Bara Bihanali
20.	Community Clinic	0.09	6062, 6063, 6066, 6067, 6336	Bara Bihanali_193_002	Bara Bihanali
21.	Graveyard	0.82	149, 162-165, 168	Bara Bihanali_193_001	Bara Bihanali
22.	Neighborhood Market	0.98	1294, 1297-1302, 1514, 1671, 1672, 1748, 1749	Sindurlang_187_000	Bara Bihanali
23.	Neighborhood Market	0.57	6447, 6448, 6455, 6461-6463, 6471	Bara Bihanali_193_002	Bara Bihanali
24.	Playground	2.44	1264, 1265, 1273-1278, 1287-1295, 1514, 1546, 1547, 1592, 1665-1668, 1671	Sindurlang_187_000	Bara Bihanali
25.	RSSC	0.36	262, 263, 265-271, 273-281	Nichu Para_190_000	Bara Bihanali
26.	Community Clinic	0.55	490, 491, 497-500, 506-508, 541	Khayra_094_000	Basu Para
27.	Community Clinic	0.54	3131, 4143, 4145, 4153-4161,	Nandanpur_136_000	Basu Para
28.	Community Clinic	0.24	2162, 2225-2229, 2231	Balanagar_168_001	Basu Para
29.	Graveyard	1.47	1265, 1280, 1292-1297, 1329-1332, 2045, 2050, 2054, 2055	Sain Para_028_000	Basu Para
30.	RSSC	0.45	1132-1134, 1137, 1143-1145	Mandial_093_000	Basu Para

31.	RSSC	0.43	270-272, 274-276, 278-281, 283, 290	Nandanpur_136_000	Basu Para
32.	RSSC	0.29	1842-1844, 2156, 2159-2162, 2196, 2225, 2226, 2232, 2233	Balanagar_168_001	Basu Para
33.	Brick Field Zone	13.98	116-124	Nanur_089_001	Dwippur
			704-712, 717-727, 773-843, 860-870, 872-874, 876-880, 882, 883, 886-889, 891, 892, 897-899, 904, 905, 907	Mirpur_088_001	
34.	Community Clinic	0.51	611, 760, 780, 1211, 1212, 1236-1243, 1250	Chak Harinarayan Kandu_179_000	Dwippur
35.	Graveyard	1.15	1026-1037	Khanpur_178_001	Dwippur
36.	RSSC	0.73	611, 779-784, 1203, 1204, 1208-1215, 1236	Chak Harinarayan Kandu_179_000	Dwippur
37.	Agro Based Industry	9.53	431-435, 438, 439, 448-459, 555-558, 562-593, 604, 777, 856, 859	Hasanpur_116_002	Ganipur
38.	Community Clinic	0.52	1107, 1108, 1127-1134, 1909	Chal Mahabbatpur_139_001	Ganipur
39.	Community Clinic	0.31	680-683, 933-935	Akkelpur_119_000	Ganipur
40.	Graveyard	1.97	224, 672, 673, 1058-1066, 1080-1084, 1086	Akkelpur_119_000	Ganipur
41.	Neighborhood Market	0.86	559-564, 569, 914, 918, 936	Hasanpur_116_002	Ganipur
42.	RSSC	0.40	676-680, 683-685	Akkelpur_119_000	Ganipur
43.	RSSC	0.39	1477, 1510, 1660	Porakoya_140_000	Ganipur
44.	Auto Stand	0.44	774, 775	Ramrama_257_003	Goalkandi
45.	Bus Bay	0.14	898	Ramrama_257_003	Goalkandi

46.	Bus Terminal	3.10	10861, 10964, 10966, 10976,	Ramrama_257_003	Goalkandi
47.	Community Clinic	0.61	1000, 1010, 1013, 1069, 1070, 1078, 1087, 1095, 1154, 1271, 1437, 1495, 3978	Konpara_250_000	Goalkandi
48.	Fish Market	0.09	10976	Ramrama_257_003	Goalkandi
49.	Graveyard	1.99	1646, 1650, 1654, 1656, 1657, 1730, 1734, 1742, 1756, 1771, 1798, 1801, 1834, 1839, 1845, 1853, 1860, 1870, 1914, 2005, 2016, 2029, 3978	Konpara_250_000	Goalkandi
50.	Ice Factory	0.11	10976	Ramrama_257_003	Goalkandi
51.	Neighborhood Market	1.14	898, 899	Ramrama_257_003	Goalkandi
52.	Public Toilet	0.06	856	Ramrama_257_003	Goalkandi
53.	RSSC	0.74	1023, 1051, 1071, 1095, 1148, 1154, 1172, 1233, 1242, 1271, 3978	Konpara_250_000	Goalkandi
54.	RSSC	0.46	968-971, 976, 977	Cheukhali_263_000	Goalkandi
55.	Waste Transfer station	0.06	774, 775	Ramrama_257_003	Goalkandi
56.	Cold Storage	0.72	1080, 1088-1093, 1107, 1119, 1120, 1122	Baksail_014_000	Gobinda Para
57.	Community Clinic	0.40	6087, 6132, 6219, 6220, 6240	Gobindapara_013_001	Gobinda Para
58.	Community Clinic	0.48	425-427, 435-439	Karkhanda_033_000	Gobinda Para
			1107-1112	Baksail_014_000	
59.	Graveyard	2.50	190-204, 206-211, 213, 232-235	Ruiya_034_000	Gobinda Para
			1504, 1505	Saljur_035_000	
60.	Neighborhood Market	1.95	81, 82, 85-89	Paschim Daulatpur_031_000	Gobinda Para

			1126-1136, 1138, 1164, 1165, 1168-1171	Baksail_014_000	
61.	RSSC	0.46	5915, 5927, 6042, 6057, 6087, 6132, 6240	Gobindapara_013_001	Gobinda Para
62.	RSSC	0.43	582, 587, 610, 628, 647, 699, 1648	Deopara_010_001	Gobinda Para
63.	Agro Based Industry	0.37	1-4, 6, 8, 22	Dakshin Majhgaon_273_000	Hamir Kutsha
64.	Community Clinic	0.29	542, 1676-1678, 2281-2283, 2285-2288, 2291	Hamir Kutsha_272_000	Hamir Kutsha
			11974, 11979, 12018, 12024, 12059, 12068, 12071, 12079, 12165, 12179, 12195, 12198	Konabaria_291_004	
65.	Fish Market	1.40	6702, 6704, 6731, 6746, 6747, 6759, 6764, 6771, 6834, 6850, 6867, 6869, 6877, 6878, 6893, 6899, 6908, 6920, 6991	Konabaria_291_003	Hamir Kutsha
66.	Fish Processing Zone	4.31	6520, 6548, 6561, 6563, 6565, 6592, 6596, 6604, 6606, 6612, 6619, 6634, 6638, 6661, 6666, 6676, 6679, 6680, 6692, 6702, 6714, 6724-6726, 6736, 6743, 6745, 6763, 6763, 6774, 6793, 6815, 6826, 6830, 6831, 6839-6841, 6859, 6860, 6866, 6869, 6870, 6878, 6886, 6891, 6898, 6904, 6921, 6924, 6926, 6927, 6929, 6931, 6935, 6943, 6955, 6968, 6977, 6985, 6987, 6992, 6996, 7001, 7008, 7015, 7035, 7039, 7041, 7044, 7049, 7054, 7065, 7072, 7081, 7094, 7110, 7111, 7116, 7120, 7122, 7150, 7156, 7161, 7166, 7180, 7191, 7199, 7220, 7228, 7251, 7262, 7274, 7294, 7328	Konabaria_291_003	Hamir Kutsha
67.	Graveyard	1.81	4001	Konabaria_291_002	Hamir Kutsha
			6369, 6446, 6447, 6469, 6470, 6481, 6486, 6488, 6507, 6521, 6528, 6538, 6549, 6579, 6586, 6590, 6620, 6628, 6640, 6657, 6659, 6668, 6684, 6699, 6704, 6717, 6731	Konabaria_291_003	

68.	Neighborhood Market	1.11	0, 2179, 2184-2188, 2197, 2198, 2200-2207, 2225, 2226	Hamir Kutsha_272_000	Hamir Kutsha
69.	RSSC	0.48	3778, 3779, 3815-3823, 3858, 3896	Arjun Para_267_002	Hamir Kutsha
70.	RSSC	0.41	12059, 12079, 12165, 12166, 12176, 12179, 12198, 12229, 12240, 12263, 12267, 12272, 12275, 12276, 12329, 12347, 12358, 12375-12378, 12382, 12440	Konabaria_291_004	Hamir Kutsha
71.	Agro Based Industry	6.25	1274, 1276-1289, 1293, 1294, 1296-1302, 1307-1309, 1312, 1340-1352, 1365, 1367-1384, 1387, 1403, 1404, 1620, 1621, 1624, 1625, 1634-1636, 1639, 1640	Seuzbari_226_001	Jhikra
72.	Cold Storage	0.29	375, 376, 379, 393, 442, 478, 511, 870	Hasanpur_116_001	Jhikra
73.	Community Clinic	0.23	1588-1590	Namkan_219_002	Jhikra
74.	Community Clinic	0.34	645, 647, 684, 706, 709, 722, 726, 728, 731, 760, 804, 816	Jhargaon_215_001	Jhikra
75.	Community Clinic	0.30	148, 157, 161, 226, 239, 241	Hasanpur_116_001	Jhikra
76.	Graveyard	1.05	4814, 4822, 4834, 4863, 4911, 4915, 4956, 4964, 4967, 4999, 5004, 5008, 5015, 5018	Hasanpur_116_001	Jhikra
77.	Neighborhood Market	0.91	271, 279, 291, 292, 294, 345, 355, 407, 459, 463, 487, 490, 502, 870	Hasanpur_116_001	Jhikra
78.	RSSC	0.39	1588, 1590, 1592, 1617, 1621-1623, 1637, 1639	Namkan_219_002	Jhikra
79.	RSSC	0.46	645, 675, 682, 684, 706, 724, 729, 764-766, 816, 830, 846, 848	Jhargaon_215_001	Jhikra
80.	Brick Field Zone	23.74	3116, 3117	Bhatghar_280_000	Jogi Para
			484, 485, 489-504, 506. 508- 629, 640-649, 668-670, 775, 828, 829, 841, 851, 853-855, 860, 864, 885, 888, 889,	Bara Madhaimuri_281_000	

			903, 914		
81.	Community Clinic	1.08	4308, 4318-4323, 4339-4344, 4360-4365, 4367-4371, 4373, 4379	Nakh Para_287_002	Jogi Para
82.	Food Godown	2.48	14, 17, 20, 22, 28, 30, 31, 34, 35, 40, 673	Katila_282_000	Jogi Para
			461-464, 466-480, 724, 725, 729, 731-733, 736-743	Bhagnadi_286_000	
83.	Graveyard	1.13	1259-1264, 1267, 1269-1274, 1276, 1294, 1959-1963, 1965, 1977, 1978	Nakh Para_287_001	Jogi Para
84.	Neighborhood Market	1.79	1060, 1062, 1071, 1100, 1105, 1170, 1171, 1175, 1216, 1219, 1224, 1234, 1241, 1260, 1265, 1271, 1287, 1302, 1313, 1315, 1408, 2687	Jogi Para_289_000	Jogi Para
85.	Silo	8.51	176, 449, 694-758, 760, 767, 769, 770, 1534, 1538, 1539, 1541, 1542, 1544,	Bri-Kutsha_284_001	Jogi Para
			6013, 6037, 6040, 6041	Bri-Kutsha_284_002	
86.	Solar Park	0.78	2998, 3002, 3020, 3021, 3033, 3040, 3041, 3082, 3092, 3109, 3123, 3133, 3141, 3143, 3168	Katila_282_000	Jogi Para
87.	Wholesale Market	1.13	176	Bri-Kutsha_284_001	Jogi Para
			6978-6981, 6983, 6984, 6989-6999	Bri-Kutsha_284_002	
88.	Community Clinic	0.57	2094, 2095, 2097, 2102, 2103, 2106, 2107	Madhupur_175_001	Kacchhari Kayali Para
89.	Graveyard	0.90	4685, 4706, 4717-4720, 4723, 4724, 4767-4774	Kacchhari Kayali Para_176_002	Kacchhari Kayali Para
90.	Neighborhood Market	1.05	2089, 2091, 2094, 2095, 2097, 2107, 2112	Madhupur_175_001	Kacchhari

					Kayali Para
91.	RSSC	0.34	3860, 3862-3869, 3892	Kacchari Kayali Para_176_002	Kacchari Kayali Para
92.	Agro Based Industry	2.60	1043, 1048, 1059,1060, 1062-1085, 1087-1090, 1093, 1096-1099	Sankoa_235_000	Maria
93.	Community Clinic	0.15	786, 816, 835, 836	Surjya Para_207_000	Maria
94.	Community Clinic	0.19	1355, 1359, 1360, 1363, 1365	Sankoa_235_000	Maria
95.	Cottage Industry	2.73	257-259, 273-280, 388-390, 392, 394-411, 414, 416, 423, 425-428, 433	Sankoa_235_000	Maria
96.	Future Government Office	3.71	126-128, 146, 152-174, 176-178, 181, 182	Takta Para_198_000	Maria
97.	Graveyard	0.54	2177, 2180, 2181, 2189-2193, 2197, 2202	Annata Para_200_002	Maria
98.	Neighborhood Market	0.68	574	Das Para_199_000	Maria
			917, 920-924, 933-935, 937, 1020	Laru Para_239_000	
99.	Neighborhood Market	0.30	1059, 1085, 1164-1168	Sankoa_235_000	Maria
100.	Park	1.93	145, 146, 172-176, 178-183, 188-191, 596-598, 611-619, 632-634, 636-639	Takta Para_198_000	Maria
101.	Public Gathering Place; Playground	2.92	280-282, 296, 297, 310-315, 377-388, 390-394, 397, 442- 450, 573, 576, 578, 594-598, 994	Sankoa_235_000	Maria
102.	RSSC	0.39	340, 341, 661	Annata Para_200_001	Maria
			1354-1358, 1362	Takta Para_198_000	
103.	RSSC	0.42	784-786, 817-819	Surjya Para_207_000	Maria

104.	Community Clinic	0.59	4865, 4887, 4915, 4917, 4920, 4943, 4952, 4992, 5040	Gorsar_085_002	Nardas
105.	Community Clinic	0.28	6, 1321, 1370, 1377, 1379	Shimla_040_000	Nardas
106.	Community Clinic	0.33	692, 731, 741, 769, 794, 799, 851, 874, 894, 901, 942	Nardas_050_001	Nardas
107.	Graveyard	1.03	1081, 1130, 1156, 1165, 1171, 1179, 1185, 1200, 1206, 1240, 1310, 1324	Sonadanga_043_002	Nardas
108.	Graveyard	1.06	4632, 4673, 4682, 4712, 4716, 4720, 4735, 4749, 4803, 4806, 4807, 4841, 4861, 4871, 4875, 4903-4905, 4910, 4932, 4939, 4947, 4970, 4995, 5032	Nardas_050_002	Nardas
109.	RSSC	0.49	6-9, 12-16, 48, 165, 167-174, 176, 178, 179	Hat Madhnagar_082_001	Nardas
110.	RSSC	0.47	4806, 4837, 4865, 4887, 4917, 4920	Gorsar_085_002	Nardas
111.	RSSC	0.28	1383, 1386, 1471, 1492, 1578, 1622, 1664	Sonadanga_043_002	Nardas
112.	Wholesale Market	1.10	6, 1314, 1321, 1366, 1368-1377, 1383, 1384, 1396	Shimla_040_000	Nardas
113.	Central Park	3.83	1541-1540, 1555, 1557-1559, 2299-2301, 2320-2325, 1541-1544, 1554, 1559, 1568, 2302, 2303, 2318, 2319, 2339	Sreepur_163_001	Sreepur
114.	Community Clinic	0.47	421-429, 442-444	Medi Para(Molla Para)_143_000	Sreepur
115.	Neighborhood Market	1.26	343, 345, 347, 348, 1209-1212, 1215-1219, 1221, 1231-1238, 1254	Goalkanda_146_000	Sreepur
116.	RSSC	0.32	423, 427-430	Medi Para(Molla Para)_143_000	Sreepur
117.	Waste Disposal Site	7.66	204, 206, 210, 211, 213, 235, 237, 239, 241, 257, 260, 283, 298, 322, 323, 335, 340, 343, 349, 352, 359, 386,	Ramguia_160_000	Sreepur

			402, 404, 408, 414, 427, 431, 432, 440, 451, 456, 458, 460, 466, 469, 470, 472, 475, 476, 480, 483, 556, 585, 601, 602, 612, 620, 629, 644, 656, 661, 672, 693, 697, 732, 734, 737, 743, 755, 760, 769, 778, 781, 801, 808, 833, 838, 840, 842, 849, 860, 867, 872, 881, 896, 908, 938, 944, 1090, 1136, 1169, 1224		
118.	Agro Based Industry	5.97	1886, 1899, 1933, 1940, 1947, 1960, 1966, 1969, 1972, 1974, 1987, 1993, 1994, 2001, 2015, 2034, 2047, 2050, 2056, 2078, 2088, 2120, 2135, 2168, 2182, 2239, 2273	Barigaon_053_002	Subhadanga
119.	Community Clinic	0.35	3706	Machmail_070_002	Subhadanga
120.	Graveyard	0.60	4, 15-18, 22-24	Binodpur_101_000	Subhadanga
121.	Neighborhood Market	1.02	3620-3622, 3625-3630	Machmail_070_002	Subhadanga
Bwabhaniganj Paurashava					
122.	Poor Housing	14.52	120-123, 262, 267-269, 278	Uttar Akdala_174_001	Ward No. 01
			99999	Kasaba_177_001	
123.	Poor Housing	16.07	115-127, 131, 132, 158, 162-187, 192, 232, 235, 237-329, 335, 336, 346, 352, 353, 359, 967	Uttar Akdala_174_001	Ward No. 02
			99999	Kasaba_177_001	
124.	Pump House/Overhead Tank	0.41	864-868	Uttar Akdala_174_001	Ward No. 02
125.	Electric Sub Station	1.90	90-92, 95, 97, 99	Paharpur_197_000	Ward No. 03
			195, 199-207	Kasaba_177_002	

126.	Future Government Office	1.12	468-476, 480-484	Paharpur_197_000	Ward No. 03
			1158, 1159	Dogachi_173_001	
127.	Neighborhood Park	1.42	276-291, 294, 295, 358, 361, 362	Paharpur_197_000	Ward No. 03
			606, 607	Dogachi_173_001	
128.	Solar Panel	2.55	90, 92-95, 97-104, 106, 125, 126, 148-156, 158-161, 163-165, 167, 773	Paharpur_197_000	Ward No. 03
129.	Sports Complex	1.47	341, 557, 560, 561, 571, 597-609, 612	Paharpur_197_000	Ward No. 03
130.	Stadium	5.57	312, 313, 315, 319, 320, 322-326, 328, 336-339, 609-612, 614-623, 661-666, 672, 673	Paharpur_197_000	Ward No. 03
131.	Central Eidgah	1.15	347	Bhawbaniganj Paurashava_172_000	Ward No. 04
			820-822, 832, 833, 839	Dogachi_173_001	
132.	Future Government Office	10.52	473, 474	Paharpur_197_000	Ward No. 04
			679-683, 692, 1086-1090, 1121-1123, 1127-1142, 1158-1165, 1170-1195, 1197, 1198, 1226	Dogachi_173_001	
133.	Hospital	1.74	760-769, 775-779, 1044, 1045, 1053-1057	Dogachi_173_001	Ward No. 04
134.	Mosque Complex	1.07	821-833	Dogachi_173_001	Ward No. 04
135.	Multi Purpose Hall	0.98	780, 823, 824, 928, 1000, 1002-1004, 1006-1018	Dogachi_173_001	Ward No. 04
136.	Neighborhood Park	2.32	277, 362	Paharpur_197_000	Ward No. 04
			587, 588, 590-601, 603-607, 609-611, 780	Dogachi_173_001	
137.	Park	0.21	648-650	Bhawbaniganj	Ward No. 04

				Paurashava_172_000	
			1194-1197	Dogachi_173_001	
138.	Passenger Shed	0.10	528, 533	Bhawbaniganj Paurashava_172_000	Ward No. 04
139.	Passenger Shed	0.16	293, 294, 298, 346	Bhawbaniganj Paurashava_172_000	Ward No. 04
140.	Paura Market	1.96	346, 349-354	Bhawbaniganj Paurashava_172_000	Ward No. 04
			833-839	Dogachi_173_001	
141.	Public Gathering Place; Playground	2.58	289-292, 346	Bhawbaniganj Paurashava_172_000	Ward No. 04
			584, 780, 789-799, 807-819, 1011, 1013	Dogachi_173_001	
142.	Public Library	0.89	346, 347	Bhawbaniganj Paurashava_172_000	Ward No. 04
			780, 820, 821-823	Dogachi_173_001	
143.	Public Toilet	0.17	833, 839	Dogachi_173_001	Ward No. 04
144.	Public Toilet	0.11	394-397	Bhawbaniganj Paurashava_172_000	Ward No. 04
145.	Public Toilet	0.05	527, 528	Bhawbaniganj Paurashava_172_000	Ward No. 04
146.	Pump House/Overhead Tank	0.19	847, 850, 851, 854	Dogachi_173_001	Ward No. 04
147.	School for Autistic Child	0.61	293, 346-349	Bhawbaniganj	Ward No. 04

				Paurashava_172_000	
			833	Dogachi_173_001	
148.	Shopping Complex	0.74	1025, 1027-1033, 1036-1038, 1041, 1045-1048, 1061	Dogachi_173_001	Ward No. 04
149.	Waste Transfer Station	0.04	527, 528	Bhawbaniganj Paurashava_172_000	Ward No. 04
150.	Waste Transfer Station	0.14	854-856, 1195	Dogachi_173_001	Ward No. 04
151.	Water Treatment Plant	1.86	82, 87, 88, 93-97, 99-102, 281-286	Bhawbaniganj Paurashava_172_000	Ward No. 04
152.	Agriculture Training Institute	0.68	142, 180-191, 201	Surjyapur_243_000	Ward No. 05
153.	Auto Stand	0.31	22-26, 117-122, 124-127, 142	Surjyapur_243_000	Ward No. 05
154.	Children Park	1.03	142, 157, 208, 210-113, 222, 225, 363	Surjyapur_243_000	Ward No. 05
155.	Night Soil Treatment Plant	2.51	526, 527, 593-595, 599-619, 622-627, 634, 947-949, 956-961, 992	Surjyapur_243_000	Ward No. 05
156.	Youth Development Center	0.75	142, 175-181, 184, 185, 201, 203	Surjyapur_243_000	Ward No. 05
157.	Agriculture Training Center	1.38	1303, 1304, 1339-1342, 1374, 1652-1655, 1657, 1659-1664	Chandpara_241_002	Ward No. 06
158.	Auto Stand	0.54	121, 122, 124, 125, 127, 142	Surjyapur_243_000	Ward No. 06
			2058-2063	Chandpara_241_002	
159.	Community Center	1.08	1160, 1161, 1168-1170, 1172, 1404, 1420-1424	Chandpara_241_002	Ward No. 06
160.	Park	1.11	655	Bhawbaniganj Paurashava_172_000	Ward No. 06

			2013-2016, 2018, 2020-2024, 2030	Chandpara_241_002	
161.	Paura Graveyard	1.64	356, 361, 362, 370-372, 374, 678-681, 772-783, 785, 786, 790-792	Chandpara_241_001	Ward No. 06
162.	Youth Development Center	0.54	176, 180, 181	Surjyapur_243_000	Ward No. 06
			2202, 2203, 2205, 2206	Chandpara_241_002	
163.	Bus Terminal	2.70	279-282, 286-300, 302-304, 308, 309, 426-436, 441-443, 657, 658, 660-666, 671, 672	Dargamaria_246_000	Ward No. 08
164.	Truck Terminal	0.71	1562, 1582, 1593, 1596, 1607, 1610, 1617, 1623, 1634, 1638, 1640, 1646	Barupara_251_000	Ward No. 08
165.	Bus Bay	0.21	2232, 3192, 3194-3196, 3319-3323, 3325	Karnipra_245_000	Ward No. 09
166.	Housing Area	23.98	1484-1486, 1496, 1497, 1502-1507, 1509-1514, 1517-1523, 1585-1595, 1598, 1693-1696, 1702, 1748-1751, 1754-1803, 1812-1871, 1948, 1949, 1952-1954, 2411-2419, 2422, 2424-2497, 2501, 2502, 2727-2729, 2768, 2769, 2772, 2774-2777	Karnipra_245_000	Ward No. 09
167.	Industrial Zone	22.26	2232-2254, 2312, 2313, 2317-2367, 2371-2379, 2777-2781, 2807-2810, 2812, 2813, 3149-3175, 3195-3271, 3273-3275, 3278, 3279, 3281-3287, 3299, 3300, 3305-3307, 3313-3315, 3318, 3319, 3323	Karnipra_245_000	Ward No. 09
168.	Pump House/Overhead Tank	0.38	2497-2504	Karnipra_245_000	Ward No. 09
Taherpur Paurashava					
169.	Cold Storage	0.47	1957, 1961, 2055, 2058, 2066, 2095-2097, 2110	Taherpur Paschim_153_000	Ward No. 01
170.	Fish Market	0.74	2011, 2016, 2017, 2022-2026, 2028, 2035	Taherpur Paschim_153_000	Ward No. 01

171.	Ice Factory	0.24	1910, 2016-2019	Taherpur Paschim_153_000	Ward No. 01
172.	Public Toilet	0.09	1939, 1969	Taherpur Paschim_153_000	Ward No. 01
173.	Waste Transfer Station	0.12	2061	Taherpur Paschim_153_000	Ward No. 01
174.	Children Park	0.92	1050, 1056, 1061, 1076, 1096, 1098, 1104, 1106	Taherpur Paschim_153_000	Ward No. 02
175.	Fire Station	0.83	603, 605, 630, 631, 634-642	Taherpur Paschim_153_000	Ward No. 02
176.	Hospital	2.32	553-555, 593-609, 611, 612, 630, 650-661, 675, 696, 697	Taherpur Paschim_153_000	Ward No. 02
177.	Mini Bus/Auto Stand	0.44	886, 887, 891-894	Taherpur Paschim_153_000	Ward No. 02
178.	Neighborhood Park	1.95	132, 164, 166-168, 732-735, 737-741, 820-822, 825	Taherpur Paschim_153_000	Ward No. 02
179.	Pump House/Overhead Tank	0.47	1332	Taherpur Paschim_153_000	Ward No. 02
180.	Vocational Training Institute	1.32	983, 998, 1146, 1150-1152, 1155-1159, 1161, 1165	Taherpur Paschim_153_000	Ward No. 02
181.	Waste Transfer Station	0.07	1225, 1226, 1350	Taherpur Paschim_153_000	Ward No. 02
182.	Auto Stand	0.12	1616, 1644, 1645, 1649	Taherpur Paschim_153_000	Ward No. 03
183.	Fish Market	0.89	1994, 2011, 2014, 2035	Taherpur Paschim_153_000	Ward No. 03
184.	Pauro Market	1.56	1451, 1453, 1454, 1456, 1459-1464, 1699, 1700, 1704-1708, 1710, 1711	Taherpur Paschim_153_000	Ward No. 03
185.	Pauro Market	1.62	1748, 1751, 1755, 1756, 1758, 1770-1779, 1781, 1784, 1803, 1805, 1809, 1811	Taherpur Paschim_153_000	Ward No. 03
186.	Public Toilet	0.07	1431, 1476, 1477	Taherpur Paschim_153_000	Ward No. 03
187.	Public Toilet	0.10	1616, 1644, 1646	Taherpur Paschim_153_000	Ward No. 03
188.	Public Toilet	0.04	1574, 1575	Taherpur Paschim_153_000	Ward No. 03

189.	Rickshaw/Auto Stand	0.44	1446, 1451-1454, 1464	Taherpur Paschim_153_000	Ward No. 03
190.	Waste Transfer Station	0.12	1513, 1514	Taherpur Paschim_153_000	Ward No. 03
191.	Waste Transfer Station	0.17	1431, 1433, 1477	Taherpur Paschim_153_000	Ward No. 03
192.	Electric Sub Station	0.71	31, 187-189, 195, 204, 233, 491-493, 530	Muthrapur_154_000	Ward No. 04
193.	Future Government Office	0.82	223, 502-505, 507, 571	Taherpur Paschim_153_000	Ward No. 04
194.	Hospital	0.06	553, 555, 598	Taherpur Paschim_153_000	Ward No. 04
195.	Jute Godown	2.70	167, 170, 171, 173-176, 180, 183, 187, 188, 190, 191, 193, 194, 196-210, 214, 226, 228, 229, 231, 233, 234	Muthrapur_154_000	Ward No. 04
196.	Jute Industry	9.88	31, 203-205, 209, 210, 212-229, 233-272, 275, 276, 278, 280-291, 293-304, 306, 309, 311	Muthrapur_154_000	Ward No. 04
			2179, 2182	Bisupara_155_000	
197.	Neighborhood Park	1.38	273, 277, 279, 313, 320, 322, 324	Taherpur Paschim_153_000	Ward No. 04
			361, 1429-1431, 1454, 1456, 1457, 1459	Muthrapur_154_000	
198.	Pauro Graveyard	1.70	5-7, 9, 10, 13, 14, 24, 29-35, 606-610, 612, 613, 618, 621	Muthrapur_154_000	Ward No. 04
199.	Solar Panel	0.58	31, 233, 236, 489-491, 493	Muthrapur_154_000	Ward No. 04
200.	Waste Transfer Station	0.14	378, 1421, 1422	Muthrapur_154_000	Ward No. 04
201.	Water Treatment Plant	1.45	786, 788, 792, 1347, 1348, 1350, 1352-1362	Muthrapur_154_000	Ward No. 04
202.	Wholesale Market	1.82	57-60, 65, 66, 68-85, 98-100, 103-107, 114, 115	Taherpur Paschim_153_000	Ward No. 04
203.	Bus Bay	0.11	1908, 1962, 1963, 2387	Jaganathpur_152_000	Ward No. 05
204.	Housing Area	38.58	1751, 1752, 1754, 1755, 1802, 2257, 2318, 2341, 2368, 2369	Jamgram_151_000	Ward No. 05

			115, 151-155, 157-170, 172, 174, 178, 180, 984, 1022, 1030-1042, 1044, 1046-1052, 1054-1070, 1072-1089, 1091, 1092, 1094-1110, 1112-1118, 1120-1122, 1124-1129, 1131-1162, 1166-1172, 1174, 1175, 1177, 1179, 1180, 1183, 1185, 1383, 1391-1393, 1396-1400, 1402-1443, 1445-1450, 1452-1474, 1476-1482, 1484-1522, 1524-1528, 1530, 1532, 1535, 1536, 1538-1561, 1567-1590, 1594-1598, 1600, 1602-1608, 1611-1618, 1620, 1621, 1624, 2063, 2065-2069, 2075-2078, 2187, 2189-2195, 2197, 2233-2239, 2244-2248, 2252, 2254, 2430, 2431	Jaganathpur_152_000	
205.	Neighborhood Park	1.30	132, 164, 166, 167, 733, 735-737, 821, 822, 825, 828	Taherpur Paschim_153_000	Ward No. 05
			608, 620-629, 638, 715,	Jaganathpur_152_000	
206.	Waste Transfer Station	0.13	115, 120, 202, 208, 230, 237, 238	Jaganathpur_152_000	Ward No. 05
207.	Waste Transfer Station	0.44	1761-1765, 1771, 1781-1783, 1787, 1790, 1815	Jaganathpur_152_000	Ward No. 05
208.	Cold Storage	0.37	1024, 1183-1187, 1294-1298, 1301, 1305	Sultanpur_156_000	Ward No. 06
209.	Fish Market	0.38	252, 1007, 1008, 1013, 1014, 1182-1185, 1296, 1297	Sultanpur_156_000	Ward No. 06
210.	Fish Processing Zone	2.17	1025, 1027, 1032, 1037, 1258, 1261, 1263-1270, 1273-1275, 1278-1281, 1283, 1285, 1286, 1288, 1289, 1304, 1305, 1314, 1347, 1349, 1351, 1437	Sultanpur_156_000	Ward No. 06
211.	Ice Factory	0.33	1024, 1263, 1288-1290, 1293-1295, 1301, 1303-1305, 1437	Sultanpur_156_000	Ward No. 06
212.	Jute Industry	2.62	210-213, 217, 218, 241, 243, 254, 255, 264-266, 304, 305	Muthrapur_154_000	Ward No. 06
			1585, 2085, 2091, 2105, 2108-2110, 2153-2161, 2163, 2164, 2167, 2168, 2170-2188, 2203	Bisupara_155_000	

213.	Mini Stadium	4.00	1737-1739, 1742, 1743, 1746, 1748-1750, 1759, 1760, 1769, 1869, 1871, 1874, 1879, 1882, 1888, 1889, 1893, 1895-1898, 1901, 1902, 1904-1912, 1914-1916, 1918-1921, 1929, 1932, 1938, 1939	Bisupara_155_000	Ward No. 06
214.	Pauro Graveyard	0.15	10, 621, 622	Muthrapur_154_000	Ward No. 06
215.	Waste Transfer Station	0.09	1123, 1198, 1202, 1223	Bisupara_155_000	Ward No. 06
216.	Playground & Park	4.09	1533, 1535-1539, 1541-1546, 1550-1566, 1567, 1822-1830, 1832-1843, 1863, 1866-1872	Dakshin Koalipara_158_000	Ward No. 07
217.	Poor Housing	12.77	1650, 1673, 1679, 1683, 1704, 1722, 1725, 1727, 1729, 1733, 1735, 1738-1746, 1757, 1897-1909, 1911-1923, 1925-1931, 1938, 1940, 1941, 2120, 2122-2127, 2131-2145, 2147, 2148, 2152, 2153, 2155-2169, 2366-2368, 2370, 2372, 2437-2441, 2443	Nurpur_157_000	Ward No. 07
218.	Waste Transfer Station	0.74	1164, 1165, 1170, 1338-1340, 1342-1346, 1354, 1365, 1366, 1385, 1393, 1394, 1399, 1963	Dakshin Koalipara_158_000	Ward No. 07
219.	Housing Area	46.38	1211, 1285-1294, 1296-1298, 1300-1306, 1309, 1311, 1559, 1565, 1566, 1569-1571, 1580, 1582, 1590, 1595, 1600, 1603, 1604, 1606-1608, 1610-1612, 1614-1623, 1626-1635, 1637-1641, 1643, 1646-1666, 168, 1670, 1672-1674, 1676-1691, 1693-1708, 1710-1718, 1720-1723, 1725-1729, 1731, 1734-1758, 1760-1774, 1776-1785, 1787-1816, 1818-1832, 1834-1836, 1838-1840, 1853, 2199, 2200, 2212-2214, 2223, 2225, 2226, 2228, 2229, 2233-2238, 2241-2243, 2249-2255, 2257-2259, 2261-2264, 2266-2274, 2276, 2277, 2279, 2281-2286, 2288-2310, 2312, 2313, 2315-2318, 2321, 2322, 2324-2337, 2339, 2341-2343, 2345-2352, 2354-2369, 2373	Jamgram_151_000	Ward No. 08

			115, 153, 154, 160-162, 167, 169, 1041-1044, 1046, 1048, 1052, 1054, 1069, 1070, 1072, 1087-1092, 1094, 1095, 1097, 1098, 1117-1122, 1125, 1126, 1438, 1439, 1442, 1443, 1445, 1450, 1455-1461	Jaganathpur_152_000	
220.	Neighborhood Market	1.56	483, 485-488, 515-526, 529, 538, 577	Jamgram_151_000	Ward No. 08
221.	Waste Transfer Station	0.04	1362	Jamgram_151_000	Ward No. 08
222.	Playground & Park	2.90	1534, 1535, 1542, 1543, 1554, 1555, 1829-1832, 1872	Dakshin Koalipara_158_000	Ward No. 09
			2502-2508, 2510-2512, 2517, 2522, 2524-2542, 2553, 2625, 2640	Chakkhayra_149_002	
223.	Waste Transfer Station	0.06	3563, 3756, 3757	Chakkhayra_149_002	Ward No. 09
Action Area Plan					
01.	Bir Kutsha Rajbari	5.36	3292, 3305-3309, 3337, 3338	Bri-Kutsha_284_001	Jogipara Union
			7650-7661, 7669, 7673-7675	Bri-Kutsha_284_002	
02.	Community Zone	5.42	1047-1049, 1055-1058, 1062, 1063, 1154-1170, 1172, 1173, 1401-1408, 1420-1426, 1507-1509, 2398	Chandpara_241_002	Bwabaniganj Paurashava; Ward No. 06

ANNEX-H

Photo Gallery



Attending Draft TMC Meeting Attending Final TMC Meeting



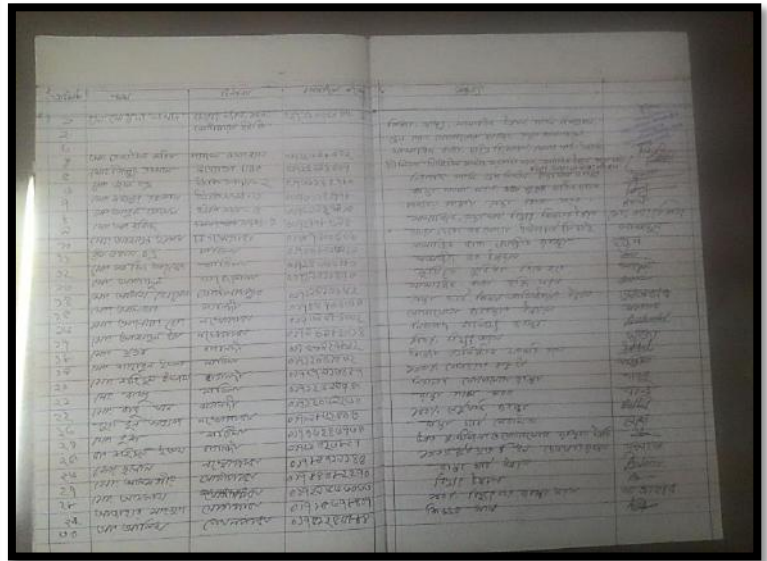
Newspaper copy of Public Hearing



Public Hearing through Miking



Miking at Maria Union Miking at Jogipara Union



H-70

**ANNEX-I
Folder Map**

Plan Map

- 1. Structure Plan**
- 2. Road Network Plan**
- 3. Land Use Plan**
- 4. Urban Area Plan**