



**Government of the People's Republic of Bangladesh**  
**Ministry of Local Government, Rural Development & Cooperatives**  
**Local Government Division**

**MORRELGANJ PAURASHAVA**  
**MASTER PLAN: 2011-2031**

March 2015

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**Technical Assistance: Local Government Engineering Department (LGED)**



**Government of the People's Republic of Bangladesh**  
**Ministry of Local Government, Rural Development & Cooperatives**  
**Local Government Division**

## **MORRELGANJ PAURASHAVA MASTER PLAN: 2011-2031**

### **STRUCTURE PLAN**

#### **URBAN AREA PLAN:**

- Landuse Plan
- Transportation & Traffic Management Plan
- Drainage & Environmental Management Plan

#### **WARD ACTION PLAN**

March, 2015



**MORRELGANJ PAURASHAVA**  
**MORRELGANJ, BAGERHAT**

# **MORRELGANJ PAURASHAVA MASTER PLAN: 2011-2031**

**Published by:**

**Morrelganj Paurashava**

**Supported by Upazila Towns Infrastructure Development Project (UTIDP) of  
Local Government Engineering Department (LGED) under  
Local Government Division**

**Consultant:**

**Joint Venture of  
Development Design Consultants Limited  
DDC Centre, 47, Mohakhali C/A, Dhaka-1212  
& Divine Associates Limited**

**Printed By:**

**Development Design Consultants Limited  
DDC Centre, 47, Mohakhali C/A, Dhaka-1212**

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Local Government Division (LGD),  
Ministry of Local Government, Rural Development & Cooperatives**

**First Edition: March, 2015**

**Price: BDT 1500.00**

**USD 20.00**

## PREFACE

Bangladesh has been experiencing rapid urbanization in the last four decades where level of urbanization has reached from 7.60% to nearly 29% between 1970 and 2011. Multidimensional complex factors like; socio-economic, political, demographic and climatic are responsible for this higher growth of spatial transformation. The fast urbanization is putting pressure on the small towns' limited land, urban services and environment along with countries big cities. Whereas urbanization is also considered as an opportunity and an integral part of the development process. Proper development plans and guidelines with necessary legislative measures and appropriate institutional arrangement can help to achieve sustainable urban as well as rural development.

However, presently, the Paurashavas has the legal mandate to take initiatives of formulating development plans, providing infrastructure and other services and creating opportunities for people to initiate developments with sustainable and harmonic approach. In this regards, Morrelganj Paurashava had initiated steps to frame its' Master Plan (*Physical Development Plan*) by taking technical assistance from the Local Government Engineering Department (LGED). LGED under the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives initiated a project titled 'Upazila Towns Infrastructure Development Project (UTIDP)' providing all sorts of technical assistances to prepare long term physical development plan titled 'Master Plan' for Morrelganj Paurashava.

Master Plan of Morrelganj Paurashava has been prepared following the pre-requisite of the Local Government (Paurashava) Act, 2009. To prepare the Master Plan, LGED engaged consulting firm named Development Design Consultant Ltd. and set up a Project Management Office (PMO) deploying a Project Director, Deputy Project Director, experienced Urban Planners as Individual Consultant and support staffs. Regular monitoring, evaluation and feedback from PMO had also accelerate the pace and quality of the Master Plan preparation tasks. During formulation of the Master Plan, the Paurashava authority along with the project and the Consultant ensure people's opinion, observation and expectation in various ways: conducting sharing meetings, Public Hearing etc. At the end of the formulation process, the Paurashava completed all procedures necessary for its approval as per the related clauses and sub-clauses of the Local Government (Paurashava) Act, 2009. Paurashava Authority has submitted this Plan to the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives for final approval and gazette notification.

This Master Plan comprises of three tier of Plan in a hierarchical order, these are: Structure Plan for 20 years, Urban Area Plan for 10 years and Ward Action Plan for 5 years. Urban Area Plan also comprises of three components namely; Land Use Plan, Traffic & Transportation Management Plan and Drainage & Environmental Management Plan. This Master plan will serve as guidelines for the future infrastructure development of Morrelganj Paurashava together with land use control and effective management of service facilities.

The Paurashava Authority acknowledges the full support and all out cooperation from the consultant team, the Project Management office of UTIDP, LGED, Local Government Division of the Local Government, Rural Development and Cooperatives Ministry, public representatives, other stakeholders and civil society with deepest gratitude for accomplishing this remarkable assignment.

Cooperation and participation from national to local authorities, all government institutions, private entities and people of Morrelganj Paurashava will be necessary to implement this Master Plan successfully and make this Paurashava developed and livable. I hope Morrelganj Paurashava will be a model Paurashava in Bangladesh through building itself green and sustainable by successful implementation of this Master Plan.

(S. M. Manirul Hoque)

Mayor

Morrelganj Paurashava

Morrelganj, Bagerhat

## EXECUTIVE SUMMARY

Morrelganj is an important pourashava of Bagerhat District with a population of only 27472 in the year 2011. In 1998 Morrelganj was established as a "C" class Pourashava with 9 wards following the Pourashava Ordinance 1977. The area of the Pourashava is about 10.20 sq. km. The outer location of Morrelganj Upazila is Kachua Upazila of Bagerhat District on the North, Sharankhola Upazila on the South and Mongla Port on West and Bhandaria Upazila of Pirozpur District on the East. Very low density (11 persons per acre in 2011) covering agricultural land, plain and lower elevation areas characterize this pourashava. It has higher agricultural activity as 34.38% of its land is under this land use. In next 20 years, as projections show, the density of population will reach only 17 persons per acre gross density. It has extremely low level of economic activities and economic potentials to flourish as an urban center in near future. Under such circumstances a Master Plan can help creating advantages for living and working in the pourashava that will indirectly help attracting investment for economic growth leading to employment generation. There are not very much development activities going on and there is also lack of organized system of development activities at present. Current development emphasizes only on road and structural development. Other utilities are neglected here. The proposed Master Plan will induce such development activities that will ensure proper provisions of utility services, urban services and with these; social development. It will also ensure good and automated governance of the pourashava and ensure good collection and utilization of its resources and thus enhance the development activities.

The Master Plan is prepared in three tiers. First one is Structure Plan, then Urban Area Plan and finally Ward Action Plan. The Structure Plan provides the policies that will guide the future development of the pourashava. In the Structure Plan of Morrelganj Pourashava 42.04% land is kept as urban area and the remaining as agricultural area and water body to support the future need for food and other agricultural products of the town and to facilitate the future drainage network. The Structure Plan proposes the restructuring of the organogram of the pourashava and inclusion of town planning department comprising two town planners. This will ensure the better implementation and monitoring of the plan. It also proposes the system of periodic review and updating of the plan and also the resource mobilization process.

Urban Area Plan consists three types of Plans; Land Use Plan, Traffic and Transportation Management Plan and Drainage and Environmental Management Plan. Under the Land Use Plan the future land use of the pourashava is proposed according to the fixed standards during the interim phase of the Master Plan. Under Urban Residential Zone and Rural Settlement Land Use Plan proposes 30.01% of the pourashava land to be earmarked. These two zones will form the future residential areas of the Paurashava. Proposals for other land uses like Commercial Zone (0.24%), Education and Research Zone (1.17%), Open Space (3.47%), Circulation Network (7.13%) etc. are made. Under the Land Use Plan the development proposals to support the future needs of the people are also given. It proposes cottage/agro based industrial zone, one Paurashava market, stadium, hospital, waste dumping ground, college, vocational training institute, low income housing project, bus terminal, truck terminal, one central park, one high schools, primary schools, playgrounds, neighborhood parks, 1 kitchen markets and many other facilities.

In the Traffic and Transportation Management Plan the Road Network Plan is proposed. The transportation facilities are proposed here in this plan. In the Road Network Plan of the

Paurashava 81.25 km. of road widening and 15.15 km. of construction of new road is proposed. The road hierarchy is proposed in this plan too. The proposed road network will comprise of primary road 80 ft RoW), secondary road (40 ft. RoW), tertiary road (25 ft. RoW) and access road (20 ft. RoW). The proposed road network and the transportation facilities along with the proposed management system will provide a good system of management for future traffic and transportation problems. The proposed transportation facilities include one bus terminal, one truck terminal, four auto-rickshaw/tempo/microbus stands, three bus bays and some other proposals.

Under the Drainage and Environmental Management Plan the drainage network of the Paurashava is proposed. This plan will analyze drainage aspects in the planning of the Paurashava, study geological fault and lineament of the project area and its surroundings, study the existing water development, flood protection and flood control project (if any) in the area and their impacts in the Paurashava plan, present planning options for drainage of the future Paurashava area, study conservation of the natural resources like parks, open space, water bodies, existing ponds etc. and conserve place of historical, architectural (if any) and agricultural importance including natural fisheries. At present there is only 11.05 km. of pucca and 2.06 km. of katcha manmade drain in the Paurashava and the natural canals and river cover 3 km. This network is not enough to support the present need and will not be suitable to support in the future. That is why the consultants proposed a comprehensive network of drains that comprises 3.91 km. of primary drain, 4.97 km. of secondary drain, 3.13 km. of tertiary drain and 0.83 km. of quaternary drain are proposed in the plan to support the drainage network.

The third and final tier of the Master Plan, Ward Action Plan, is prepared including the proposals that will be implemented during the first to fifth year of the Master Plan period. Two or more Ward Action Plans will be prepared under this Master Plan to address the need of the people for the remaining fifteen year's period of the Master Plan. This first Ward Action Plan, which is described in this report, addresses the urgent needs of the people of the Paurashava and incorporates those in the Master Plan. It analyzes the immediate requirements of the people living in the nine wards of the Paurashava and then provides facilities in a manner that it supports the particular ward in the first phase of the Master Plan period of twenty years.

This is the first Master Plan of Morrelganj Paurashava. It is prepared by LGED under Package – 12 of the Upazila Towns Infrastructure Development Project (UTIDP). It is expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future.

**PREPARATION OF MASTER PLAN FOR PAURASHAVAS UNDER UPAZILA TOWNS  
INFRASTRUCTURE DEVELOPMENT PROJECT (UTIDP), LGED**

**PACKAGE-12**

**MORRELGANJ PAURASHAVA**

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## ACRONYMS

BM	Bench Mark
BTM	Bangladesh Transverse Mercator
CBD	Central Business District
CNG	Compressed Natural Gas
CS	Cadastral survey
DGPS	Differential Global Positioning System
DLRS	Directorate of Land Records and Survey
DPA	Demarcation of Planning Area
DPHE	Department of Public Health and Engineering
GCP	Ground Control Point
GIS	Geographic Information System
GPS	Global positioning system
K.P.H	kilometers Per Hour
K.M.	Kilometer
LGED	Local Government Engineering Department
MSL	Mean Sea Level
O-D	Origin and destination Survey
PCU	Passenger Car Unit
PWD	Public Works Department
RHD	Roads and Highway Department
RTK-GPS	Real Time Kinematics Global Positioning System
SOB	Survey of Bangladesh
TCP	Temporary Control Points
TIC	Tentative points)
TS	Total Station
UTIDP	Upazila Towns Infrastructure Development Project

## LOCAL WORDS

Khal	Canal
Tempo	Human hauler
Bazar	Trade Center
Hat	Weekly an occasional Market
Paurashava	Municipality

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Urbanization in Bangladesh is moving at a rapid pace. Between 1961 to 1981, the average urban growth rate was 8%. The present average growth rate is about 4.5%. According to the population census of 2001, the share of urban population was about 23.29% and at present it is approximately 25%. By the year 2015, the share of urban population will be about 37% of the national population. The importance of urban development is emphasized in terms of its role in the national economy. More than 60% of the national GDP is derived from the non-agricultural sectors that are mainly based in urban areas. Again, the most foreign exchange earning sectors, like, garment and knitwear enterprises are agglomerated in urban areas. These sectors earn over 70% of the foreign exchange. Remittance is also a major sector of foreign exchange earning and a large share of the remittance goes into the purchase of urban land. Surplus remittance is invested in business and manufacturing located in urban areas. These phenomena indicate the increasing role of urban areas being played in the national economy. The expansion of urban economy leads to the growth of urban population and concomitant haphazard urban spatial growth without planning. The rapid urbanization is marked by the creation of Paurashavas, whose number at present stands at 324. Paurashavas are created not only to provide urban services to their citizens, but also to create a livable environment through development of planned and environmentally sound living space.

The present infrastructure provisions in the Paurashavas are in a precarious state. Drains are mostly clogged that can not drain out water during heavy rains and natural drainage systems have either been filled up or occupied by land grabbers creating water logging during monsoon. Traffic in Paurashavas is increasing day by day with the increase in population and demand. But the sub-standard road network can not keep pace with the growing demand for movement. As a result, congestion becomes a common problem. Road networks are not developed in planned and systematic way leaving room for traffic congestion that increases economic loss to the people due to travel delay. The land use development in the Paurashavas is unorganized and unplanned, which is a major source of environmental deterioration. Building Construction Rules are not effectively enforced in the Paurashavas mainly for want of a well formulated Master Plan and qualified planning professional.

Under the above circumstances, it is high time to think about solving the problems of the Paurashavas that might otherwise be emerged critically in the future. To overcome all likely problems to come in future, the Paurashavas should go for planned development through preparation and implementation of a Master Plan. The Master Plan can be prepared exercising the power conferred to them by the Paurashava Ordinance 2009. The Upazila Town Infrastructure Development Project (UTIDP) aims to prepare Master Plan for 223 Upazila level Paurashavas and Kuakata Tourism center under 12 packages for a period of next 20 years. The project has provisions for separate plans for land use control,



drainage and environment, traffic and transportation management and improvement. The project also aims to prepare a Ward Action Plan (WAP) to ensure systematic execution of future infrastructure development projects. There is also aim to prepare proposals to enhance Paurashava revenue so that it becomes more capable to meet its own capital needs.

Of the total 223 Paurashavas Morrelganj is one of 20 Paurashavas within Khulna Region under Package 12. The location of Morrelganj within Bangladesh is shown in Map 1.1.

**Map 1.1: Location Map of Morrelganj Paurashava within Bangladesh**



Thus the Master Plan of Morrelganj Paurashava suggests for the development of urban infrastructure, such as new roads and bridges/culverts, drainage facilities, street lights, markets, bus stands, solid waste management, sanitation, water supply, community facilities and other such infrastructure in order to equip the Paurashava to face future challenges of urbanization and economic regeneration. The Master Plan will initially focus on growth and development, social integration and environmental improvement following principles of sustainable development.

## **1.2 Philosophy of the Preparation of Master Plan**

The philosophy behind preparation of Master Plan of the Upazila level Paurashava lies in the very motive of providing community welfare through a process of spatial organization, socio-economic rejuvenation, environmental improvement and provision of amenities to the present and future generations. The Master Plan aims for rational use of scarce land resources for concentrated development at urban scale following the principles of sustainable development.

## **1.3 Objectives of the Master Plan**

As per the Terms of Reference (TOR), the objectives of the preparation of Master Plan of Morrelganj Paurashava are to:

Find out development issues and potentials of the Morrelganj Paurashava and make a 20-year development vision for the Paurashava and prepare a Master Plan in line with the vision for the development;

Plan for the people of Morrelganj Paurashava to develop and update provisions for better transport and communication network, housing, 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;

- a. Prepare a multi-sector short and long term investment plan through participatory process for better living standards by identifying area based priority-drainage master plan, transportation and traffic management plan, other need specific plan as per requirement in accordance with the principle of sustainability;
- b. Provide controls for private sector development, with clarity and security in regard to future development;
- c. Provide guideline for development considering the opportunity and constrains of future development of the Upazila Town; and
- d. Prepare a 20-year Master Plan to be used as a tool to ensure and promote growth of the Morrelganj Paurashava in line with the guiding principles of the Master Plan and control any unplanned growth by any private and public organization.

## 1.4 Approach and Methodology

- e. The UTIDP Project is aimed for substantial development of infrastructure and services for the Paurashava with optimum provision of opportunities for Paurashava dwellers and making scope for extending services to surrounding areas.
- f. The current project is preparing a Master plan of the Paurashava, where the existing condition and different problems are identified, studied and analyzed and the probable solutions are to be sought to ameliorate the same. The study moves through a process of data collection-analysis and fixation of objectives for planning. The approach is based on field survey for data collection and collection of

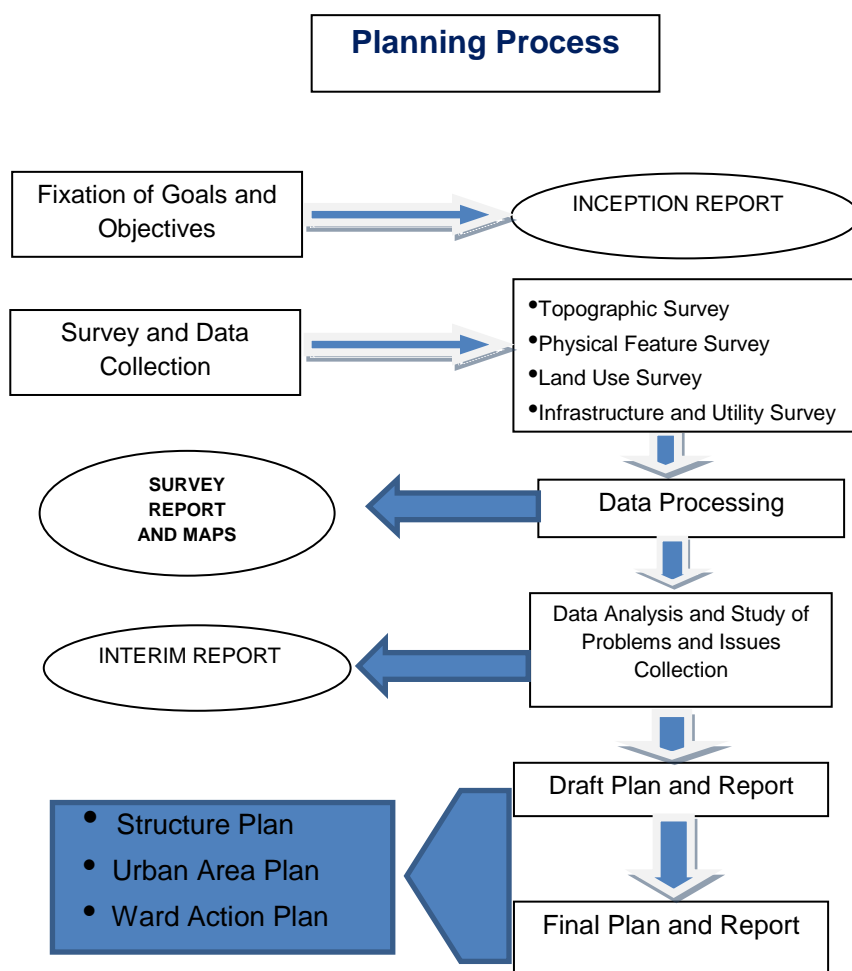


Figure 1.1: Flow Chart of Planning Process

Information from secondary sources. The data is presented through maps, text and tabular form. Then the survey report and maps are prepared and submitted. Analysis of collected data is carried out to identify the nature and extent of problems prevailing in the Paurashava in order to fix the objectives of the actions to be undertaken in the form of planning and the interim report prepared and submitted. Through the process, involvement of the stakeholders has been ensured to make the planning as much sustainable as possible. For this purpose, continuous formal and informal discussions and meetings have

been carried out throughout the project period using participatory approach. The discussions serve two purposes, first, a sense of belongingness develops within the minds of the stakeholders, particularly among the citizens, about the master plan to be prepared, and secondly, identification of problems and finding their solutions become easier with the participation of stakeholders, as the local stakeholders are more knowledgeable about local problems and possible solutions of those problems.

After doing all these jobs thoroughly the Draft Master Plan had been done based on a prepared planning standard for Paurashava level town and formulating future strategies for the corresponding area. Again after final consultation with the stakeholders on the prepared plan the Final Master Plan has to be completed.

## **1.5 Scope of Work**

The scope of work under this consultancy services covers all aspects related to the preparation of Master Plan, which includes Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Management Plan and Ward Action Plan for the proposed Paurashava. In order to prepare these plans, the activities contain but not limited to the following:

Visits have been made to the Paurashava at different stages of work of the preparation of Master Plan of Morrelganj Paurashava.

Feasibility for preparation of Master Plan has been submitted to the office of the PD, UTIDP.

An Inception Seminar has been organized at the Paurashava level to inform the Paurashava about the scope and Terms of Reference for the preparation of Master Plan. A thorough investigation has been made based on potential scope and opportunities available in the Paurashava to develop a 20 year development vision for it linking the ideas and view of the Paurashava people.

Determination of the study area and planning area has been done based on existing condition, demand of the Paurashava and potential scope for future development. A detailed survey has been conducted on the existing conditions of socio-economic, demographic, transportation and traffic, physical features, topographic, and land use of the Paurashava area following the approved format and data have been collected from primary and secondary sources. Analysis of such data and information has been carried out to find out the possible area of intervention to forecast future population of the Paurashava (15-20 years), vis-a-vis assess their requirement for different services, such as physical infrastructure facilities, employment generation, housing, right of way and land requirement for the existing and proposed roads, drains, playgrounds, recreation centers and other environmental and social infrastructure. The following major tasks have been accomplished:

Identification and investigation of the existing natural and man-made drains, natural river system, the extent and frequency of floods, area of planning intervention have been done. Other works include study of the contour and topographic maps produced by the relevant agencies and review of any previous drainage Master Plan available for the Paurashava.

A comprehensive (storm water) Drainage Master Plan for a plan period of 20 years has been prepared considering all relevant issues including discharge calculation, catchments areas, design of main and secondary drains along with their sizes, types and gradients and retention areas with preliminary cost estimates for the proposed drainage system.

Recommendations have been made on planning, institutional and legal mechanisms to ensure provision of adequate land for the establishment of proper rights of way for (storm water) drainage system in the Paurashava.

Collection and assessment of the essential data relating to existing transport Land Use Plan, relevant regional and national highway development plans, accident statistics, number and type of vehicles registered for each Paurashava have been made.

Assessment has been made on the requirements of critical data and data have been collected through reconnaissance and traffic surveys, which should estimate present traffic volume, forecast the future traffic growth, identification of travel patterns, areas of traffic conflicts and their underlying causes.

Study has been conducted on the viability of different solutions for traffic management and development of a practical short term traffic management plan has been accomplished, including one way systems, restricted access for large vehicles, improved signal system, traffic islands, roundabouts, pedestrian crossings, deceleration lanes for turning traffic, suitable turning radius, parking policies and separation of pedestrians and rickshaws etc.

Assessment has been done on the non-pedestrian traffic movements that are dominated by cycle rickshaw. Special recommendations should be made as to how best to utilize this form of transport without causing unnecessary delays to other vehicles. Proposals should also consider pedestrians and their safety, with special attention for the children.

Assessment has been made on the current land use with regard to road transportation, bus & truck stations, railway stations etc, and recommendations to be provided on actions to optimize this land use.

Preparation of a Road Network Plan based on topographic and base Map prepared under the Project. Recommendation has been made on the road development standards, which serve as a guide for the long and short term implementation of road. Also Traffic and Transportation Management Plan and traffic enforcement measure have been suggested.

Preparation of the Master Plan with all suitable intervention, supported by appropriate strategic policy, outline framework, institutional arrangement and possible source of fund for effective implementation of the plan.

Preparation of a plan has been set out proposed Master Plan at 3-levels namely Structural Plan, Urban Area Plan and Ward Action Plan.

At the first level, policies and strategies have been worked out for the preparation of a Structure Plan for each Paurashava under the package. The Master Plan has been prepared consisting of Structural Plan, Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Management Plan and Ward Action Plan.

A total list of primary and secondary roads, drains and other social infrastructures for each Paurashava for a plan period of next 20 years has been made. Examining and classifying

according to the existing condition, long, medium and short term plans have been proposed and estimated cost for improvement of drain and road alignment and other infrastructures have been prepared.

In line with the proposed Master Plan, a Ward Action Plan has been proposed with list of priority schemes for the development of roads, drains, traffic management and other social infrastructures for implementation during the first five years of plan period.

With the help of concerned Paurashava, at least 2 public consultation meetings or seminars have been organized, one for discussion on Interim Report and the other on draft Final Report on the proposed Master Plan. Beneficiary's point of view has been integrated in the plan with utmost careful consideration.

Preparation and submission of Master Plan and Report with required standards as per the TOR.

## **1.6 Organization of the Master Plan Report**

The Master Plan Report is organized in three major parts with an introduction at the beginning. The three major parts contain various components of work under the UTIDP of LGED. The three major parts of the Master Plan of Morrelganj Paurashava are as follows:

**INTRODUCTION:** It describes the ToR of the UTIDP, philosophy and objectives of the Master Plan, methodology and scope of the work and organization of the Master Plan Report.

**PART – A:** The Structure Plan sets the conceptual framework and strategies for planned development of the Paurashava based on its potentials for next 20 years up to 2031.

**PART – B:** Urban Area Plan includes i) Land Use Plan; ii) Transportation and Traffic Management Plan; iii) Drainage and Environmental Management Plan; and iv) Proposals for Urban Services.

**PART – C:** Ward Action Plan presents ward wise detailed proposals for implementation within first five years of the Master Plan period of 20 years.





# CHAPTER 2

## INTRODUCTION TO STRUCTURE PLAN

The Draft Master Plan Report is the fourth of the series of the reports to be submitted as per the ToR of the project “Upazila Town Infrastructure Development Project - Preparation of Morrelganj Paurashava Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan)”. Part A of this report describes the Structure Plan of Morrelganj Paurashava and Chapter 2 describes the conceptual issues related to the preparation of Structure Plan for Morrelganj Paurashava.

### 2.1 Background of the Paurashava

As per the Local Government (Paurashava) Act 2009, the Paurashavas in Bangladesh are categorized mainly into A, B, and C classes based mainly on annual income of the Paurashava. There is also a separate category called “Special Class”, basically for industrial and commercial hubs of Narayanganj and Tongi within the Dhaka Metropolitan Development Plan (DMDP) area.

It is a C-category Paurashava with an area of 10.20 sq. km (2521.02 acres) that was established in 1998 with 9 wards following the Paurashava Ordinance 1977. The outer location of Morrelganj Upazila is Kachua Upazila of Bagerhat District on the North, Sharankhola Upazila on the South and Mongla Port on West and Bhandaria Upazila of Pirozpur District on the East of this Paurashava (Vide Map 1.1). Morrelganj-Bagerhat Highway is situated at the north east part of the Paurashava.

The Paurashava as well as the Upazilla is connected within the region by both road and water ways. Mainly Road is the means of transportation but water way also acts as an important role in overall connectivity of the Paurashava. The project area is one of the important centers of economic activities within the southern part of Bagerhat district. The long established easy transportation link has brought these areas closer in terms of trade and industrial activities. Morrelganj Paurashava lies on 22° 27' north latitude and 89° 51' east longitude. It is located about 50 km. from district headquarter, Bagerhat. It is about 160 km road distance from the capital city Dhaka. Morrelganj Paurashava at present is being governed by 1 Mayor and 12 Councilors. Among the Councilors 9 are male and 3 are female. The present institutional facilities are being provided by around 12 Paurashava staffs.

From British time Morrelganj was distant administrative unit of British Gov't and named after four British Shaheb named Robert More, Thomas Morel, William Morel and Ivan More who developed the area as a market place. In 1849, it became a police station. It was developed as a prosperous rice growing centre on the bank of Baleshwar river. There is considerable urban development trend on both sides of the Haringhata river. The



**Map 2.1: Location Map of Morrelganj Paurashava within Bagerhat District**



Paurashava has flourished on both sides of the Haringhata River. The river banks on both sides are subject to bank erosion as no bank protection/embankments are there. The Upazila Paurashava has two ferryghat connecting the towns on both sides.

## **2.2 Vision of the Structure Plan**

The vision of the plan is the creation of an urban livable environment, where people irrespective of their socio-economic, demographic and religious identities can live and enjoy today within affordable means without sacrificing interests of tomorrow. The implementation of Master Plan of the Paurashava will translate this vision into reality.

## **2.3 Objectives of the Structure Plan**

To guide long term growth within the Structure Plan Area by means of demarcation of the future growth areas and indication of potential locations of major development areas includes: a) indication of important physical infrastructure; and b) setting out policy recommendations for future development. According to the Terms of Reference, the objectives of Morrelganj Paurashava Structure Plan are:

- Description of the Paurashava's administrative, economic, social, physical environmental growth, functional linkage and hierarchy in the national and regional context; catchment area; population; land use and urban services; agencies responsible for different sectoral activities, etc.
- 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.
- Identification and description of physical and environmental problems of Morrelganj Paurashava.
- Discussion of relevant policies to analyze and find out potential scopes for the use in the present exercise and also find out constraints and weakness of the existing policy to suggest appropriate measures for the development and management of Morrelganj Paurashava.
- To provide land use development strategies.
- To provide strategies and policies for sectoral as well as socio-economic, infrastructural and environmental issues of development.
- To discuss about implementation issues including institutional capacity building and strengthening of Paurashava, resource mobilization etc.

## **2.4 Concepts, Content and Format of the Structure Plan**

### **Concepts**

Structure Plan is a kind of guide plan, or framework plan, or an indicative plan that is presented with maps and explanatory texts in a broader planning perspective than other components of Master Plan. Structure Plan indicates the broad magnitudes and directions of urban growth, including infrastructure networks, the placement of major facilities such

as hospitals and upazila complex. A Structure Plan is not intended to specify detailed plot by plot land use or local road configurations and development proposals. Rather it identifies the areas where growth and change are such that more detailed local and action plans are needed. Structure Plan does not require excessive effort in gathering data and it is flexible and dynamic and can be changed to accommodate demanded changes. The present Structure Plan is an overall long term strategic plan for the Paurashava Shahar (Town), Morrelganj.

Structure Plan is the 1st component of the Master Plan package. The other two lower level components are Urban Area Plan and Ward Action Plan. Structure Plan lays down the framework of the future plan including strategy and the sectoral policies. The Urban Area Plan and the Ward Action Plan detail out development proposals under the framework of Structure Plan. The extended area was selected in consultation with the Paurashava for possible extension of the Paurashava. But no development proposals are suggested for the extended part as existing Paurashava area is enough to accommodate population and services during Structure Plan period, that is, up to the year 2031.

#### Content and Format of the Structure Plan

The Structure Plan is an indicative plan that gives a brief on the future development of an area with policy guidelines. It is a long-term plan with flexibility in the sense that it sets down a broad framework for future development, but not the details. The format of a Structure Plan comprises written document and indicative major development locations presented in maps and diagrams as parts of the report. The written text analyses the issues that are not possible to be presented as diagrams, drawings and maps. Therefore, the written document is as important as the physical plan and diagrams and should be read in conjunction with each other.

## **2.5 Duration and Amendment of the Structure Plan**

The Structure Plan is to remain valid for a period of 20 years from the time of its approval that is up to the year 2031. Structure Plan can contain two Urban Area Plan for the time period of 10 years each and four Ward Action Plan for the time period of 5 years each.

# CHAPTER 3

## EXISTING DEVELOPMENT STATUS OF MORRELGANJ PAURASHAVA

This chapter of the report makes a review of the various issues related to existing growth trend of the Paurashava and unveils its problems. The existing scenario in development status concerning socio-economic, physical infrastructure and environment are presented in the following paragraphs.

### 3.1 Social Development

Development is a dynamic issue. Measurement of social development essentially requires time series data. Consultants collected only recent data of the project area by means of sample survey (5% of total households) with no reference to previous situation. The population census reports are the only sources of information for Paurashava level data, but they cover only a selected number of issues that are not sufficient to make a qualitative judgment of social improvement. As the consultants have no option, it only makes a review of social development based on available population census data of 1991 and 2001 and presents the current situation using the sample socio-economic survey data. This social review indicates positive social development in Morrelganj Paurashava. As per household survey, present average household size of the Paurashava is 4.83. This indicates the success of family planning program of Morrelganj Paurashava.

### 3.2 Economic Development

Economic activity is the lifeblood of any urban centre. The higher is the economic activity, the higher will be the level of employment and consequent physical growth. So, before going for a development plan, it is necessary to assess the current level, constraint and prospects of economic activities of the Paurashava.

The principal criterion to judge the economy of an urban centre is to learn about its main sources of employment. Besides, the number of productive enterprises and tertiary level activities are also the indicators of the pattern and level of economic activities in any area. It is revealed from the sample survey on all categories of people, although 34.38% of the Paurashava area is under agriculture but agriculture occupies only 19.56% in the occupation which include agriculture, fishing and farming. The main agro base products are Rice, Maize, and other home base crops like Potatoes, pulse, nuts

etc. Again an enormous variety of water bodies, including Rivers, irrigation canals, flood plains, ox bow lakes and ponds are dispersed throughout the Paurashava and many people engaged with fishing. People of Morrelganj Paurashava also engaged with farming like poultry, dairy etc. About 47.11% people are engaged in business sector and 29.33% people are engaged in public and private sector services, 45% students.



### **3.2.1 Economic Activities**

#### **Industry**

Except some small scale processing units, there is virtually no manufacturing, as such, in the Paurashava. The town actually has no industrial base. There are a number of rice processing units and saw mills in the town that can not be termed as industry.

#### **Commerce**

The commercial activities in the Paurashava are dominated by retail business. The Morrelganj bazar is located at the middle of town. This is also a largest wholesale market.

#### **Services**

18% people is employed in government/autonomous and private sector. Ward no. 06 occupies maximum number of people who are engaged in service sector and that figure is 170.

#### **Agriculture**

Sample survey by the consultant reveals that about 8% of people in the Paurashava are engaged in farming occupation whereas 7.40% people are farm laborers. It is evident from land use survey of the Paurashava that about 34.38% of the Paurashava lands are still under agriculture.

#### **Agro-based**

As the Paurashava is mostly rural in nature at present, with effective agricultural extension services, the agricultural output can be increased many times to serve the agro-based industries in future. In this backdrop, the major challenge is to strike a balance between urbanization and maintenance of rural nature of the project area.

#### **Informal Sector Economic Activities**

Informal sector study was not a part of ToR, so the consultant did not conduct any formal study on this sector. It can be considered that the informal sector characteristics at upazila level Paurashava are same all over Bangladesh. It is more prominent, where the concentration of people takes place. Informal sector is a part and parcel of urban economy in developing countries. The most important feature of informal sector is the sellers carry their goods to the buyers and their concentration is more where agglomeration of buyers is more. They have small capital and are usually self-employed. In Morrelganj, the concentration of informal businesses is found around the bazar area, transport terminal and stoppage areas and also near the Upazila Complex.

### **3.2.2 Existing Employment Pattern**

Occupational status of the household is highly relevant for assessing the socio-economic status of the families. This has a great impact on employment and poverty reduction. Business is the prominent occupation here. Out of the employed population 38.71% is engaged in this sector. Service sector occupies second position with 18% share of all profession. Of the total surveyed population, 45% is student.

### 3.3 Population

According to BBS 2001 population census the total population of Morrelganj Paurashava was 21,715 and the density of population was 2129 persons/sq. km with annual growth rate of 4.02%. At present, ward no. 05 is the mostly densely populated area. The density per acre is 61 in this ward. Table 3.1 is shows the detail:

**Table 3.1: Population Distribution in Morrelganj Paurashava**

Ward	Area (In Acre)	Population 2001	Density (PPA) (2001)	Population 2011	Density (PPA) (2011)
1	254.84	2286	9	2892	11
2	109.95	2281	21	2886	26
3	226.92	2302	10	2912	13
4	271.99	2600	9	3289	12
5	59.28	2870	48	3631	61
6	245.59	2929	12	3706	15
7	231.21	2475	11	3131	13
8	470.23	1984	4	2510	5
9	649.95	1988	3	2515	4
<b>Total</b>	<b>2519.96</b>	<b>21715</b>	<b>8</b>	<b>27472</b>	<b>11</b>

#### Size and Type of the Family

Average household size of the project area is about 4.6. The highest household in dwelling unit in the Paurashava is 11+ (BBS, 2001). However, only few household (1.35%) belong to this category. The highest size of dwelling unit is consisted with 4 persons (23.70% of the total dwelling unit), second highest consists with 5 persons (19.09%).

#### Sex Ratio

The average sex ratio (males per 100 females) for the project area is 111:100 higher than the national average (100:106).

According to BBS 2001, combined age-group 0-9 comprises 22.47% and the age-group 10-17 years comprises the 42.11% of the total population of the Paurashava. The age-group 18-34 shows 29.91%, of which 14.00% are male and 15.91% are the female of total population. The age-group 35-59 is another group to be mentioned here which comprises the 21.34% of which 12.06% are male and the 9.28% are the female. Besides the population above 60 years is found to comparatively lower constitute only 6.64% of the population of the Paurashava.

#### Marital Status

According to BBS 2001, 46.58% of total male population is unmarried and 52.95% is married. 33.54% of female population is unmarried and rest of them is married.

#### Religious Status

According to latest population census report (2001), 83.59% of the population of this Paurashava belongs to Muslim community, 16.37% to Hindu community and 0% to

Buddhist and Christian community. Population belonging to other religion such as Buddhist and Christian are very insignificant in number.

### **Education**

The literacy rate (both male and female) of the inhabitants of the Paurashava is presented in According to BBS 2001. Literacy rate is 61.56% in Morrelganj Paurashava. In all wards of the Paurashava literacy rates of male population are found to be higher than female population. Ward Nos. 6 and 9 possesses the highest literacy rate which is 63.76%. The educational status in Morrelganj Paurashava is not very satisfactory as observed from the Household Survey. The percentage of illiterate household head in the Paurashava as observed from the survey had been 5.5

### **Monthly Income and Expenditure of the Household**

Monthly household income and expenditure of the households in an area indicate socio-economic status of people living in that area. This also allows determination of the household saving rate. Here income means income of a household for a month from all sources such as production, property, salary and business and expenditure means amount of money that a household spends for all types of consumption.

The data collected through household survey shows that most of the households fall in the low to middle income group. About 48.0% of the total surveyed population is in the income level BDT 5001-10000. The income level below BDT 5000 comprises second highest percentage (26.22%) of the households in the Paurashava. The Survey reveals that in most of the cases households have to spend all their earnings without any savings. People, earning more than BDT 20000, can save negligible portion of their earnings.

### **Migration Pattern**

Migration is one of the most important aspects when analyzing the demographic pattern of a place, the Chandina Paurashava about 58.8% of the surveyed population migrated to the same Upazila. Again out of the total migrated people, 23.5% people migrate to other Upazila of the District. Only 17.6% of the total respondents migrate to other districts to this Paurashava. No migration was occurred in Ward Nos. 5 and 6.

## **3.4 Physical Infrastructure Development**

### **Building and Structures**

Major number of buildings and structures has grown at western side of the River named Panghuchhi in Morrelganj Paurashava following the road transport networks. The households by type of structure in the project area are dominated by katcha (80%) followed by semi-pucca (13%) type, where as only 7% is pucca. Katcha structures are made of temporary materials. Normally there is a correlation between the household income and the structure type of dwelling house. Usually, it appears that quality of dwelling house is directly related with income.

### **Transport and Communication**

Total length of road network is 98.08 km. Among these 10.38 km is katcha road, 60.6 km semi pucca road and rest 27.1 km is pucca road in Morrelganj Paurashava. The highest

katcha road about 3km, exists in Ward no. 04, The highest (6.14 km) semi pucca road exists in Ward no. 07, and the highest pucca road about 6 km. exists in 07. The Paurashava has about 510 m. of roads within the town owned and maintained by the Roads and Highways Department (RHD). This road passes through north eastern side of the town. The width of this road is 20-30 m; while the right of way is 40 m. Improper intersection, Absence of traffic signal/control, On street parking, Presence of large number of NMT vehicle on the street, Absence of pedestrian ways are regular scenario of Morrelganj Paurashava. There is no rail way network in Morrelganj Paurashava.

### **3.5 Utility Services**

The following paragraphs present the existing condition of utility services in the Paurashava.

#### **Electricity**

The Rural Electrification Board (REB) at present is providing electricity facility within Paurashava area. There is no existing substation within the Paurashava or even in the entire Morrelganj Upazila. The power is being distributed from Bagerhat Palli Bidyut Samiti sub-station through transmission line to the Paurashava area. Electric poles of different sizes exist in the study area to carry HT and LT line and the total number of poles is 253. Electricity Poles are distributed evenly and transformers are used to transform the high voltage to low voltage for distributing to the clients.

#### **Water Supply**

The water requirement for Upazilla towns is generally estimated to be about 100 lpcd considering 20% technical loss and 20% demand of Industrial and commercial purpose (Rahman, 2000). Based on this general rule water requirement per day for the Paurashava at present is about 23759.99 Barrels and it will 38032.6 Barrels for the projected year 2031.

#### **Telecommunication**

Bangladesh Telephone and Telegraph Board provide the services to Morrelganj but the service is very poor. There are about 41 electric poles were found in Morrelganj Paurashava. At present like all over the country the mobile phones of different companies have gaining importance. All the six companies have their networks available in Morrelganj.

#### **Solid Waste Management**

There is no dustbin system found in this Paurashava. It was reported and proved that, the authority did not maintain formal dumping system. Wastes are dumped where it is generated. The Paurashava authority could not ensure the prohibition of waste dumping station. Total population of Morrelganj Paurashava will be 43976 (projected) during the year 2031. Total daily generation of solid waste from Morrelganj Paurashava is estimated to be 11 Metric Tones considering a generation rate of 0.25 kg/person/day (Waste Concern, 2005). So several Waste Transfer Stations and one proper Waste Disposal site have to provide for relevant waste management option.

Waste transfer stations help achieve a more environmentally sustainable system of waste management as they can reduce transport requirements, particularly long distance haulage, and allow a greater proportion of the waste stream to be recycled, treated and/or recovered.

### **Gas supply**

Gas supply is not available in the entire Paurashava area. Few households have been found using Liquid Petroleum Gas (LPG) for domestic purpose. There are 6 LPG retail shops within the Paurashava area serving the local demands.

## **3.6 Environmental Issues**

Surface water of ponds, canals and rivers in Morrelganj is observed to be fresh and free from salinity. With the development of a planned drainage system some environmental problem will be minimized.

Morrelganj Paurashava faces severe water logging during rainy season due to inadequate drains and encroachment of existing natural drainage network. Unplanned development of various infrastructures in the lower slope creates barrier to natural flow of water. These issues will consider during to the preparation of Master plan of Morrelganj Paurashava.

Flash flood occurs at Morrelganj Paurashava one or more time in every year interval caused by heavy rains. Last flood occurred at Morrelganj Paurashava in 2008.

The town of Morrelganj is no different from other towns of Bangladesh, but as disasters are concerned it is highly vulnerable to at least one disaster, earthquake the urban environment of Morrelganj Paurashava includes both built and natural environment. Urbanization has some increased hazards on natural environment. Where the built environment overburdens the natural environment urban development cannot be sustainable. The urbanization is vital for country's economic growth. Urban centers concentrate services, infrastructure, labor, knowledge, entrepreneurship and markets. Cities and towns are key generators of economic activities. The urban economies are critically important in national economic growth and of development goal. Urbanization is unavoidable. So in every phase of planning processes, all these environmental issues shall be evaluated and proper measure shall be taken to minimize the adverse environmental impacts on land pollution, water and air quality, biodiversity resources and marine resources by energy usage, transport network, waste management, slum improvement, disaster etc, due to its location in a particular seismic zone. Geological explorations and extractions make the area more vulnerable to any other town of the country. So care should be taken in construction of buildings in the town. Buildings are needed extra care to make them earthquake resistance to reduce loss of life and property. Special building codes are needed to prepare particularly for this region. Care is also needed to be taken to protect the town from flood vulnerability. So there is urgent need to render the town safer not only against earthquake but also from flooding.

### **3.7 Institutional Capacity**

#### **Existing Manpower**

Morrelganj is “C” class Paurashava. According to Paurashava manual, there should have been 84 officials and staff engaged in “C” class Paurashava to manage the engineering, administrative, health, family planning, and conservancy works within the Paurashava area. In the organogram, Mayor is the head of institution. Chief Executive Officer coordinates the three major divisions. These divisions are Engineering division (headed by Assistant Engineer), Administrative division (headed by Secretary), Conservancy, health and family planning division (headed by Health Officer). In this organogram, both full time and contractual officials are included.

Existing manpower scenario of Morrelganj Paurashava is not encouraging at all. There is acute shortage of manpower in each section of the Paurashava. Paurashava has 12 officials against 84 officials mentioned in Paurashava manual organogram. There is no Chief Executive Officer, Health Officer. Assistant Engineer of Morrelganj Paurashava coordinates the engineering division. In the Health and Family Planning Division, there is only one staff working.

#### **Paurashava Town Planning and Implementation Capacity of Master Plan**

At present, the Paurashava has no town planning section or any appropriate manpower, especially Town planner to prepare or implement town plan. The existing capacity of the Paurashava is seriously inadequate to implement the Paurashava Master Plan. The Paurashava must strengthen its capacity to implement its Master Plan, when it is completed by employing requisite manpower.

#### **Conservancy and Health Services**

Conservancy service of Morrelganj Paurashava is also very poor. There is only 5 dustbins within the Paurashava and mostly located at bazar area. Paurashava has no fixed waste dumping land. The waste collection and dumping are operated in traditional way. Conservancy department of the Paurashava is not established yet. Staffs are recruited on contract basis to convey the work of conservancy service. There is no CBO based house to house waste collection system introduced in this Paurashava.

There is one Upazila Health Complex in the Paurashava and other three private clinics/hospitals serve this Paurashava. Paurashava has only 1 staffs for health and family planning division against 22 staffs proposed in the organogram of Paurashava manual.

#### **Logistic Support/Equipment**

According to the Paurashava manual “C” class Paurashava will get logistic support/equipment to continue the work properly. This includes one jeep, one road roller (5-7 ton), two trucks/tractors, two motorcycle, three bicycles (according to the needs of the Paurashava), one type writer machine, one photocopier machine and duplicate machine. Morrelganj Paurashava got 1 no. of road roller, 1 no. of truck and a computer from government.

### **3.8 Urban Growth Area**

Accessibility is a major driving force behind the physical growth. Another important factor is flood free high land. Physical growth usually follows major thoroughfare and higher grounds. The general land level of the town is almost uniform everywhere. Therefore, accessibility is the leading factor to direct physical growth. The main thoroughfare of the town is Morrelganj/Bagerhat highway. The present growth direction is at ward no. 1 and 7. These wards are situated at western side of the Paurashava and adjacent to Bazar area (Ward No. 5).

### **3.9 Catchment Area**

It is widely recognized that there is a strong interdependence of social, economic and environmental development between rural and urban areas. The towns play an important role in rural development as markets for their goods and products, and also as the sites for food processing and other agricultural related activities, and as source of non-farm income, especially from wage labour. On the other hand, urban areas rely on rural areas for food production, labour, and raw materials for manufacturing and markets for their products. This linkage is stronger in small towns like the Paurashavas, primarily due to their proximity to the surrounding rural hinterland. People of the catchment areas can access public service offices and hospitals in the towns with less difficulty than offices in cities, while schools and other facilities serve a large number of the catchment area population, contributing significantly to rural development.

### **3.10 Land Use and Urban Services**

The general land uses of the project area are shown in Table 10.1 in Chapter 10. In the land use pattern of the Paurashava, 19 types of land uses are found. It is clearly evident from the table that agricultural land use (about 34.38%) dominates the Paurashava area, followed by residential (31.19%), water bodies (26.92%), urban green space (2.67%), circulation network (only 1.95%), and government services and educational land use occupy 0.39% and 0.84% respectively.

Settlements are found particularly in the areas of higher elevation following linear pattern along side roads. The trend of settlement growth is greater in areas close to the main road. The core part of the Paurashava is the most built up part of the planning area. Apart from core area, in most of the other areas, residential developments have taken place as dispersed settlements on high lands. Dispersed settlements make provision for services difficult.

### **3.11 Paurashava Functional Linkage with the Regional and National Network**

Any development initiative at the local level must relate to the national level plans in order to achieve cohesion and integrity with overall development of the country to attain the national development objectives.

The present system of national level planning hardly links the local level plans. The present system of allocation of resources in national development budget is a top down

approach, which is highly influenced by political objectives. As a result, urban sector is not yet considered a priority sector and due to resource constraint, many problems of the Paurashavas remain unresolved. Therefore, it is important to establish a linkage between the local plans and the national development plan so that aspirations of the people can be realized. National development plans are prepared considering the overall needs and aspirations of the country with respect to different sectors of development.

This necessitates for a bottom up approach of development planning and the budget allocation should be made according to the choice of the local governments who are accountable to the Paurashava people directly. Budget should be allocated according to the priority list of the projects prepared by the Paurashava that is supposed to reflect the needs of the Paurashava people as the list can be prepared by the councillors and the Mayor who are directly elected by the people.





**Map 3.1: Communication Network of Khulna Region Showing Connectivity with Morrelganj Paurashava**



The aim of the Structure Plan is to prepare a development plan for Morrelganj Paurashava with full participation of its stakeholders. In the process of planning, a large number of development projects have been identified in different sectors. Implementation of development projects will improve infrastructure and services and will create an environment for utilization of local resources. This will attract more investment in the locality to generate new employment. New employment will generate income for the poor people and shall improve the poverty situation, which is the main objective of PRSP. New jobs will also be created during implementation of various development projects of the Paurashava prepared under the master plan. New and improved road infrastructure will increase mobility vis-a-vis economic activities of the Paurashava that will help to address the problems of unemployment.

The current program of Paurashava Planning helps to address urban poverty through adequate steps taken up to accelerate urban infrastructure development based on the Morrelganj Paurashava plan. The new developments will induce new investments in trade and industry and lead to generation of more employment in the service, construction, transport and informal sectors. This will directly assist in reducing poverty. It will help absorb additional work force of rural areas as a result of natural growth of population. Agricultural sector has limitations in absorbing labor force.

### **3.12 Role of Agencies for Different Sectoral Activities**

The successful implementation of Structure Plan depends upon efficiency of the stakeholders and the degree of integration and coordination among them. Structure Plan of a town involves a complex affair having numerous stakeholders influencing the decision making process of development.

Care has been taken for all programmes and projects to be developed in a sound manner technically, socially, environmentally and institutionally with full participation of local communities. Due care has been taken so that there have no significant adverse internal or external environmental impacts. Sustainable urban development based on a continuous dialogue between the actors involved in urban development is needed to improve the urban environment. It is expected that after the completion and implementation of the Master Plan as well as the mentioned projects and programmes of other organizations in Morrelganj, the eastern most small town of Sylhet region will develop with its full potential.

#### **Development Schemes Implemented by the GOs**

The recent infrastructure or development schemes implemented by the Government includes roads, street lights etc.

Morrelganj is agriculture based urban area and Upazila Agriculture Office has a significant influence on its agricultural sector. Central Government use subsidy for the betterment of the farmers. Local office distributes fertilizer to the poor farmers 20 kg per head through the Paurashava. Paurashava authority sometimes distributes that fertilizer to the farmer 10 kg per head to balance between demand and allocation by agriculture office. Besides, agriculture office also arranges some training workshop for the farmers about the modern techniques of the cultivation and how to increase more production.

Upazila Fisheries and Livestock Office distribute fish fry and fertilizers for fish and vaccination of poultry and other livestock to the people with free of cost though its rate is not mentionable. They also arrange training session to train the people. Upazila Parisad sometimes takes initiatives for the forestation and distribution of saplings. Upazila Health Complex only implements a few activities like vaccination, training on child and mother health etc.

Electrification of Morrelganj is directed by Polli Biddutayan Board (Rural Electrification Board- REB) has a master plan to avail 100% electrify the whole Upazila including the Paurashava area. The master plan includes priority basis electrification to the residents and the commercial establishments. Paurashava source says that this activity by REB is not seen last two years.

#### **Development Schemes Implemented by the NGOs**

No mentionable infrastructure development project was undertaken by the NGO's in the Paurashava. Different NGOs at Morrelganj Paurashava provide mainly micro credit service. ASA only provide micro credit service and money transfer service of Western Union. Grameen Bank of Morrelganj Paurashava provides micro credit and house loan service for the poor people. BRAC alongside micro credit program provides other type of programs for the wellbeing of the local people. These are health program, Apon- Adult Education for the local juvenile, establishing Library, AIDS awareness program, Solar energy program, Remittance supporting program, Woman health program, Social development and human right program, to control acid violation (treatment, support of law, rehabilitation), education. Ongoing programmes are- Pure water supply program, Secured out migration- financial support.

#### **Development Schemes Implemented by Private Sector**

There are a few development works that have been implemented by private sector. Some commercial activities and private schools have been developed by private initiative.

# CHAPTER 4

## CRITICAL ISSUES FOR PLANNING

Deficiency in infrastructure and services is one of the major critical problems of the Paurashavas in Bangladesh, and Morrelganj is no exception. The reasons for such deficiency may vary, but are mostly linked with the institutional capacity and resource potential of the Paurashavas. The institutional capacity of each similar category Paurashava in terms of manpower and other logistics at present can be same across the country, but their efficiency and performance in practice may vary for a variety of reasons.

Chapter 4 describes the critical issues for planning based on the existing conditions in respect of Socio-Economic and Demographic issues, Transport and Communication, Urban Utilities, Drainage and Environment, related other issues namely disaster, land use control, law and regulation etc. The weaknesses in the present development processes are also taken into consideration to identify the critical issues for planning at Morrelganj Paurashava.

### 4.1 Socio-Economic and Demographic Issues

Most of the Paurashavas in Bangladesh are basically urban centers with direct links to rural areas. There are significant differences in the standard of socio-economic well being and demographic characteristics of these small towns with metropolitan and major cities in the country. Most of these Paurashava towns have small population, not enough to sustain economic growth to render services and facilities for quality of life needed in an urban environment. As a result, qualities in socio-cultural and demographic matters suffer from inadequacies in their requirements of facilities and services of various kinds. In the preparation of various components of the Master Plan of Morrelganj Paurashava, this critical aspect of reality in development has to be addressed for sustainable solutions.

### 4.2 Transportation and Communication

Communication network plays the very important role in development of settlements. Houses and other establishments always prefer road side lands to have easy access to different places. Morrelganj Paurashava is not yet developed as a town. The Paurashava has a very low traffic volume. Traffic Conflict is not common and frequent in Morrelganj town. However, without planning a transport network for the Paurashava area as a whole, a standard transport network and an efficient traffic management system for the future can not be ensured. The nature of problems and deficiencies are identified below.

#### a. Unplanned and Narrow Road

Roads in the town are being developed without using any planning standard and network plan. As a result, narrow roads with tortuous pattern are common. Narrow roads and poor maintenance of those roads are major problems for traffic movement in the town. New houses and other structures are cropping up along these sub-standard narrow roads. This

is likely to poise traffic movement problems in the future, when development becomes more intense and density of population increases. The existing narrow roads require widening and improvements of pavement. Some road segments within the Paurashava are built in an unplanned manner. These segments will require improvement as per future traffic volume and required space for turning lane. Map 4.1 shows the unplanned and narrow road of Morrelganj Paurashava.

#### **b. Traffic Congestion**

Extremely low level of vehicular traffic in the streets of the town does not pose a problem in terms of congestion at present. However, congestions are found to arise from non-motorized traffic at selected locations, where public assembly is profound, especially Bazar intersection and Bus Stand More. Poor designing of the intersection creates congestion. Again, slow moving rickshaws, vans on street parking and on street loading-unloading of goods are found to be a major source of traffic congestion. Manually operated rickshaws and vans are a cozy and cheap traffic mode that can take passengers to their door steps. It is, therefore, a very popular mode that requires special planning attention in the design of transportation network and individual roads.

#### **Reason for Congestion**

- Traffic mis-management is the prime reason for congestion. There is a common tendency among the rickshaw pullers to disobey rules. They roam about the busy areas in search of passengers and park rickshaws at critical points leading to congestion.
- There is no proper and adequate space for parking auto-rickshaws and tempos. They are parked on the road. On road waiting of these vehicles is also a source of congestion.

#### **C. Bus, Truck, and Tempo Terminal/Stand**

The only bus stand of Morrelganj Paurashava is located at Solombaria area beside the Morrelganj-Bagerhat highway and the ferry ghat at northern side of the Paurashava.. It is known as 'Solombaria bus stand'. The buses are normally parked beside Morrelganj-Bagerhat linkage road or on street, with a capacity of accommodating 5-10 buses at a time. Though major traffic gathering point is on the western side of the Paurashava, but it has no formal truck terminal for loading and unloading of trading materials. There is two non formal tempo stands at Morrelganj Paurashava. One tepmo stand is located at the bazar point and another one is located in the bus stand more beside Morrelganj-Bagerhat linkage road.

### **4.3 Urban Utilities**

A key issue related to the sustainable development of planning area providing a minimum quality and standard of living, pertains to the availability of and accessibility to basic infrastructure facilities, viz. water, power, sewerage, drainage and solid waste management. The present state of infrastructure problems in the Paurashava may become a cause of crisis. At present, state of telecommunications and power scenario in Morrelganj Paurashava is not so good. There is no provision for water supply or gas

supply network in the Paurashava. Thus critical need of advance action and arrangement is required for adequate provision of physical infrastructure related to utility services.

#### **4.4 Drainage and Environment**

The condition of drainage service in the Paurashava area is very much dismal. A total of 6.68 km. of drains are available in the Paurashava area but they aren't properly connected. Unplanned development of various infrastructures in the lower slope creates barrier to natural flow of water. The result is pool of stagnant water found almost everywhere, especially in wet season.

Morrelganj Paurashava suffers from the shortfall of funding to provide sufficient drainage system as well as its proper operation and maintenance. Only 20-22 staffs and all of them are contractual labors are engaged in its conservancy division for street sweeping, solid waste collection, cleaning and maintenance of drainage system. But due to the lack of equipments they are unable to clean and maintain it. Negligence of duties/responsibilities of staffs is another main problem for inadequate operation and maintenance of the drainage system.

#### **4.5 Related Other Issues**

Panguchhi River flows middle of the Paurashava. Ward No. 08 and 09 located at eastern side of this river are deprived to benefit of direct linkage with the main economic zone or business center of Mrrelgonj Paurashava located at western side of that river. Moreover, Morrelganj-Bagerhat roadway also got ended at eastern side of the river which plays as barrier to direct communication with the other part of Paurashava. This river also brings misery to the people inhabiting the region. Scarcity of water may cause siltation on river beds. Generally during rainy season, the water overflows on the both sides of the Panguchhi River up to 2 ft. In the months of Srabon to Ashwin, the water rises with a height of 2-3 ft.

#### **4.6 Disaster Issues**

Inundation has been measured within Paurashava on plinth and above plinth level. Two level of inundation creates following types of damages. When flood reaches plinth level and above plinth level the crop loss occurs in most of the Wards. The Paurashava was not affected by recent flood. The Paurashava area including the Morrelganj Upazila has been undergone several major natural disasters in the past ranging from Cyclone, Water logging and Draughts. The period of these disasters are 2006, 2007, 2008 and late 2008 to early 2009. Very scanty attempt has been made by government to rehabilitate people after all these natural disaster.

#### **4.7 Land Use Control**

A Land Use Plan of the town was prepared in 1987 by Urban Development Directorate (UDD), but it was never brought into practice due to lack of regulatory measure for implementation. Instead, discretionary decisions are used in case of land use decisions. The Land Use Plan at that time was prepared for the Upazila Headquarters by UDD, but remained under the administrative control of the Ministry of LGRD & C. So conflict and



lack of legal basis in implementation prevailed. In the present context of socio-economic demand and land use dynamics in the country, development of a Paurashava without a Master Plan can not be imagined.

#### **4.8 Laws and Regulations**

Absence of adequate planning and development control is a problem in all urban areas of Bangladesh and Morrelganj is no exception. A number of legislative measures are there to help the administration of urban area, urban development and management. But all these enacted planning laws could not be enforced and many of them are not efficient in regulating planning. Due to lack of proper implementation and enforcement, these laws remain inactive. Some weaknesses in the implementation are also observed in some conditions. So it has turned into a critical problem for the implementation of plans for towns and cities.

A substantial portion of national resource is invested in building construction in both public and private sectors. In order to ensure optimum return of this investment and to achieve satisfactory performance of the buildings in terms of safety, serviceability, health, sanitation and general welfare of the people, building construction needs to be controlled and regulated. Legislative measure for such control has been provided in the East Bengal Building Construction Act, 1952 and from time to time, regulations have been promulgated by the government under the Section 18 of this Act. As per law, it is mandatory to get any structure approved from appropriate authority before construction. Permission to building construction in Paurashava is administered by this authority within its jurisdiction. However, as elsewhere in the country, noncompliance to these rules is also observed here.

##### **a. Weak Local Government**

Though Paurashava is a democratically elected urban local government, its authority is limited to work as a local government. In most cases, prior government permission is required before taking any legal action. Section- 66, Section-69 (1) and (2), Section- 72 (4), Section-32 (2) of Paurashava Act are a few examples. This is one of the reasons that there has been a little progress in decentralization of governance at local level in Bangladesh.

##### **b. Lack of Fund**

Local bodies in this country are in constant shortage of funds as is the case in Morrelganj. The sources of its income are generally taxes, rates, fees and charges levied by the authority, and rents and profits accruing from individuals and institutions, govt. grants, profits from investments, receipts accruing from the trusts placed with the authority, loans raised by the local body and proceeds from such services are other sources of income.

##### **c. Public Participation in Plan Making Process**

The planning and development Acts of earlier times had contained a little scope for the authorities concerned to seek public opinion on their city/town plans prepared before they are sent to the government for final approval. Not having any scope for public participation is against the democratic norms of a modern society. The authority must involve people in

the planning and development process, and hear their views, needs and grievances to mitigate problems. This vital aspect should be incorporated in the Ordinance through revision.

**d. Coordination of Activities of Public Sector Development Agencies**

There are a large number of public sector development agencies working in the town and surroundings areas. There is hardly any coordination among activities of these development agencies. Absence of coordination results wastage of resources and often brings misery to the people. This is commonly evident in our urban development works, for example, as one agency digs the streets for telecommunication network and repairs the streets, another agency starts digging for sewerage ducts. Effective coordination in this case, would result integrated approach to development work reducing wastage of resources. There should be provisions in the Ordinance for such coordination by the Paurashava Authority to ensure accountability of the agencies working for their respective jobs in municipal development.

**e. New Rules for Planning Standard**

At present, there is no standard for infrastructure, services and facilities provided by the public sector. There is need to formulate standard rules for services and facilities and get incorporated in the Paurashava Ordinance/Act to secure public interests. A standard has been set in the UTIDP for future land use proposals in the Master Plan of the Paurashava.

**f. Betterment fee**

Due to failure of execution of the powers of charging betterment fee, all the benefits of land value enhancement due to Paurashava development of infrastructure go to the adjacent landowners or the persons having interest therein. A proper execution of betterment fees will help increase in revenue earning of the Paurashava.

**g. Penalty for Violation of Plan Provisions**

The penalty for violation of plan provisions provided in the Ordinance (Section 49) is only Tk. 5000/ and Tk.50 for each day, if violation continues further after notification. This is extremely low rate of penalty, which would be unable to prevent any violation effectively. The penalty provision should be more stringent to ensure enforcement of plan provisions.

**4.9 Existing Problems and Weaknesses in the Development**

The major problems that currently exist in Morrelganj Paurashava include the following:

- a. The Paurashava town has a weak economic and revenue base that does not support improvement in the socio-economic well being of the people. The Paurashava authority for lack of resources, fails to make required investments in the development of physical infrastructure to improve the quality of life of the people living in the town. The tax management is weak, resulting in poor collection. Poor assessment system, lack of efficient manpower and legal issues are the main reasons for this. Corruption is another main reason for low collection of taxes.

- b. The Paurashava has also no definite plan for the development of various physical infrastructures in the near future in a planned manner. With lack of resources, it also lacks in professionally skilled manpower to carry out development in a planned way.

Thus for making this Paurashava a viable urban center, attention should be paid toward cost-effective development of all of its required infrastructure in phases, with the help of professionally skilled manpower and utilizing the newly prepared Master Plan as an important tool for all development.

# CHAPTER 5

## REVIEW OF POLICIES, LAWS AND REGULATIONS

### 5.1 Introduction

The urban planning and land use regulations per se are essential for municipal development. They impact on land market favorably or unfavorably and result in social benefits and costs depending on their nature and the specific contexts in which they are applied. Policies, regulations and processes that facilitate availability of land and its uses for planned development at affordable costs need to be continued and those lead to contrary results need to be eliminated or modified.

### 5.2 Review of Relevant National Policies

The various existing policies, regulations and laws of the country have direct and indirect effects on the preparation and implementation of Master Plans of the Paurashavas in the country. These are briefly reviewed in this chapter to examine their adherence with the Master Plans of the Paurashavas.

#### 5.2.1 Directives of the Local Government (Paurashava) Act 2009 for Preparing the Master Plan

The Paurashava Ordinances at different times since 1960's till the present time have iterated that a Paurashava as it gets established must prepare its Master Plan for planned development of the municipal town. So far, three ordinances have been made in the year 1967, 1977 and 2008, all suggesting for planned development. The Paurashava Ordinance 2008 was later modified and enacted as Local Government (Paurashava) Act, 2009 in the national Parliament on 6, October, 2009.

The Paurashava Act made provision for having the Master Plan prepared by a Paurashava within five years of its inception. The Master Plan of a Paurashava town is aimed for ensuring planned development, and should include the following:

- Survey of history, detailed statistical information, public service activities and other mentioned subjects of the Paurashava;
- Development, extension and upgradation of any area within the Paurashava; and
- Control and regulation of development of any land, any building construction and renovation within the Paurashava.

#### **Actions Suggested in the Act to Prepare Master Plan**

The Local Government (Paurashava) Act, 2009 suggests for having qualified Town Planner in its Organogram of Manpower to undertake the job of preparing the Master Plan of the Paurashava. Until such qualified Town Planner is not available in the Paurashava, the Paurashava may require a competent national government authority to prepare such plan for the Paurashava. The Act also makes it contingent to form a Town Planning Committee within the capacity of its manpower to execute the Master Plan of

the Paurashava Town.

Morrelganj Paurashava has no Town Planner and Town Planning Committee at the moment. This makes the Paurashava dependent on having the Master Plan currently being prepared by LGED.

### **5.2.2 National Land Use Policy, 2001**

To safeguard the use of its land resources, particularly the valuable agricultural land of the country, the government in 2001 declared the National Land Use Policy. The policy proposed for the preparation of national land use plan, which is very much relevant to the current plan of the Paurashava.

The land use plan is to be based on the criteria of land productivity, land capability and land suitability, use and requirement of land by agriculture, forestry, industrialization, urbanization and housing. Following are the key issues of the national land use plan:

- Execution of coordinated land conservation programs aimed at prevention of desertification and weathering of land, conservation of land fertility, development and conservation of land.
- Prevention of destroying the landscape by earth cutting, excavation and removal of land.
- Formulation and effective execution of Land Use Plan in order to ensure planned use of land.
- Payment of compensation to those who will be affected by land weathering and land acquisition by the government.
- Monitoring, survey and research on desertification, land reclamation, prevention of weathering of land, conservation and development of land and watershed areas.

The policy emphasizes on the planned and the best use of land, and stressed on the most intensive use of this scarce resources of the country. The policy aims to introduce 'land use zoning' based on particular characteristics of land, prevent unplanned expansion of residential areas and control of indiscriminate growth of industrial and commercial activities. In absence of execution, the situation in land use and land management is severely being deteriorated.

### **5.2.3 National Housing Policy, 1993**

The Government of Bangladesh formulated the first ever housing policy of the country in 1993. The priority of the government is to create affordable housing, which might be possible through controlling unplanned and haphazard housing area development. The policy is committed to encourage private developers in land and infrastructure development, and house construction. The policy also made commitment to provide government assistance on participatory housing infrastructure development involving the community, NGOs, CBOs, private developers and social welfare organizations.

The policy declares that in housing activities, the government will continue to remain as a facilitator in housing sector. The government intends to provide housing only to the poor and the rootless classes of the society. The policy makes commitments to encourage private organizations, NGOs and CBOs in housing development, income generation and

environmental improvement under local planning. The preparation of Master Plan of the Paurashavas is, therefore, a step forward to address the various development issues including housing for mass people at local level.

#### **5.2.4 Population Policy, 2004**

Prepared in 2004, the Population Policy of Bangladesh responds to the critical need to deal with the complex national population problem in a holistic way. It aims to build national consensus and synergy among institutions: public, private, civil society and NGOs about the problem.

The objectives of the National Population Policy are to improve the living standard of the people through making a desirable balance between population and development. The Policy proposals can broadly be divided into four sectors, human resources development, decentralization of population activities, participation of NGOs and private sector in population planning. The population policy aims to create a large skilled workforce, emphasizing on education and training strategies.

The policy calls for decentralization of population activities and ensure people's participation through decentralization of services and devolution of power to the local levels. The policy aims to prepare Action Plan through participation of local elites, opinion makers, representatives of poorer section of the society along with the local level government officials. With a view to give a holistic approach, the population policy calls for making the NGOs and private sector as important partners in population activities at various levels.

#### **5.2.5 Transportation Policy, 2004**

Prepared in 2004, following are the policy objectives of Transport Policy:

- To provide a safe and dependable transport service for all.
- Removal of unnecessary control and formulation of laws and regulations conducive to providing services.
- Fare control and reduction of transport cost of goods for export.
- Determining the roles of the Government sector and the private sector.
- To maintain an economic and environmental balance.
- To ensure maximum utilization of Government funds.
- Expansion of the role of transport in the ever increasing economic activities.
- Growth of traffic commensurate with economic development.
- Introduction of an integrated transport system and provision of alternate transport systems.

The aim is to encourage greater private sector participation with national ownership of road and rail infrastructure. Lease of infrastructure may be allowed on long term basis. The Government is interested to establish a user role within its transport planning process. The Government intends to make arrangements to realize the cost of transport operation and road maintenance from road users through new fiscal policies and protect public

interests. The Government will regulate tariffs for passenger and goods both in road and rail transport.

### **5.2.6 National Environment Policy, 1992**

Government declared an environmental policy in 1992 with a view to safeguard the national environment. The main objectives of the policy are:

- To promote natural balance and overall development by means of conservation and development of environment.
- To save the country from natural disaster.
- To identify and control all sources of pollution and degradation.
- To ensure environment friendly development in all sectors.
- To ensure sustainable, long term and environment friendly use of all national resources.
- To get involved with all international initiatives on environmental issues.

The comprehensive environmental policy covers as many as 15 sectors of development namely, agriculture, industry, health and health promotion, energy, water resources, flood control and irrigation, land, forest, wild life and biodiversity, fish and animal resources, food, coastal and maritime environment, transport and communication, housing and urbanization, population, education and public awareness, science, technology and research, legal framework, institutional structure. The consultant highlights only those sectors that have relevance to urban development and planning.

#### **Industrial Sector**

The following environmental measures are important:

- Potential polluting industries must incorporate control measures in its set up.
- All industries must conduct EIA and take pollution control measures.
- All industries in residential areas to be gradually shifted and new locations to be identified for planned industrial development.
- The industries producing pollutants should have their own system of pollution monitoring.
- Recycling of waste in order to reduce the volume of waste.
- Safeguard health of industrial workers.

#### **Health Sector**

The following environmental issues are important:

- Supply of safe drinking water in the Paurashava area and introduction of low cost healthy sanitation system.
- Control of pollution in all kinds of water bodies by municipal, industrial and toxic materials.

- Ban on carrying waste during day time and in open garbage trucks.
- Steps to be taken to protect public health and environment from all activities harmful for human health.
- Inclusion of environment in the academic syllabi.

### **Energy Sector**

The following are some relevant policies:

- Large scale for introduction of improved cooker and wide dissemination of the technology to conserve energy and save environment.
- Promotion of biogas, solar energy, mini hydro electric unit and wind mill as sources of energy.
- Take up measures to reduce the amount of harmful elements in fuel including, sulfur in diesel and lead in petrol.
- Care has to be taken so that use and transformation of primary and commercial energy does not create any adverse impact on the environmental balance.
- Appropriate measures have to be taken during extraction and distribution of different natural resources like, oil, gas coal, peat so that they do not create any adverse impact on air, water, land, hydrological balance and the eco-system.
- Care has to be taken during giving fitness certificate to vehicles that emit black smoke. Mobile courts will have to be arranged to enforce the relevant legal provisions.

### **Transport and Communication Sector**

The important aspects are:

- Care to be taken to make the road infrastructure development congenial to environment and the development of roads does not impede drainage of water.
- Appropriate measure to be taken so that the passengers and the transport do not endanger public health by indiscriminate throwing of solid waste and defecation.
- The rail, road and water transport must adopt measures to control emission of excessive black smoke.
- Creation of public awareness about the effect of pollution of river water.
- Control on water pollution to be ensured in inland river ports and dockyards.
- Encourage railway rolling stocks that generate less pollution.
- Forestation on both sides of railways and roads.

### **Population Sector**

The important aspects are:

- Conduct study on the impact of population growth on environment and take appropriate measures to mitigate the problems of population growth.



- Prepare manpower utilization plan to make planned and effective use of human resources congenial to environment.
- Emphasize participation of women in environment conservation.
- Appropriate measures are needed to safeguard health of the poor and save them from the adverse effects of environmental degradation.

### **5.2.7 Industrial Policy, 2005**

The key aspects of the Industrial Policy 2005 are to:

- Set up planned industries considering the real domestic demand, prospect of exporting goods abroad, and discouraging unplanned industries in the light of the past experience.
- Accept private initiatives as the main driving force of economic development and uphold the government's facilitating role in creating a favourable atmosphere for private investments.
- Take necessary initiatives to establish industries on state initiative in those sectors that are considered very important and essential, where private entrepreneurs are not forthcoming.
- Cater to the needs of consumer satisfaction of the local products; measures to be undertaken to: produce quality products, diversify goods, and provide support for enhancing productivity using appropriate and advanced technology.
- Provide inspiration for the speedy expansion of cottage industries and SMEs, and for further investment in these sectors so that new employment opportunities are generated, unemployment reduced and poverty alleviation programs made available.
- Prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat-sheep industry as agricultural industries.
- Provide women entrepreneurs with all necessary assistance in establishing industries in various sectors.
- Provide all necessary assistance for producing environment-friendly product with the objective to creating a pollution-free environment in the industrial sector.
- Enrich the industrial sector with the proper utilization of various natural and mineral resources.

### **5.2.8 National Tourism Policy, 1992 and 2010**

Recognizing the contribution of tourism to the socio-economic development of the country, the government framed the National Tourism Policy in 1992. The government in a gazette notification in May 2010 declared that the government may declare any potential site as a tourist area and if declared so, any development within the area will require formal permission from the government. The attractions of tourism can be varied, and the major policy thrusts for the sector are:

- 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 area concerned
- To identify sectors for private capital investment
- To arrange entertainment and recreation
- To strengthen solidarity and integrity among the peoples

### **5.2.9 Agriculture Policy, 1999**

Agriculture Policy of Bangladesh was framed in 1999. A new policy is currently under preparation. The following are the important considerations in the 1999 Agriculture Policy.

The major issues dealt within the policy are, seed, fertilizer, irrigation, pest management, agricultural research, extension services, marketing of agro-products, land use, education and training, environment and agriculture, women and agriculture, coordination of various agencies engaged in agricultural development. Most of these issues are not relevant to the current Master Plan. The only relevant issue is the land use. So, review has been carried out on the land use only.

The Policy stresses on all possible steps to ensure optimum use of land. Its use has to be compatible with the overall goals of socio-economic services and utility provisions. The policy targeted to take the following steps to ensure planned utilization of land:

- Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis. Integrated approach of SRDI will be further strengthened for this purpose.
- To ensure maximum utilization of land, bottom up planning through people's participation will be started from the mouza or village level.
- Measures can be taken to stop fertile agricultural land being used for non-agricultural purposes, such as private construction, house building, brickfield, etc.
- Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.

About one percent of agricultural lands are being converted into non-agricultural use every year. In a country of constantly growing population, withdrawal of land from agriculture will affect food production. So it is necessary to safeguard farm land from conversion. But this vital issue has been partially addressed in the policy. It states only about fertile land and not agricultural in general.

Government has not framed any effective mechanism to discourage acquisition of land in excess of requirement for non-agricultural purpose. To protect agricultural land, immediate steps are necessary to delineate agricultural lands. This issue has not been covered in the policy. It has been found that large areas of agricultural lands are unnecessarily being included within Paurashava. Sometimes, it is about 70% of the total Paurashava area.

### **5.2.10 Urban Forest Policy, 1994**

Representing an amendment of the forest policy of 1979, current national forest policy was enacted in 1994 and officially announced on 31st May 1995. The policy was formulated to initiate a 20-year Forestry Master Plan (FMP). The plan provides a framework for optimizing the forestry sector's ability to stabilize environmental conditions and assist

economic and social development. Three imperatives were identified: sustainability, efficiency and people's participation. Important objectives are:

- To afforest about 20% of the total area of the country by initiating various a forestation 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;
- 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
- To provide for and implement a forestation programmes on both public and private lands.

The policy statements which are most relevant to local participatory forestry are as follows:

- Tree growing by communities, local groups or individual families on roadsides, windbreaks, canal/river banks and other public or marginal lands will be promoted through NGOs and relevant state agencies;
- Buffer zones attached to protected areas may be allocated for tree farming and agro-forestry on a long term lease basis;
- The State will provide technical assistance and financial support to promote all forms of homestead forestry;
- Cottage and small scale labor intensive industries, which contribute to the local economy and process wood and other forest based raw materials, will be promoted;
- The traditional rights of people living within and adjacent to designated forest areas will be maintained and their forest-related cultural values and religious beliefs will be respected.

### **5.2.11 National Plan for Disaster Management, 2008-15**

National Plan for Disaster Management 2008-2015 is an outcome of the national and international commitments of the Government of Bangladesh (GoB) for addressing the disaster risks comprehensively. The plan is developed to reduce the vulnerability of the poor to the effects of natural, environmental and human induced hazards to a manageable and acceptable humanitarian level. The objectives of this Plan are to:

- Align the strategic direction of disaster management programs with national priorities and international commitments.
- Articulate the vision and goals for disaster management
- Outline the strategic direction and priorities to guide the design and implementation of disaster management policies and programs.
- Create a cohesive and well-coordinated programming framework incorporating government, non-government and private sector.

- Ensure that disaster management has a comprehensive and all-hazards focus comprising disaster risk reduction and emergency response.
- Illustrate to other ministries, NGOs, civil society and the private sector how their work can contribute to the achievements of the strategic goals and government vision on disaster management.

A holistic approach for disaster management has been emphasized to work together with all the stakeholders and build strategic, scientific and implementation partnerships with all the relevant government departments and agencies, other key non-government players including NGOs, academic and technical institutions, the private sector and the donors. The role of Government is mainly to ensure risk reduction and comprehensive disaster management.

### **5.2.12 National Plan of Action for Person's with Disabilities (PWDs) as well as Autism, 1995**

In line with the Government policy the Department of Social Services under the Ministry of Social Welfare has an enthusiastic vision & mission to address the social issues relating to Person's with Disabilities (PWDs) as well as Autism. The National policy for the persons with disability, 1995 calls for social protection and ensured the rights of the vulnerable groups. In the recent time, dynamic and sustainable steps have been taken for the PWDs. The steps are:

- To establish separate ticket counters in railway station, bus terminals, river ports, steamer terminal, airport and airways office to facilitate easy availability of tickets for the PWDs.
- To maintain reserve seats in the bus, train and water transports for PWDs.
- To fill up 10 percent reserved quota for employment in government jobs by orphans and PWDs.
- To construct a ramp in all the government offices to facilitate easy movement of the PWDs.
- To withdraw the existing restrictions regarding appointment of PWDs in the Govt. class I & class II jobs, and arrange micro-credit for PWDs by all the Nationalized Commercial Banks (NCBs).

### **5.2.13 Review of Relevant Laws and Regulations**

#### **5.2.13.1 The Act (36 of 2000) for Conservation of Play field, Open space, Park and Natural Water Reservoir in Mega City, Divisional Town, District Town and Paurashavas of Bangladesh**

According to the section 5 of the Act, any land having such use as play field, park and natural reservoir can not be changed or can not be used for any other purpose(s). However, in absence of Paurashava Master Plan, the Act can not be properly applied. This emphasizes upon having Master Plan for each Paurashava.

In the existing provision of the Act, any person violating the Act may be liable to punishment up to 5 years of imprisonment or Tk. 50,000 fine or both. The Act makes a provision for appeal, however, and any land owner having any land with above mentioned use may apply to the appropriate authority to have permission to change the use. The authority shall convey the results of appeal within 60 days of the appeal.

#### **5.2.13.2 Bangladesh National Building Code (BNBC) 1993**

The Bangladesh National Building Code (BNBC) 1993 was formulated in 1993, but given legal status in 2008. The purpose of Bangladesh National Building Code (BNBC) is to establish minimum standards for design, construction, quality of materials, use and occupancy, location and maintenance of all buildings in order to safeguard within achievable limits, life, limb, health, property and public welfare. It aims to insure public safety, health, and general welfare in so far as they are affected by the construction, alteration, repair, removal, demolition, use or occupancy of buildings, structures of premises, through structural strength, stability, means of egress, safety from fire and other hazards, sanitation, light and ventilation. The BNBC suggests for conservation and restoration of historic buildings.

#### **5.2.13.3 The Building Construction Act, 1952**

This Act was prepared in 1952 to prevent haphazard construction of buildings and excavation of tanks that are likely to interfere with the planning of certain areas in Bangladesh. The Act is usually exercised in areas under the urban local governments. The Act sets some conditions regarding construction of buildings in urban areas, where the Act will be in execution.

##### **Preparation of Master Plan**

The Act calls for preparation of a Master Plan of the urban area concerned before approval of building plan. The Master Plan shall show the future land use of the area through land use zoning. The buildings will be approved according to the land use provisions of the zoning plan. Having a Master Plan prepared, a Paurashava has the scope of exercising the following provisions/actions:

##### **Building Construction Rules**

The Act in its Section 18 keeps provision for preparation of Building Construction (BC) rules to ensure healthy and environment friendly building development. The last BC Rules were prepared in 1996. However, due to special characteristics of building development in Dhaka city a separate set of BC Rules was prepared for Dhaka City in 2008 under the same Act.

##### **Power to Removal of Construction (Section 3B)**

The Act gives special power to plan approval authority to remove any building that did not follow the specified rules of the Act or take action against any building owner who constructs building violating the rules after approval of the building plan.

##### **Restriction on Cutting of Hills (Section 3C)**

The Act forbids cutting of any hill without prior permission of appropriate authority.

### **Removal of Unauthorized Building (Section 7)**

The Act empowers the authority to remove any building that has been built violating the BC rules. On failure to do so, the authority itself shall dismantle it and the entire cost shall be recovered from the owner as public demand.

### **Appeal**

The Act, however, keeps provision for appeal, if the owner finds himself aggrieved due to any action by the authority.

### **Observation on the Building Construction Act**

For appropriate execution of the Act, there is necessity of having Master Plan for a Paurashava. At the moment, there is serious lack of monitoring of disobedience of rules by the builders. Once the Master Plan is made for a Paurashava Town, the Paurashava Authority will be able to follow the rules properly.

## **5.3 Applicability of the Acts, Regulations and Policies in the Paurashava Master Plan**

The key aspects of the policies presented in this Chapter have both direct and indirect relationships with the preparation of Master Plan of Paurashava Town in general, and Morrelganj Paurashava in particular. The Local Government (Paurashava) Act, 2009, the Building Construction Act 1952, the BNBC, the Conservation Act 2000, Agriculture Policy etc. have serious stakes in the execution of Paurashava Master Plan. The other policies also have relevance in the preparation of Master Plan for an Urban Centre. As a result, the relevant aspects of the Acts, rules, and policies are mentioned in this chapter and are taken into consideration in the preparation of the Master Plan for the Paurashava. The key aspects that are most relevant with the preparation of Paurashava Master Plan are shown in Table 5.1.

**Table 5.1: Important provisions of different Acts, Policies and Rules having relevance with the preparation of Paurashava Master Plan**

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
Local Government (Paurashava) Act, 2009	<p>Makes provision for having a Master Plan of the Paurashava Town.</p> <p>Provides legal basis for the preparation and implementation of Paurashava Master Plan.</p> <p>Suggests on the content and structure, and other relevant issues, such as provision for qualified Town Planner in the Paurashava staff.</p>
National Land Use Policy 2001	<p>Formulation and effective execution of Land Use Plan in order to ensure planned use of land.</p> <p>Suggests for afforestation, conservation and development of land maintaining landscape.</p>
National Housing Policy, 1993	<p>To create affordable housing through controlling unplanned and haphazard housing area development.</p> <p>To encourage private developers in land and infrastructure development, and house construction. Participatory housing infrastructure development involving the community, NGOs, CBOs, private developers and social welfare organizations.</p>
Population Policy 2004	<p>To improve the living standard of the people through a desirable balance between population and development.</p> <p>The proposals are divided into four sectors - human resources development, decentralization of population activities, participation of NGOs and private sector. The policy aims to create a large skilled workforce providing education and training.</p>
Transportation Policy 2004	<p>To provide a safe and dependable transport service for all.</p> <p>Removal of unnecessary control and formulation of laws and regulations conducive to providing services, determining the role of public and private sectors, maintaining an economic and environmental balance, maximum utilization of Government funds and introduction of an integrated transport system and provision of alternate transport systems.</p>
National Environment Policy 1992	<p>To promote natural balance and overall development by means of conservation and development of environment, save an area from natural disaster, identify and control all sources of pollution and degradation, ensure environment friendly development in all sectors, ensure sustainable, long term and environment friendly use of all national resources, and get involved with international initiatives on environmental issues.</p>

<b>Act/Ordinance, Policies, Rules</b>	<b>Relevance with Paurashava Master Plan</b>
Industrial Policy 2005	<p>To set up planned industries considering the real domestic and export demand discouraging unplanned industries, provide necessary assistance for producing environment-friendly products with the objective of creating a pollution-free environment, and enrich the industrial sector with the proper utilization of various natural and mineral resources.</p> <p>To prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat-sheep industry as agricultural industries; and provide women entrepreneurs with all necessary assistance in establishing such industries.</p>
National Tourism Policy 1992 and 2010	<p>To create interest in tourism among the people, preserve, protect, develop and maintain tourism resources, take steps for poverty-alleviation through creating employment, build a positive image of the area concerned, arrange entertainment and recreation, identify sectors for private capital investment, and strengthen solidarity and integrity among the peoples.</p>
Agriculture Policy 1999	<p>To strengthen land zoning program, ensure maximum utilization of land through bottom up planning and people's participation, stop fertile agricultural land being used for non-agricultural purposes, and discourage acquisition of land in excess of requirement for non-agricultural purposes.</p>
Urban Forest Policy 1994	<p>To afforest about 20% of the total area of the country by initiating various afforestation programs 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; enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals;</p> <p>Strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources; and implement afforestation programs on both public and private lands.</p>
National Plan for Disaster Management, 2008-15	<p>To align the strategic direction of disaster management programs with national priorities and international commitments, articulate the vision and goals for disaster management, outline the strategic directions and priorities to guide the design and implementation of disaster management policies and programs, create a cohesive and well-coordinated programming framework incorporating government, non-government and private sector, and ensure that disaster management has a comprehensive and all-hazards focus comprising disaster risk reduction and emergency response.</p>



<b>Act/Ordinance, Policies, Rules</b>	<b>Relevance with Paurashava Master Plan</b>
National Plan of Action for Person's With Disabilities (PWDs) as well as Autism, 1995	To establish separate ticket counters in railway station, bus terminals, river ports, steamer terminal, airport and airways office to facilitate easy availability of tickets for the PWDs, fill up 10 percent reserved quota for employment in government jobs by orphans and PWDs, construct a ramp in all the government offices to facilitate easy movement of the PWDs, and withdraw the existing restrictions regarding appointment of PWDs in the Government Class I & class II jobs.
The Act (36 of 2000) for Conservation of Play field, Open space, Park and Natural Water Reservoir in Mega City, Divisional Town, District Town and Paurashavas of Bangladesh	To protect the existing use of land such use as play field, park and natural reservoir, and ensure punishment for conversion of such lands by any person/authority without proper permission from the appropriate authority..
Bangladesh National Building Code (BNBC) 1993	To establish minimum standards for design, construction, quality of materials, use and occupancy, location and maintenance of all buildings in order to safeguard within achievable limits, life, limb, health, property and public welfare. It aims to insure public safety, health, and general welfare in so far as they are affected by the construction, alteration, repair, removal, demolition, use or occupancy or buildings, structures of premises, through structural strength, stability, means of egress, safety from fire and other hazards, sanitation, light and ventilation. The BNBC also suggests for conservation and restoration of historic buildings.
The Building Construction Act 1952	<p>The Act calls for preparation of a Master Plan of the urban area concerned before approval of building plan. The Master Plan shall show the future land use of the area through land use zoning. The buildings will be approved according to the land use provisions of the zoning plan.</p> <p>To ensure healthy and environment-friendly building development.</p> <p>To empower special power to remove any building that did not follow the specified rules of the Act.</p> <p>To take action against any building owner who constructs building violating the rules after approval of the building plan.</p> <p>To forbid cutting of any hill without prior permission of appropriate authority.</p> <p>To keep provision for appeal, if the owner finds himself aggrieved due to any action by the authority.</p>

# CHAPTER 6

## PROJECTION OF FUTURE GROWTH BY 2031

The future growth projection is helpful to draw mechanisms for improving and guiding long-term development strategies, identifying existing problems and future demand and making possible suggestions, to formulate viable projects for urban development and increase management capabilities of the concerned authority.

### 6.1 Projection of Population

In absence of data for previous census years for Paurashava, it has been difficult task to collect information on population. The detail of how the estimation of population are made, have been discussed below.

#### Basis of Population Projection Method

Perhaps no single factor is more important for planning than the size and composition of a region's population and the way it will change in the future. Estimating future population for a specific period for a particular area is one of the most difficult tasks in the planning process. For Bangladesh population projection is a very difficult task as the required data are not available for particular area and same is the case for Morrelganj.

On the other hand, the difference of data from different secondary sources also makes the job more problematic. The population figures collected from secondary sources especially for Paurashava were very much ambiguous. So for the final projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2001 Population Census, the projection up to the year 2031 with five years interval has been made.

To calculate the future population of the area, the following formula is used.

$P_n = P_o (1 + r)^t$  where,

$P_o$  = the base year population (2011, 21741),

$P_n$  = the projected year population (2031, 43975)

$t$  = time period (20 Year),

$r$  = annual growth rate (4.02%).

#### Assumptions

The basic objective of the study is to estimate the population of the Paurashava for the year 2001, which would be the base year population. First using the base year population, a projection of the study area population at five yearly intervals up to 2031 is on the basis of some assumptions. In general, the projection is made on the basis of trends in population growth observed in the past, and looking ahead the development prospects in future.

The important issues to be considered are;

- The natural growth;
- Composition of the population, particularly the age breaks;
- Net migration;
- The annexation of new areas with existing city.

### **Shortcomings**

The data found from the several sources is not reliable to be accepted. Because it was found that in different sources the data is also different. When it is calculated for the projection then the output shows the separate result. So, it is the main deficiencies of data obtained from the diverse sources.

Migration information is not available census by BBS. It only considers the natural growth rate. But actual population projection requires both natural growth rate and migration rate. For this unavailability of migration data, population projection becomes very difficult. To avoid this problem, population estimation has done here as alternate of population projection.

Morrelganj Paurashava was established on April 2001. During the last BBS census occurred in 2001, Paurashava boundary area was not properly demarcated. So, ward wise population distribution was available in BBS data. For this reason, available population data in BBS as per mouza within the Paurashava area was converted in to ward wise for future population projection/estimation.

### **Ward wise Projected Population**

The existing estimated population of Morrelganj Paurashava is 27472 in 2011 within an area of 2519.96 acres. According to 2001 Population Census, the population was 21715. With an annual growth rate of 4.02%, the forecasted population of Morrelganj Paurashava will be 43975 in the year 2031. The gross density of the area in the year of 2031 will be 17 ppa (person per acre). Due to the maximum concentration of residence in Ward no. 05, the density of population will also be higher (98 ppa) in this area. Table 6.1 shows ward wise population distribution of Morrelganj Paurashava based on growth rate 4.02%.

**Table 6.1: Population Projection and Density for Morrelganj Paurashava Up to 2031**

Ward no.	Area (In Acre)	2001		2011		2021		2031	
		Pop	PPA	Pop	PPA	Pop	PPA	Pop	PPA
WARD-1	254.84	2286	9	2892	11	3659	14.	4629	18
WARD-2	109.95	2281	21	2886	26	3651	33	4619	42
WARD-3	226.92	2302	10	2912	13	3685	16	4662	21
WARD-4	271.99	2600	9	3289	12	4162	15	5265	19
WARD-5	59.28	2870	48	3631	61	4594	77	5812	98
WARD-6	245.59	2929	12	3706	15	4688	19	5932	24
WARD-7	231.21	2475	11	3131	13	3962	17	5012	22
WARD-8	470.23	1984	4	2510	5	3176	7	4018	9
WARD-9	649.95	1988	3	2515	4	3182	5	4026	6
<b>Total</b>	<b>2519.96</b>	<b>21715</b>	<b>8</b>	<b>27472</b>	<b>11</b>	<b>34759</b>	<b>14</b>	<b>43975</b>	<b>17</b>

Source: 1. BBS, 2001 & Paurashava. Estimation by the Consultant

Note: Growth rate for Population projection has been considered as 4.02%.

## 6.2 Identification of Future Economic Opportunities

Like elsewhere in the country, the project area economy consists of both the Formal Sector and the Informal Sector. The economy of the project area is predominantly agricultural in nature which includes agricultural farming, poultry farming, dairy farming and fish production farms. Formal sector economic activities include industrial and manufacturing activities carried out in mainly Ward Nos. 2, 4 and 5. Small and Medium Enterprises (SMEs), small manufacturing units, cottage industries, business and trading houses located in different places of the project area are other formal sector economic activities. These establishments of the formal sector play important role in local as well as regional economy. In the project area 32.04% among the Population (Population 10 years and above) were engaged in economic activities whereas, 67.96% population found working as non-economic activities (not working, looking for work and household work purposes). Agriculture based economic activists in the Paurashava found highest (17.07%) where business related economic activist fund in second highest among total population (Population 10 years and above) of the project area..

Contribution of the Informal Sector of the project area is also remarkable. Establishments like NGOs, CBOs, financial and monetary institutions also play important role and contribute to the local and regional economy.

## 6.3 Projection of Land use

Projected land use is a critical component to a comprehensive plan. The forecast determines the amount of land needed to accommodate future growth, and includes the land required for residential, commercial and industrial uses. In some instances, a community may have enough vacant lands within its boundary to accommodate its forecasted population increases and land use demands. In other instances, there may be a need to consider land outside a community's boundaries to accommodate this increase. The projection and demand on land requirements as per the planning standard approved by the PMO office of UTIDP project are discussed in Chapter 10 and Section 10.1.2.



# CHAPTER 7

## LANDUSE ZONING POLICIES AND DEVELOPMENT STRATEGIES

This chapter sets planning consideration of structure plan, zone of structure plan, land use policies and development strategies for planning area. It classifies the Structure Plan area into categories and also includes strategies for optimum use of urban land resources, plans for new area development and areas for conservation and protection

### 7.1 Broad Planning View of Structure Plan

Morrelganj-Bagerhat Highway passes through north western side of the Paurashava. The Paurashava as well as the Upazilla is connected within the region by both road and water ways. Mainly Road is the means of transportation but water way also acts as an important role in overall connectivity of the Paurashava. The project area is one of the important centers of economic activities within the southern region. The long established easy transportation link has brought these areas closer in terms of trade activities. Considering these opportunities, growth pattern of the town and also development constrains, an urban livable environment for people irrespective of their socio-economic, demographic and religious background has been suggested. The implementation of Structure Plan of the Pourashava will translate this consideration into reality. The zoning policies and strategies of development in the land use zones have been given due importance for future development of the Pourashava.

### 7.2 Zone of Structure Plan Area

To guide long term growth within the Structure Plan Area by means of demarcation of the future growth areas and indication of potential locations of major development zones are broadly classified into seven categories. Table 7.1 shows the Structure Plan area zones, its area and percentage coverage. Details of the description of structure planning zones are given in the following paragraphs. Map 7.1 and Appendix-1 shows the structure plan of Morrelganj Pourashava.

**Table 7.1: Structure Plan Policy Zoning**

Zoning	Description of the Zone	Area (acre)	%
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. It will absorb most population growth during the Land use Plan (2011-2021) period.	221.46	8.79
Fringe Area	This zone is developing areas which will take further decades to reach the population densities of the urban core area. Low initial densities in these areas do not justify supply of a full range of services as they will initially be underused. However, it is	386.26	15.32

Zoning	Description of the Zone	Area (acre)	%
	essential that planning and reservation of rights of way, at least for primary networks, be undertaken soon to enable provision when justified by increased density levels and allowed by resources.		
Peripheral Area	This is the zone where a slow trend of urbanization is continuing in unplanned manner. The area identified in the Structure Plan as the likely choice for new urban development beyond the core area. Ideally, it might be reasonable to provide primary infrastructure networks in this area to foster development and encouraged to enable a more rapid urbanization in a planned way.	338.20	13.42
New Urban Area	This zone will be the required additional area for future planned urban development as per population projection. New facilities and services like road, drains, footpath, waste transfer station and other civic services will be provided. This area is proposed to grow within 2031.	113.64	4.51
Agriculture	Agricultural land (also <i>agricultural area</i> ) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock.	682.38	27.07
Water body	Water body containing an area equals to or more than 0.25 acres excluding those of khal, irrigation canal and river will be treated as this category.	599.11	23.77
Major Circulation	Major circulation contains major road network and railways linkage with regional and national settings.	179.76	7.13
<b>Total</b>		<b>2520.81</b>	<b>100</b>

### 7.2.1 Core Area

Total is only 221.46 acres of land, which covers 8.79% of Structure Plan area, is declared as Core Area (Map 7.1 and Figure 7.1). It is located with in Ward no. 1, 3, 4, 5, and 7. It includes the highest concentration of service area for an example upazila health complex, upazila complex, schools Morrelganj Bazar area etc. and it has the highest potentiality of development because the town developed based on the Morrelganj Bazar and Bagerhat-Morrelganj Highway, which is passing through the heart of the Pourashava and road hierarchy of this Paurashava is established based on this highway. Since these areas are forecasted to show density increase and increased demand and therefore will require regular upgrading.

**Map 7.1: Structure Plan of Morrelganj Paurashava**





The main thrust to improve services should be in the unplanned zones, particularly where the deficiencies already are great and quality of life will sharply decline when the services also have to cater for the additional population.

### **7.2.2 Fringe Area**

A total of 386.26 acres of land covering 15.32% of Structure Plan area is declared as Fringe Area (Map 7.1 and Figure 7.2). Fringe area is proposed East side of Pangucchi River and maximum fringe area of proposed structure plan is along with southern side of Bariakhali khal. It covers area of Ward no. 1, 2, 4, 6 and 9 and identified in the Structure Plan as the likely choice for new urban development beyond the core area. Bagerhat-Morrelganj high way and Pangucchi River as influential factors of development. Road network and other infrastructures developed based on this high way and river. Ideally, it might be reasonable to provide primary infrastructure networks in this area to foster development encouraging a more rapid urbanization in a planned way.

### **7.2.3 Peripheral Area**

A total of 338.20 acres of area, which covers 13.42% of Structure Plan area, is declared as Urban Peripheral Area (Map 7.1 and Figure 7.3). Total 4 peripheral areas declared in structure plan. First peripheral zone located in ward no. 09, a scattered settlement from urban core area and surrounded by agricultural area, second peripheral area is located eastern portion of ward no. 08 and third peripheral area is in south west corner of ward o. 04 and fourth one is in western part of ward no. 02. This zone is developing areas that will take a longer time to reach the population densities of the urban core area. Low initial densities in these areas do not justify supply of a full range of services as they will initially be underused. However, it is essential that planning and reservation of rights of way, at least for primary networks, be undertaken soon to enable provision when justified by increased density levels and allowed by resources.

### **7.2.4 New Urban A**

Total 113.64 acres of land covering 4.51% of Structure Plan area is declared as New Urban Area (Map 7.1 and Figure 7.4).

### **7.2.5 Agriculture**

Total 682.38 acres of land covering 27.07% of Structure Plan area is declared as Agriculture Area (Map 7.1 and Figure 7.5).

### **7.2.6 Water body/ Retention Area**

Total 599.11 acres area, which covers 23.77% of Structure Plan area, is declared as water body (Map 7.1). It includes ponds with an area equal to or more than .15 acres and all the canals and river within the Paurashava. More detail information is provided in drainage and environmental plan in Chapter 12, of this report.

### **7.2.7 Major Circulation Network**

It contains major road network with Bagerhat and other neighboring urban centers and also includes the major road way network required for maintaining existing internal communication. Total 179.76 acres of land which covers 7.13% of total structure plan area.

## 7.3 Strategies for optimum use of Urban Land Resources

### 7.3.1 Optimum use of Urban Land Resources

With a limited land mass, Bangladesh is the most densely populated country in the world. The land area of the country remains static amid continuously increasing population. Such a situation calls for strict regulation to utilize its scarce land resources for non-agricultural purposes. Increase in urban population means more demand for houses, roads, schools, hospitals, factories, bazars, shops, business centres, offices, other service facilities etc. Providing all these facilities require land and that is at the cost of valuable agricultural land, as the country has hardly any fallow land to accommodate all these land uses. Morrelganj Paurashava is surrounded by valuable fertile agricultural land. Any urban expansion will cost net deduction of agricultural land that will consequently affect local food and cash crop production. Practice of thriftiness on land utilization is, therefore, essentially needed in plans and development proposals. Such practice should start through adoption of conservative and rational standards of space use and their proper application in planning, designing and development. Table 7.2 shows the optimum use of urban land resources.

**Table 7.2: Policy for optimum use of urban land resources**

Policy	Justification	Means of Implementation	Implementing Agency
<p><u>Policy UA/1:</u> <u>Optimization of Available Land Resources</u></p> <p>Growth within the established urban area is not compact in Morrelganj. There are still large amount of land lying vacant amid all categories of land uses within the Paurashava area and beyond. Infilling of these lands should be promoted and encouraged to optimize use of land.</p>	<p>Keeping large land areas vacant within the existing built up area, extension of physical boundary of the town is not logical. Such a tendency might cause valuable agricultural land out of use. There is a need to economize the use of land, which is a scarce resource against an expanding population in the country.</p>	<p><i>Control:</i></p> <p>Imposition of tax on the land remaining vacant for a long time can be tried to discourage speculation on the land use practices. Measures should be adopted to minimize the use of land by public sector agencies. Policies to discourage large scale land acquisition for development by the public sector can be tried.</p> <p><i>Promotion:</i></p> <p>The public sector should develop infrastructure facilities and services in deprived areas to enable the land owners for development.</p>	<p>-Morrelganj Paurashava; -Ministry of Land</p>
<p><u>Policy UA/2:</u> <u>Utilisation of Khas Land for Urban Development</u></p>	<p>Khas lands are public land that should be made best use for community purpose. Instead of evicting people from their own land for implementing development proposals, khas land should</p>	<p>Taking over of khas land by Paurashava that falls under different development proposals under the current development plan. Paurashava can later on hand over the land to the</p>	<p>-Morrelganj Paurashava - Ministry of Land -DC, Bagerhat</p>

### 7.3.2 Plans for New Area Development

Table 7.3 shows policy to develop new urban area. It includes justification of new area development, means of implementation and agencies for implementation.

**Table 7.3: Policy for new area development**

Policy	Justification	Means of Implementation	Implementing Agency
<u>POLICY UA/3:</u> <u>INITIATIVES FOR NEW</u> <u>URBAN AREA</u> <u>DEVELOPMENT</u>	New areas with their growing stage offer excellent opportunity for organized development with little or no compensation cost for eviction and less hindrances in motivation of the local residents in favor of organized development	Participatory approach to new urban area development is to be supported by innovative ideas of spatial development. Long motivational activities will have to be carried out for this purpose. Public sector with technical and financial support of the private sector and cooperation from service giving agencies will make the task easier.	- Morrelganj Paurashava - DPHE - Private sector.

### 7.3.3 Areas for Conservation and Protection

To ensure livable environment in the planning area, different areas are conserved in various forms, namely agricultural land, low land, pond and natural drainage, green belt, historic and heritage areas, etc. Details are given in Table 7.4.

**Table 7.4: Area for conservation and protection**

Type of Land	Means of Implementation	Implementing Agency
<p>Loss of Productive Agricultural Land:</p> <p>The Master Plan area has a vast agricultural land in the southern side of this project. After implementation of the project, environment of agriculture will be converted into non-productive urban and semi-urban area.</p>	<p>The EIA Guidelines of DOE emphasized on the avoidance of productive agricultural land for any development project. Therefore, it will be wise to consider more economical use of land to avoid fertile lands. The town expansion and land acquisition should be based on the growth rate of population. According to population projection for the year 2031, the present residential land use area will grow with increasing density. So a large share of agricultural land can be spared at least for the time being.</p>	<p>- Morrelganj Paurashava - DOE.</p>
<p>Low Land, Pond and Drainage Path:</p> <p>A total 182.75 acres with an area equal to or more than 0.15 acres within the Paurashava are declared as retention area. In no way permission for filling up of these ponds should be given. Paurashava should acquire these ponds at suitable time to use them for retention and emergency use.</p>	<p>This area is declared as water body in the Master Plan. As per the guideline of Wetland Conservation Act 2000, this area will be conserved as water body. According to population projection for the year 2031, the present residential land use area can be developed with increasing density up to this year. So a large share of water body can be spared.</p>	<p>- Morrelganj Paurashava - Water Development Board</p>
<p>Green Belt:</p> <p>The Bank of the Panguchhi river and Bariakhali khal is declared as green belt. This area will be used for forestation and recreational purposes for conservation of environment and creation of opportunity for tourism development in this town.</p>	<p>This area is declared as green belt in the Master Plan.</p>	<p>-Morrelganj Paurashava</p>

## 7.4 Policies for Development

This section of the chapter sets forth strategies and policies for various components of the Master Plan on sectoral basis.

### 7.4.1 Policies for Socio-economic Sector

#### Population

Controlling population should be given utmost importance nationally, as because of the uninterrupted population growth, the country's economic problems are being accentuated, pressing on its resources. It makes poverty reduction difficult, which is the key to overall national development. It is, therefore, necessary to enhance population control drive. The people at the grassroots can play an effective role in this regard. An efficient, well trained and well paid grassroots level work force can help profoundly in achieving the targets of population control policy of the government. Side by side, promotion of education can be very effective in the creation of awareness about small family size. The Paurashava may undertake relevant measures in line with national objectives to strengthen its own position in population planning.

#### Strategy:

- Raise the level of education among mass people and emphasize more on grassroots level family planning workers' services with effective delivery of birth control services.

**Table 7.5: Policy for Population Sector**

Policy	Executing Agency
<p><u>Popu/1:</u> Declaring population as one of the most critical sectors of national development</p>	<p>-Ministry of Planning -Ministry of Health and Family Planning</p>
<p>Justification: Per capita national growth is being eaten up by constantly growing population. By controlling population, national benefits earned from economic growth can be shared in a better way, raising the level of living standard of the people.</p>	
<p><u>Popu/2:</u> Putting more efforts and resources in raising the level of education.</p>	<p>-Ministry of Education -Ministry of Planning -Ministry of Health and Family Planning</p>
<p>Justification: Education would not only create awareness among the masses about the benefits of small family size, it will also help secure better job with higher pay that would reduce poverty.</p>	
<p><u>Popu/3:</u> Creation of well paid and well trained grassroots level family planning workers for motivational work.</p>	<p>-Ministry of Planning -Ministry of Health</p>

Policy	Executing Agency
<p>Justification:</p> <p>Grassroots level workers can give door to door motivational services and distribute birth control materials in a better way. To get good services they must be efficient and well paid.</p>	<p>and Family Planning</p>

### Economic Development and Employment Generation

Economic development of any place is associated with generation of employment. The generation of employment depends on the rate of investment in various sectors of an economy. An urban economy of any town starts building up with investment in the basic sector that leads to the building up of the non-basic sector. Investment in basic sector is not very bright in Morrelganj as it is a very small town with a very small size of population. Besides, it has to compete with other adjoining urban centers like, Bagerhat, Sharankhola, Mongla, Bhandaria, and Pirozpur. These urban centers are counter magnets of investment.

#### Strategy:

- Creating basic sector investment climate and leading the local economy forward through promotion of Small and Medium Enterprises (SME).

**Table 7.6: Policy for Economic Development and Employment Generation**

Policy	Executing Agency
<p><u>Econ/1:</u></p> <p>Provision of bank loans on easy terms to attract prospective investors in the SME sector.</p>	<p>- Ministry of Industries</p> <p>- Ministry of Commerce</p>
<p>Justification:</p> <p>Easy loans would encourage and attract prospective investors for investment in small scale industries.</p>	
<p><u>Popu/2:</u></p> <p>Taking of measures to channelize remittance to value adding productive sectors.</p>	<p>- Ministry of Industries</p> <p>- Ministry of Commerce</p>
<p>Justification:</p> <p>Larger amount of remittance is being diverted to land purchase, which is considered as the safest investment. This huge capital may be diverted to productive sectors to help create more employment.</p>	
<p><u>Popul/3:</u></p> <p>Arranging entrepreneurship training programmes for prospective investors.</p>	<p>- Ministry of Industries.</p> <p>- Ministry of Commerce.</p>

Policy	Executing Agency
<p>Justification:</p> <p>There are many potential investors who are ignorant of the ways and means of investment and operation of an enterprise. The training can help them get educated in these lines.</p>	

## Housing

As the town has low level of population, housing is yet to become a problem here. Housing policy and programmes are provided and executed by the national government. There is no local office of the National Housing Authority to execute housing programmes at Upazila level. As a local government, Paurashava can facilitate housing area development by means of providing road infrastructure, drainage, water supply, gas supply etc in designated housing zones. The consultant supports the prevailing national housing policy and advocates its execution at all levels, which at the moment is highly lacking.

No slums are observed in this small town, the way they are exposed in large cities. So no slum and squatter related problems are there in the town. This provides a better scope for planned housing development in the Paurashava.

### Strategy:

- Upholding the role of Paurashava, as a facilitator to provide all necessary infrastructure and services to enable housing by people in general. As a least cost approach, involvement of the land owners can be encouraged in housing area development on a public-private partnership basis.

**Table 7.7: Housing and Slum Improvement**

Policy	Executing Agency
<p>Policy House/1:</p> <p>Provision of necessary services and facilities to promote housing at private sector.</p>	<p>- National Housing Authority</p> <p>- Ministry of LGRD</p> <p>- Morrelganj Paurashava</p>
<p>Justification:</p> <p>It is more difficult to provide housing on public sector initiatives, as it involves funding and land acquisition that takes a long time. By providing infrastructure and services, general people can be encouraged to build their own houses.</p>	
<p>Policy House/2:</p> <p>Housing zone land owners can be involved in a participatory development approach, where Paurashava will provide infrastructure and the cost will be shared by land owners.</p>	<p>- National Housing Authority</p> <p>- Ministry of LGRD</p> <p>- Morrelganj Paurashava</p>



## Social Amenities and Community Facilities

Social amenities and community facilities include, education facilities, health facilities, open space recreation facilities like, park and playground, amusement park and community centre. For comfortable and healthy urban living, these facilities are the fundamentals. Since these are social services, they must be provided by the public sector agencies as public good. For education and health facilities, the national government has policies and there are separate ministries and their agencies to execute the policies through programmes and projects. There are also Upazila level offices of the concerned agencies to take care of the execution of national education and health policies and programmes. For providing amenities like, park and playground and community centre, the responsibility lies with the Paurashava.

For park and playground, the Paurashava may secure local khas land. The open space recreation is difficult to provide as population expands and land price goes higher. Once time is lost, vacant lands are also lost. Amid soaring land price and absence of vacant land, it becomes extremely difficult to provide open space recreation. So, it is better to secure vacant lands for open space before density of population increases and land becomes scarce and pricier. For community center, intensive use of land should be made by making multiple use of the same space, for example, providing community center, ward councillor's office, clinic or any other use in the same building.

### Strategy:

- Exploring khas /public land within the Paurashava and using the unused/vacant land for providing amenities, before density of population increases and land becomes scarce and dearer.

**Table 7.8: Social Amenities and Community Facilities**

Policy	Executing Agency
<p><u>Policy-Amenity/1:</u></p> <p>Procurement of khas and other public land for park, playfield, community centre.</p>	<p>- Ministry of Land</p> <p>- DC Office, Bagerhat</p> <p>- Ministry of LGRD</p> <p>- Morrelganj Paurashava</p>
<p>Justification:</p> <p>Since above facilities are non-revenue earning, they should be procured at least cost.</p>	
<p><u>Policy-Amenity/2:</u></p> <p>Land should be procured for open space facilities as quickly as possible, because when land value will be higher, cost of providing the facilities will also be very higher. Besides, with the growth of population, vacant land will disappear gradually, so no land will be available at strategic locations for providing open space facilities.</p>	<p>- DC Office, Bagerhat</p> <p>- Ministry of Land</p> <p>- Ministry of LGRD</p> <p>- Morrelganj Paurashava</p>

## 7.4.2 Physical Infrastructure Sector

### Transport

By far, transport is the most important means to revitalize an urban center. Intra and inter urban transportation facilities create economies of scale for prospective investors and enables easy and comfortable mobility of the residents. Easy and cheaper transportation of raw materials and finished goods create good investment climate for manufacturing enterprises that lead to development of the service sector firms. New employment generates and the non-basic sector expands leading to thriving urban center. To create transportation facilities, quality inter-Upazila and inter-District road network will have to be created that makes movement faster and easy. With good transport infrastructure,

economic development may become attractive. Besides, quality of local roads will have to be upgraded to encourage people live in the town. Once population starts increasing, it will expand local consumer market and will attract new investments in consumer goods production.

### Strategy:

- Creation of efficient inter-city and intra-town communication for easy transportation of goods and passengers.

**Table 7.9: Policy for Transport Sector**

Policy	Executing Authority
<p><u>Policy-Transport/1:</u> Development of efficient inter-city road network with standard road.</p> <p>Justification: Increased inter-city mobility will increase business transactions and generate investment and employment.</p>	<p>- Roads and Highways Department (RHD)</p>
<p><u>Policy-Transport/2:</u> Promotion of efficient road transport facilities between urban centers.</p> <p>Justification: Not only that communication is needed between urban centers, but to attract investment, emphasis must be laid on quality of roads built.</p>	<p>- Bangladesh Road Transport Authority (BRTA) - Bagerhat District</p>
<p><u>Policy-Transport/3:</u> Development of local road network through participatory approach.</p> <p>Justification: Development of roads will involve huge cost. Participatory development will enable cost sharing, which will reduce cost of road construction substantially.</p>	<p>- Morrelganj Paurashava - Local Government Engineering Department (LGED)</p>

## Utility Services

Utility services are the most essential parts of urban life. To make an urban center livable, there must be adequate provision for utility services. Utility services include water supply, solid waste management, power supply, sanitation and drainage. Except power supply, the rest are the responsibilities of the Paurashava.

### Strategy:

- Attainment of self reliance in revenue collection and adoption of participatory approach to service provision to ensure better services and facilities to the people.

**Table 7.10: Policy for Utility Services**

Policy	Executing Agency
<p><u>Policy-Utility/1:</u> Exploration of alternative sources of water to ensure sustainable supply.</p> <p>Justification: Amid constant rise of urban population, it is time to explore alternative sources of water like, rain water harvesting and surface water supply.</p>	<p>- LGED - Morrelganj Paurashava</p>
<p><u>Policy-Utility/2:</u> Involvement of beneficiaries in solid waste management.</p> <p><b>Justification:</b> Involvement of beneficiaries in solid waste management will make the operation more effective and reduce financial responsibility of the Paurashava.</p>	<p>- Morrelganj Paurashava, - NGOs and CBOs</p>
<p><u>Policy-Utility/3:</u> Exploring re-use and recycling of waste materials to extract resources.</p> <p>Justification: Re-use and recycling of waste materials will produce resources and reduce cost of waste management.</p>	<p>- Morrelganj Paurashava, - NGOs and CBOs</p>
<p><u>Policy-Utility/4:</u> Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.</p> <p>Justification: Motivation will encourage people to adopt healthy sanitation and reduce health risks.</p>	<p>- LGED - Morrelganj Paurashava - NGOs and CBOs</p>
<p><u>Policy-Utility/4:</u> Protection of natural drainage system and preparation of hierarchical drainage network.</p>	<p>- LGED - Morrelganj Paurashava</p>

<p><u>Justification:</u></p> <p>Natural drainage systems are being grabbed and filled up, which increases the risk of water logging. Well planned hierarchical drainage network helps smooth drainage of storm and waste water.</p>	
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### 7.4.3 Environmental Issues

From environmental point of view Morrelganj Paurashava is not yet badly affected. There are some issues that must be taken care of. The issue of sanitation has already been dealt within the utility services section. Except cyclone, there is no natural hazard. There is no mentionable air, water or soil pollution in the Paurashava from any mentionable sources at present.

#### Natural Resources

The Paurashava is not endowed with many natural resources that can be conserved. Among the meager natural resources that are available, 256 number of existing ponds and ditches and 15.67 km of natural drainage canals can be mentioned. Ponds with an area equal to or more than 0.15 acres and the natural khals need to be protected and conserved to ensure sustainability in drainage and water supply of the Paurashava.

#### Strategy:

- All khas land and canals should be vested with Paurashava for use in community interest.

**Table 7.11: Policy for Natural Resources**

Policy	Executing Agency
<p><u>Policy-Nature /1:</u></p> <p>All khas lands within the Paurashava must be assessed and handed over to the Paurashava for use in community interest.</p> <p>Justification: This will prevent misuse of khas lands by political and powerful local people.</p>	<p>- Ministry of Land</p> <p>- Morrelganj Paurashava</p>
<p><u>Policy-Nature/2:</u></p> <p>All natural canals within the Paurashava must be vested with the Paurashava for maintenance and proper use as drainage canal.</p> <p>Justification:</p> <p>This will help prevent unauthorized occupation and filling of natural drainage.</p>	<p>- Ministry of Land</p> <p>- Morrelganj Paurashava</p> <p>- NGOs and CBOs</p>



# CHAPTER 8

## IMPLEMENTATION ISSUES

This chapter deals with the issues of implementation of the Master Plan. Here, recommendations have been made about capacity building and resource mobilization for the implementation of the plan.

### 8.1 Institutional Capacity Building of the Paurashava

In the present context of spatial and legal jurisdiction of the Paurashava for planned development of its area, some recommendations are made here. Also, observing the financial and Institutional strength of individual stakeholders in relation to their liabilities and identifying their shortages and absence of any perfect coordinating body, some suggestions have been made as remedial measures as a whole.

- All urban local governments including Upazila level Paurashavas must be given more independence and autonomy to perform their responsibilities. At the same time, their accountability to the government and people regarding their performance has to be ensured. For this purpose the legal framework of the urban local governments has to be reviewed and updated. The legal provisions have to be consolidated and simplified and make them compatible to changing circumstances. Opportunities must be created in the Act allowing scope for privatization of service providing activities.
- To avoid duplication of development functions, there should be clear line of separation between central government and the urban local government.
- A double entry cash accounting system has to be introduced to modernize the accounting system. For this purpose, massive training programme has to be arranged for the relevant municipal staff.
- To improve revenue collection, the urban local governments should be given more power and responsibilities. Measures should be taken for strengthening the Paurashava administration for municipal development.
- Section-50 of the Paurashava Act needs to be revised and more power should be given to the Executive Officer for appointment of employees.

It can not virtually function effectively as a Paurashava under such a stringent financial condition. To function, effectively, it must raise its revenue earning. But it is reported that the Paurashava can not collect all its holding tax from the citizens. Holding tax is the most important source of its own revenue earning. It must take care to ensure 100% recovery of holding tax. The Paurashava can not function effectively depending upon government grant only. The existing manpower position of the Engineering, Development control and Accounts should be substantially raised to handle future volume of work. Moreover, additional staff especially for the implementation of Master Plan will soon be required.

The present plan package imposes a large number of development projects on Morrelganj Paurashava for implementation. Paurashava will not only be 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. This situation calls for strengthening of the existing capability of Paurashava.

### **8.1.1 Staffing and Training**

As a traditional system of the Paurashava, engineer and secretary are appointed directly by the Ministry of Local Government and other staffs are appointed locally through the approval of the Ministry after the advertisement on the newspapers. In Morrelganj Paurashava, the revenue income is too low. That's why it is not capable to pay the salary of all the officials and staffs. The salary is recovered from the government grant and BMDF allocation. This is the main reason for under staffing of the Paurashava.

There is no proper arrangement for staff training. As a result, the staffs are mostly unskilled. They can not deliver proper service to the citizens. Besides, most of them are not qualified enough to render proper services.

### **8.1.2 Lack of Automation**

Most works in the Paurashava are done manually. Such practice delays works and deprives the citizens from services. This is also a source of mal-practice and corruption. 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.

### **8.1.3 Lack of Paurashava Town Planning Capacity**

At present, the Paurashava has no town planning section or any appropriate manpower to prepare and implement the Master Plan. The Paurashava must strengthen its capacity to implement its Master Plan when it will be completed. It will otherwise be in trouble in the implementation, monitoring and updating the Master Plan.

#### **8.1.3.1 Institutional Framework**

To rearrange the institutional framework for the Paurashavas recently the government has made a committee for the categorization of all the Paurashavas of Bangladesh. According to the clause no. 72-78 (Paurashava Officer & staff, provident fund etc) of Paurashava Act, 2009 and on the basis of the type and category of works, the committee suggested 5 divisions within the Paurashava framework. Afterward on the basis of the type of works, similarities and technicalities each division is further subdivided into some sections accordingly. The suggested divisions and sections are as follows:

- Planning Division:**
- a) IT Section
  - b) Planning Section
  - c) Beautification and recreation Section

According to the divisions and their relevant sections the manpower should be set up for each category of Paurashava.

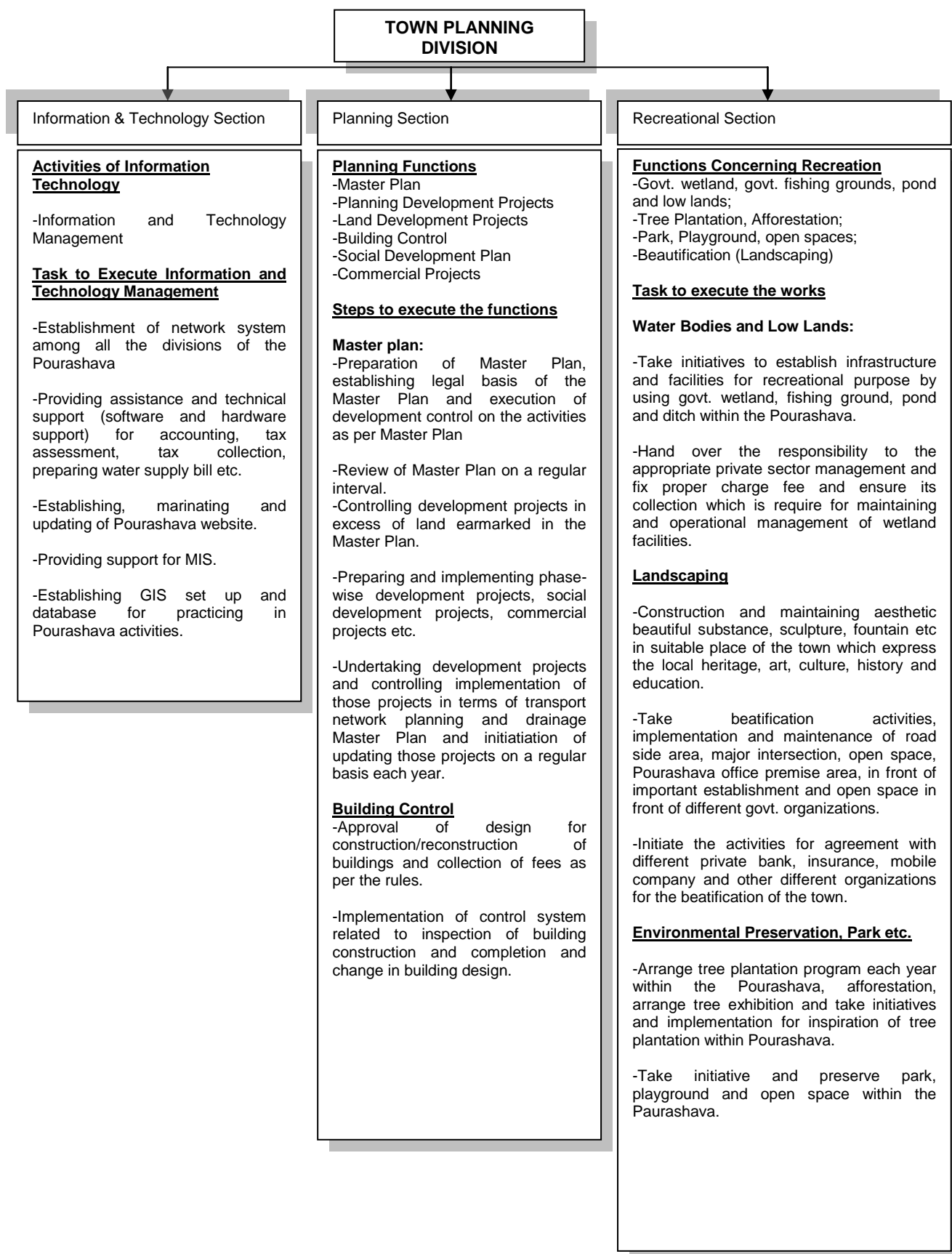


Figure 8.1: Scope of Work for Planning Division



The above committee has also chalked out the detail scope of work for each division. The scope of proposed Planning Division is given in Figure 8.1.

### **8.1.3.2 Lack of Paurashava Town Planning Capacity**

At present, the Paurashava has no town planning division or any appropriate manpower to prepare and implement the Master Plan. For proper implementation of the Master Plan in each Paurashava establishment of a separate planning division is indispensable. The Paurashava must strengthen its capacity to implement its Master Plan when it will be completed. It will otherwise be in trouble for implementation, monitoring and updating the Master Plan.

Morrelganj is a 'C' class Paurashava. For the 'C' class Paurashava Government approved an organogram and required manpower. A comparison of the existing manpower with the approved organogram finds that there is a huge gap between the two. Many positions have been vacant since the inception of Paurashava. Paurashava authority supported with the line ministry should take necessary steps to set up planning unit and strengthen all units/division of the Paurashava for its better performance.

#### **Support for Planned Urbanization**

**For creating planned urbanization, Paurashava may:**

- Support for preparation of Computerized Infrastructure Database.
- Support for Preparation of Paurashava Base Map.
- Support for Preparation of Paurashava Infrastructure Development Plan.
- Orientation on preparation, use, update & implementation of Paurashava Master Plan.
- Assist preparation and execution of Community Development Plan by Community Based Organization (CBO).
- Introduce 3D-Modeling in Master Planning components.
- Beautification of Paurashava by 3D-Modeling.

#### **Community Mobilization Program**

**Following are the community mobilization support activities:**

- Support to establish Town Level Coordination Committee (TLCC) and make it functional
- Support to establish Ward Committee (WC) and make it functional.
- Support for preparation of Community Planning and implementation by forming Community Based Organization (CBO).
- Support to accelerate the Paurashava Standing Committee activities.

#### **Urban Governance Improvement Action Programme (UGIAP)**

It is stipulated in the 6th 5 year plan 'the Key constrains to the effective functioning of the Paurashavas and City Corporations are unclear mandate and service responsibilities; lack of accountability; weak finances and financial autonomy; poor coordination and control among service agencies and weak management'.

To overcome the challenges, the 6th Five year plan as well as Perspective Plan of Bangladesh, 2011-31 recommends the same issues mentioned below:

the instructional reform and decentralization of responsibilities and resources to local authorities; participation of civil society including woman in the design, implementation and monitoring of local priorities; building capacity of all actors (Institutions, groups and individuals) to contribute fully to decision making an urban development process; and facilitate networking at all levels.

It is already tested, proven and accordingly recognized in the 6th Five year plan that urban infrastructure improvements have been proved very successful introducing governance and performance-based approach adapted by UGIIP in selected ULBs in the country. Among other suggestions the 6th Five year plan also includes nature for Urban Governance Improvement Action Programme (UGIAP) and Capacity Building of Institutes at Municipality-level in particular.

### **Citizen Awareness and Participation**

The Paurashava authority may initiate to buildup citizen awareness and to ensure peoples participation in plan initiation and implementation process. Initiatives may be as follows:

- Establishment of Civil Society Coordination Committee (CSCC) and make it functional
- Establishment of Ward Level Coordination Committee (WLCC) and make it functional
- Citizen Charter display at Paura Bhaban.
- Citizen Report Card Survey by the Paurashava.
- Establishment of Grievance Redress Cell and make it functional with specific ToR
- Establishment of Mass Communication Cell (MCC) and make it functional
- Establishment of Urban Development Coordination Unit with inclusion of other departments for inclusive development

### **Urban Planning and Environmental Improvement**

- Master plan is a guideline and detail urban planning activities are being prescribed in the plan. To produce a livable environment in the Paurashava premises, following initiatives should be taken:
- Recruitment of staffs and establish Planning Department related to administrative structure, meeting and meeting minutes preparation.
- Master Plan, Base Map verification and update landuse plan preparation.
- Approval of building plan and development control.
- Introduction of environment and public health activities.

### **Urban Poverty Reduction**

Following initiatives can be taken by the Paurashava for urban poverty reduction:

- Establishment of Slum Improvement Committee (SIC) in selected slums and scattered area.

- Preparation of poverty reduction action plan with guideline and necessary budget allocation.

#### **Income Generating Activities**

The income generating activities include:

- Tax assessment software use and capacity development for staffs of assessment section.
- Continue reassessment activities regularly at 5 years interval.
- Continue interim assessment regularly in whole year.
- Introduction of computerized tax system and bill preparation.
- Increase collection by more than 5% annually (up to 85% collection efficiency).
- Increase non-tax own revenue source atleast by inflation rate.
- Introduction of computerized trade license system and computer bill/ license prepared and report produced.
- Introduction of computerized Water bill (Tariff) system.
- Introduction of Computerized non-motorized vehicle management system.
- Identification of new income sources for increasing income.

#### **Transparency and Accountability**

- Functions and activities perform by the Paurashava authority should be transparent and the persons responsible for performing activities for betterment of the society should maintain accountability to the Paurashava people as well as central government. Following guidelines may be followed for such performances:
- Administrative Reformation of Paurashava.
- Set Vision, Mission and functions for each department/ section of the Paurashava.
- Functions to be decentralized, transfer and coordination with other authorities.
- Establishment of Capacity Development Committee in Paurashava-level.
- Establishment of Urban Information Services Centre at Paurashava premises.
- Meet the Mass people of Paura-Parishad.

#### **8.1.4 Legal Aspects**

The drive to establish strong urban local governance in the Paurashava is yet to be legalized. The governance programmes at present are operated project wise based on the formulated policies of the implementing agencies of the national government. The Laws that the country inherited are mostly prepared during the colonial rule to serve its own interests. Even after independence from the British, the issue of good governance was not infused into the new Acts formulated.

### **8.1.5 Good Governance in Legal Provisions**

There is hardly any Act where the elements of good governance are clearly visible. The consultant has identified some Acts, where some elements of good governance can be traced.

The Paurashava/Municipal Act/Ordinances prepared at different times since 1960's have iterated for the preparation of Master Plan by the Paurashava/Municipality for its planned development. So far urban local government Ordinances/Acts made in 1967, 1977, 2008 and 2009, all suggested for planned development. The Paurashava Act 2009 has made the provision of having a Master Plan prepared by a Paurashava within five years of its inception. The function of the Paurashava also includes that it ensures planned development following the rules of the Ordinance. But there is no provision for public participation in the Paurashava Ordinance 2009. In all these legal documents, people's role has been ignored which is the violation of the norms of good governance.

The constitution of the Peoples' republic of Bangladesh clearly spells out that the Government should work to minimize the gap between urban and rural areas. A planned Paurashava development in that pursuit can provide necessary services to improve quality of life in both urban and rural areas within the Upazila.

### **8.1.6 Financial Issues**

#### **Governance in Morrelganj Paurashava**

Financial governance refers to transparency and accountability of financial matters. All financial matters must be transparent to all. People must know about the policies and programs of the Paurashava, how much revenue is collected each year and the amount of expenditure made on annual development. They must also be answerable to the people on how the public money is being spent and accounts being maintained.

Under different Government Projects computer and accessories are supplied for automation of the accounts system of Paurashavas within Bangladesh. Besides, trainings are also offered to the Paurashava account staffs for enabling introduction of automation in accounts system. But Morrelganj Paurashava has not yet been enlisted under any kind of these projects.

#### **Revenue Management**

The Paurashava still follows a traditional management system in tax collection and revenue management. Assessment section is responsible to assess the tax of the Paurashava and tax collection, and license and bazar section are responsible to collect the tax of the Paurashava. Tax automation system is not established here yet. The public is mainly informed about tax collection during the presentation of annual budget. They may, however, get information from the councilors or Paurashava accounts office.

#### **Paurashava's Financial Capacity and Plan Execution**

The main focus of Paurashava financial governance is to establish automation in entire financial management. This includes computerization of accounts system, holding tax management, and billing of different service charges. Software for above functions will have been supplied and installed in the Paurashavas covered by different projects. The projects also provided training to the relevant staff for functioning of the systems. With the

implementation of these projects people can now instantly know about the status of their tax payment, bill payment, and licensing. This has not only made the functions of the Paurashava easy, but also has freed the citizens for paying bribe, and experiencing hassle.

The size of annual budgets of the Paurashavas indicates the poor financial status of the Paurashavas. With low income, Morrelganj Paurashava will have to depend substantially on the government funding for implementing the development projects. But the government has limitations of its resources. In such a situation, if the Paurashava can not raise its own revenue adequately, it will not be able to execute much of the development projects under the Master Plan.

### **8.1.7 Monitoring, Evaluation and Updating**

Monitoring and evaluation is a very important part of plan implementation. Monitoring helps check if the plan is being implemented properly. It also measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can be taken 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. Such monitoring and evaluation must be carried out from within the Paurashava. But Morrelganj Paurashava is not equipped with qualified manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing as and when it is required.

### **8.1.8 Periodic Review and Updating**

The plan package needs to be updated regularly to make it respond to the spatial changes over time. But such updating would require relevant technical professionals and requisite fund that are highly lacking in Morrelganj Paurashava. As there is no planner or planning section in the Paurashava, review and updating of the Master Plan will require service of senior level planners that Paurashava might not be able to provide. This service will have to be procured by out sourcing and the Paurashava is not even capable to accomplish this financially either. This will create problem when the plans or its components gets obsolete or need to be changed. Another problem would arise when the duration of plans ends. It is necessary that the entire plan document (including all planning and land use proposals) should be reviewed every 4th year of the plan period and will come into execution from the 5th year. 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.

A new set of plans will have to be prepared replacing the old ones. This problem, however, can be overcome by undertaking another planning project by LGED. So, for regular updating and changes, and plan implementation monitoring, the Paurashava should immediately set up a planning section with a number of planners and other staff. The section will not only look after planning, but will also be responsible for development control, estate management, and project preparation. Since the planners would be qualified and skilled in computer operation, they can also help achieving automation of the Paurashava functions.

## **8.2 Resource Mobilization**

Resource mobilization will be one of the most challenging tasks in implementing the current 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 heaviest burdens will have to be shouldered by the Paurashava. As a local government agency, it suffers from resource constraint due to low level of urbanization and investment by both public and private sectors. The land value will maintain perpetually low growth rate in the town. Therefore, prospect of mobilization of substantial resource from sale of serviced land is extremely meager. For the same reason, revenue earning from betterment fee, planning permission and other sources may also remain low. Paurashava is heavily dependent on the government for executing its development projects as it is unable to collect sufficient revenue from its tax and non-tax sources. Therefore, it is clear that execution of development projects under the current plan will depend heavily on the government response to supply adequate fund. This situation calls for increasing revenue earning by generating new revenue sources.

## **8.3 Concluding Remarks**

From the past experience, it has been observed that plans are prepared for organized development, but development control has been subject to negligence. In most cases, execution has been piece-meal. It is unfortunate that town planning has not yet become a part of our urban development culture. Individuals develop lands and construct buildings with a little respect for planned development, and the concerned authority is also unable to exercise full control on development. Some strict measures are necessary to make stakeholders follow up plans and development rules. Awareness is to be built among the people to follow the Master Plan provisions and plan. Government agencies must be compelled to follow plans. Existing laws in this regard must be updated incorporating provisions of plan execution.



# CHAPTER 9

## URBAN AREA PLAN

This is the first chapter of Part- B that starts with Urban Area Plan. Urban Area Plan is the mid level plan that covers the existing Pourashava. It lays down the land use zoning plan and infrastructure development proposals at the town level. Land use planning is an important part of Master Plan ensuring that land is used efficiently for the benefit of economy, society and environment of Morrelganj Pourashava. This planning means the scientific, aesthetic, and orderly disposition of land, resources, facilities and services with a view to securing the physical, economic and social well-being of urban communities.

### 9.1 Goals and Objectives of Urban Area Plan

Urban Area Plan is the first phase illustration of the Structure Plan intended to be implemented over a time span of 10 years. The Urban Area Plan has been prepared within the policy framework of the Structure Plan and aims to attain the overall project objectives. So there is a hierarchical relationship between the two. In fact, Urban Area Plan is the first phase detailed illustration of the policies and strategies of the structure plan.

The preparation of Master Plan for Morrelganj Paurashava is aimed towards its future development, and covers the areas that are likely to become urban in future. The Urban Area Plan is aimed to:

- Determine the present and future functional structure of the town, including its land uses; and
- Provide infrastructure proposals for improving and guiding development of future urban area.

### 9.2 Methodology and Approach to Planning

The base map supporting for land use survey was obtained from the physical feature survey that contained all categories of physical features within the planning area (Chapter 3 of Survey Report). During physical feature survey, all structures and the functions of principal buildings were picked up and depicted on the map. The physical features were superimposed on a mouza map and printed for land use survey on the map. The map was carried to the field by investigators for detailed plot to plot land use survey (Chapter 4 of Survey Report). The field investigators carrying the map visited each and every plot and the structures therein and noted their uses in writing and marking them on the map with color pencil. They also verified the land use names put during the physical feature survey. Back in the office, the common land uses of plots were delineated in the map as per land use format given in the ToR. The delineated zones were then digitized and a new land use map was prepared for the entire planning area. After land use demarcation, field checking was done to correct possible errors.



Urban Land Use Plan is aimed to guide the physical development of Morrelganj town including its economic and social activities. This plan adheres to the policy directives spelled out in the Structure Plan. The current Urban Area Plan is akin to the traditional Master Plan approach prevalent in the country that designates plot-to-plot use of land apart from infrastructure development proposals. Thus it will also serve as a development control mechanism/instrument. The Urban Area Plan is, therefore, more rigid than Structure Plan. Making a land use plan on a cadastral map makes the Urban Area Plan more rigid. Once the plan on a cadastral map is drawn and accepted by the government and formalized, it gains a formal status and thus becomes a binding for all concerned.

The objectives of the Urban Area Plan have been attained through:

- Orderly location of various urban land uses;
- Location of appropriate transportation and drainage network; and
- Orderly location of services and facilities.

### 9.2.1 Delineation of Planning Areas

For delineation of Master Plan area, it is necessary to identify the possible future urban growth locations. The objective of project area demarcation is to determine the boundary of the area and mark it on the map as well as in the field. Logic behind the delineation of the Planning area of Morrelganj Paurashava for the year 2031 has been done on the basis of the gazette notification of the Paurashava and after the reconnaissance survey within the area, the discussions with all groups of stakeholders, analyzing the present trend of developmental growth of the town. Cooperation of the Paurashava was more important in delineating the Paurashava area in the cadastral map and the future planning area boundary (Detail was given in Chapter-2, Section 2.4 of Survey Report). As conversant with local conditions and the future trend of development, valuable advices were received from the Pura Mayor and its engineers and other staffs. Table 9.1 presents the detail about the mouzas, within the 9 wards of the Paurashava along with their areas in acre.

**Table 9.1: Ward wise RS Mouza sheets**

Ward	Mouza Name	J.L. No.	Sheet No.	Area (Acre)
Ward 1	Fakirer Takia	098	04	254.84
	Balaibunia	097	07	
Ward 2	Fakirer Takia	098	03, 04	109.95
	Saralia	115	01	
	Morrelganj	116	01	
Ward 3	Fakirer Takia	098	04	226.92
	Saralia	115	01	
	Morrelganj	116	01	
Ward 4	Saralia	115	01, 03	271.99
	Morrelganj	116	01, 02	
Ward 5	Fakirer Takia	098	04	59.28
	Saralia	115	01	
	Morrelganj	116	01	
Ward 6	Morrelganj	116	01, 02, 03	245.59
	Saralia	115	01, 03	
Ward 7	Balaibunia	097	07	231.21
	Fakirer Takia	098	04	
	Morrelganj	116	01, 02, 03	

Ward	Mouza Name	J.L. No.	Sheet No.	Area (Acre)
	Saralia	115	01	
Ward 8	Subrajkhati	096	-	470.23
	Morrelganj	116	01	
	Balaibunia	097	06, 07	
	Sankibhanga	095	01	
Ward 9	Subrajkhati	096	-	649.95
	Sankibhanga	095	01, 02, 03	
	Morrelganj	116	01, 03	
<b>Total</b>				<b>2519.96</b>

Source: Field Survey, 2009.

### 9.2.2 Content and Form of Urban Area Plan

The Urban Area Plan is presented in both map and textual format. The plan map is presented in 1:1980 or 1 inch to 165 feet scale, superimposed on latest cadastral/revenue map having plot boundaries within mouzas. The plan is accompanied by an explanatory report supported by necessary figures, maps and data. The report explains the various plan proposals and other components of the plan. At present, the Urban Area Plan covers the total area of Structure Plan area of 10.20 sq. km. or 2519.96 acres with a present population of 27472 of Morrelganj Paurashava.

The Urban Area Plan of the Master Plan of Morrelganj Paurashava contains several components. These are:

- i) Land Use Plan;
- ii) Transportation and Traffic Management Plan;
- iii) Drainage and Environmental Management Plan; and
- iv) Proposals for Urban Services.



# CHAPTER 10

## LAND USE PLAN

### 10.1 Existing and Projected land use

This section describes the analysis of existing and proposed land uses and at the same time mention estimation on the requirement of land for different land uses. It also lays down the land use zoning plan and infrastructure development proposals at the town level.

#### 10.1.1 Existing Land Use

Map 10.1 illustrates how the land uses are distributed at present in the Paurashava area. The information helps the preparation of Master Plan providing background information for selection of areas of different land uses.

The land uses of the project area are shown in Table 10.1. In the land use pattern of the Paurashava, 19 types of land uses are found. It is clearly evident from the table that agricultural land use (about 734.38%) dominates the Paurashava area, followed by residential (31.19%), water bodies (more than 26.92%), Urban Green Space (about 2.67%), circulation network (1.95%) and government services and educational land use occupy 0.39% and .84% respectively.

**Table 10.1: Existing Land use Classification of Morrelganj Paurashava**

Sl. No.	Landuse	Area in Acre	Area (%)
01	Agriculture	866.77	34.38
02	Circulation Network	49.22	1.95
03	Commercial Activity	7.3	0.29
04	Community Service	3.74	0.15
05	Education & Research	21.12	0.84
06	Governmental Services	9.94	0.39
07	Manufacturing and Processing Activity	5.52	0.22
08	Miscellaneous	2.76	0.11
09	Mixed Use	10.10	0.40
10	Non Government Services	0.82	0.03
11	Recreational Facilities	4.12	0.16
12	Residential	786.34	31.19
13	Service Activity	9.84	0.39
14	Transport and Communication	0.66	0.03
15	Urban Green Space	67.15	2.67
16	Vacant Land	1.08	0.04
17	Water Body	678.64	26.92
<b>Total</b>		<b>2519.96</b>	<b>100.00</b>

Source: Land use Survey, 2009.



## **10.1: Existing Land Use Map of Morrelganj Paurashava**



### 10.1.2 Land Requirement Estimation

This section proposes land use zoning plan for different land uses of the future town. The estimations have been made according to the Planning Standard approved by the client. The category wise land allocations are provided below.

#### Urban Residential Zone

Urban residential zone is the most significant segment of urban development scenario. The future residential area need to be based on a recommended planning standard of 100-150 persons per acre. With this standard, the estimation shows, the maximum land required to accommodate total projected population (43976) in the year 2031 will be 293.17 acres. But survey of existing land use has identified 786.34 acres of land is currently under residential use with a low density of population (about 13 persons/acre). The consultant, therefore, retains the existing housing land (178.76 acres) for the population of the Paurashava in 2031 (ppa 17). The consultant considered the standard for general housing as 200 persons /acre. Considering this standard, the land requirement for residential use will be 219.88 acres. Table 10.2 shows the detail.

**Table 10.2: Estimation of Urban Residential Land Requirement**

Use/Facility	Recommended Standard	Land in Acre		
		Estimation	Existing Land	Add. Required
General Housing	150 persons/acre	293.17	786.34	Existing land is more than enough
	200 persons/acre	219.88		

#### Commercial Zone

Market facilities are usually provided privately on commercial basis depending on the trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. The standard for commercial use can only be applied if ever these facilities are provided by the Paurashava. However, for the sake of current planning, we can earmark land as per standard at appropriate location, where commercial facilities may be developed privately or publicly. Including existing commercial activities, the total commercial land in 2031 has been fixed at 59.87 acres. Table 10.3 shows the detail.

**Table 10.3: Estimation of Land Requirement for Commercial Zone**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Wholesale market	1.0 acre/ 10000 population	4.40	0	4.40
Neighborhood/Local market	1.00 acre/per neighborhood Market	9.0	0	9.0
Retail sale Market	1.0 acres/ 1000 population	43.976	0	43.976
Super Market	1.50 – 2.50 acres/per super market	2.5	0	2.5
<b>Total</b>		<b>59.87</b>	<b>7.30</b>	<b>52.57</b>



### General Industrial Zone

According to approved planning standard, the total land for industries is estimated to be 109.94 acres with 65.964 acres for small scale industries and 43.976 acres for cottage industries. Table 10.4 shows the details.

**Table 10.4: Estimation of Land Requirement for General Industrial Zone**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Small scale	1.50 acres /1000 population	65.964	0	65.964
Cottage/agro-based	1.00 acres /1000 population	43.976	0	43.976
<b>Total</b>		<b>109.94</b>	<b>0</b>	<b>109.94</b>

### Education and Research Zone

Estimation of land according to standard indicates that there will be a land requirement of 68.76 acres to accommodate educational facilities by the year 2031. If we deduct the already available 32.45 acres of existing land uses under various education facilities, there will be need of additional 41.83 acres of land for education facilities will be required as shown in Table 10.5.

**Table 10.5: Estimation of Land Requirement for Education and Research Zone**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Nursery	0.5 acre/10,000 population	2.20	2.57	-
Primary School/ kindergarten	2.00 acres/5000 population	17.59	10.50	7.09
Secondary/High School	5.00 acres/ 20,000 population	10.99	16.14	-
College	10.00 acres/20,000 population	21.99	0.00	21.99
Vocational Training Centre	5 - 10 acres / Upazila	5	2.43	2.57
Other	5.00 acres/ 20,000 population	10.99	0.81	10.18
<b>Total</b>		<b>68.76</b>	<b>32.45</b>	<b>41.83</b>

### Health Services

There already exists an Upazila health complex on an area of 10.17 acres and permanent Health Complex. According to the proposed standard, it would be 10 acres. Paurashava requires additional 5.73 acres of land for the Health centre/Maternity clinics in future. Table 10.6 shows the detail.

**Table 10.6: Estimation of Land Requirement for Health Services**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Upazila health complex/ hospital	10 -20 acres/Upazila HQ	10	10.17	-
Health centre/ Maternity clinic	1.00 acre/ 5,000 population	8.80	3.07	5.73
<b>Total</b>		<b>18.80</b>	<b>13.24</b>	<b>5.73</b>

### Government office

Estimation of land according to standard indicates that there will be a land requirement of 28 acres to accommodate government offices by the year 2031. If we deduct 6.33 acres of existing land under various administrative facilities, additional 9.06 acres of land for administrative facilities will be required. Table 10.7 shows the details.

**Table 10.7: Estimation of Land Requirement for Government Office**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Upazila complex	15 acres	15	6.33	8.67
Paurashava office	3-5 acres	3		3
Jail/Sub-Jail	10 acres/Upazila HQ	10	0	10
<b>Total</b>		<b>28</b>	<b>6.33</b>	<b>21.67</b>

### Community Facilities

For various community facilities, the total land requirement has been fixed at 16.80 acres. About 1.10 acres have been earmarked for mosque, 2.2 acres for eidgah/graveyard, 2.20 for Paurashava provided community centre. No additional land is required for mosque, church and temple. A total of 2.2 acres have been reserved for police boxes, 3 acres of land is required for fire station including an additional 1.1 acres for post office. Table 10.8 shows the details.

**Table 10.8: Estimation of Land Requirement for Community Facilities**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Mosque/Church/Temple	.5 acre /20,000 population	1.10	3.20	Existing land is more than enough
Eidgah/ Graveyard	1.0 acre/20,000 population	2.20	2.12	0.08
Community centre	1.00 acre /20,000 population	2.20	0.00	2.20
Police Station	3 – 5 acres/Upazila HQ	5.00	0.00	5.00
Police Box/outpost	1.00 acre/ 20,000 population	2.20	0.00	2.20
Fire Station	3 – 5 acres/Upazila HQ	3.00		3.00
Post office	0.5 acre /20,000 population	1.10		1.10
<b>Total</b>		<b>16.80</b>	<b>5.32</b>	<b>13.58</b>

### Recreational Facilities

Field survey shows no public park or play field in the town, except play grounds in the premises of educational institutions. The total land required for various open space recreation facilities recommended by client stands at 14.60 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex. Table 10.9 shows the detail.

**Table 10.9: Estimation of Land Requirement for Open Space Recreation/ Recreational Facilities**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Play field/ground	3 acres/20, 000	6.60		6.60
Park	1 acre/1000 pop	1.00	0.00	1.00
Neighborhood park	1 acre/1000 pop	1.00	0.00	1.00
Stadium/sports complex	6-10 acre/upazila	6.00	0.00	6.00
<b>Total</b>		<b>14.60</b>	<b>0.00</b>	<b>14.60</b>

### Utility Services

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 2.2 acres for water supply installations, like, pump stations and other establishments related to water supply; and 2.2 acres have been fixed for gas related facilities. A dumping site is proposed to be developed over an area of 2.2 acres for final disposal of the solid waste. The total land requirement for electric substation is 2.2 acres. Table 10.10 shows the details.

**Table 10.10: Estimation of Land Requirement for Utilities**

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Water supply	1.00 acre /20,000 population	2.20	0	2.2
-				
Gas	1.00 acre /20,000 population	2.20	0	2.20
-				
Solid waste disposal site	1.00 acre /20,000 population	2.20	0	2.20
Waste transfer station	4-10 acres/Upazila HQ	4.00	0	4.00
Electric sub-station	1.00 acre /20,000 population	2.20	0	2.20
Telephone exchange	1.00 acre/20,000 population	2.20	0	2.20
Fuel Station	0.5 acre /20,000 population	1.10	0	1.10
<b>Total</b>		<b>16.10</b>	<b>0</b>	<b>16.10</b>

## Transportation Facilities

Estimation of land according to standard indicates that there will be a land requirement of 10.00 acres to accommodate transport and communication facilities by the year 2031. Table 10.11 shows the details.

**Table 10.11: Estimation of Land Requirement for Transport and Communication**

Use/Facility	Recommended standard	Land in Acres		
		Required land	Existing Land	Add. Required
Bus terminal	1.0 acre /20,000 population	2.20	2.19	0.01
Truck terminal	0.50 acre /20,000 population	1.10	-	1.1
Launch/Steamer terminal	1.00 acre /20,000 population	2.20	-	2.2
Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand	0.25	1.14	-
Railway Station	4.00 acre / per Station	4.00	-	4
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	0.25	-	0.25
<b>Total</b>		<b>10.00</b>	<b>3.33</b>	<b>7.56</b>

## 10.2 Land Use Proposals

Bangladesh is the most densely populated country in the world. The land area of the country remains static amid continuously increasing population. Such a situation calls for strict regulation to utilize its scarce land resources for non-agricultural purposes. Increase in urban population means more demand for houses, roads, schools, hospitals, factories, bazars, shops, business centers, offices and other service facilities. Providing all these facilities require land and that is at the cost of valuable agricultural land, as the country has hardly any fallow land to accommodate all these land uses. Morrelganj Paurashava is surrounded by valuable fertile agricultural land. Any urban expansion will cost net deduction of agricultural land that will consequently affect local food and cash crop production. A conservative and rational standard of space use and their proper application in planning, designing and development is, therefore, followed in the land use proposals. Appendix -2 shows the Land Use Plan of Morrelganj Paurashava.

### 10.2.1 Designation of Future Land Use

Designation of the future land uses in the Land use Plan is an important task of planning as it will ensure the compliance with the Structure Plan guidelines and provide the details of land use pattern along with transport and drainage network and utility lines. The existing uses and new proposals of land uses for future development have been identified and designated on the map for compliance by law. The land use categories with quantity of land required are based on the sectoral needs for now and in future. The implementation of the plan will require cooperation and collaboration of relevant authorities and agencies, and the Paurashava being the custodian of the Plan will safeguard the status of the Plan.

## **10.2.2 Land Use Zoning**

Development control is an essential part of urban planning. For development control certain procedures have to be followed for approval of designs of various categories of structures, establishments and land uses. The first condition is to secure land use permit according to approved zoning plan followed by approval of the design of proposed building/structure.

### **10.2.2.1 Types of Land Use Zoning**

In land use zoning, the entire area of a town is divided into suitable land use zones to create congenial and livable environment and thereby enhance land value. In Bangladesh such land use zoning is incorporated as a part of the master plan / land use plan/urban area plan. Before submitting building plans for approval an applicant must secure land use permit from the Paurashava. For land use permit, an applicant's prospective use of structure must be compatible with the approved land use zone of the site. Land use zoning limits activities that can or cannot function on a land parcel by establishing a range of development options. Land use zoning is a legal instrument by application of which a Paurashava can control,

- a) The height of building/structure,
- b) The area of a land parcel that must be left vacant, and
- c) The use of a buildings and land.

Zoning can be of three types, area zoning, density zoning and height zoning.

#### **Area Zoning**

By area zoning an area is divided into zones suitable for that particular area. The main objectives of such zoning are done mainly from environmental point of view that accrues other social benefits.

#### **Density Zoning**

The aim of the density zoning is to limit the size of population in any particular area by means of density control. The size of population has bearing on the capacity of designed utility facilities and amenities and traffic volume and crowding, especially in the residential areas. Such zoning is done to ensure a healthy and enjoyable community living.

#### **Height Zoning**

Height zoning restrict the height of buildings structures in any particular area. This zoning is aimed to promote the proper and sound development of areas. Height zoning is of particular importance in airport areas to ensue take off and landing of aircrafts.

Considering the existing level of development and development prospects, the consultant recommends to follow the area zoning only. Zoning is only a part of development control regulations. A prospective developer in a Paurashava has to comply with other rules and regulations, like, Building Construction Rules, 1996 under East Bengal Building Construction Act 1952, Bangladesh National Building Code 1993 and other conditions of construction method, building safety and associated issues.

### 10.2.2.2 Classification of Land Use Zoning

After a detailed consultation between the client and the consultants of the project, the land use classification for the Paurashava Master Plan is finalized as shown in Table 10.12. Map 10.2 and Appendix -2 shows the Land Use Plan of Morrelganj Paurashava.

**Table 10.12: Land Use Plan of Morrelganj Paurashava**

SL. No.	Land use Category	Remarks	Area (acre)	%
01	Urban Residential Zone	Urban Residential area is a land use in which housing predominates. These include single family housing, multi-family residential, or mobile homes. Zoning for residential use may permit some services or work opportunities or may totally exclude business and industry. It may permit high density land use.	207.32	8.19
02	Rural Settlement	Rural settlement includes the low dense residential area which is scattered and rural in nature. It may permit only low density uses. Aiming to control the growth in this zone, less service and facilities will be provided.	552.08	21.91
03	Commercial Zone	The land used for commercial activities is considered as commercial land use. These activities include the buying and selling of goods and services in retail businesses, wholesale buying and selling, financial establishments, and wide variety of services that are broadly classified as "business". Even though these commercial activities use only a small amount of land, they are extremely important to a community's economy. Commercial land includes established markets and areas earmarked for markets.	5.99	0.24
04	Mixed Use Zone	Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.).	7.85	0.31
05	General Industrial Zone	Green and Orange A categories as per The Environment Conservation Rules, 1997	14.03	0.56
06	Heavy Industrial Zone	Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997)	7.94	0.31
07	Government Services	All Government Offices except large scale service based offices as Civil Surgeon Office, DC Office, Police Box, Police Fari, Police Station, LGED Office, Paurashava Office, Settlement Office, Union Parishad Office, Upazila Headquarter, BADC Office, Fisheries Office, Ansar/VDP Office, Agriculture Office, Zila Parishad Office, Post Office, Telephone Exchange Office and Other Government Offices.	12.14	0.48
08	Education & Research Zone	All kinds of educational institutes like Primary/secondary/other Schools/ Colleges etc are mentioned to calculate the land use for education and research purpose.	29.44	1.17
09	Agricultural Zone	Agricultural land denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. It includes productive land (single, double and triple cropped), seed bed, fisheries, poultry farm, dairy farm, nursery, horticulture etc.	681.89	27.06
10	Water body	Equal or More than 0.25 acre and justification by the consultant and wet land will merge with water body	599.16	23.78
11	Open Space	Playground, Botanical Garden, Stadium, Zoo etc. (Facilities without or with minimum building structure)	87.46	3.47
12	Recreational Facilities*	Facilities other than those mentioned to Open Space and indoor based facilities with designated building structure i.e. Cinema Hall, Theater Hall etc.	0	0.00

SL. No.	Land use Category	Remarks	Area (acre)	%
13	Circulation Network	Road and Rail communication	179.76	7.13
14	Transportation Facilities	Under transport and communication land use both transport and communication services are considered. This category includes airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc.	4.21	0.17
15	Utility Services	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal ,Fire Service, Water Pump House ,Water Reservoir, Water Treatment Plant etc.	9.21	0.37
16	Health Services	This land will be used to provide health facility.	12.64	0.50
17	Community Facilities	All community facilities including funeral places and other religious uses	7.90	0.31
18	Historical and Heritage Site	The entire mentionable historical and heritage site.	Not applicable	
19	Restricted Area	A Restricted Area is an area where no one but certain people can enter. Here the areas which are not accessible for the general public except some high ranked personnel are considered as restricted area.	Not applicable	
20	Overlay Zone	If the consultant justify any area that should not be defined as other given definitions but the facility(s) may not be avoidable, they may use this category	Not applicable	
21	Urban Deferred	Optional depending on the Paurashava and the Consultant's judgment	97.71	3.88
22	Forest	Designated Forest Area	Not applicable	
23	Beach	Sea Beach	Not applicable	
24	Miscellaneous	Any other categories which are not related to above 23 categories.	4.22	0.17
<b>Total</b>			<b>2519.96</b>	<b>100.00</b>

In the sections below, the general definition of the use and description of associated permitted and conditionally permitted uses under each land use zone have been provided. The uses that are not listed here in any of the categories shall be treated as Restricted Use for the corresponding land use category and shall not be permitted only except unanimously decided otherwise by the appropriate authority. In such situations, the use shall get permission in the category of New Use. The following is a short description of recommended land use zones. Land use plan of Morrelganj Paurashava is given in Map 10.2 and Appendix-2.

#### Urban Residential Area

Urban residential zone refers to all categories of urban residential areas, including exiting ones and the residential land use proposed under the present Master Plan. In total, this zone covers 206.32 (8.19%) acres of land delineated up to the year 2031, considering standard provided by LGED. Urban residential zone refers to all categories of urban residential areas, including exiting ones and the residential land use proposed under the present Master Plan. Potential area for high dense residential area near to urban core area (influences of close proximity to commercial hub, administrative, educational facilities, road way network, service facilities and flood free suitable land for development) are

demarcated as such kind of land plan. Table A.1, Annexure- A and conditional permission will be given to a number of other land uses as specified on Table A.2, Annexure- A.

### Rural Settlement

Morrelganj Paurashava has some rural characteristics. So in Urban Area Land use category for UTIDP Master Plan the residential settlements within the agricultural belt are categorized as rural settlements. These settlements have usually temporary type of structures. Morrelganj Paurashava is mostly rural in character. About 34.38% existing land use is in agriculture practice and most of the settlement situated surrounding or within this agricultural land. So in a manner to develop control in Morrelganj Paurashava portion of land declare as rural settlement. This settlement occupies acres 552.08 of land, which comprises more than 21.91% of the total land. The areas of rural settlement have some restrictions for non-agricultural development. Table A7, Annexure-A shows the permitted land use of rural settlement and Table A8, Annexure-A conditionally permitted use in this zone. Annexure-D shows the planning schedule of Rural Settlement Area in Morrelganj Paurashava.

### Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails and wholesale can be set up and function without creating hazards to surrounding land uses. This zone has an area of 5.99 acres (0.24%) designated up to 2031 and zone will allow commercial uses as listed in Table 10.13 Table 10.13 shows the different new commercial proposal of Morrelganj Paurashava.

**Table 10.13: New proposal of Commercial Zone of Morrelganj Paurashava**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Slaughter House	0.15	7	Morrelganj _116_01	274,278,294	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
Paurashava Market	0.13	7	Morrelganj _116_01	283,436,439		Land acquisition and establish	Continue the development
Kitchen Market	0.47	1	Morrelganj _116_01	420,427,428, 429,430,431, 432,433,434, 435,436,439, 440,441,675		Land acquisition and establish	Continue the development
<b>Total</b>	<b>0.75</b>						

### Community Facilities

Community services include community centre, club house, fire service, health facilities, religious centres, other community services etc. In additionally all funeral places and other religious uses incorporated in this category. Total 7.90 acres land which covers 0.31% of total planning area will be used for this purpose. In additionally community facilities will also provided in civic centre (Table 10.14) Annexure-D shows the planning schedule of Community Facilities in Morrelganj Paurashava.



**Table 10.14: New proposal of Community Facilities in Morrelganj Paurashava**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Central Eidgah	2.05	3	Saralia_115_01	367,368,376,385,386,392,393,409,465,466	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
Central Graveyard	1.8	6	Morrelganj_116_05	1105,1106,1109,1118,1119		Land acquisition and establish	Continue the development
Central Shahid Minar	0.52	4	Saralia_115_01	527,528,581,591,669,670,683		Land acquisition and establish	Continue the development
Poura Auditorium	0.1	7	Morrelganj_116_02	230,232,269			
Shahid Smriti Soudha	0.4	4	Saralia_115_01	526,527,581,591,670,672,683			
<b>Total</b>	<b>4.87</b>						

### Heavy Industrial Zone

Industrial/Manufacturing/Processing Zone is intended to provide locations, where Orange B and Red categories (as per Environmental Conservation Rule,1997) industrial, manufacturing and processing

**Map 10.2: Land use Proposal of Morrelganj Paurashava**



Establishments can be set up and function without creating hazards to surrounding land uses. Since there is no industrial agglomeration in the town, the industrial zone will be meant for new industries. In this zone, a complex line of industrial and supporting non-industrial land uses will be permitted as per Table A.3, Annexure- A and conditional permission will be given to a number of other land uses as specified on Table A.4, Annexure- A. Again table 7.94 shows new land proposal for manufacturing and processing activity in Morrelganj Paurashava. This land will be used for established general industrial area.

**Table 10.15: New Land Proposal for Industrial Zone Area**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Heavy Industrial Zone	7.94	09	Morrelganj_116_04	928,933,935, 936,937,938	Land acquisition and developed basic infrastructure	Establish Industry	Ensure full functioning of industrial area
			Morrelganj_116_06	2026,2027,2030,2032,2036,2037,2043,2044,2052,2053,2059,2060,3422,3423,3424,3425,3426,3427,3428,3429,3430,3435			
General Industrial Zone	9.5	9	Sankibhanga_095_01	200,201,202,257,281,282,283,284,285,286,287,288,289,290,291,292,293,295,296,335,336	Land acquisition and developed basic infrastructure	Establish Industry	Ensure full functioning of industrial area
<b>Total</b>	<b>17.44</b>	<b>2 industrial estate</b>					

### Government Services

Administrative zone covers all kinds of government and non-government offices in the town. The permitted uses in this zone are presented in Table A.15, Annexure- A and conditional uses as listed in Table A.16, Annexure- A. The total area under this use has been estimated as 12.14 acres that include existing and proposed land uses. Table 10.16 shows the new land proposal for governmental services /administrative area in Morrelganj Paurashava. This land will be used for established Paurashava office premise in Morrelganj Paurashava. Annexure-D shows the planning schedule of Government Services area in Morrelganj Paurashava.

**Table 10.16: New Land Proposal for Governmental Service/Administrative Area**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Paurashava Office Premise	0.43	07	Morrelganj_116_02	232,269	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
			Morrelganj_116_04	840			
<b>Total</b>	<b>0.43</b>						

### Education and Research Zone

Education and Research zone refers to mainly education, health and other social service facilities as listed in Table A.13, Annexure-A, and conditional uses as listed in Table A.14, Annexure-A. The total area under this use has been determined as 29.44 acres that include existing 21.12 acres and proposed (8.32 acres) land uses. Detail new land proposal for education and research is shown in Table 10.17. Total two primary schools, one secondary school, one vocational training institute and one college will be established in this land. Annexure-D shows the planning schedule of Education and research area in Morrelganj Paurashava.

**Table 10.17: New Land Proposal for Education and Research**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Secondary School	8.19	4,9	Sankibhanga_95_01	1933,1934, 1938			Land acquisition and establishment
			Saralia_115_03	2015,2016, 2017,2033, 2034,2035, 2036,2037, 2038,2088, 2089,2092, 2214			
Primary School-01	2.36	04	Saralia_115_01	655,685,68 8,689,709, 710,711,71 2,730,731, 732,737,73 9,740,741, 742	Land acquisition and establishment	Continue the further development of the primary school.	
	.89	08	Subhrajkat i_96_00	144,145		Land acquisition and establishment	Continue the further development of the primary school.
Primary School-02	.33	09	Sankibhanga_95_2	610			
Vocational Training Institute	2.24	08	Balaibunia _97_6	5451,5452, 5457,5459, 5467,5468	Land acquisition and establishment	Continue the further development of Vocational Training Institute	
<b>Total</b>	<b>13.97</b>						

### Agricultural Zone

The Paurashava has a vast area of agricultural land that demands formation of a separate zone of, agriculture. Agriculture zone is primarily meant for agriculture; land uses related to it and land uses that support it. Total 681.89 acres land which covers 27.06% of total land will be use as agricultural use. Details of land uses are presented in Table A.17, Annexure- A and conditional uses as listed in Table A.18, Annexure- A. Annexure-D shows the planning schedule of Agriculture Area in Morrelganj Paurashava.

### Water Body and Retention Area

Total 599.16 acres of water body which cover 23.78% of total land within the Paurashava. The plan suggests preserving most of these water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds.

### Open Space

This zone has been provided to meet the active and passive recreational needs of the people and at the same time, conserve the natural resources. The total area estimated for this zone stands at 87.46 acres (3.47%). The details of permitted and conditional permits have been presented in Table A.19 Annexure- A, and conditional uses as listed in Table A.20, Annexure- A. Table 10.18 shows the detail of new land proposal for open space proposal in Morrelganj Paurashava. There are 1 Stadium, 11 Playgrounds, 8 Neighborhood Park and 1 Central Park newly established to fulfill the need of the resident. Annexure-D shows the planning schedule of open space in Morrelganj Paurashava.

**Table 10.18: New Land Proposal for Open Space**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Stadium	12.74	3	Saralia_115_01	332,340,341,345,346,347,353,354,355,367,368,376,385,386,393,409,410			Land acquisition and establishment
Playground	1.3	9	Sankibhanga_95_01	1933,1934,1938,1944			Land acquisition and establishment
Playground	2.88	4	Saralia_115_01	692,695,696,697,703,704,705,707,708,709,737,741,742,743,753	Land acquisition and establishment	Maintaining the playground and improve facilities	
Playground	3.16	4	Saralia_115_03	2015,2016,2017,2019,2035			Land acquisition and establishment
Playground	.81	8	Morrelganj Purba_081_02	139,140,144		Land acquisition and establishment	Maintaining the playground and improve facilities
Park	5.59	4	Saralia_115_03	1984,1985,1986,1987,1988,1989,1990,2001,2002,2003,2004,2005,2006			
Park	3.23	8	Sankibhanga_095_01	2,1924,1935,1936,1941,1942,1985,1986,1987			

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Neighborhood Park	0.37	4	Morrelganj_116_1	2			Land acquisition and establishment
			Saralia_115_01	521,522,523,581,591,672,673			
Central Park	7.42	1	Fakirer Takia_98_04	2767,2768,2770,2772,2773,2774,2775,2776,2777,2782,2894,2895,2896,2899,2900,2901,2902,2903,2941,2942,2953,2954,2955,2956,2957,2968,2985			Land acquisition and establishment
<b>Total</b>	<b>37.5</b>	<b>1 Stadium, 4 Playgrounds, 1 Neighborhood Park and 1 Central Park, 2 Park</b>					

### Recreational Facilities

This zone has been provided to meet the active and passive recreational needs of the people and at the same time, conserve the natural resources. The details of permitted and conditional permits have been presented in Table A.19 Annexure- A, and conditional uses as listed in Table-A.20, Annexure- A. Annexure-D shows the planning schedule of open recreational in Morrelganj Paurashava.

### Circulation Network

The road network is mainly considered as circulation network. National highway, pucca/ semi- pucca/ katcha road, footpath, flyover, over- bridge, underpass, bridge, culvert, railway, railway bridge all are include in circulation network. Total 179.76 acre land which covers 7.13% of total planning area of Morrelganj Paurashava. Details are given in Chapter 11, Part B of this report. At present only 49.22 acres of land uses for circulation network in this Paurashava. Annexure-D shows the planning schedule of Circulation Network in Morrelganj Paurashava.

### Transportation Facilities

Transportation facilities incorporate transport and communication services. For an example airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc. Total 4.21acres land (0.17% of total area) will be used for this purpose. Annexure-D shows the planning schedule of Transportation Facilities in Morrelganj Paurashava. Table 10.19 shows the new transportation facilities for Morrelganj Paurashava.

**Table 10.19: New Land Proposal for Transportation Facilities**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Bus Terminal	1.89	1	Fakirer Takia_98_04	2658,265 9,2664,2 665,2666 ,2667,26 68,2669, 2670,267 1,2672,3 255,3256	Land acquisition and establishment	Maintaining and improvement of Parking facilities	
Bus Terminal	0.29	8	Balaibuni a_97_06	5091,509 2,5093		Land acquisition and establishment	Maintaining and improvement of facilities
Tempo Stand	0.11	6	Morrelgan j_116_05	1026,102 1,1025			Land acquisition and establishment
Tempo Stand	0.46	3	Saralia_15_1	410,411, 463,465			Land acquisition and establishment
Tempo Stand	0.57	8	Subhrajka ti_96_0	139,140, 144,45,4 6,49		Land acquisition and establishment	Maintaining and improvement of auto stand facilities
<b>Total</b>	<b>3.32</b>	<b>2 Bus Terminal,3 Auto Stands, 1 Bus Bay</b>					

### Utility Services

It incorporated all utilities and service facilities except the health service. For an example water treatment plant, water reservoir, water pump house, public toilet, fire service, waste disposal, sewerage office, power office or control room and over head tank. In survey stage this type land use was define as service activity. Total 9.20 acres land which covers 0.37% total area of Morrelganj Paurashava. Annexure-D shows the planning schedule of Utility Services in Morrelganj Paurashava.

**Table 10.20: New Land Use Proposal for Utility Services**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Waste Dumping Ground	6.97	4	Saralia_115_3	1949,2049 ,2050,205 2,2053,20 54,2120,2 121,2125, 2132,2133 ,2136,215 2,2153,21 60,2161,2 173		Land acquisition and establishment	Maintaining and improvement of waste dumping ground



Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Waste Transfer Station	0.20	1	Fakirer Takia_98_4	2926,2964,2965,3046	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Waste Transfer Station	0.34	2	Fakirer Takia_98_4	830,852	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Waste Transfer Station	0.15	4	Saralia_115_1	655,658,659	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Waste Transfer Station	0.09	5	Morrelganj_116_02	176,209,211	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Waste Transfer Station	0.16	7	Morrelganj_116_1	66,84,85,99	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Fire Service	0.59	1	Fakirer Takia_98_04	2896,2898	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Filing Station	0.17	4	Saralia_115_1	681,682,686,717	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Filing Station	0.530	8	Balaibunia_97_6	5071,5072,5073	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
<b>Total</b>	<b>9.21</b>						

### Health Services

This land will be used to provide health facility. Total 12.64 acre land 0.5% of total land will be used for this purpose. Along with this community based health facilities will be provided at ward center. Ward center is given in mixed use category in land use plan proposal. Table 10.21 shows the new health facilities for Morrelganj Paurashava. Annexure-D shows the planning schedule of Health Services in Morrelganj Paurashava.

**Table 10.21: New Land Use Proposal for Health Services**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Community Clinic	2.713	1,2,3,4,6,7,8	Fakirer Takia_98_4	2883,2896,2898,2926,3003,3004,3006,3007			Land acquisition and establishment
			Morrelganj_116_04	863,964	Land acquisition and establishment	Maintaining and improvement of waste transfer station	

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
			Morrelganj_116_05	1020, 1021, 1025	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
			Saralia_115_1	470,662, 669,670			Land acquisition and establishment
			Saralia_115_3	1996,1997,2039			Land acquisition and establishment
			Subhrajati_96_0	39,46			Land acquisition and establishment

### Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Morrelganj, as the trend shows, an exclusive commercial land use is unlikely to function. Admixture of land uses will allow flexibility of development, instead of restricting development. Total area for mixed uses has been put to 7.85 acres which share 0.31% of total area, including both, existing and proposed land uses.

**Table 10.22: New Landuse Proposal for Mixed Use**

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
Ward Center-01	1.29	01	Fakirer Takia_098_04	2971, 2972, 2973, 2975	acquisition and establishment		
Ward Center-02	0.91	02	Fakirer Takia_098_04	3017	acquisition and establishment		
Ward Center-03	0.59	03	Saralia_115_01	447, 448	acquisition and establishment		
Ward Center-04	1.184	04	Saralia_115_03	1971	acquisition and establishment		
Ward Center-05	0.961	05	Saralia_115_01	777	acquisition and establishment		
Ward Center-06	1.16	06	Morrelganj_16_05	1144	acquisition and establishment		
Ward Center-07	0.80	07	Morrelganj_16_04	911	acquisition and establishment		
Ward Center-08	1.67	08	Subhrajati_096_00	160	acquisition and establishment		
Ward Center-09	0.71	09	Morrelganj_16_04	926	acquisition and establishment		
Total	9.275						

### **Overlay Zone**

The overlay land uses refer to those uses that are not compatible to the surrounding land uses but, anyhow, they need to stay there and therefore will not be removed. These uses are only sites and not zones, actually. They have local, regional or national importance, though they do not conform to surrounding land uses. No other use except the use of overlay site is permitted in this zone. There is no scope for permitting or conditionally permitting the functions or uses as the zone itself is an overlay. The present and proposed use of the zone will continue until the next zoning regulation is imposed on those specific parcels of land.

There are a variety of overlay zones within the project area. Some of the important types of overlay sites are listed below including the purpose of retaining them.

### **Urban Deferred**

The Urban Deferred refers to lands lying outside of the urban growth boundary and identified as Urban Reserve. The total area under this use has been proposed as 97.71 (3.88%) acres that include existing and proposed land uses. Annexure-D shows the planning schedule of Urban Deferred Area in Morrelganj Paurashava. The following are permitted *Uses* within the Urban Reserve (UR) *Zone*:

- Agriculture, Livestock based
- Agriculture, Vegetation based (mushroom farms shall not be permitted)
- Existing facilities up to the date of gazette notification of the Master Plan. Condition is that, no further extension will be permitted.

### **10.2.3 Land Use Permission**

One of the major purposes of land use zoning is to restrict an area for a particular use meant for the zone. This is intended to maintain a disciplined land use distribution and development. But there are many uses other than the use meant for the zone that are considered for permit in the zone. Sometimes such applications are accommodated to support or assist the area, with conditions imposed in giving land use permit, sometimes strict restrictions are maintained by refusal of applications. Detailed lists of permissible and conditionally permissible uses have been provided in Annexure- A according to land use categories. The list has been developed with ideas borrowed from the recommendations made by the consultants under the recently completed DAP Project of RAJUK. It is required that permit procedures mentioned in Annexure- A are officially adopted through incorporation in the Building Construction Rules under Section 18 of the East Bengal Building Construction Act 1952.

Development Permit is the most important function of Paurashava and for that matter of any City Development Authority. Master plan will have no bearing unless development can be channelized to its desirable direction through effective permit procedure. Master plan has developed its plan using GIS database and other advanced computer software of world standard. The necessary planner to handle this database is sufficiently available in

the country. This combination provides Paurashava the unique opportunity to make its plan permit procedure fast, well managed and transparent. This is also in line with the idea of digital Bangladesh pronounced by the present govt.

**a. Computerization of the Permit procedure**

Maintaining information of all the development activities within the Paurashava jurisdiction is a mammoth task and maintain them in the present manual method is neither possible nor necessary. Consultant recommends development of customize software for the purpose. The system would prove worthwhile by saving in the form of time, cost, ease of management, ease of upgrading information, control of corruption and so forth.

**b. Land use Permit**

Paurashava has the legal responsibility to develop plan for the wellbeing of the citizens within its jurisdiction and implement the same by channelizing all developments through appropriate control mechanisms. Issue Plan Permit to private plot owner/s or developers working with the consent of the owner/s that comply the set regulations constitute the most part of development control activity conducted by Paurashava. In the following paragraphs the structures of the proposed land use control Authority has been elaborated considering that Paurashava shall be strengthened adequately and in that situation planner's ranks would be as under (Proposed organogram of BIP) was given in Section 8.1.3.2, Chapter 8, and Part A of this report.

Structure of Land use Permit Authority

The Land use Permit Authority shall be comprised of three vertically linked tiers:

- At the entry level Land use Permit Planner [LPP]
- At the mid level Land use Permit Committee [LPC] to control LPPs, clarify legal provisions regarding land use permit decisions on a case to case basis, and
- At the top level Nagar Unnayan Committee comprised of representatives from planning departments, professional institutions, imminent scholars and citizens of the town.

**Land use Permit Planner**

Land use Permit will be issued with the signature of Land use Permit Planner [LPP] appointed by the Mayor, Paurashava from among the Planners not below the rank of Assistant Town Planner. Land use Permit issued by the LPP/s shall be considered null and void, even if signed, unless the use sought for, is in conformity with the land use options of the respective zone that contains the plot.

To cover the Paurashava area, Paurashava Planners [PP] working in the Paurashava may be delegated with the power to act as LPP and issue Plan Permit and control development within the provision of Master plan on behalf of Paurashava. He/she must have needful Inspectors and GIS facility with logistics and knowledgeable personnel to operate so as to accomplish such responsible job. For all plan permit activities PPs shall be accountable to, controlled by and act in close communication with Land use Permit Committee at Paurashava.

### Land use Permit Committee

At the mid level Land use Permit Committee [LPC] shall function for effective control of LPPs [both main stream and Paurashava and to clarify legal provisions regarding land use permit decisions on a case to case basis. LPC shall be a maximum four member committee headed by Paurashava senior urban planner. The activities of LPC will include

- Clarify the legal provisions for the LPPs as per their request.
- Make recommendations in case of New Use or Conditional Use and send it to the Paurashava Sthayee (permanent) Committee for decision.

Earmark plot numbers under non-conforming uses and notify the owners about the time span to relocate the facility, procedure and conditions that must be strictly maintained to Avoid immediate.

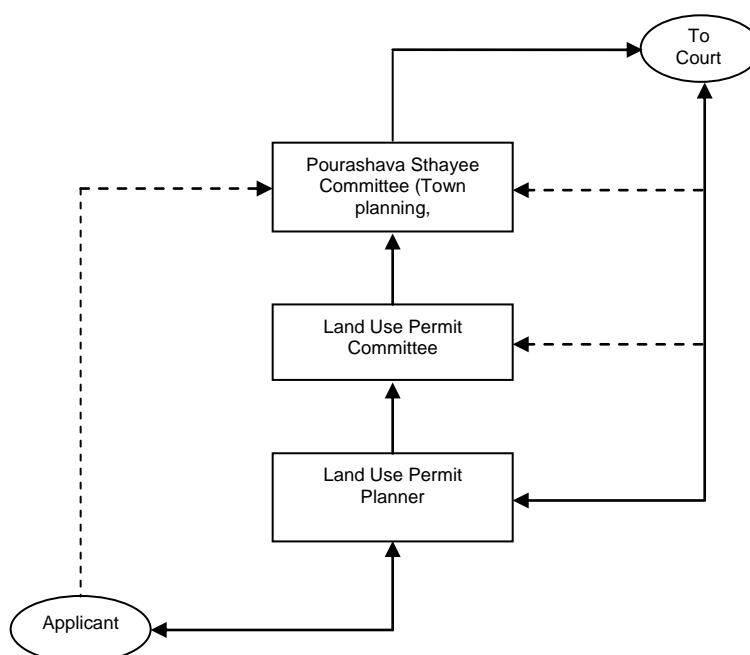


Figure 10.1: Structure of Land use Permit Authority Showing Linkages

### Paurashava Sthayee Committee (Town Planning, Public services and development)

According to the Paurashava ordinance 2009, section 64 Paurashava Sthayee Committee (Town Planning, Public services and development) shall be the supreme authority regarding Land Use Permit within Paurashava jurisdiction. Paurashava Sthayee Committee will have five Members. The committee will form according to the section 55 of Paurashava ordinance 2009.

Paurashava Sthayee Committee shall be well supported by a secretariat and shall be empowered both authoritatively and financially to carry out study and/or survey, arrange public hearing, round table conference, seminar, or if necessary, engage experts.

Paurashava Sthayee Committee shall decide whether the proposed New Uses should be permitted or denied; in case of Conditional Permit impose the conditions to comply; accept variances for specific cases and so forth. Besides, Paurashava Sthayee Committee shall

decide strict conditions to nonconforming uses and the action against its violation if it so happens.

#### **Land use Permit Option:**

For a plot seeking land use permit there can be three possible options:

- Land use permitted
- Land use conditionally permitted, or
- Land use restricted

#### **Land use Permitted**

Land use that unconditionally permitted in the zone is listed in this category. When permission is sought for a residential land use on a plot earmarked as urban residential zone then it falls under this category.

#### **Land use Permitted with Condition**

Land use that generally is not incompatible or harmful for the community but whose number, location or specific use nature may pose threat to community's lifestyle, privacy, safety or security etc. then the land use is permitted but with a condition to fulfill so that the potential threat is avoided. For example, in a Residential-General Industrial Mixed use zone a request is made seeking land use permit for a composite textile mill with a dyeing unit. Since the use is compatible in the zone except for the release of noxious effluent to the surrounding, the permit may be issued with a pre condition to exclude the dyeing unit in order to get land use permit. Now, following the formal agreement by the applicant to comply with the condition the permit is issued against the plot. A list of such conditional uses is maintained in this category.

#### **Land Use Restricted**

Land use that is harmful for the community are restricted by law. Such harmful land use is listed in this category. A cinema hall in a neighborhood may be cited as an example under this category. But for convenience, any use not listed in the permitted and conditionally permitted use category is considered as restricted for the zone.

#### **Land use Permit Procedures**

Land use permit procedure is a product of a number of interlinking activities. The whole process has been shown in a flow diagram for clearer understanding in Figure 4.2.

The procedure is commenced with the submission of formal application by the applicant to the Mayor of Paurashava. The applicant must submit along with other information and documents a mauza map showing his plot including plot no, mauza name etc. The concerned official designated as Land use Permit Planner (LPP), will then check the compliance of the land use desired by the applicant with the land use zone containing his plot and the uses permitted therein.

Four situations may be possible:

- Desired Use is listed as Permitted in the zone
- Desired Use overlaid

- Desired Use is listed as Conditionally Permitted in the zone, and
- Desired is not listed under any of the categories and may be permitted as New Use

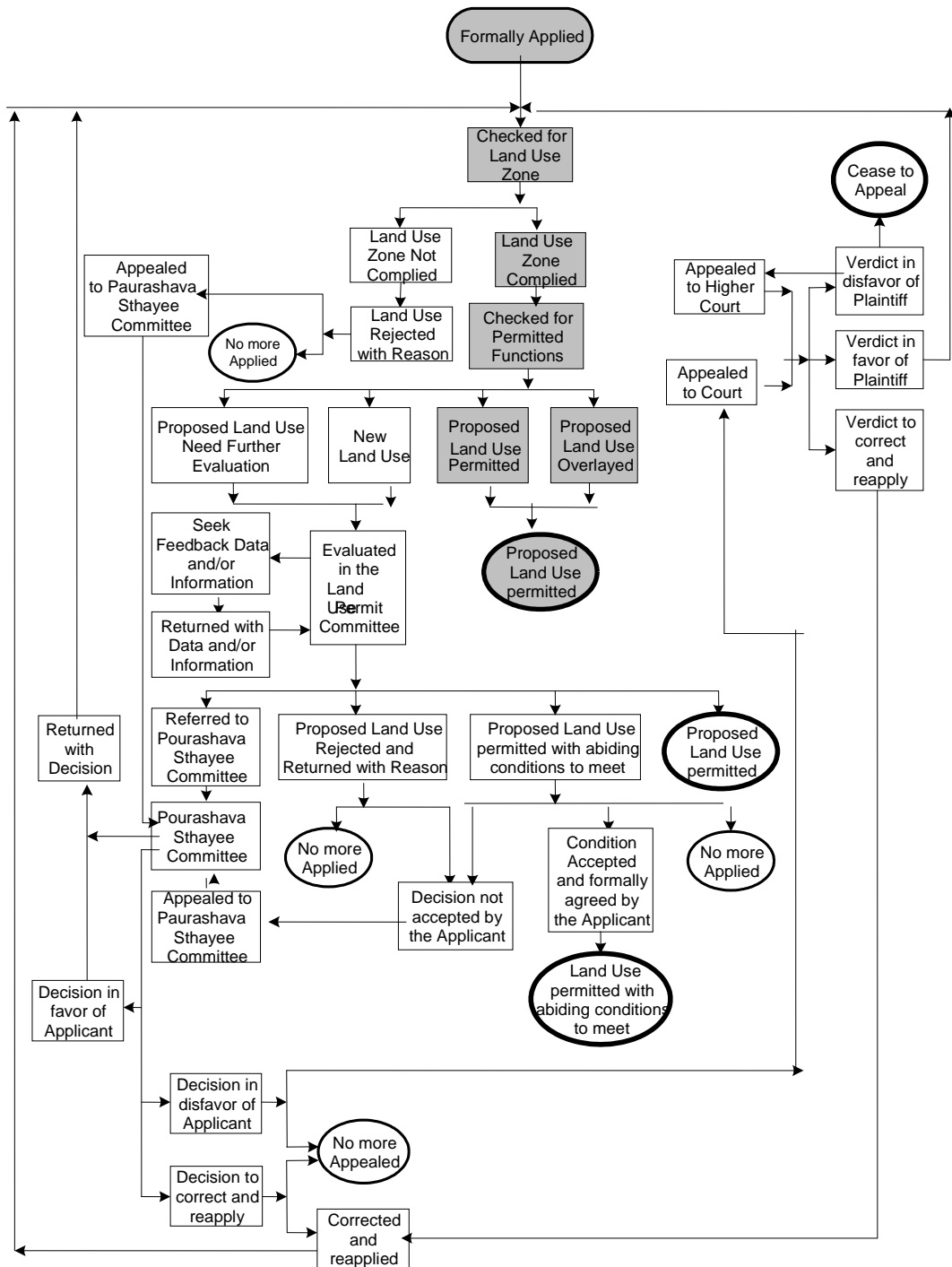


Figure 10.2: Flow Diagram Showing Activity Linkage of Plan Permit Procedure

If the desired use is listed as Permitted or Overlaid then it will be permitted without any question. If the desired use is listed as Conditionally Permitted the LPP would refer it to the LPC for further action.

In case of desired use not found in the permitted or conditionally permitted lists of the zone, the LPP shall reject the desired land use as it is not allowed in the zone. At this

stage if the rejection decision taken by the LPP is not satisfactory to the applicant, he/she can appeal to the Paurashava Sthayee Committee. If the decision of the Committee goes in favor of the applicant, LPP shall then issue the permit. Paurashava Sthayee Committee may also ask the applicant to make some modifications to make his/her claim appropriate for approval. The applicant may comply accordingly and apply afresh.

If the applicant is not satisfied with the decision of the Paurashava Sthayee Committee he/she may go to the court for decision.

If the LPP is convinced that the desired use should be allowed for the greater interest of the people and therefore, deserves to be considered under New Use category, he may recommend it to the LPC furnishing reasons in favor. The LPC if convinced by the reasoning will send the case to the Committee with recommendation to permit desired land use in the New Use category. Following necessary study and investigation if the Committee is also convinced about permitting the use as recommended by the LPC, they may decide so and authorize the LPP to issue permit for the desired land use in the New Use category.

### **10.3 Plan Implementation Strategies**

This section deals with the issues of implementation of land use plan. Discussion is made on development regulation and recommendation on implementation, monitoring and evaluation of urban land use plan.

#### **10.3.1 Land Development Regulations to implement the Land Use Plan**

Urban planning regulations are necessary for the smooth functioning of land use plan. The land use regulations impact on planned development and result in social benefits and costs depending on their nature and the specific contexts in which they are applied. Careful reforms of these regulations can result in a lower cost for urban development and for housing. An additional benefit could be in terms of a more functional spatial organization of the town. Regulations and processes that facilitate land availability and uses for planned development at affordable costs need to be continued. Regulatory and process reforms can lead to

- More compact towns, containment of urban sprawl, more efficient urban forms,
- Less costly urban infrastructure,
- More market-friendly development of urban land;
- More intensely used central areas, better efficiency of public transportation systems and decrease in trip length and transportation costs;
- Less violations in zoning, sub-division and building regulations, and reduction in non-conforming and non-compatible uses and slums;
- Reduction in difference between what is allowed under regulations and what is financially feasible due to land use reforms leading to reduced opportunities for corruption;
- Generally lower land prices in city/town but higher prices in some prime commercial and business districts driven by market forces;



- Average urban population densities likely to stay constant as more efficient land use consumption.

The following measures of Land Development Regulations should strictly be followed for the proper implementation of the Land use Plan.

**a. Restriction on Use of Land Contrary to the Master Plan**

No person shall use any land for any purpose other than that laid down in the land use zoning of the Master Plan approved by the Government. All future developments and constructions, both public and private within the area of Structure Plan shall be in conformity with the Master Plan approved by the Government. No compensation shall be payable to any person owing to demolition of any construction developed in violation of the Master Plan provisions.

**b. Building Permission and Construction Approval**

Development control mechanism will be one of the major plan implementation instruments to be carried out through the Building Construction Rules under Section 17 of the EBBC Act 1952 and the land use provisions of the Master Plan.

**c. Building Permission in Proposed Development Areas**

The Master Plan proposes a number of development projects. Many of the lands under these development projects are under private ownership. No development in these lands by their owners will be allowed. They will remain in the present form till they are taken over by the respective authority for development or the development project is abandoned.

**d. Parking in Commercial and Mixed Use Areas**

For parking, BC Rules, 1996 has specific provisions for housing and commercial areas. But no provision has been suggested for mixed use areas. According to the rules for commercial area, 23 sq.m areas, has to be reserved for every 200 sq.m of commercial space. The consultant suggests that for mixed areas, BC Rules, 1996 meant for commercial area should also be applied to the mixed areas under the current plan.

**f. Rules for Realization of Betterment Fee**

The Ordinance enables Paurashava to charge betterment fees on land owners or any other person having interest in it for an increase in land value due to execution of any development scheme by the Authority. The Authority should develop appropriate procedures in this regard and get them approved to start charging betterment fee. Due to failure of execution of the powers of charging betterment fee, all benefits of land value enhancement due to Paurashava development projects goes to the land owner at the cost of the community. So it is not irrational for the road developer to demand a share of the benefit accruing to the land owner following road development.

**g. Planning Rules for Real Estate Companies**

With the increase in population, there will be further rise of land based real estate activities. But there is no provision in the Paurashava Ordinance to control the activities of real estate companies. It is needed that infrastructure and services provided in the housing

plans of the real estate projects be standardized to secure interest of the buyers. Strict vigilance is needed against any fraudulent practices that might affect public interest.

However, any control imposed on the housing companies must be imbued with a positive approach, so that it does not affect the housing promotion activities of the private sector. The intention would be to allow them function under certain control that would secure public interest and at the same time will not discourage private investment in housing. The infrastructure, services and facilities provided in a housing project must be standardized. Road width and the land allocated for community facilities must be adequate to meet requirements of the future inhabitants. The infrastructure provided therein must follow minimum standard as some day these housing estates would become parts of the future town and the infrastructure provided therein would be used by a wide range of population of the town.

To control apartment development, the national rules under EBBC Act 1952 will be applied. The rules for land based real estate projects exist for Dhaka only. In anticipation of expansion of real estate projects, there is an urgent need to prepare a set of rules for small towns. The real estate companies seeking approval for their housing project layout plan must fulfill certain conditions as set in the rules. The set of rules is clearly described in the Private Residential Land Development Rule-2004.

#### **h. Minimum Road Width**

Building Construction Rules, 1996, should be amended in the following way by incorporating the minimum road width standard.

To ease future traffic movement, it is necessary to keep provision for wider roads in the present plan. It is an uphill task to widen roads after development has taken place along the road. So it is wiser to reserve wider right of way for new roads now. Building Construction Rules, 1996 has determined the minimum road width as 12 ft. or 3.65 meter for roads in general and approximately 10 ft. for private roads. The consultants feel that this standard is not enough in view of future increase in population density and traffic. For safeguarding and easing future traffic movement the consultants have set the minimum width for any road for common use as 20 ft. or 6 meter and 16 ft. or 4.77 meter for private roads. However, in the built up areas, where development has already blocked the scope for developing such wide roads, the consultant recommends the minimum road width provisions of BC Rules, 1996. The new road width provision will be applicable in new areas. In the areas, where there already exist roads of less than 20 ft., the land owners on either side of the road will equally share the space needed to increase the road width to 20 ft. The land owners must leave the space vacant for taking it over by the Paurashava for widening of the road at some later date. No proposal for construction should be permitted on the vacant space reserved for road widening though the land will remain under its current ownership till it is taken over by the authority. In the light of the above recommendations, necessary amendment will have to be brought in the BC Rules, 1996 applicable to the secondary and small towns only.

#### **i. Low Land, Pond and Drainage Path**

No low land that retains water for certain period of the year can be filled up and no obstruction to natural or man made drainage system shall be allowed. Prior permission of

Morrelganj Paurashava will be required for filling up of any low lands. The Paurashava shall accord such permission based on prevailing laws. All ponds should not be allowed to be filled up as they are a good source of urban water supply as well as serve as open space. As per the Wetland Conservation Act 2000, the use of these water bodies can not be changed without prior permission of the authority.

**j. Security Areas - Cantonment, BGB, Police Stations**

BGB, Police, etc. areas have to be safe guarded from any possible incompatible development.

**k. Radio, Television, Water Treatment and Pump Station and Power Station Sites**

The key point installations including radio, television, water treatment and pump station and power station sites will have to be safeguarded from any possible undesirable development around these areas that can endanger their security. No building except vegetation should be allowed within 183 meters around the transmission towers.

**10.3.2 Implementation, Monitoring and Evaluation of the Land Use Plan**

Monitoring and evaluation is a very important part of plan implementation. Monitoring helps check if the plan is being implemented properly. It also measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can be taken to put the execution on track. After expiry of any plan, evaluation is made about the errors and omissions. Such evaluation helps take corrective measures in the next plan. Such monitoring and evaluation must be carried out from within the Paurashava. But Morrelganj Paurashava is not equipped with qualified manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, its monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing.

**Updating of Plans**

The plan package needs to be updated regularly to make it respond to the spatial changes over time. But such updating would require relevant technical professional and fund that are highly lacking in Morrelganj Paurashava. There is no planner or planning section in the Paurashava. Updating would require service of senior level planners that Paurashava would not be able to provide. This service will have to be procured by out sourcing and the Paurashava is not even capable to accomplish this financially either. This will create problem when the plans or its components gets obsolete or need to be changed. Another problem would arise when the duration of plans ends. A new set of plans would have to be prepared replacing the old ones. This problem, however, can be overcome by undertaking another planning project by LGED. So, for regular updating and changes and plan implementation monitoring, the Paurashava should immediately move for setting up a planning section with planner(s) and other staff. The section will not only look after planning, but will also be responsible for development control, estate management and project preparation. Since the planners would be qualified and skilled in computer operation, they can also help achieving automation of the Paurashava functions.

# CHAPTER 11

## TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

### 11.1 Introduction

The transportation system directs the urban development pattern. The performance of transportation system largely influences the economy and social progress of an area. It provides mobility to people, goods and services to their destination. It has linkages with other sectors of development and for a sustainable development of any area, its traffic and transportation system should be adequately addressed. The current chapter of the report is about Transportation and Traffic Management Plan covering the scope of improvement of the existing network and system and plan proposals for new development. The proposals on improvement and new development are made for the project area up to 2031. The report also provides the purpose and the role of Transportation and Traffic Management Plan and its relation with Structure Plan and Land Use Plan.

#### 11.1.1 Approach and Methodology

Transport study provides special attention to urban transportation planning as it greatly influences the location decisions and travel behavior of people, goods and services. Transportation is critical for the efficiency of towns contributing to their productivity and economic growth. A good network of roads and other transportation mode coupled with an efficient transport management system makes a substantial contribution to the "working efficiency" of cities and towns and enables them to become catalysts for social and economic development. On the other hand, the impact of a poorly designed urban transport system is manifested in terms of traffic congestion, delays, accidents, high energy consumption, high pollution of the environment and inequitable access to services. A well-planned transportation system results in orderly urban growth, greater use of urban public transport, lower vehicular pollution, and shorter auto trips.

A comprehensive transportation study is undertaken to investigate the existing transportation infrastructure, transportation modes and modal share scenario of Morrelganj Pourashava and to estimate the anticipated transportation needs of the town up to the year 2031. Accordingly, the transportation study is conducted to determine the present travel patterns and the characteristics of existing transportation facilities to forecast the future travel demand and develop a transportation plan.

Standard methodology was followed for traffic study in the project area as per the Terms of Reference. A nine hour traffic counting was conducted to assess the traffic volume at the most important traffic point, the zero point of the town at Morrelganj Bazar. An origin-destination (O-D) survey was also conducted at the same point where origin and destination of the traffic passing through this point of the town were recorded. Speed and Delay survey has been done at 3 points on major local roads.

Bus and tempo fleet data were collected from local transport owners' offices like, Bus Owners' Association, Tempo Owners' Association. They also provided information about routes, trips and movement data. Information about bus station and tempo station were collected from the respective owners' association and the Pourashava/District Administration. Year wise data of non-motorized traffic were collected from the Morrelganj Pourashava, where these vehicles are registered.

Data on road pattern and condition of roads with their problems and road width were collected from the physical feature survey and verified through field visit. Data were also collected from socio-economic survey of the households. Information on road ownership was collected from the Pourashava, LGED and RHD. The same sources also provided information about future road projects in and around the Pourashava. Information about traffic conflict and accident were collected from the field and from Thana (police station). Mapping of major roads has been done using physical feature survey data and by thorough reconnaissance survey of roads.

## 11.2 Existing Conditions of Transportation Facilities

### 11.2.1 Roadway Characteristics and Functional Classification

#### 11.2.1.1 Major Road Network

Morrelganj is a medium size town which is situated along the Bagerhat Morrelganj Highway. The growth of this urban centre has been based on a Morrelganj bazar. A number of major roads connect the town to different urban centers including district headquarters, divisional head quarters and also the capital of the country. The routes coming from different places are,

- Hospital To Ghosirhat Road
- Morrelganj to East Sarolia Road
- Morrelganj to Bagherhat Road
- Upazila Road
- Morrelganj Road

#### 11.2.1.2 Roads in Morrelganj Pourashava

Total length of road network is 98.08 km. Among these 10.38 km are katcha road, 60.60 km semi pucca road and rest 27.10 km is pucca road in Morrelganj Pourashava. Table 11.1 shows the picture of road network of the Pourashava.

**Table 11.1: Road network in Morrelganj Paurashava**

Type of Road	Length (km)	Percentage (%)
Pucca	27.1	27.63
Semi-pucca	60.60	61.79
Katcha	10.38	10.58
<b>Total</b>	<b>98.08</b>	<b>100.00</b>

Source: Physical Feature Survey, 2008.

**Map 11.1: Existing road network of Morrelganj Paurashava**



### Important Local Roads

The Paurashava has 98.08 km of roads within its area with different widths. Paurashava is responsible for the maintenance the roads. The Paurashava has named many of these roads after renowned local personalities.

#### 11.2.2 Modal Share of vehicular traffic

Morrelganj Paurashava is a small town. Non Motorized Transport (NMT) is currently dominating in the town's internal traffic. The traffic volume survey at Morrelganj Nabboirasi intersection presents that, the NMT is higher than MT in Bazar Road to Nobboirasi More, Feri Ghat to Nobboirasi More and Saronkhola Main Road to Nobboirasi More flow directions. And in rest of the flow directions MTs are higher than NMTs. Here numbers of MT s are 2291 and NMTs are 4627.

**Table 11.2: Average Daily Traffic Volume of Nabboirasi Intersection**

Node	Roads	Motorized					Non-Motorized					Total Motorized	Total Non-Motorized	Grand Total
		Truck	Bus	Car/ Microbus	Auto-Rickshaw	Motor-cycle	Rickshaw	Bicycle	Animal Push Car	Van				
Nabboirasi More	Bazar Road to Nobboirasi More	0	0	0	0	572	0	649	0	1210	572	1859	2430	
	Feri Ghat to Nobboirasi More	26	0	38	0	538	0	606	0	819	601	1425	2026	
	Saronkhola Main Road to Nobboirasi More	107	84	79	282	567	0	674	0	670	1119	1343	2462	
<b>Sub Total</b>		<b>133</b>	<b>84</b>	<b>117</b>	<b>282</b>	<b>1676</b>	<b>0</b>	<b>1928</b>	<b>0</b>	<b>2699</b>	<b>2291</b>	<b>4627</b>	<b>6918</b>	

Source: Traffic Volume Count Survey by DDC, 2010

It is clearly evident from the survey that majority of the people choose motorized vehicle to go their desired destinations and hence MT is the most widely used transport mode for Morrelganj like most of the other Paurashavas.

#### 11.2.3 Intensity of Traffic Volume

In order to investigate the nature of traffic movement and assess the volume of traffic the consultant has identified Dhan Bazar intersection with in the Project area for conducting the traffic volume survey. The consultant has designed a standard format for traffic volume survey (approved by LGED). Traffic volume survey shows about 6918 traffic move through the intersection. Among these 4627 NMT and are 2291 MT vehicles.



## **11.2.4 Level of Service: Degree of Traffic Congestion and Delay**

### **11.2.4.1 Traffic Congestion**

Traffic Conflict is common and frequent in towns where there is combination of transport vehicles-slow and fast-in the streets. Areas of Conflict occur at point where the intensity of traffic movement is very high, on street parking and on street loading or unloading goods. The consultants studied the traffic movement at all over the town and have identified three main points where the traffic conflict is the highest. These are located Feri Ghat to Nobboirasi More Saronkhola Main Road to Nobboirasi More and Bazar Road to Nobboirasi More road. At these points the slow moving vehicles like, rickshaw and vans come in conflict with motor vehicles, creating traffic congestion. As the number of slow moving vehicles is higher the conflict is usually frequent.

### **11.2.4.2 Delay**

The delays occur due to stoppage are conveniently recorded by separate stop-watch. Special watches which can accumulate the delay time as the observer operates buttons find convenient for this purpose. The delays have been measured at the intersections of Feri Ghat to Nobboirasi More.

## **11.2.5 Facilities for Pedestrians**

The town does not have any footpath anywhere. In small towns like Morrelganj, footpaths are usually absent, as it is given least priority in development program.

## **11.2.6 Analysis of Existing Deficiencies**

### **11.2.6.1 Roadway capacity Deficiencies**

As in any other small towns in Bangladesh, Morrelganj has also its own road and transportation deficiencies. A physical feature and traffic survey of major inter-sections revealed that none of these are properly designed. Traffic level is far behind the actual capacity of the junctions. Congestion is created by large number of slow moving rickshaws waiting for passengers at the inter-sections.

#### **Narrow Road Width**

Narrow widths of roads and poor maintenance of these roads have been marked by most respondents (of the household survey conducted by the consultant) as the major road problems in the town. Maximum of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Narrow width of roads is likely to become a major problem of traffic movement when the town will grow and density of population will increase in future with consequent increase of road traffic. As field survey shows, most of the households of the town reported that the road widths in front of their houses are 6 ft. or less. This is alarming, as this condition will become a source of traffic problem, when road traffic will increase. Map 4.1, Chapter -4, Part A of this report shows the roads as per road width.

#### **Tortuous Road and Missing Link**

A major characteristic of spontaneously developed roads is that they are tortuous in their shapes. This is because land owners allow roads to follow the alignment of the edges of

the tortuous plot boundaries. Another problem of community initiated roads is that they are not in a well linked network. Sometimes links to nearby roads are missing. This causes people to travel comparatively longer distances to reach a nearby destination.

#### 11.2.6.2 Operation, Safety, Signal and other Deficiencies

Like any other upazila town, Morrelganj Paurashava has no traffic management system. There is no traffic point and traffic island including road dividers and signal posts. There is also no traffic police. So the operation of traffic and road safety is yet to become an important traffic issue.

### 11.2.7 Condition of other Mode of Transport (Rail/Water/Air)

#### 11.2.7.1 Railway Network

There is no railway network in and around Morrelganj.

#### 11.2.7.2 Waterway Network

Pangucchi River plays an important role in water way communication during over the year seas.

### 11.3 Future Projections

This section presents future projection on transportation requirement of Morrelganj Paurashava up to the year 2031. The chapter also provides information on transport network and future traffic volume and level of service.

#### 11.3.1 Travel Demand Forecasting for Next 20 Years

Road is one of the most critical areas of the current planning project under UTIDP. The main problem of present road network in the Paurashavas is that there is no systematic planning of the roads, whether highway or local roads. There is no logical links of roads and no plan to link the important activity areas where mobility is high. The present level of transport infrastructure at the Upazila Town in Bangladesh is satisfactory. Reviewing different previous planning proposals in Bangladesh and other similar countries and after discussions with experts and LGED officials of this project a set of standard for basic infrastructure and services at Upazila level towns has been finalized. Accordingly different standards have been suggested for different types of Paurashava road of Morrelganj, which are as follows:

**Table 11.3: Geometric Design Standards of Roads Proposed by LGED**

Road Type	Right of Way (ROW)
a) Primary Road	150 – 100 feet
b) Secondary Road	100 – 60 feet
c) Local Road	40 - 20 feet

Source: UTIDP, LGED.

Morrelganj is a small town with a very low volume of internal and external traffic movements. So consultants have established a road hierarchy based on the functional area within the Paurashava and as well as the external and internal linkage. This hierarchy

will be established as per the geometric design standard provided by the PMO office of LGED and suggestion of the consultation with the Paurashava.

To extrapolate the transport demand, it is necessary to accumulate data on employment, vehicle ownership, trip distribution, etc. Though some categories of data mentioned above have been collected through Socio-economic Survey, yet these data are highly inadequate to forecast future travel demand.

Furthermore, the traffic survey conducted as per ToR was intended to give an overall picture of traffic movement pattern in the project area. The collected data are not detailed enough to allow extrapolation of traffic data. So, it is not possible to develop any traffic model and to forecast future traffic demand.

The complexities of traffic in the study area, as per observation are assumed to be insignificant. It is considered that at this level of traffic in the town current measures are sufficient. Detailed traffic study reviews on the transportation and traffic management plan for future.

### 11.3.2 Transportation Network Considered

An efficient transportation system will enable the project area to develop as an important urban center through proper functioning of its activities. This is considered in the preparation of transportation network plan of Morrelganj Paurashava.

## 11.4 Transportation Development Plan

The current chapter of the report is about Transport Development Plan covering its development plan proposals and management of the proposed project area up to the year 2031. The report describes existing transportation facilities and consultant's proposal on the important facilities such as, bus terminal, truck terminal, rickshaw stands, baby taxi/tempo stands and passenger sheds for local bus users. Many of the proposals may now seem to be premature, but will be necessary in future. If their executions are delayed, land may not be available in future for providing such facilities. Map 11.2 and Appendix-3 shows the road network plan of Morrelganj Paurashava.

### 11.4.1 Plans for Road Network Development

Following are the suggested planning standards (Table 11.3) for road network development. The standards are meant for use by UTIDP, LGED and other planning and development agencies. The standards have been adopted by the consultants to draw up the transportation development plan.

**Table 11.4: Proposal for Road Standard in the Project area**

Roads 9-15% of the total built up area		
	Widening	New Construction
Paurashava primary roads	ROW 80ft	ROW 80 ft
Paurashava secondary roads	ROW 30 -40ft	ROW 30-60 ft
Tertiary Road	ROW 25ft	ROW 25 ft
Access Road/ Local Road	ROW 20ft	ROW 20 ft

Source: Upazila Towns Infrastructure Development Project and Proposed by Consulting Firm, Interim Report Morrelganj Paurashava

## Neighborhood and Local Road

The right of way (RoW) of all neighborhoods (mahallah) roads may be in between 20 ft. to 40 ft wide depending on their functions.

## Standard Road Design

All urban roads should have flexible pavements. The road intersection should be designed to allow easy movement of vehicles. At bridge, the road design should provide for an adequate sight distance and a smooth riding.

## Functions of Roads

Each category of road has its particular functions to perform. Access road carries traffic from buildings to the collector road and collector road carry traffic to the major road and vice versa. In reality, however, it is almost impossible to maintain this hierarchical use of roads except in an entirely planned area. However, functions will not be dependent on the road width, rather on the location of the road, surrounding land use and the link it is providing or the volume of traffic it is carrying. Thus a 40 feet wide secondary road can become a major road due to its strategic location and the purpose it is serving.

### 11.4.1.1 Road Network Plan

Bgerhat –Morrelganj highway is passing through the heart of Morrelganj Paurashava which connected Paurashava with Capital city Dhaka and Divisional town Khulna. The other major roads are also connected with this high way and connected the town with different urban centers including district headquarters. Main intersection is located at the center of the town, known as Morrelganj Bazar. Planning team initiates to confirm uninterrupted traffic flow through this Bgerhat –Morrelganj highway. To ensure this the high way will be widening up to 80 ft and two service roads (20 ft RoW) will be constructed along the both side of the highway. Two bypass roads with 60ft RoW will be constructed. Among this one bypass road connect Nasirnagar with Dhaka-Sylhet highway to avoid congestion Morrelganj Bazar area and another one will connect Dhaka-Sylhet High way with Morrelganj-Montola road. RoW of Morrelganj-Montola road will be 60 ft. than the external and internal road way linkage and road hierarchy of the Paurashava will be established based on these major road way linkages. Map 11.2 shows the road network plan of Morrelganj Paurashava.

### Paurashava Primary Road

0.55 km with 100 ft RoW is proposed for widening as primary road of this Paurashava. Figure 11.2 shows the layout design of primary road with 100 ft RoW.

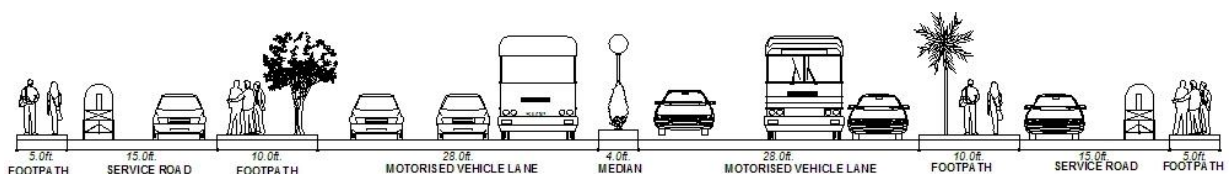


Figure 11.1: Primary Road with 100 ft RoW

(Highway with 60 ft RoW along with two service roads on both side of the high way RoW in 20 ft). Map 11.2 shows the road network plan of Morrelganj Paurashava.



**Map 11.2: Proposed Road Network Map of Morrelganj Paurashava**



### Paurashava Secondary Road

Total secondary road is 29.96 km with 40-60 ft RoW. Within 23.99 km secondary road will be widening and rest 5.97 km new secondary road will be constructed. Figure 11.4 shows the layout design of secondary road with 40 ft RoW.

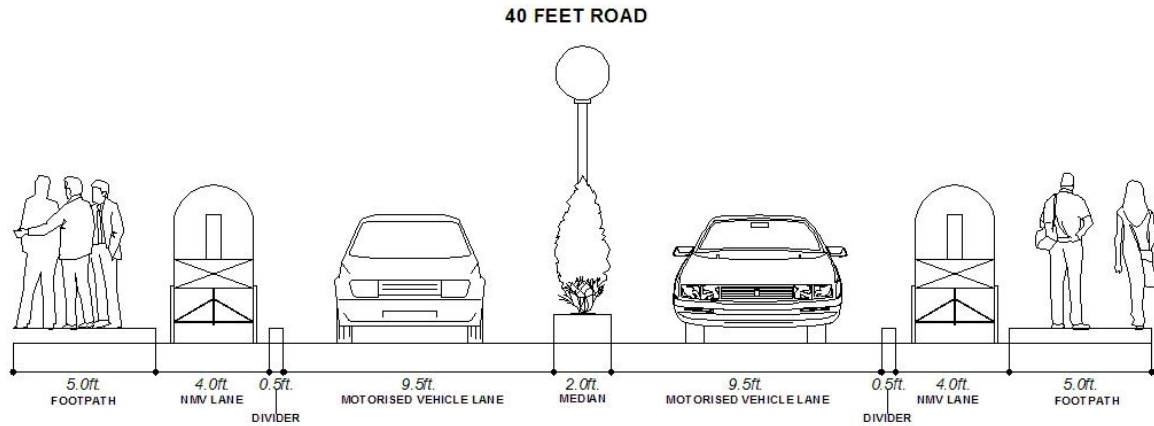


Figure 11.2: Secondary Road with 40 ft RoW.

### Tertiary Road

Total 21.41 km Tertiary Road is proposed with 30-35ft RoW within in the Paurashava of which 19.59 km road will widening and rest 1.82 km road will be newly constructed in on different phases to fulfill the future needs of the Paurashava. Figure 11.5 shows the layout design of Tertiary road with 30 ft RoW.

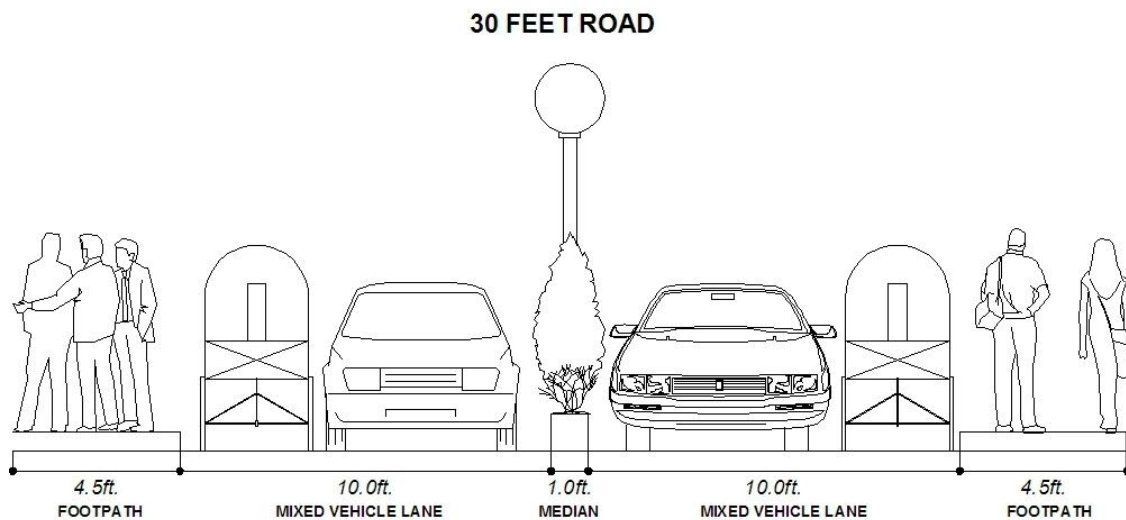


Figure 11.3: Secondary Road with 30 ft RoW.

### Access Road/ Local Road

Total Local road/Access road is 44.52 km with 15-20 ft RoW. Of which total 37.13 km road will widening existing road and 7.39 km road will newly construct to fulfill the future need of the Paurashava. Figure 11.6 shows the layout design of Local road with 20 ft RoW.



## 20 FEET ROAD

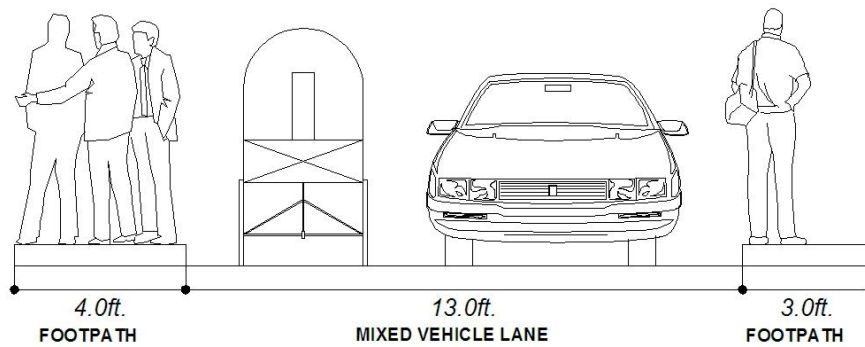


Figure 11.4: Access/Local Road with 20 ft RoW.

### 11.4.1.2 Proposal for Improvement of the Existing Road Networks

Most of the road in Morrelganj Paurashava is very narrow and it creates tremendous transportation problem. To improve this situation about 81.25 km road is proposed for widening in the transport development plan. The highest 19.83 km (24.41%) and 17.80 km (21.29%) is proposed for widening up to 15 ft and 20 ft, which will function as access road/local road. Then 16.79 km (20.63%) km and 2.83 km (3.48%) is proposed for widening up to 30 ft and 35 ft, which will function as tertiary road. Again 8.57 km (10.54%), 3.38 km (4.16%), 8.20 km (10.90%) and 3.84 km (4.2%) road is proposed as secondary road and is proposed for widening from 40 ft, 45 ft, 50 ft and 60 ft. Finally, .55 km road is proposed for widening 100 ft, which will function as Primary Road. Table 11.4 shows the summary of road widening proposal.

**Table 11.5: Summary of road widening proposal in Morrelganj Paurashava**

RoW (in ft)	Length (in Meter)	Length (in Km)	Percentage	Road Type
15	19830.00	19.83	24.41	Local Road
20	17300.00	17.3	21.29	
30	16760.00	16.76	20.63	Tertiary Road
35	2831.00	2.83	3.48	
40	8567.00	8.57	10.54	Secondary Road
45	3380.00	3.38	4.16	
50	8197.00	8.20	10.09	
60	3839.00	3.84	4.72	
100	547.50	0.55	0.67	Primary Road
<b>Total</b>	<b>81251.50</b>	<b>81.25</b>	<b>100.00</b>	

Table 11.5 shows the detailed scenario of road widening proposal of Morrelganj Paurashava along with width of the existing roads.

**Table 11.6: Existing road width and proposed RoW of roads in Morrelganj Paurashava**

Road Id	Width in ft		Length (in Meter)	Type of Road	NAME	Phase-wise development		
	PW <sup>1</sup> ( Ex.)	Width _ft				First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
R01	20	100	547.55	Primary Road	Morelgang to Bagerhat Road	First Phase	Development will continue	
R11	15	40	1891.42	Secondary Road		First Phase	Development will continue	
R12	15	40	1796.41	Secondary Road		First Phase	Development will continue	
R13	15	50	1448.05	Secondary Road	Embankment cum road	First Phase	Development will continue	
R14	15	60	1732.72	Secondary Road	Hospital To Ghosirhat Road	First Phase	Development will continue	
R15	15	50	971.24	Secondary Road	Embankment cum road	First Phase	Development will continue	
R17	15	60	310.11	Secondary Road			Second Phase	Development will continue
R18	15	60	1587.74	Secondary Road	Fakirhat ROAD		Second Phase	Development will continue
R19	15	45	1859.61	Secondary Road			Second Phase	Development will continue
R20	15	40	778.62	Secondary Road			Second Phase	Development will continue
R21	15	40	801.56	Secondary Road			Second Phase	Development will continue
R23	15	40	2533.69	Secondary Road			Second Phase	Development will continue
R24	15	40	764.84	Secondary Road			Second Phase	Development will continue
R25	15	45	1520.76	Secondary Road	Morrelganj to East Sarolia Road	First Phase	Development will continue	
R31	12	30	1827.12	Tertiary Road			Second Phase	Development will continue
R32	12	30	552.25	Tertiary Road			Second Phase	Development will continue
R33	12	30	392.46	Tertiary Road			Second Phase	Development will continue
R34	12	30	1379.27	Tertiary Road	Embankment cum Road	First Phase	Development will continue	
R35	12	35	325.19	Tertiary Road	Bazar road	First Phase	Development will continue	

Road Id	Width in ft		Length (in Meter)	Type of Road	NAME	Phase-wise development		
	PW <sup>1</sup> ( Ex.)	Width _ft				First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
R36	12	35	1693.34	Tertiary Road	Bazar road		Second Phase	Development will continue
R37	12	35	812.43	Tertiary Road			Second Phase	Development will continue
R38	12	30	939.92	Tertiary Road	Shahid Ansar Sarak		Second Phase	Development will continue
R39	12	30	715.00	Tertiary Road			Second Phase	Development will continue
R40	12	30	1940.73	Tertiary Road			Second Phase	Development will continue
R41	12	30	810.91	Tertiary Road	Moddho Vai Jora Road	First Phase	Development will continue	
R42	12	30	604.71	Tertiary Road			Second Phase	Development will continue
R43	12	30	255.11	Tertiary Road	Krishi Bank Road	First Phase	Development will continue	
R44	12	30	1166.24	Tertiary Road			Second Phase	Development will continue
R45	12	30	485.31	Tertiary Road			Second Phase	Development will continue
R46	12	30	404.08	Tertiary Road			Second Phase	Development will continue
R48	12	30	461.44	Tertiary Road			Second Phase	Development will continue
R49	12	30	1438.23	Tertiary Road			Second Phase	Development will continue
R52	12	30	519.13	Tertiary Road			Second Phase	Development will continue
R53	12	30	763.65	Tertiary Road			Second Phase	Development will continue
R70	8	20	310.23	Local Road				Third Phase
R74	8	20	388.45	Local Road				Third Phase
R77	8	20	579.85	Local Road				Third Phase
R82	8	20	414.50	Local Road				Third Phase
R96	8	20	337.81	Local Road				Third Phase
R97	8	15	295.24	Local Road				Third Phase
R101	8	20	320.82	Local Road				Third Phase
R109	8	20	272.52	Local Road			Second Phase	Development will continue
R112	8	20	421.83	Local Road				Third Phase

Road Id	Width in ft		Length (in Meter)	Type of Road	NAME	Phase-wise development		
	PW <sup>1</sup> ( Ex.)	Width _ft				First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
R119	8	20	282.45	Local Road				Third Phase
R126	8	20	431.77	Local Road				Third Phase
R128	8	20	258.84	Local Road				Third Phase
R148	8	20	342.29	Local Road				Third Phase
R158	8	15	259.30	Local Road				Third Phase
R160	8	15	257.66	Local Road				Third Phase
R162	8	20	286.94	Local Road	KG Girls High School Road	First Phase	Development will continue	
R179	8	15	586.05	Local Road				Third Phase
R182	8	20	326.13	Local Road			Second Phase	Development will continue
R186	8	15	512.98	Local Road				Third Phase
R195	8	20	1275.72	Local Road			Second Phase	Development will continue
R211	8	15	305.12	Local Road				Third Phase
R212	8	15	447.43	Local Road		First Phase	Development will continue	
R214	8	15	234.62	Local Road				Third Phase
R215	8	15	275.18	Local Road				Third Phase
R224	8	20	269.24	Local Road	proposed road	First Phase	Development will continue	
R231	8	15	254.52	Local Road				Third Phase
R234	8	20	244.08	Local Road				Third Phase
R235	8	15	433.51	Local Road				Third Phase
R237	8	15	278.87	Local Road	Abadabad Road	First Phase	Development will continue	
R240	8	15	251.64	Local Road				Third Phase
R244	8	20	379.46	Local Road				Third Phase

\*\* Road length  $\geq$  250 meter incorporated here. Detail was given in Appendix-B and Ward Action Plan.

1. PW (Ex.): Paved Width of Existing Road in ft.
2. RoW (Pr.): Right of Way of Proposed Road in ft.

#### 11.4.1.3 List of Proposed New Roads

To improve existing transportation system about 15.15 km new road is in the transport development plan. The highest 4.14 km (27.30%) and 3.25 km (21.44%) new road is proposed with 15 ft and 20 ft right of way (RoW), which will function as access road/local road. Then 1.82 km (12.02%) new road is proposed with 30 ft RoW, which will function as Tertiary Road. Again 5.74 km (37.86%) and 0.21 km (1.37%) new road is proposed as

Secondary Road with 50 ft and 60 ft width. Table 11.6 shows the summary of road widening proposal.

**Table 11.7: Summary of new road proposal in Morrelganj Paurashava**

RoW (in ft)	Length (in meter)	Length (in Km)	Percentage	Road Type
15	4135.00	4.14	27.30	Access/Local Road
20	3248.00	3.25	21.44	
30	1820.00	1.82	12.02	Tertiary Road
50	5735.00	5.74	37.86	Secondary Road
60	208.20	0.21	1.37	
<b>Total</b>	<b>15146.20</b>	<b>15.15</b>	<b>100.00</b>	

Table 11.7 shows the detailed scenario of new road proposal of Morrelganj Paurashava along with its length, new road id, road type and right of way (RoW).

**Table 11.8: New Road Proposal in Morrelganj Paurashava**

Road id	RoW in ft	Road Type	Length in Meter	Proposed Name	Phase-wise development		
					First Phase (1 <sup>st</sup> to 5 <sup>th</sup> yr)	Second Phase (6 <sup>th</sup> to 10 <sup>th</sup> yr)	Beyond 10 <sup>th</sup> year
R11	50	Secondary Road	1493.10	Embankment cum road	First Phase	Development will continue	
R13	50	Secondary Road	725.10	Embankment cum road	First Phase	Development will continue	
R15	50	Secondary Road	1333.40	Embankment cum road	First Phase	Development will continue	
R16	50	Secondary Road	2183.60	Embankment cum road	First Phase	Development will continue	
R33	30	Tertiary Road	460.70		First Phase	Development will continue	
R34	30	Tertiary Road	266.20	Embankment cum Road	First Phase	Development will continue	
R39	30	Tertiary Road	266.20			Second Phase	Development will continue
R47	30	Tertiary Road	711.20	Kathal Tola Road		Second Phase	Development will continue
R100	15	Local Road	425.60			Second Phase	Development will continue
R112	20	Local Road	293.30			Second Phase	Development will continue
R142	20	Local Road	324.50			Second Phase	Development will continue
R159	20	Local Road	256.60			Second Phase	Development will continue
R206	15	Local Road	350.10				Third Phase
R213	15	Local Road	274.70				Third Phase
R216	15	Local Road	273.40				Third Phase
R229	15	Local Road	299.40			Second Phase	Development will continue
R231	15	Local Road	309.90				Third Phase
R235	15	Local Road	540.30				Third Phase

\*\* Road length  $\geq$  250 meter incorporated here.

#### 11.4.2 Plans for Transportation Facilities

In the field of transportation facilities, the consultant has proposed such facilities as, bus terminal, truck terminal, rickshaw stands, baby taxi/tempo stands and passenger shed for local bus users.

##### 11.4.2.1 Transportation Facilities Plan

Following are the suggested planning standards (Table 11.8) for transport facilities plan. The standards are meant for use by UTIDP, LGED and other planning and development agencies. The standards have been adopted by the consultants to draw up the transportation development plan.

**Table 11.9: Estimation of Land Requirement for Transportation Facilities**

Use/Facility	Recommended standard	Land in Acres		
		Required land	Existing Land	Add. Required
Bus terminal	1.00 acre /20,000 population	2.20	2.19	0.01
Truck terminal	0.50 acre /20,000 population	1.10	-	1.1
Launch/Steamer terminal	1.00 acre /20,000 population	2.20	-	2.2
Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand	0.25	1.14	-
Railway Station	4.00 acre / per Station	4.00	-	4
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	0.25	-	0.25
<b>Total</b>		<b>10.00</b>	<b>3.33</b>	<b>7.56</b>

##### 11.4.2.2 Parking and Terminal Facilities

###### Bus Terminal

The two bus stand of Morrelganj Paurashava is located beside the Morrelganj-Bagerhat highway and in Baroikhali. It is known as 'Morrelganj Paura bus stand'. The buses are normally parked beside Baroikhali road or on street, with a capacity of accommodating 6-10 buses at a time. Considering needs of the Paurashava 1.89 acres of land is proposed for bus terminal in Morrelganj Paurashava. Location of bus cum truck terminal is given in Map 11.3 and detail land proposal was given in Table 10.19, Chapter 10, and Part-B of this report.

###### Tempo Stand

Tempo is now a major and a cheaper mode of transport in small towns that play important role in commuter transportation. There is three non formal tempo stands at Morrelganj Paurashava. One tempo stand is located at the western side of Paurashava beside Proposed Stadium, another one is located southern part of Paurashava. The tempo stand area beside Stadium road accommodates approximately 10 to 15 tempos at a time. Almost same number of tempos can accommodate in other tempo stand. Though there are three non formal tempo stands exists here, so there is no proposal has proposed for another tempo stand. Location of Tempo is given in Map 11.3 and detail land proposal was given in Table 10.19, Chapter 10, and Part-B of this report.

### **11.4.2.3 Development of Facilities for Pedestrians, Bicycles and Rickshaws**

#### **Footpath**

Footpath has been recommended for all the roads (above 20 ft) for safety and ease of pedestrian movement. Due to narrow right of way, it is difficult to provide wider footpaths. Width of footpaths will vary between 1.5 m to 2.0 m depending on availability of right of way. Figure 11.1 to Figure 11.6 in this chapter show the provision of footpath of different proposed road.

#### **Bicycles and Rickshaws**

Separate lane for NMT vehicles will be provided in Transport network development plan which will be used by bicycle and rickshaw. Figure 11.4 shows the provision of separate lane for NMT vehicles. Again, Figure 11.1 shows the provision of service road along the main highway to ensure uninterrupted vehicular movement through the highway.

### **11.4.2.4 Other Transportation Facilities**

#### **Improvement Roadway Intersection**

Due to the poor designing of road way intersection, traffic congestion and traffic conflict occur in the Paurashava. To avoid this, appropriate design will be provided for the major intersection within the Paurashava in the detailed area plan.

#### **Signals and Road Marking**

Road markings must be put on major roads and signals must be installed at intersections for good traffic management. Traffic police have to be posted at critical intersections.

#### **Traffic Island**

There will provide traffic island is proposed in all major intersections proposed in Morrelganj Paurashava transport network plan.

### **11.4.3 Waterway Development/Improvement Options**

Though Morrelganj is situated on the bank of the Pangucchi River, but there is no proper waterway network.

#### **11.4.3.1 Proposal for Improvement of the Existing Water Way**

There is no launch terminal proposed in Morrelganj Paurashava.

### **11.4.4 Railway Development Options**

At present there is no scope for railway development in Morrelganj Paurashava.

## **11.5 Transportation System Management Strategy (TSM)**

This chapter describes transport management strategy (TSM) in respect of facilities and operations, traffic flow and safety, and traffic management in Morrelganj Paurashava.

### **11.5.1 Strategies for Facility Operations**

Since road is limited and it is foreseeable that new road construction will be very difficult due to unavailability of land, traffic management strategies are required in order to ensure

appropriate mobility. The following strategies are recommended for an overall traffic management improvement program.

### **Traffic Engineering**

Ensure effective use and management of existing physical infrastructure. These enhancements typically include better road markings, signs, traffic signals, channelization at intersections, turn restrictions and separation barriers, space for bus stops, and parking/waiting areas for public transport vehicles (buses, rickshaws, auto-rickshaws, taxis, etc.). Each of the intersection approaches is required to have proper pedestrian crossing stripping i.e. Zebra crossing.

### **Parking**

Parking should be prohibited on arterials highways unless it is possible to designate spaces such that they do not interfere with the free flow of traffic. At bus stops, there will be a need to provide properly design spaces for the use of feeder services provided by either rickshaws or CNGs.

### **Roadside Interference**

Measures that move in a positive and definitive manner to reclaim the full potential capacity of the existing road by relocating or removing inappropriate and illegal non-transport related activities from the public right-of-way. In some cases this may involve the need to help relocate or establish alternative sites for such activities.

The right-of-way should be clearly defined and all obstructions removed within these confines. This will entail a gradual clearance of illegal trading areas, surplus building materials left over from construction and items such as refuse containers deposited on the road itself.

## **11.5.2 Strategies for Traffic Flow and Safety**

Improved safety requires a multi-dimensional comprehensive approach involving issues related to road conditions, regulations, enforcement, driver training, vehicles, public education, awareness, incident response and information, all of which should be applied in a systematic manner over time and with adequate funding.

### **Road Safety Initiatives**

Effective road safety action requires the involvement of many different disciplines and the cooperation of a wide range of government, private and civil entities.

### **Traffic Law Enforcement**

Traffic law enforcement is needed to encourage safer road use and orderly traffic flow. Enforcement of various regulations, such as speed limits, use of seat belts, wearing of motorcycle safety helmets etc. have led to reductions of associated deaths and injuries in many countries. Effective enforcement of traffic regulations require training of the traffic police force in many traffic related areas, including incident investigation, highway patrolling, motorcycle riding and car driving and management skills. Traffic rules and regulations should be strictly enforced for all. Provision of instant fine for violations may be introduced.



### **Driver Training and Testing**

The behavior of drivers, particularly of commercial vehicles, is generally considered to be chaotic and does not reflect consideration for others. Commercial vehicles are involved in a majority of incidents. Effective driver training and testing is important for achieving a long-term reduction in the statistics. To ensure that road user behavior becomes safer, improvements in the training and testing of all drivers is required. A “motivational” training program for all drivers, organized with the involvement and support of the vehicle owners and professional associations is one example of the type of training that would be beneficial.

### **Education and Publicity**

To develop safe road user behavior, children need to be taught skills (i.e. how to cross a street safely, how to use traffic signals properly, how to watch for and anticipate driver behavior, etc.) rather than focusing simply on rules, regulations and knowledge of traffic signs. To be effective, road safety education requires a clear structure within a recognized curriculum with a planned, sustained and coherent program of learning, based on sound educational principles. Children learn a lot from observation of others.

Road safety publicity for the general public is equally important. Road safety education is a long-term intervention, aimed at developing positive attitudes in children such that they become safer road users in the future. Publicity is an indispensable part of any nation’s road safety strategy. Boys’ scouts and local NGOs can be engaged for this purpose.

### **Vehicle Safety**

Substandard, often overloaded, vehicles using roads that facilitate increasingly higher speeds, invariably will lead to increased incidents. Poor vehicle condition is widely accepted in Bangladesh to contribute to the number and severity of road collisions.

Despite inspection forms and manuals having been produced under a recent aid project, little priority has gone into their use. While inspection monitoring procedures are thorough, no use is made of the data or concern shown over the unrealistically high pass rate. Vehicle inspection is treated perfunctorily and the minimal inspection procedures reflect this attitude. This sector has made little significant progress and is unlikely to do so without substantial support. Motivational training of the official’s concerned and strict enforcement of inspection procedures is needed. Five computerized vehicle inspection stations have been built and equipped with the assistance of loan from the ADB and these are waiting commissioning.

### **Medical Services**

Lack of first aid and prompt transportation to adequate medical support facilities contribute to what medical professionals call the ‘second accident’, where injury severity is worsened for lack of proper care and quick transport services. Payment in advance is often required before a driver will transport an injured person. While major hospitals have ambulances, they are primarily used for non-emergency situations and rarely if ever respond to a road incident scene. In addition, hospital facilities and rehabilitation services are inadequately equipped to provide needed medical attention.

Initial, on the spot first aid care can contribute greatly to reducing morbidity and injury severity by ensuring the victim is kept breathing, bleeding reduced and shock controlled. Improvements in at-the-scene first aid care.

### **Information and Data**

In order to improve road safety, it is important to determine the causes of road based collisions. At present, the focus of data is on number of incidents and on their severity, in terms of fatalities, injury and casualties. There is a need to establish a mechanism to analyze the cause of every incident.

### **11.5.3 Strategies for Traffic Management**

Traffic Management is the maximum use of existing road space, using traffic operations enforcement, materials and equipment to achieve safe and efficient movement of people and goods. An example of the absence of good traffic management is the chaotic disorder that exists in many areas of the Paurashava today. A major source of traffic problem is poor traffic management.

In all the urban centers of Bangladesh traffic management is very poor. Particularly, adherence to traffic rule is highly ineffective that results most traffic problems. Indiscriminate parking ignoring the rules of directions, indiscriminate boarding and disembarking bus passengers, wrong side movement by non-motorized vehicles, fake driving license are all in disobedience to traffic rules. Following measures are suggested to improve traffic management.

#### **Signals and Road Marking**

Road markings must be put on major roads and signals must be installed at intersections for good traffic management. Traffic police have to be posted at critical intersections.

### **11.6 Plan Implementation Strategies**

This chapter describes the plan implementation strategies of transportation plan of Morrelganj Paurashava. This also describes the regulation to implement transport plan, evaluation and coordination to implement the transport plan in the Paurashava.

#### **11.6.1 Implementation, monitoring, Evaluation and Coordination of the Plan**

##### **Monitoring of Plan Implementation**

Regular monitoring of plan implementation is very important to see its level and nature of implementation. This will be done by the proposed Urban Planning Section of the Paurashava. It will not only monitor plan implementation, but will also identify problems associated with implementation and will suggest ways and means how to overcome the obstacles.

##### **Mobilization of Resources**

Paurashava is already suffered from scarcity of resources. For implementing the development project under the plan, huge resources will be necessary. Presently, lion's share of the resources is provided by the government. But it will not be possible for the government to supply all the funds needed to implement plans of all the projects of the

Paurashava. So, effort must be directed to mobilize own resources by the Paurashava. Holding tax is the most important sources of local revenue, there should be attempt to maximize holding tax collection. The Paurashava should collect hundred percent of its holding tax. Besides, to increase earning from holding tax, updating of holding information should be carries out regularly. In this revision, new structure should be brought under tax.

#### **Institutional Arrangement**

Effective enforcement of traffic regulations require training of the traffic police force in many traffic related areas, including incident investigation, highway patrolling, motorcycle riding and car driving and management skills. Motivational training of the official's concerned and strict enforcement of inspection procedures is needed.

# CHAPTER 12

## DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

### 12.1 Drainage Management Plan

This chapter states about goals and objectives, and methodology of Drainage Development Plan. An inventory of the existing drainage system of Morrelganj has been made as a part of the comprehensive topographical survey to be taken-up under this project. While assessing the drainage conditions, the serviceability, structural conditions, obstruction, siltation, blockages are taken into consideration. And finally describe the drainage and environmental management plan, and its implementation strategies.

#### 12.1.1 Goals and Objectives

Provision of drainage facilities are important concern to human settlements to create better living environment. Failure to provide the adequate drainage facilities results in flooding and detrimental environmental quality. Drainage of high rainfall region particularly in the context of Sylhet region is very important.

The objectives of drainage planning are described as follows:

- To analyze drainage aspects in the planning of the Pourashava.
- To study geological fault and lineament of the project area and its surroundings.
- To study the existing water development, flood protection and flood control project (if any) in the area and their impacts in the Pourashava plan.
- To present planning options for drainage of the future Pourashava area.
- To study conservation of the natural resources like parks, open space, water bodies, existing ponds etc.
- To conserve place of historical, architectural (if any) and agricultural importance including natural fisheries.

#### 12.1.2 Methodology and Approach to Planning

Drainage Network Survey for Morrelganj Pourashava has been carried out through the guideline of ToR .In this survey explore the existing drainage network system at Morrelganj Pourashava. The main vision of this survey is explored the length, depth, flow direction, coverage area and satisfactory level of the Pourashava inhabitants. The information of drainage network gathered from topographic, socio-economic and physical feature survey (detail was given in Chapter 6, Section 6.2 of Morrelganj Survey Report). Major feature of drainage and environment survey are as follow:

- Survey the main drainage channels from their heads to the outfalls and to estimate their capacity to discharge water.
- Collect and analyze meteorological data over time in the area to determine the meteorological conditions and predict storm surges.

- Determine the efficiency of the present drainage systems and make recommendation to government.
- Organize a public enlightenment campaign to expose the adverse effects of dumping refuse in drainage channels, through a mass media meeting.
- Drainage channels were surveyed by leveling from the head of the channels to the outfall using a surveyor's level. A zero datum was chosen at the head of each channel. This zero height was then used to level the channel from the head to the toe or outfall. In areas where water flow was observed, the velocity of the flow was recorded. The flow velocity was calculated by timing the flow rate within a 3-5m length of channel. In areas where sediment or refuse was observed to accumulate in the bottom of the channel, the thickness of such sediment or refuse was measured.
- A questionnaire was administered to local residents to collect information about flooding, refuse disposal and drainage channel patterns from local residents along flood prone areas. The answers to the questionnaire were statistically analyzed and use to decipher resident's opinion on the problem of flooding.

## 12.2 Existing Drainage System/ Network

### 12.2.1 Man-made drains

Provision of this type of drainage is a part of the activities of municipal authority or any other local government and also donor agencies. As an urban local Government, Morrelganj Pourashava is responsible to provide drainage system to carry out the domestic as well as storm water. The municipality is also responsible for its operation and maintenance within its jurisdiction.

Total length of manmade drain in Morrelganj Pourashava is 13.11 km. The length of manmade pucca drain is 11.05 km (84.29%) and Katcha drain is 2.06 km (15.71%). Table 11.1 shows major drain in Morrelganj Pourashava.

**Table 12.1: Type and length of Drainage Network of Morrelganj Pourashava**

Type	Length (km)	Percentage (%)
<b>Pucca</b>	11.05	84.29
<b>Katcha</b>	2.06	15.71
<b>Total</b>	<b>13.11</b>	<b>100.00</b>

Source: Physical Feature Survey by DDC, 2009-2010

### 12.2.2 Natural Canal and River

#### General Description of Natural Canals

The existing Panguchi River and 2 small and narrow canals at present are trying to serve the drainage requirements. These canals pass through the Pourashava area and are linked with the nearby Chitra River. Among the three categories of drains, only 2 categories of drains have been found to be connected to canals; whereas no pond/ ditch has been found to be connected with existing drains/ canals. Lack of drainage network is causing water logging for 4 months in the Pourashava area during rains. The entire drainage network is required to be developed with primary, secondary and tertiary drains to mitigate the current water logging problem.

**Map 12.1: Existing drainage network in Morrelganj Pourashava**



### River

Pourashava has one river named Panguchi River that passes through the middle of the Pourashava. Total length of this river within the Pourashava area is 3 km and area is about 51.74 acres.

### Beel/ Marsh Land

There is no beel/ marsland found in the Morrelganj Pourashava.

### Other Element (Ponds, Deghee-Ditch and Dyke)

Ponds are abundant in numbers in the Pourashava which is evident from the existing drainage network map (Ref. Map 6.1) of Morrelganj Pourashava. The Pourashava has, in addition, one river, 2 natural canal and numerous large Ponds/ Dighies, Ditches. These water bodies account for 83.16 acres of land being depression storage during flood and rainy season and a source for bathing, washing or fishery cultivation. Table 12.2 gives list of water bodies in the Pourashava.

**Table 12.2: List of Water bodies in Morrelganj Pourashava**

Type	Number	Area	
		Acres	Percentage
Ditches	227	14.16	12.20
Pond	1169	101.91	87.80
Total	1396	116.07	100.00

Source: Environment Survey by DDC, 2009

### 12.2.3 Analysis on land level Topographic contour

A total of 15300 spot heights are considered in the contour survey that shows the mean height of the area as 5.302m. It further shows that the minimum height of the area is - 2.776m and the maximum 8.581m, which indicates that there are differences in the height levels of the land within the Pourashava. This will be a matter of important consideration in the planning of land uses and utility services. Summary result of contours generated is presented in Table 12.3.





**Map 12.2: Topographic Map of Morrelganj Paurashava**



**Table 12.3: Contour derived from the spot elevation**

Sl. No.	Spot Unit	Value (meter)
01	Total Spot Number	18271
02	Average Spot Height	5.302
03	Maximum Height	8.581
04	Minimum Height	-2.776
05	Standard Deviation	1.641

Source: Topographic Survey by DDC, 2009

#### **12.2.4 Analysis of Peak Hour Run Off Discharge and Identification of Drainage Outfalls**

Drain as the structure is generally develops to free our living area from household waste water and rain water of storm water. The daily waste water discharge from a household is negligible so for the drainage design it is necessary to calculate the storm water.

Urban storm drainage primarily concerns this surface run-off. The primary objective of urban drainage system design is to drain out this storm water either through open surface drains or through underground sewers. An important parameter for the design of storm water systems is the rate and volume of run-off to be conveyed through the system as a consequence of storms. Run-off estimates are carried out based on knowledge of the occurrences of heavy rainstorms and a relation between rainfall and the corresponding run-off. The quantity of run-off again depends on the geometry and physical properties of the catchments.

Rainfall occurs at irregular intervals, and intensities, and frequency and duration vary within catchments. Due to this random nature of occurrence of rain events, the storm drainage system is designed considering estimated run-off based on the analyses of past rainfall records. A widely used statistical description of heavy rainfall is that of intensity–duration–frequency curves that are developed by processing the data for a large number of storm events observed over a number of years, considering the time variation of the rainfall intensity.

##### **12.2.4.1 Method Used**

Drain as the structure is generally develops to free our living area from household waste water and rain water of storm water. The daily waste water discharge from a household is negligible so for the drainage design it is necessary to calculate the storm water.

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#### **Calculation of Drainage Runoff:**

The consultant has used the Rational Method for calculation of drainage runoff. It is relatively simple, internationally used technique for designing storm drainage system in urban areas, and according has been selected for use in estimating the design discharge for the proposed storm drains/ khals for Morrelganj Pourashava. Accordingly, the peak flows at any given point in a drainage system can be calculated by using the following formula:

$$Q = CIA/360$$

Where,

Q = peak flow in m<sup>3</sup> / sec

C = run-off coefficient

I = design rainfall intensity in mm/hr

A = Catchment area in hectares

#### **Run – off coefficient**

The run-off coefficient C is defined as the ratio of the rate of run–off to the rate of rainfall during the same time period and is dimensionless. Because, some rainfall is retained in depression or ponds and the run–off is prevented from reaching the drain due to obstructions, or infiltrates into the soil, the run – off coefficient is less than one. Table 12.4 shows the run-off coefficients, which are commonly used when using the rational method for the individual situations.

The value applied is based upon an average for the situation under consideration, and is recommended to be set in the range of 0.40 to 0.48 for fully developed urban areas containing a normal mix of residential and commercial properties. This table shows the common run – off coefficient used for different type of areas.

#### **Rainfall Intensity:**

The design rainfall intensity in mm/hr is defined as the average rate of precipitation of a given time period during a storm event. This is a variable value, and is dependent on the particular rainfall characteristics of the area, on the return period selected for the rainfall events, and on the time required for the run – off to flow from the most remote part of the catchment area to the point under consideration (defined as the time of concentration, T<sub>c</sub> in minutes).

**Table 12.4: Common Run-off Coefficients for Different Types of Area**

Type of Drainage Area		Run-off Coefficient: C
Business:	Downtown areas	0.70-0.95
	Neighborhood area	0.50-0.70
Residential:	Single-family areas	0.30-0.50
	Multi-units, detached	0.40-0.60
	Multi-units, attached	0.60-0.75
	Suburban	0.25-0.40
	Apartment dwelling areas	0.50-0.70
Industrial:	Light areas	0.50-0.80
	Heavy areas	0.60-0.90
	Parks, cemeteries, playgrounds	0.10-0.35
	Rail road yard areas	0.20-0.40
	Unimproved areas	0.10-0.30
	Streets; Driveways and roofs	0.10-0.95
	Lawns:	Sandy soil, flat, 2 %
Sandy soil, avg., 2 -7%		0.10-0.15
Sandy soil, steep, 7 %		0.15-0.20
Heavy soil, flat, 2 %		0.13-0.17
Heavy soil, avg., 2-7 %		0.18-0.22
Heavy soil, steep, 7 %		0.25-0.35

#### 12.2.4.2 Demand Analysis

As stated earlier that the drainage network of Morrelganj Pourashava is mostly developed based on natural drainage system. Unfortunately most of the khals are either filled with silt and solid waste or encroached by the influential. These channels should be dredged and should reacquire from encroachment. Again, special attention would be provide to ensure integrated natural and man made drainage network system. In the demand analysis land use, especially road network and alignment of khal will be important basis for drainage network and area determination of drains.

The existing drainage network has not fulfilled the present need of the project area. Drain as one of the basic civic demand of the Pourashava people so the 100% coverage is bare need of the built up area. It will fulfill the primary demand of the Pourashava residence and also save the loss of public and private property.

### 12.3 Plans for Drainage Management and Flood Control

#### 12.3.1 Plan for Drain Network Development

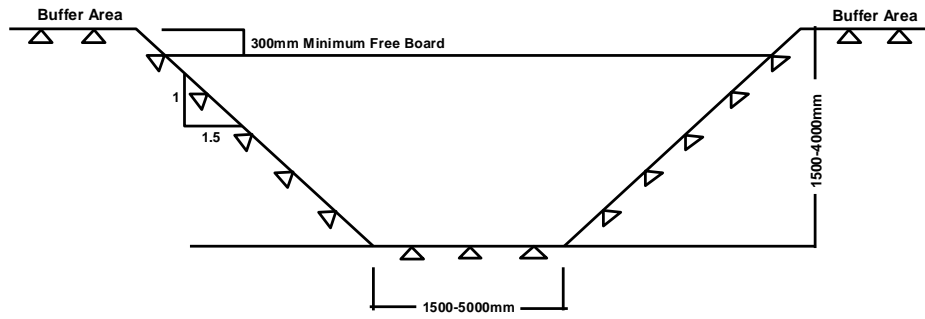
##### Drainage Network Plan

The Pourashava needs a hierarchical drainage system for easy and smooth discharge of storm and waste water comprising tertiary, secondary and primary drains. The existing natural khals will serve as primary drains. Here only alignments of proposed drains have been shown.

##### Primary Drain

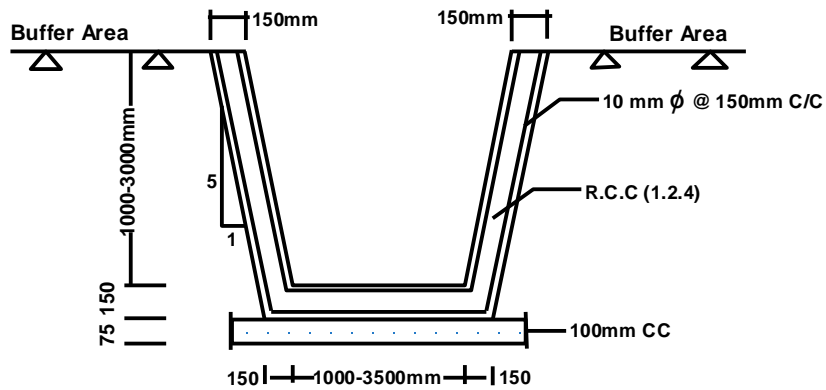
Primary drains are called as the main drains. Primary drains cover larger storm drainage area than above discussed tertiary and secondary drains. In ascending order its position is

third. Its cross-section is larger than other types; carrying capacity is high and is constructed of brick, cement concrete and sometimes reinforced concrete. Primary drains may be of earthen structure provided sufficient land is available and land value is low. Contributing drainage water comes from tertiary and secondary drains. Primary drains discharge its drainage water to outfall, natural khal, river or large lowland area/ Beels. Figure /figures below show the typical cross-section of the primary drains:



A Typical Earthen Primary Drain (Dimensions in mm)

Figure 12.1: Earthen Primary Drain

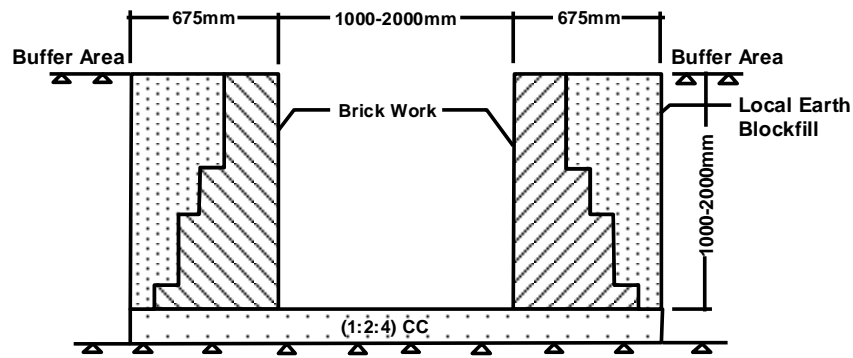


A Typical RCC Primary Drain (Dimensions in mm)

Figure 12.2: Typical RCC Primary Drain

### Secondary Drain

Secondary drains collect discharge from tertiary drains. One secondary drain may receive drainage discharges from several tertiary drains in its course. Size and capacity of secondary drain is much bigger than tertiary drains, its catchment area is also bigger than tertiary drains. Like tertiary drains, it may run parallel to bigger roads. Secondary drains may run along and through the middle of its storm water contributing area. The typical cross-section, size and shape, and its construction material are shown below:

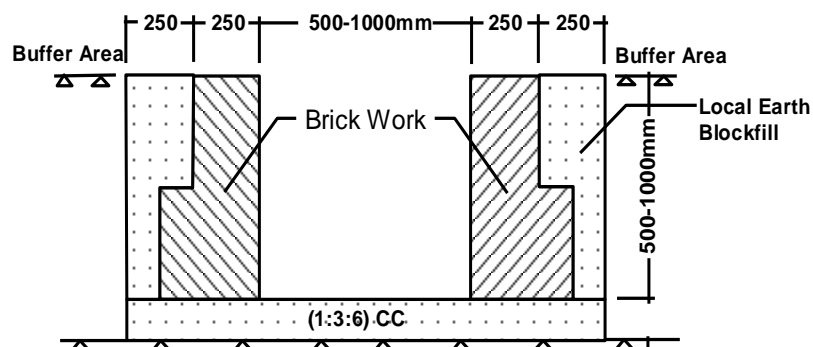


**A Typical Secondary Drain (Dimensions in mm)**

Figure 12.3: A Typical Secondary Drain

### Tertiary Drain

Tertiary drain carry run-off or storm water received from the above mentioned plot drains and block or Mohallah drains. Their catchment area or storm water contributing area is bigger than Mohallah drains. Tertiary drains generally are the under jurisdiction of municipality and city corporation. These drains or drainage networks are constructed and maintained directly by municipalities and City Corporation. These drains are constructed by brick, cement concrete and sometimes by excavating earth in their alignments. These drains may run parallel to road or across the catchment area. Sometimes borrow pits of the road serves as drains provided borrow pits are uniformly and continuously excavated. Borrow pits that serve as drains may be channeled or lined by brick works. Tertiary drains deliver its discharge usually to secondary drains. A typical tertiary drain is shown below:



**A Typical Tertiary Drain (Dimensions in mm)**

Figure 12.4: A Typical Tertiary Drain

Other kinds of drainage infrastructure are lowland, outfall areas, khals and rivers. Man made drains are Plot, Block, Tertiary, Secondary and Primary drains and others are natural drainage infrastructures. In planning for drainage network, care should be given for road network in terms of conflict of drainage and waterways with roads. In the following and subsequent sections major element, their principle, purpose and function are discussed and presented in lower to higher order:



## Plot Drains

Plot drains are provided around a building on a plot. In most cases, the drain is made of bricks and rectangular in shape that can carry storm water generated in the plot and from the building. Plot drain is connected to the Block or Mohallah drain. The sketch below gives an impression of plot drain usually constructed in a plot and block drains that follow plot drain.

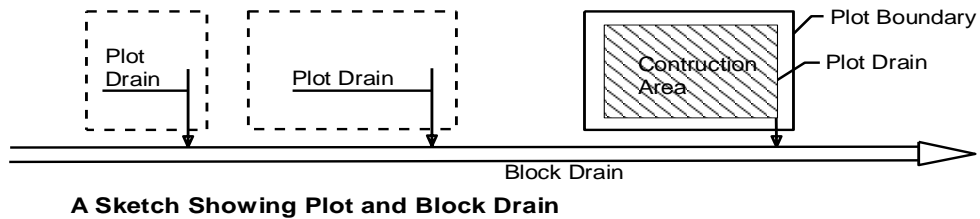


Figure 12.5: Plot and Block Drain

## Block Drain

A block drain is provided at the outside of a block that accommodates several buildings of the block. The block drains are made of bricks like plots drains but bigger in size so that it can serve the storm water generated within the block and the buildings and open areas within the block. Sometimes the block drain may serve few neighbouring blocks or Mohallahs. Block drains carry storm water coming from the plot drains. The shape of the block drain is also rectangular, but bigger than plot drains and its bottom is lower than plot drain. The sketch of the plot drain above also shows the block or Mohallah drain under plot drain.

## Other Drainage Related Infrastructures

In order to facilitate or mitigate drainage issues some infrastructures are provided or used, these are namely

- i. Bridges, culverts, box culverts
- ii. Drainage sluices, pipe sluices, siphons
- iii. Flood protection embankments and flood walls
- iv. Sluice gates, Regulators, Navigation lock
- v. Flood protection and drainage structures.

### i) Bridges, Culverts and Box Culverts

These structures are provided at places wherever roads cross the drainage network system. Such structures are built on the roads to free passage of drainage water and sometimes to provide navigation/ boat passages. Consequently the conflict between drainage and road networks is mitigated. Figures below show bridge and culverts in such system.

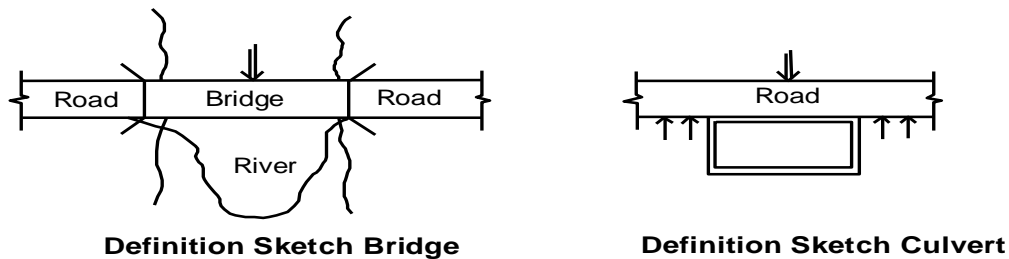


Figure 12.6: Bridge and Culvert

### ii) Drainage sluices, pipe sluices and siphons

Drainage sluices, pipe sluices and siphons are provided on the embankments. Embankments protect the area from floods coming from outside rivers and make the project area flood free.

However storm water from rainfall-runoff within the area causes localized flood, drainage congestion and submergence. A sketch below shows a few of such structures.

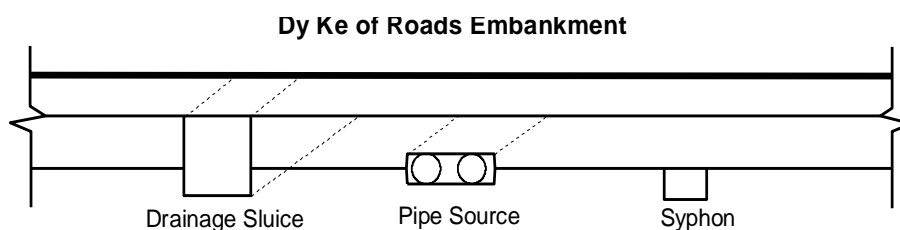


Figure 12.7: A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion.

### 12.3.2 Outfall of Drains

Panguchi River plays as formal outfall of drains of Morrelganj Pourashava. The secondary drains mainly discharge storm water to the nearby khals and borrow pits, which will be act as primary drain.

### 12.3.3 Proposal for Improvement of the Existing Drain Networks

Pourashava has only 13.11 km drainage network at Morrelganj Pourashava. Of these 2.06 km is Katcha drain and 11.05 km pucca drain. Based on the results of drainage study it is recommended for the existing drain that:

- Rehabilitate broken drains;
- Cover the open drains based on budget allocation.
- Fencing off some of the channels to prevent dumping of refuse.
- Construction of new channels and rehabilitation of old ones with enough drainage head.
- Construct a new pump drainage network for the area towards Panguchi i River.
- Remove all un-authorized structures, which developed on drainage structures.
- Regular cleaning and maintenance by the concerned authorities.

- Embarking on a sustained public enlightenment to discourage residents from dumping their refuse into drainage channels.

### 12.3.3.1 List of proposed new drains

There is 3 km river in Morrelganj Pourashava. This will be served as natural drain. Based on this natural drain drainage network system of Morrelganj Pourashava will be established. Total 3.91 Km Primary drain, 4.97 Km Secondary drain, 3.13 Km tertiary drain proposed in drainage development plan. Map 12.3 shows the drainage network Plan of Morrelganj Pourashava.

**Table 12.5: Summary of proposed drain**

Type of Drain	Length in M	Length in Km	%
Primary Drain	3913.02	3.91	30.48
Secondary Drain	4967.46	4.97	38.69
Tertiary Drain	3125.67	3.13	24.35
Quaternary Drain	831.49	0.83	6.49
<b>Total</b>	<b>12837.64</b>	<b>12.84</b>	<b>100.00</b>

Table 12.6 shows the proposal of new drain in drainage development plan of Morrelganj Pourashava.

**Table 12.6: Proposal of new drain**

Drain ID	Length in M	Drainage Type	Phase	Width(m)	Depth(m)
D01	900.91	Primary	First Phase	2-4.5	.5-1.5
D02	1260.12	Primary	First Phase	2-4.5	.5-1.5
D03	1751.99	Primary	First Phase	2-4.5	.5-1.5
D11	327.35	Secondary	Second Phase	2-4.5	.5-1.5
D12	555.51	Secondary	Second Phase	2-4.5	.5-1.5
D13	1184.84	Secondary	Second Phase	2-4.5	.5-1.5
D14	565.39	Secondary	Second Phase	2-4.5	.5-1.5
D15	624.94	Secondary	Second Phase	2-4.5	.5-1.5
D16	806.32	Secondary	Second Phase	2-4.5	.5-1.5
D17	273.24	Secondary	Second Phase	2-4.5	.5-1.5
D18	629.87	Secondary	First Phase	2-4.5	.5-1.5
D21	175.14	Tertiary	Second Phase	1.5-2.5	.64-1
D22	96.95	Tertiary	Second Phase	1.5-2.5	.64-1
D23	39.34	Tertiary	First Phase	1.5-2.5	.64-1
D24	95.91	Tertiary	Third Phase	1.5-2.5	.64-1
D25	181.14	Tertiary	Second Phase	1.5-2.5	.64-1
D26	65.75	Tertiary	Second Phase	1.5-2.5	.64-1
D27	123.40	Tertiary	First Phase	1.5-2.5	.64-1
D28	188.84	Tertiary	Second Phase	1.5-2.5	.64-1
D29	155.11	Tertiary	First Phase	1.5-2.5	.64-1
D30	205.04	Tertiary	Third Phase	1.5-2.5	.64-1
D31	118.23	Tertiary	First Phase	1.5-2.5	.64-1

Drain ID	Length in M	Drainage Type	Phase	Width(m)	Depth(m)
D32	97.01	Tertiary	First Phase	1.5-2.5	.64-1
D33	102.76	Tertiary	Second Phase	1.5-2.5	.64-1
D34	307.75	Tertiary	Third Phase	1.5-2.5	.64-1
D35	201.50	Tertiary	Third Phase	1.5-2.5	.64-1
D36	82.38	Tertiary	First Phase	1.5-2.5	.64-1
D37	519.46	Tertiary	Third Phase	1.5-2.5	.64-1
D38	174.90	Tertiary	Second Phase	1.5-2.5	.64-1
D39	195.06	Tertiary	Third Phase	2-4.5	.5-1.5
D41	81.37	Quaternary	Second Phase	1.5-2.5	.64-1
D42	84.88	Quaternary	Third Phase	1.5-2.5	.64-1
D43	441.46	Quaternary	Third Phase	1.5-2.5	.64-1
D44	156.71	Quaternary	Third Phase	1.5-2.5	.64-1
D45	67.07	Quaternary	Second Phase	1.5-2.5	.64-1

#### 12.3.3.2 List of Infrastructure measures for Drainage and Flood Control Network

There are 61 bridge and culverts in the project area. A new bridge and few sluice gates will be established for drainage and flood control network of Morrelganj Pourashava.



**Map 12.3: Proposed Drainage Network of Morrelganj Paurashava**



## **12.4 Environmental Management Plan**

This section describes the goals and objectives, and methodology and approach to planning of environment management plan.

### **12.4.1 Goals and Objectives**

Urban planners today are becoming ever more involved with environmental concerns. Environmental planning coordinates development to meet objectives for clean air and water; removal of toxic and other wastes; recycling of resources; energy conservation; protection of wetlands, beaches, hillsides, farmlands, forests, and floodplains; and preservation of wildlife, natural reserves, and rivers. Historic preservation strives to keep important buildings and places as part of the permanent environment and uses them to finance the maintenance costs.

Every development work has both positive and negative impacts on environment. It is wise to consider the environmental impacts and its mitigation at planning stage. Environmental consideration at planning process can make the project sustainable for long period. The objectives of Environmental Study of Morrelganj Structure Plan, Master Plan and Detailed Area Plan project are,

- To study the existing ecological system and environmental problems in the project area;
- To suggest the mitigation measures for all environmental problems;
- To provide the guidelines and assist the planners, engineers and consultants involved in this project in preparing environmentally sound Plan for Morrelganj Town and
- To prepare an Environmental Management Plan (EMP) for future environmental management in the area.

### **12.4.2 Methodology and Approach to Planning**

In environmental study, a multi-disciplinary approach is used for studying development project. The present environmental study is based on data collection and sharing with drainage and geology, transport engineering, socio-economic, economic and topographical survey components. A structured questionnaire prepared by LGED for environmental survey has been followed. Environmental study has been carried out through survey of biodiversity of flora and fauna, water pollution, local air pollution problem, drinking water sources, renewable energy, diseases, and major local environmental issues.

Secondary data has been collected from BWDB, UP Offices, Civil Surgeon Office, Thana Fisheries Office, District Agriculture Extension Office and Meteorological Department. Reports of national organizations were also considered as secondary sources of information.

### **12.4.3 Existing Environmental Condition**

With the increase of housing along with population will produce impact on the environment. Rapid urbanization and numerous human activities will deteriorate the



environment, if the infrastructure is not developed as per requirement. So, before planning and designing of any development project, possible adverse environmental impact should be studied. The whole range of potential impacts of the project of various environmental components due to various project activities should be identified qualitatively and in quantities, where they are possible. After identification of significant impacts and issues arising out of them, mitigation measures or project modification/ alternatives will have to be proposed to address the environmental impact issues. An environmental management plan should also be formulated for mitigation and protection of adverse effect of the project on the environment. Environmental consideration in the planning process can make the project sustainable for a long period.

#### **12.4.3.1 Geo-Morphological Status**

The Geo-Morphological condition of the Pourashava consists of soil type, soil characteristics and its exact geological features.

##### **Geological Condition**

Being located in the Bagerhat District, the general soil type is following. The Pourashava belongs to Non-calcareous Brown Floodplain soils group whose main characteristics are: Non-calcareous brown sandy loams to clay loams occurring in the old Himalayan piedmont plain, Tista and Old Brahmaputra floodplains and locally in the old Ganges river floodplain. Soils are slightly too strongly acid in reaction.

The Pourashava is basically a flat land and average 4.384 mPWD above the mean sea level and varying more than 3m in elevation. Panguchi River crosses Morrelganj Pourashava from the middle. Small and narrow canals of the Pourashava have strong linkage with the Panguchi River.

##### **Morphological Condition**

###### **Temperature**

Average maximum temperature varies between 30.1° C and 36.3° C and minimum temperature varies between 26.4° C (December) and 24.6° C (January). The hottest months are March, April, May, June and August. From December to February, Pourashava experiences cold periods when temperature varies from 12.5° C (December) to 14.1° C (February).

###### **Rainfall and Humidity**

The Morrelganj Pourashava has an average normal rainfall of 397.2 mm in the month of July which is highest among all other months. In September, it falls to 327.1 mm; again falling little bit to 229 mm in August. From November to March, this rainfall varies between 28.1 mm to 19.3 mm. July has been the highest precipitation in comparison to September, August and June. The rainy season begins with April/May and usually ends in the end of October. The highest number of normal rainy day is in July, which is the highest rainfall month. About 19 rainy days at an average in July, followed by 15 rainy days in September, 12 in May, 14 in June and August has been the characteristics of rainy day as the data reveals. Like other parts of Bangladesh, the Pourashava has four weather seasons viz. i) South-west Monsoon, ii) Transition-I(Post Monsoon), III) Winter, iv) Transition-II(Pre-

monsoon). The temperature starts dropping from November and continues till February. After that temperature starts rising.

**Table 12.7: Rainfall data of Morrelganj Pourashava**

Year	Rainfall data		
	Maximum (mm/month)	Average (mm/month)	Minimum (mm/month)
1999	420.00	142.50	14.00
2000	405.00	144.00	4.00
2001	354.00	140.83	21.00
2002	846.00	222.33	10.00
2003	315.00	134.83	22.00
2004	621.00	164.83	7.00
2005	435.00	165.17	15.00
2006	579.00	171.75	1.00
2007	591.00	175.92	14.00
2008	379.00	133.00	36.00

(Source: Meteorological Department, 2010)

### Other Related Issues

Frequent water logging occurs whenever excessive rainfall happens in the Pourashava. Few low roads and low lands go under water after excessive rainfall.

#### 12.4.3.2 Environmentally Concern Issue

Excessive utilization of Chemical fertilizers and their dumping in the ground and pollution during flooded, monsoon season triggers ground pollution and damage to plant including dust and smoke emitted from Rice mill and Saw Mill are serious concern for a safe environment.

#### Industry

Pourashava has a few numbers of small medium Industries including saw mill, rice mill and ice mill which creates huge column of smoke and hot gases. These Mills have no effluent treatment plants.

#### Brick- Field

The Pourashava has no Brick-Fields within its vicinity.

#### Solid Waste

It was observed during the survey that Morrelganj Pourashava does not possess a well managed system for managing solid wastes generated in the Pourashava area. Total population of Morrelganj Pourashava is 9658 (Morrelganj Pourashava, 2010). Total daily generation of solid waste from Morrelganj Pourashava is estimated to be 2.414 tons (considering a generation rate of 0.25 kg/person/day). There are 5 nos. of dustbin for dumping of the wastes. Dumping also occurs in the ditches which creates major health hazards when season of water logging begins. There is neither any solid waste treatment plant nor any solid waste collection network encompassing entire Pourashava. Pourashava is partly covered by Solid waste collection system around the core part. The present practice of dumping consists of truck used for carrying waste. The existing

management capacity of Pourashava consists of 4 sweepers and a garbage truck for transportation. The sites which are contaminated are Conservancy workers of low living areas around Pourashava.

### **Latrine**

The sanitation facility of the Pourashava is almost satisfactory. About 80% households are having sanitary latrine. Only 5% households have no toilet facility. There is no latrine connected to drain. 15% households in the Pourashava have insanitary toilets. During Rainy Season these insanitary latrines cause serious health hazards. Regular contamination of pond water, low-lying area is occurring during water logging.

### **12.4.3.3 Pollutions**

Pollution is the introduction of contaminants into the environment that causes instability, disorder, harm or discomfort to the ecosystem i.e. physical systems or living organisms. Pollution can take up the form of chemical substances, or energy, such as noise, heat, or light energy. Pollutants, the elements of pollution, can be foreign substances or energies, or naturally occurring; when naturally occurring, they are considered contaminants when they exceed natural levels. The major forms of pollution are Air pollution, Water pollution, Land pollution and Sound pollution.

#### **Water Pollution**

Water is considered polluted when it is altered from the natural state in its physical condition, and chemical and microbiological composition, so that it becomes unsuitable or less suitable for any safe and beneficial consumption. The used water of a community is called wastewater, or sewage. If it is not treated before being discharged into waterways, serious pollution occurs. Water pollution also occurs when rain water runoff from domestic waste and from agricultural land makes its way back to receiving waters (Ponds, Canals and Beels) and into the ground.

In Morrelganj Pourashava there are 103 ponds, 104 ditches, 12 khal and 1 river as sources of surface water. The type of surface water is fresh in Morrelganj. Surface water pollution has been found in the study area originating from the use of insecticide and chemical fertilizers in crop fields. Wash out by rain water from crop fields to nearest water sources with chemicals is causing water pollution. Cattle bathing and flow of waste water from domestic use and rain off into the khals and river have also identified as reasons for surface water contamination. The Pourashava authority has been not yet taken any initiatives to control surface water pollution.

Ground water pollution also exists in Morrelganj Pourashava. A total of 429 hand tube wells are distributed all over the Pourashava area. Presence of iron and arsenic as pollutants in ground water are the reasons for such pollution. No initiative has been made by any local authority/ GOs/ NGOs to mitigate arsenic contamination.

#### **Air Pollution**

Air pollution is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to human or other living organisms, or damages the natural environment, into the atmosphere.

Operations of shallow engine driven vehicles (Alam Sadhu/ Nochiman/ Kariman) that are unfriendly to the environment are responsible for air pollution due to, these vehicles uses diesel as fuel. Diesel particulate matter (DPM) includes diesel soot and aerosols such as ash particulates, metallic abrasion particles, sulfates, and silicates. The small size inhaled particles may easily penetrate deep into the lungs with acute short-term symptoms such as headache, dizziness, light-headedness, nausea, coughing, difficult or labored breathing, tightness of chest, and irritation of the eyes, nose and throat. Long-term exposures can lead to chronic, more serious health problems such as cardiovascular disease, cardiopulmonary disease, and lung cancer.

The rice husking mills used to boil rice before husking. The mills use wood, rice husks or sawdust as fuel in boiling burners. Smoke and hot gases releasing through chimney create massive air pollution. During husking time, the mills release dust husks into the air and polluting the nearby environment. These mills have not installed any effluent treatment plant. The Pourashava authority has been not yet taken any initiatives to install treatment plant in the industry.

### **Sound Pollution**

Noise pollution basically consists of unpleasant human, animal or machines creating sound that disrupt the activity or balance of human or animal life. A common form of noise pollution is from vehicles, principally motor vehicles. Other sources are car alarms, office equipment, factory machinery, construction work, audio entertainment systems, loudspeakers and noisy people.

In the Pourashava, shallow engine driven vehicles like Yame/ Nochiman/ Kariman are plying on roads as a mean of local transport. They are making more than 250 trips per day throughout the Pourashava. Engine generated sounds during their operational time on roads is both a matter of nuisance as well as a source of sound pollution. The Pourashava authority has been already served notice to restrict their movements. Generated sounds from Saw mills at their operational time are also a source of sound pollution existing in Morrelganj Pourashava. In this respect there is no measures have been taken either by Paurashava or by any Public or Private agency.

### **Land Pollution**

Land pollution is basically about contaminating the land surface of the Earth through dumping urban waste matter indiscriminately, dumping of industrial waste, mineral exploitation, and misusing the soil by harmful agricultural practices.

In the Paurashava, land pollution is occurring from extensive use of fertilizer in the agriculture lands and water logging. Extensive use of fertilizer is changing the bio-chemical composition and the lands are loosing their productivity day by day. In the same way, water logging for four months in a year is settling non decomposable materials on lands and the lands are being polluted. Water logging, over time leads to the soaking of soils, impeding agricultural production. The water applied in excess as a stock pollutant accumulates in the underground hydrological system and causes damage to production.

The entire Paurashava is affected. There is no attempt to curb this pollution from either by Paurashava or from other agency.

#### **12.4.3.4 Regular Hazards**

Under regular hazards, either there is a natural or human-made hazard. A hazard is a situation which poses a level of threat to life, health, property, or environment that negatively affects society or environment. Disaster can be classified into two categories; natural disaster and man-made disaster. A natural disaster is the effect of a natural hazard (e.g. flood, volcanic eruption, earthquake, or landslide). Man-made disasters are disasters resulting from an element of human negligence or involving a failure of a man-made system.

##### **Water Logging**

Water logging occurs in the Paurashava during the Rainy season (June-September). Mainly encroachment to natural canal is responsible for this problem. The natural canal is mostly encroached, canal bed filled up or lack of maintenance, is the causes of water logging. The effects are serious health hazards (Flu, Diarrhea and cold and Arsenic contamination of surface water. Also contamination of flora and fauna and agricultural land with chemical fertilizers which lay dumped on the ground. No measures have yet been taken by authority to re excavate the khals.

Inundation within Paurashava areas is experienced in the months of Srabon to Ashwin. Due to influences of rainfall during monsoon, usually the Ward nos. 1, 2, 4, and 5 suffers from water logging. Rainy season is the season when problems of water logging begin. Generally during rainy season, the water overflows on the both sides of the Panguchi River up to 2 ft. In the months of Srabon to Ashwin, the water rises with a height of 2-3 ft. This internal flood or water logging is experienced within the above mentioned Wards during peak monsoon time with high rainfall for long duration. The water logged areas are found along roads, ditches and ponds within Paurashava. There is no attempt to redress Paurashava from Water logging. A proper Drainage Master Plan from LGED and BWDB is required.

##### **Flood**

Inundation has been measured within Paurashava on plinth and above plinth level. Two level of inundation creates following types of damages. When flood reaches plinth level and above plinth level the crop loss occurs in most of the Wards. The Paurashava was not affected by recent flood.

##### **River Erosion**

The Paurashava is not an erosion prone area. Although it is located along the bank of Chitra River, erosion is not so significant due to steady flow and low river stage.

##### **Other**

There are no other hazards that can be seen in recent years.

#### **12.4.3.5 Natural Hazards**

The Paurashava area including the Morrelganj Upazila has been undergone several major natural disasters in the past ranging from Cyclone, Water logging and Draughts. The period

of these disasters are 2006, 2007, 2008 and late 2008 to early 2009. Very scanty attempt has been made by government to rehabilitate people after all these natural disaster.

### **Cyclone**

From 2008 to early 2009, except in 2007, there was major cyclone named 'SIDR' and 'AILA' causing 5 crore takas of damages. Lives of three people, crops covering 20 acres land, animals etc. were lost. Around 100 acres of crops and produces were lost in 2008-2009 by drought. And twice the crops and properties covering 500 acres and 300 acres of land were lost in 2008, causing Tk.50 lac and Tk.25 lac worth of damages just because of the water logging from heavy rain remained for a long period.

### **Earthquake**

No such incident has ever occurred.

### **Fire Hazards**

No such incident has ever occurred.

### **Other Hazards**

No records of other hazards are found.

#### **12.4.3.6 Critical Issues**

Urbanization is changing the rich limited "A" grade agricultural lands to other uses like residential use, Commercial, Industrial/ Brick field etc. Agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. The Morrelganj Paurashava is no exception to this. Wet lands are filled up and agricultural lands are converted into urban lands. There is continuing expansion of settlement towards North from South of built up section. This has been identified as the major manmade disaster which is accelerating and the degree of conversion rising year to year.

Use of poisonous insecticides on the agricultural land is another manmade disaster which will affect in the long run.

### **Encroachment**

Settlement development is a big issue in encroachment towards rural area/ agriculture area. This is evident that encroachments take place towards Ward nos. 3, 7 and 8. Haphazard development without proper road and other basic utility facility are taking place as density in the built up area increases. Unplanned development will continue if a guideline land use plan along with a Drainage, Transportation and basic utility provision do not occur as rising population will demand.

### **Pollution**

Pollution has been generated from alarming use of Nasimon, Karimon as a transport carrier, creation of Rice Husking Mill, Saw mill (Dust and fumes) and Arsenic in ground water etc. These have serious effects on human health. There is noise from Nasimon, air pollution from Saw and rice mill, water pollution from Chemical fertilizer dumping and unsanitary latrine and water logging coupled with no solid waste collection system, all are

serious agents of pollution in the Paurashava. No proper measure is yet to be seen to combat pollution.

### **Hazards**

Except cyclone, which occurred periodically (in 2006 and 2007) there is no other type of hazards in the Paurashava. Extensive damage crops and properties occurred for cyclone and water logging as respondents said. There was business loss too. Livelihood damage is a major contribution floods have made in the Paurashava.

### **Land Filling**

There is no land filling activity going on in the Paurashava.

### **Environmental Laws and their violation**

The law which stipulated National Environmental Quality Standards for ambient air, surface water, ground water, drinking water, industrial effluents, mission, nose and vehicular exhaust, is made by National Environment Policy under DOE/ GOB. The light industries of Morrelganj Paurashava have no effluent treatment plant. As well as due to the pressure of urbanization large numbers of low land and ponds/ ditches are filled up daily. Those activities violate Bangladesh National Environmental Policy, 1992. Paurashava authority has no awareness or capacity to redress the affects pollution is creating in the Paurashava.

#### **12.4.3.7 Other**

Absences of proper tertiary drain network, poor condition of roads in front of the household are elements in deteriorating environment. From the field survey it has been found that there is no arrangement for clinical waste management. The clinics, hospitals and diagnostic centers used to dump solid wastes here and there or nearby ditches. This activity may bring serious health hazard to the inhabitants specially the nearby dwellers.

## **12.5 Plans for Environmental Management and Pollution Control**

The urban environment of Morrelganj Paurashava includes both built and natural environment. Urbanization has some increased hazard on natural environment. Where the built environment overburdens the natural environment urbanization cannot be sustainable. The urbanization is vital for countries economic growth. Urban centers concentrate services, infrastructure, labor, knowledge, entrepreneurship and markets. Marketing cities are key generators of economic activities. The urban economics are critically important in national growth and the achievement of development goal. Urbanization is unavoidable. So in every phase of planning processes all these environmental issues shall be evaluated and proper measure shall be taken to minimize the adverse environmental impacts on land pollution, water and air quality, biodiversity resources and marine resources by energy usage, transport network, waste management, slum improvement, disaster etc.

### **12.5.1 Proposals for Environmental Issues**

#### **12.5.1.1 Solid waste management Plan**

An improved sanitary and sewage system consists of a network of sewers for collection of sewage from the service areas of town and conveying those to the treatment plant.

Paurashava has got limited resource and affordability to maintain such a system, as such low-cost sanitary system comprising sanitary/unsanitary latrine is being followed all over the area. To identify the most suitable types of low-cost sanitary latrines for the community; to identify the constraints in installation and use of sanitary latrines and to monitor the behavioral changes as well as the health improvement after providing some sanitary facilities with the intensive motivational work for practicing appropriate defecation systems.

#### **Criteria for Selection of Solid Waste Dumping Site**

Usually the Paurashava does not have its own solid waste disposal site. For selection of solid waste dumping site, the following criteria should be considered.

- At least two solid waste disposal sites should be selected and reserved so that when the first site is filled up, the second site would be used
- Site should be located to minimum fuel distance
- Site should not create any nuisance to the residential areas
- Site should be connected with main road and have sufficient width for truck movement.
- Infiltration of water into the dump should be prevented by covering the wastes with a layer of soil and sloping surface of the dump.

#### **Land Requirement for Solid Waste Management**

According to population estimation at present (2011), of the Morrelganj Paurashava it is 27472 populations and population will stand at 47304 by 2031. According to JICA average per capita waste generation is 0.25 kg/capita/day in dry season. It has been found from the Paurashava source that, this population produces about 38.42 metric tons/day in dry season. Usually waste generation in wet season is 46% more than dry season. So as per this calculation waste generation in Morrelganj Paurashava in wet season is 56.09 metric tons/day. As per this assumption, in the project area the projected Waste generation in wet season will be 75.005 metric tons/day.

So the required land for solid waste filling will be 1.38 acre (edge dimension considering square size 80.54 m). After filling and closing up of solid waste disposal site, it can be used for many purpose such as playground, market, shopping center, parks, recreational area, car parking area, bus/truck terminal or other public facilities. Total 6.97 acres land is proposed for solid waste dumping station at south east corner of Morrelganj Paurashava Master Plan.

#### **12.5.1.2 Open space, wet-land and relevant features protection Plan**

The river Pangucchi is a great asset of Morrelganj that plays multifaceted role for the town. Most importantly it is the boundary with the Indian Territory. It could be a navigation route to some extent, a source of water and also a source of recreation.



**Mitigation:**

- ❖ The river should be preserved for future sustainable source of surface water supply for the city when the city's ground water would be depleted.
- ❖ Its banks can serve as breathing space and recreation for the town dwellers.
- ❖ The river should be kept pollution free applying regulatory measures based on environmental regulations,
- ❖ No industry should be allowed within 100 m of the river bank.

**Loss of Wetlands**

Wetlands are mainly affected first by the urbanization process. Earth filling fills up the ponds, haors and chhoras. Waste water affects the aquatic ecosystem and makes the ponds and chhoras unproductive and as a result the aquatic plants, fishes and animals have to die or migrate to other places. There is no strict regulation on earth filling of ponds. The Paurashava can fine only Tk.500 if someone fills the ponds. However, Wetlands Conversation Act exists in Bangladesh, which is applicable only to natural beels and khals. Wetlands play an important role as a reservoir of rain and flood water. They are also important to maintain the balance of ecosystems and for replenishing the ground water level through seepage.

**Mitigation:**

1. Designate all ponds in Master Plan Map and protect the large ones according to the ecological importance and public interest.
2. Protect the ponds as per regulatory framework of Master Plan.
3. Avoiding wetlands during road alignment fixation.
4. Stopping housing, industries and other development works in wetlands through earth filling.
5. Stopping earth filling of ponds in the area through creation of public awareness.
6. Strict implementation of Wetland Conversation Act, 2000.
7. Strict implementation of Environment Conversation Act(ECA), 1885
8. Create new laws if existing one fails to stop land filling of ponds.

**12.5.1.3 Ground Water Pollution**

Though ground water is not a major source of drinking water supply in the study area, yet ground water pollution by salinity and arsenic is a serious problem for future water supply. Arsenic is geological problem. But experts view that it arises due excessive extraction of ground water. So in future, when population rises further excessive ground water extraction will aggravate contamination situation.

**Mitigation Measures:**

Following mitigation measures may be adopted:

1. Expand use of surface water by protecting existing ponds and excavating new ponds.

2. Introduce and popularize rain water harvesting system.
3. Reduce dependency on ground water.

#### **12.5.1.4 Surface Water Pollution**

Various surface water sources of the town are regularly polluted by deliberate drainage of waste water in respect of pH, turbidity and coliform bacteria when compared with national standard. But present pollution level is low due to low density of population and no industrial agglomeration. The main sources of surface water pollution are urban waste water, sanitary sewage and solid waste dumping. With the implementation of this plan the pollution level may further increase as population and activity will increase leading to increase in waste water, sanitary sewage and solid waste dumping.

##### **Mitigation Measures:**

1. Abolish katcha and hanging latrines.
2. Encourage practice of sanitary latrines.
3. Take measures against indiscriminate dumping of solid waste.
4. Improve sanitation conditions of slaughter house, fish market and katcha bazaar.
5. In future set up sewerage treatment plant to treat waste water.

#### **12.5.2 Natural calamities and regular hazard mitigation proposals**

##### **12.5.2.1 Protection plans addressing Natural Calamities**

###### **a. Natural Calamities**

Cyclone is a regular natural calamity in the study area. It affects the poor people mostly who can not build houses with permanent materials. Cyclones also destroy trees and other establishments causing economic losses. It is not possible to prevent cyclones, but it is possible to reduce the losses by cyclones.

##### **Mitigation Measures:**

1. Provide housing loan to build houses with permanent materials.
2. Take measures to promote employment and reduce poverty.
3. Take appropriate measures for post disaster loss mitigation.

###### **a. Flood Protection**

The Sonai River is subject to bank erosion, but it is not continuous. The road along the river has eroded to some extent. With implementation of Master Plan (MP) Project, the whole project area will be protected from flooding.

##### **Enhancement Activities:**

1. Arrangement of pump drainage to Sonai during high flood when gravitational drainage fails. Pump of excess water will save the area from internal flooding.

**Responsible Organizations:** BWDB and Paurashava.

#### **b. Earthquake**

Earthquake is among the most destructive and terrifying disaster that nature can unleash. Bangladesh sits on several seismically active faults are the focal point of tremors. Morrelganj is located in the seismic zone 3 and so it is highly vulnerable to earthquake. Unplanned and unregulated urbanization and disregard to BNBC rules in building construction aggravate the situation more. With the implementation of SMP the planned urbanization will strictly follow the actual zoning plan and following of BNBC rule will minimize the earthquake damage. In DMDP Urban Area Plan Volume- II, (Part-3, Interim Planning Rules) development restriction considering the geological fault line areas states “Structures above 2 storeys situated within 500 meters of a geological fault is not allowed unless built to the BNBC standards for Seismic Zone 3 (BNBC Section 6 Chapter 2.25)”. Similar measures are also suggested for Sylhet town.

#### **Enhancement Activities:**

- Ensure all new buildings are designed and constructed following the guideline of BNBC.
- Development of a comprehensive plan for managing post earthquake situation.
- Train community workers who would carry out the initial search and rescue efforts.
- Launch a massive public awareness campaign.

**Responsible Organizations:** Paurashava, MOFDM, Civil Defense, Fire Service and DOE.

#### **c. Protection Plan addressing regular hazards**

##### **Fire Hazard**

Though fire hazard is low in the town it might increase in future with increased urbanization. Fire hazard will be severe when katcha housing will be built by low income poor people of the town. To avoid fire hazard following mitigation measures are recommended.

#### **Mitigation Measures:**

1. Set up modern fire extinguishing devises.
2. Discourage people from using low quality electrical wire in building and industries.
3. Ensure periodical checking of electrical lines.
4. Advise low income dwellers about cooking safety.
5. Create awareness among people about the dangers of fire hazard.

#### **d. Protection Plan addressing encroachment and other relevant issues**

Implementation of SMP activities like roads, drainage, bridge/culvert, housing and industrial estates and bazars will radically change the natural topography and land use pattern of the area. The agricultural area will be converted into urban and semi-urban

area. The present green scenic beauty will disappear, water bodies will be lost and general slope will be diminished for earth cutting due to rapid urbanization.

**Mitigation:**

1. Careful planning to minimize the change of the area.
2. Avoid water bodies during construction of roads, housing and industrial estates.
3. Practice good architectural/engineering design during planning of housing estates, buildings and the intersections of main roads.
4. Enhancement of plantation and gardening to increase the scenic beauty of the town.
5. Preserve the ponds, chhoras and large water bodies.
6. Strict implementation of Environment Conservation Act (ECA), 1885
7. Propaganda for public awareness

**Responsible Organizations:** Paurashava, DOE and Forest Department

## **12.6 Plan Implementation Strategies**

### **12.6.1 Regulations to Implement the Drainage and Flood Plan**

Management of a drainage system is more difficult than its construction. It requires not only an institutional set up but also huge resources for regular maintenance. The present engineering set up of the Paurashava is highly inadequate to manage the future drainage network. It must be equipped not only with adequate manpower but also sufficient number of logistics and equipment will be necessary for sound maintenance of the drainage system. For Morrelganj Paurashava with its meager revenue earning it will be extremely difficult to go for regular maintenance of the drainage system without government assistance. So, the Paurashava must be provided with sufficient budget allocation to maintenance going on regularly. The next strategy will be to create awareness among the citizens not to dispose of solid waste in the drains and get them clogged. This can be done by regular publicity, engaging NGOs for motivation and the last imposing punitive measures like, fine on the waste disposer.

### **12.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan**

For plan implementation the first requirement would be resources, which is highly lacking in the Paurashava. It is small Paurashava with very limited holding tax realized. So, the first strategy will be to increase its revenue earning and non-revenue earning income. The strategy is to build capacity of the Paurashava to implement the plan. Permission for additional manpower has to be sought from the government. At the same time additional fund has to be provided to pay for salaries and charges.



# CHAPTER 13

## PROPOSAL FOR ADDRESSING URBAN SERVICES

This chapter describes the urban basic services development proposals for future development of the Pourashava. The proposals have been made at the town level, that is, the area under the urban area plan. The local level development proposals will be addressed in the Ward Action Plan. The development proposals deal with the basic urban services, like, water supply, drainage, sanitation, solid waste, telecommunication, electricity and gas, community facilities, education and health.

### 13.1 Water Supply

Own network based water supply system at Morrelganj Pourashava is not developed. The entire water supply system of the Pourashava is based on household tube well and pond. As per the census 2001, about 94.33% household depend on tube well and about 2.06% depend on tape for their drinking water. However, not many of the tube wells provide arsenic free drinking water. As a result lots of hand tube wells water is mostly used for washing purpose. Water from ponds is mainly used for washing. Water supply network will develop along the road considering the development pattern of settlement of Morrelganj Pourashava. Figure 13.1 shows cross section of road showing the water supply network along the road.

Developing a network based supply system will depend on availability of fresh water aquifer. Detailed geological investigation is required to find out fresh water aquifers. But here problem lies here to use of ground water. Safiuddin (2001) observed the serious arsenic contamination of groundwater in Bangladesh has come out recently as the biggest natural calamity in the world. The people in 59 out of 64 districts comprising 126,134 sq km of Bangladesh are suffering due to the arsenic contamination in drinking water (arsenic contamination is also found in the ground water of Morrelganj Pourashava). Seventy five million people are at risk and 24 million are potentially exposed to arsenic contamination. He also mentioned the groundwater in Bangladesh has declined progressively due to the excessive extraction of water for irrigation and domestic water supply, lack of water management and inadequate recharge of the aquifer. The groundwater declined beyond 8 meters in 12% areas of Bangladesh in 1986. This extent rose to 20% areas in 1992 and 25% areas in 1994. So in case of water supply for Morrelganj Pourashava, special emphasis will be given to use surface water rather than use of ground water. The Panguchhi River is passing through middle of the Pourashava, is the most important source of water supply. Based on the water of Panguchhi River a water treatment plant will be established in the Pourashava. And it will be the main source of water supply network in Morrelganj Pourashava. Before it is done Pourashava should take a programme to preserve and maintain all major ponds in the Pourashava. This will require taking over possession of all major waters supply ponds in the Pourashava for the greater interest of the people at large.

The Pourashava has large number of ponds, khals and river. The town dwellers use this water for their daily necessities. Other than drinking and cooking purpose the use of these sources of water can be considered. In a project of DANIDA and DPHE for Water Supply and Sanitation for this type Pourashava, the daily per capita consumption has been calculated as 53 liters (Source: Raipur Pourashava). So it will require much less amount of water supply for the Pourashava town than a city consumption as assumed above. According to the estimation of Population, the total population in 2011 of Morrelganj Pourashava is 27472 and at the end of the project i.e. in 2031 this will be around 43975. So according to the above stated per capita consumption the present water demand is  $882.23 \text{ m}^3$  ( $16646 \times 53\text{lt}=882238\text{lt}$ ) and this will be  $1424.53 \text{ m}^3$  in 2031.

As an alternative to drinking water supply harvesting of rain water may be explored. The idea of rainwater harvesting is unknown to the local people. NGOs working in rain water harvesting training and motivation may be engaged for this purpose. Pourashava may take initiative to prepare a programme for popularizing rain water harvesting among the Pourashava people.

### **13.2 Utilities**

A number of utility serves establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 1.34 acres for water supply installations, like, pump stations and other establishments related to water supply; it will be established in the proposed ward center of the Pourashava. Area for gas related facilities is not proposed in the plan, because there is no scope for installation gas facilities in this Pourashava within the planning period. If land required in future for gas related facilities will be allocated from propose urban differed area.

### **13.3 Sanitation**

As the field survey shows, the present sanitation system of the Pourashava is composed of a variety of types, like, hanging latrine, pit latrines of different types, water sealed latrines and septic tank based sanitary latrine. There is also provision development of sewerage network based on the road network of Morrelganj Pourashava. Figure 13.1 shows cross section of road showing the sewerage network along the road.

According to 2001 Population Census, about 84% of the Pourashava households had healthy sanitation. Apparently, the percentage of coverage has decreased by 15%, compared to 2001, though the absolute number of sanitary toilets has increased due to increase in the number of households.

Due to prohibitive expenditure one should not expect establishing network and treatment plant based sewerage system in the town by the Pourashava. So, for long the sanitary system of the Pourashava will remain on site. To promote healthy sanitation, Pourashava should promote low cost sanitary latrines in the town together with awareness building for healthy sanitation. It is proposed to set up public toilets in public gathering areas, like, existing and proposed bus stand, bazaar and the main town centre.

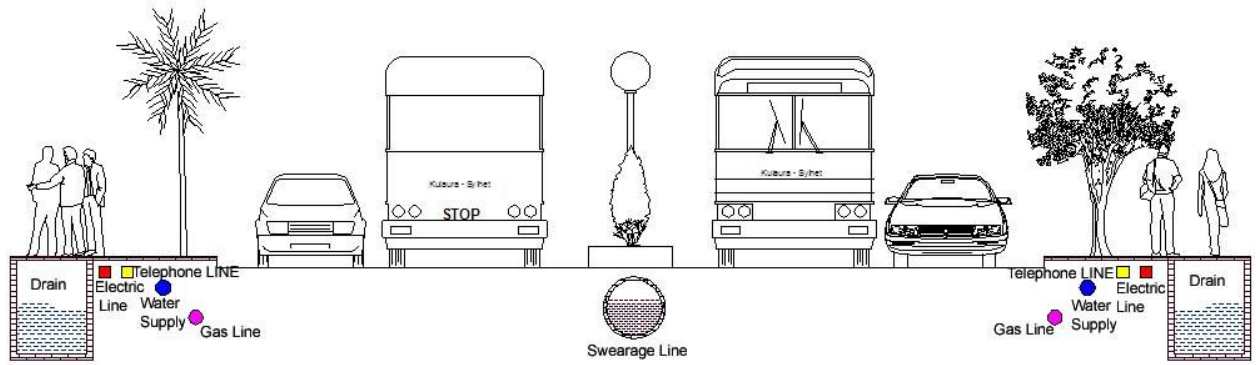


Figure 13.1: Thematic Cross Section of Road is showing different utility services along the road

### 13.4 Electricity and Gas

Power Development Board (PDB) is mainly responsible for electricity supply in the Paurashava, supported by the Rural Electrification Board (REB). PDB works for power production and distribution, while REB is responsible for distribution only. Both, PDB and REB have their own plans for power supply in the town, which is executed in phases, depending on demand for power. In its infrastructure





**Map 13.1: Urban Services Plan of Morrelganj Paurashava**



plan has shown the future power supply network of the town. The required electricity facility within the Paurashava will be provided through existing power system master plan of both REB and PDB. But the greatest problem of power supply in the entire country remains to be handicapped by the shortage of supply due to low production.

Gas network has been shown along all major roads and to the designated industrial site. A recent policy of the government forbids supply of gas for domestic purpose. So gas networks have been established along major roads. So gas networks have been established along major roads. Planning team suggests to developed underground electric and gas network which will follow the network. Figure 13.1 shows cross section of road showing underground electric line and gas line along the road.

### **13.5 Telecommunication**

The town enjoys the networks of all mobile and PSTN telecommunication companies operating in the country. Besides, there also exist landlines of BTCL, the national telephone company. Due to easy and cheaper access to mobile, the demand for land lines has decreased substantially. Planning team suggests to developed underground electric and gas network which will follow the network. Figure 13.1 shows cross section of road showing underground telephone line.

### **13.6 Community Facilities**

#### **13.6.1 Open Space Recreation**

Detail will be given in Ward Action Plan. Detailed will be given in Ward Action Plan. Table 10.17 and Table 10.18 of Chapter 10, Part-B of this report show proposed new land for new open space facilities Morrelganj Paurashava. Annexure-D shows the planning schedule of Open space and Recreational facilities in Morrelganj Paurashava.

#### **13.6.2 Market Facilities**

Detail will be given in Ward Action Plan. Table 10.13 of Chapter 10, Part-B of this report show proposed new land for new market facilities of Morrelganj Paurashava. Annexure-D shows the planning schedule of commercial facilities in Morrelganj Paurashava. Map 136.1 shows the Market facilities in Morrelganj Paurashava.

#### **13.6.3 Mosque, Eidgah and Graveyard**

Standard determined for mosque that the allocated land has already been covered by existing mosque. So, additional lad is not proposed for this purpose in this plan.

#### **13.6.4 Community Centre**

There is no municipal community centre in the town; the consultant proposes to set up one community centre in each ward center. Civic center will serve for multipurpose use including Ward Councilor Office and small scale maternity clinic cum vaccination center. Table 10.13 of Chapter 10, Part-B of this report show proposed civic center of Morrelganj Paurashava which will provide different community facilities. Annexure-D shows the planning schedule of community facilities in Morrelganj Paurashava.

### **13.6.5 Police Outpost**

Five police outposts will be set up for control of law and order in each civic center of the Paurashava. Map 13.1 shows the location of civic center.

### **13.6.6 Post Office**

There is one post office in Morrelganj Paurashava. So no further post office has been proposed. The existing post office will serve as the central post office for Morrelganj Paurashava and a few post boxes will set at different locations so that people may enjoy easy accessibility to post documents.

### **13.6.7 Fire Station**

There is one service station at Morrelganj Paurashava. So it does not require any new area.

### **13.6.8 Education**

About 16.56 acres of land have suggested for new education facilities. The facilities include one college, one vocational training center, two primary schools, one secondary school, and college vocational training institute. Detail will be given in ward action plan. Table 10.16 of Chapter 10, Part-B of this report show proposed education and research area of Morrelganj Paurashava which will provide different educational facilities. Annexure-D shows the planning schedule of education and research facilities in Morrelganj Paurashava.

### **13.6.9 Health**

Estimate shows 10 acres of land for the health complex according to recommended standard. The consultant feels that 8.98 acres additional land is required for the upazila health at Morrelganj Paurashava. Again 5.05 acres of land is required for health centre/maternity clinic. In additionally health service will also provide in each civic center. Table 10.21 of Chapter 10, Part-B of this report show proposed health service area of Morrelganj Paurashava which will provide one disable specialized hospital. Map 13.1 shows the location of health facilities in Morrelganj Paurashava.

# CHAPTER 14

## WARD ACTION PLAN

This chapter presents Part-C of the report which contains Ward Action Plan of each individual Ward. First, the issues prevailing in different Wards have been briefly described followed by description of Development Proposals in first ward action plan (1<sup>st</sup> to 5<sup>th</sup> year of planning period) for each Ward.

### 14.1 Introduction

#### 14.1.1 Background

The Ward Action Plans are prepared under the framework of Structure Plan and Urban Area Plan. The Ward Action Plans contain details of development proposals at Ward level including the problems and opportunities existing therein and also include the proposals made in the upper level plan that is in the Urban Area Plan. The Ward Action Plans have been formulated for execution within a period of 5 years.

Ward Action Plan is a vital part of the current plan package as far as spatial development and development control is concerned. Absence of Ward Action Plan not only hampers undertaking of development projects by planning authority, but also leads to uncontrolled and unwanted spatial development in the private sector. Land use zoning is also provided in the Ward Action Plan to enable detailed view of proposed land use and development.

#### 14.1.2 Content and Form of Ward Action Plan

The Ward Action Plan is detailed area plan based on the policy framework, guideline indication of Structure Plan and more detailed guideline of Urban Area Plan. The provision of Ward Action Plan is inherent in the Structure Plan with some specific purposes. The Ward Action Plan is to:

- a. Provide basic micro level infrastructure and services in the study area through systematic planning, under the framework of Structure Plan and proposals of the Urban Area Plan;
- b. Create congenial environment to promote economic activities;
- c. Improve drainage system and protect natural water channels from encroachment; and
- d. Create service centers to promote urban growth.

#### 14.1.3 Linkage with Structure and Urban Area Plan

Ward Action Plan is the 3<sup>rd</sup> component of the Master Plan package. The other two upper level components are Structure Plan and Urban Area Plan. Structure Plan lay down the framework of the future plan including strategy and the sectoral policies. The Urban Area Plan and the Ward Action Plan detail out development proposals under the framework of Structure Plan.

## **14.2 Derivation of the Ward Action Plan**

The Ward Action Plan is derived from the conceptual framework, and guidelines and strategies for development under Structure Plan and detailed proposals of Urban Area Plan. Ward Action Plan is aimed to provide detailed infrastructure plan to guide the physical development of Morrelganj town including its all economic and social activities. This plan adheres to the policy directives spelled out in the Structure Plan.

### **14.2.1 Revisiting Structure Plan and Urban Area Plan**

To guide long term growth of the Paurashava, potential locations of major development areas are identified and the Structure Plan Area is broadly classified into nine categories, namely Established Urban Area, Sub Urban Area, New Urban Area, Recreational Facility, Circulation Network, Restricted Area, Urban Peripheral Area, Agriculture Area and Water Retention Area. The Urban Area Plan is prepared under the framework of Structure Plan and the infrastructure identified for improvement and development are listed as proposals in the Urban Area Plan. The broad classification of lands in the Structure Plan and detailed proposals in the Urban Area Plan form the basis for Ward Action Plan.

### **14.2.2 Prioritization**

The prioritization of project proposals in Ward wise Action Plan are made on the basis of urgency for development depending on the needs of people and the town's requirement for infrastructure development.

### **14.2.3 Ward Wise Action Plan**

The Ward Action Plan is prepared for each of the nine Wards and is presented in order of their serial number. The Ward Action Plans are a series of detailed spatial development plans of different use and facilities. The plans comprise maps of appropriate scale supported by explanatory report. The Ward Action Plans have been formulated for execution within a period of 5 years. They do not initially cover the entire Structure Plan area. While all sub-areas will eventually require Ward Action Plan, only priority areas are to be dealt with initially. The aim of a Ward Action Plan is to prevent haphazard urban development and ensure livable environment in areas that are likely to be urbanized soon. Initially Detailed Area Plan should be covered for only those areas where action is needed immediately or where development pressure is high.

### 14.3 Ward Action Plan for Ward No. 01

#### 14.3.1 Demography

Ward No. 1 is located on the north-eastern part of the Paurashava and beside its eastern part, the river Panghuchhi flows. It has the population of below average level. As per the BBS 2001, the Ward No. 01 had a population of 2286 persons. Population projection shows 2892 population for the year 2011. For the same year, it has a gross density of 9 persons per acre and it will be 19 persons per acre in 2031. Table 14.1 shows the detail.

**Table 14.1: Population Statistics of Ward No. 01**

Item	Year		
	2001	2011	2031
Area (acre)	254.84	254.84	254.84
Population	2286	2892	4979
Density of Population (acre)	9	11	19

#### 14.3.2 Critical Issues and Opportunities of the Ward

##### Critical Issues

Ward no. 1 is medium size ward in Paurashava with dense settlement along the road way network. Here the basic facilities and infrastructures required for an urban area are not established yet. There is no systematic drainage and solid waste management facilities, and there is lack of recreational and educational facilities. Even the road network and other basic facilities were not up to the mark. Again, very low density and scattered settlements are the main obstacles for infrastructure development. Major problems and opportunities of the Ward no. 01 are described below.

##### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 8.16 km with 0.53 km katcha, 3.83 km semi-pucca and only 3.80 km pucca roads. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 11 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement, when population increases in the ward. Quality of roads on average is not satisfactory. Unpaved roads turn miserable during monsoon making movement more difficult.

##### ii. Lack of Drainage

The ward has no drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, it is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future, due to construction, the net run off area will increase and will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.



### **iii. Haphazard Development**

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area, but also its livable environment.

### **iv. Water Supply**

There is no water supply network at ward no. 01.

### **v. High Density in Settlement Area**

Present net density of Ward no. 1 in Morrelganj Paurashava is about 38 persons per acre, where present gross density is 11 persons per acre. Low lying land is main hindering to develop settlement area.

### **vi. Lack of Threshold Population for Business**

The Paurashava possesses quiet low level of population, which is not adequate to run large retail business activities. Present population size of this ward is only 2892, which will be 4979 at the end of planning period 2031; this size of population will not help grow the local economy. Besides, the average income of the people is also very low, which is not conducive to economic flourishing of the town. The higher the size of population, more demand is created for goods and services leading to more economic activities and employment.

## **Development Opportunities**

### **i. Low Density of Population**

The present gross density of population in the ward is 11 persons /acre. From environmental point of view, this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials and agricultural land can help grow small scale manufacturing in this town and agro based industry. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, and small engineering works can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital as incentive toward initiating business ventures based on local potentiality.

## **14.3.3 Ward Action Plan Proposals**

### **14.3.3.1 Review of Existing Land Use**

Ward no. 01 is mainly rural in character. Out of total 254.84 acres of land of this Ward, 30.07 acres of land i.e. 11.80% is used as agriculture. The residential use with 77.57 acres, occupies 30.44% of total land, water bodies 48.18%, Governmental Services 2.62% and circulation network 1.99%. Only .34 % of land is used as community facilities. The availability of urban green space and recreational facilities is negligible.

### **14.3.3.2 Proposed Land Use Zoning**

The category wise proposals are presented here. Table 14.2 shows the amount of land existing and proposed uses in Ward no. 1.

**Map 14.1: Land Use Plan of Ward No. 01**



#### **i. Urban Residential Zone**

Present residential of ward no. 1 is 77.57 Acres with 11 ppa gross density and about 38 ppa of net density. In 2031 gross density of this ward will be 19 ppa and net density within the existing land will be 65 ppa. Considering the existing and proposed road network and growth pattern 40.43 acres of land is proposed as urban residential zone which will cover 15.86% of total land. Here net density will be 123 ppa and gross density will be 19 ppa.

#### **ii. Rural Settlement**

About 35.24 acres of land is proposed as rural homestead.

#### **iii. Education and Research Zone**

About 1.76 acres of land is proposed as education and research zone.

#### **iv. Governmental Service**

About 8.42 acres of land is proposed as governmental service.

#### **v. Commercial Zone**

About 0.45 acre of land is proposed as commercial zone..

#### **vi. Mixed Use Zone**

There are 0.32 acres of land is proposed as mixed use zone. A ward center will establish in this ward.

#### **vii. Circulation Network**

For any type of development, circulation net work is an important facility. To improve the efficiency of transport network of the ward, more roads are proposed which will consume almost 20.64 acres of land and more than 8.10% of the total area.

#### **viii. Transport and Communication**

One Paurashava Bus Terminal is proposed for Ward no. 01. It will require 1.89 acres of land. Detail was given in Table 10.20, Chapter 10 and Part-B of this planning report.

#### **ix. Community Facilities**

Land for community facilities will be .74 acre whereas present land for this purpose in this ward is .87 acres.

#### **x. Agricultural Zone**

The Paurashava including Ward No. 01 has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. The highest amount of land of the Ward will remain for agricultural use up to the year 2031. The total area under this use has been estimated as about 12.32 acres of land covering 4.83% of the total land. Rural homestead will also perform some agricultural activities as farm, poultry or horticulture. This zone will serve as the hinterland for the town.

**Table 14.2: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 01**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	77.57	30.44	01	Urban Residential Area	40.43	15.86
				02	Rural Settlement	35.24	13.83
02	Education and Research	2.14	0.84	03	Education and Research Zone	1.76	0.69
03	Governmental Services	6.68	2.62	04	Governmental Services	8.42	3.31
04	Non Government Services	0.00	0.00	05		0	0
05	Commercial Activity	0.66	0.26	06	Commercial Zone	0.45	0.18
06	General Industrial Zone	0.15	0.06	07	General Industrial Zone	0.15	0.06
				08	Heavy Industrial Zone	0	0
08	Mixed Use	0.51	0.20	09	Mixed Use Zone	0.32	0.13
09	Circulation Network	5.06	1.99	10	Circulation Network	20.64	8.10
10	Transport and Communication	0.22	0.09	11	Transportation Facilities	2.02	0.79
11	Service Activity	3.05	1.20	12	Health Services	0.28	0.11
12	Health Services			13			
13	Community Facilities	0.87	0.34	14	Community Facilities	0.74	0.29
14	Recreational Facilities	0.00	0.00	15	Recreational Facilities	0	0
15	Historical and Heritage Site	0.00	0.00	16	Historical and Heritage Site	0	0
16	Restricted Area	0.00	0.00	17	Restricted Area	0	0
17	Agriculture	30.07	11.80	18	Agricultural Zone	12.32	4.83
18	Urban Green Space	4.73	1.86	19	Open Space	11.03	4.33
19	Water Bodies	122.78	48.18	20	Water body	112.43	44.12
20	Vacant Land	9.73	6.39	21	Utility Services	0.79	0.31
				22	Urban deferred	7.50	2.94
21	Forest	0.00	0.00	23	Forest	0	0
22	Beach	0.00	0.00	24	Beach	0	0
23	Miscellaneous	0.35	0.14	25	Miscellaneous	0.31	0.12
<b>Total</b>		<b>254.84</b>	<b>100</b>	<b>Total</b>		<b>254.84</b>	<b>100</b>

#### xi. Open Space

About 11.03 acres of land is proposed for recreational facilities. One Central park is proposed in this ward. Detail was given in Table 10.17, Chapter 10 and Part-B of this planning report.

#### xii. Water body

The plan suggests for preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The proposed waterbody area covers 112.43 acres of land which covers almost 44.12% of the total ward area.

### xiii. Urban Deferred

About 7.50 acres of land is earmarked as urban deferred.

#### 14.3.3.3 Proposed Road Infrastructure Development

A total of 8.53 km or 8533.84 meters of road development has been proposed in first ward action plan for Ward no. 01 of Morrelganj Paurashava. Length of the local road will be 4.90 km and RoW of these roads will be 15 or 20 ft which covers 57.53% of total road network development proposal. The length of tertiary road will be .69 km which covers 8.14%. Total length of secondary road will be 2.93 km and width of these roads will be 40 or 60ft for this ward. The detailed scenario of road network development proposal is given in Table 14.3.

**Table 14.3: Summary of Road Network Proposal at Ward no. 01 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length(m)	%	Length(m)	%	Length (m)	%
15,20	Local Road	4909.24	57.53	279.17	23.88	4630.07	62.87
30	Tertiary Road	694.51	8.14	307.20	26.27	387.30	5.26
50, 60	Secondary Road	2930.09	34.33	582.89	49.85	2347.20	31.87
<b>Total</b>		<b>8533.84</b>	<b>100.00</b>	<b>1169.27</b>	<b>100.00</b>	<b>7364.57</b>	<b>100.00</b>

Again a total of 1.16 km or 1169.27 meters of new road have been proposed in Ward no. 01. Table 14.3 and Table 14.4 show the details.

**Table 14.4: New Road Proposal for Ward no. 01**

Road ID.	RoW (in Ft)	Length in Meter	Road type	Remarks
R15	50	374.66	Secondary Road	
R17	60	208.23	Secondary Road	
R33	30	307.20	Tertiary Road	
R62	15	85.66	Local Road	
R64	15	64.83	Local Road	
R70	20	34.42	Local Road	
R89	15	60.48	Local Road	
R91	20	33.79	Local Road	
<b>Total</b>		<b>1169.27</b>		

A total of 7.36 km or 7364.57meters of road widening has been proposed for ward no. 01 of Morrelganj Paurashava. Among these, 4.63 km is local road, 0.38 km tertiary road, 2.34 km secondary road. Table 14.3 and Table14.5 show the details.

**Table14.5: Road Widening Proposal in first Ward Action Plan for Ward no. 01**

Road ID	Road Name	Width in ft	Length (in m)	Type of Road
R100		15	0.030	Local Road
R15	Embankment cum road	20	954.282	Local Road
R17		60	310.106	Secondary Road
R18	Fakirhat Road	15	1082.812	Local Road

Road ID	Road Name	Width in ft	Length (in m)	Type of Road
R31		60	146.308	Secondary Road
R32	Upazila Road	15	240.995	Local Road
R61		20	51.075	Local Road
R62		15	163.273	Local Road
R63		20	128.875	Local Road
R64		15	94.205	Local Road
R65		15	159.782	Local Road
R66		15	81.333	Local Road
R67		15	196.480	Local Road
R68		15	130.738	Local Road
R69		20	78.971	Local Road
R70		15	310.225	Local Road
R71		15	59.098	Local Road
R72		15	77.680	Local Road
R73		15	24.091	Local Road
R74		30	388.451	Tertiary Road
R75		20	30.805	Local Road
R76		30	61.730	Tertiary Road
R77		30	579.847	Tertiary Road
R78		15	134.861	Local Road
R79		20	71.177	Local Road
R80		15	117.298	Local Road
R81		15	159.385	Local Road
R82		20	414.498	Local Road
R83		15	124.221	Local Road
R84		50	64.244	Secondary Road
R85		15	49.785	Local Road
R86		15	76.746	Local Road
R87		15	58.795	Local Road
R88		15	29.023	Local Road
R90		15	28.530	Local Road
R96		15	337.807	Local Road
R97		60	295.240	Secondary Road
R98		20	51.768	Local Road

#### 13.4.3.4 Drainage Development Plan

There are .86 km man-made drainage systems at Ward no. 01. The existing drainage of the Ward mainly depends on the natural drainage facilities. The proposed drainage facilities will be developed based on these natural channels surrounding this ward. About 1.06 km drain as primary drain, .081 km as quaternary drain, .34 km as tertiary drain will be connected in the first ward action plan for ward no. 01 of Morrelganj Paurashava.. Table 14.6 shows the details.

**Table14.6: Proposed Drainage Development Plan Proposals of Ward 01**

Item	Length in Meter
Available Drainage	862.93
Proposed Drainage (Primary)	1068.88
Proposed Drainage (Quaternary)	81.37
Proposed Drainage (Tertiary)	343.95

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified all existing khals that need to be re-excavated to allow smooth flow of Water through them.

### 14.3.3.5 Urban Services

#### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is a major factor that influences the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposes two solid waste transfer stations in this Ward. It is recommended that home collection system is introduced in the Ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

**Table14.7: Utility and Service Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Kitchen Market	0.47	1
Central Park	7.42	1
Bus Terminal	1.89	1
Waste Transfer Station	0.2	1
Fire Service	0.59	1
Ward Center-01	1.29	1
Community Clinic	2.713	1

#### b. Water Supply

It is proposed to install a water supply system as per the design of DPHE and it will follow the proposed road network of this ward. Here it is highly encourage using the fresh water and ensure the best utilization of fresh water available from Panguchhi River and ponds through out the ward and also introduce rain water harvesting in this ward.

#### c. Sanitation

It is apprehended that the government would not be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visitors and the local people. The existing toilet of bus terminal area has to be developed as public toilet is required for the town people and as well as for the passengers waiting for departure.



**d. Education Facility**

About 1.76 acres of land is proposed as education facility.

**e. Ward Center**

A ward centre will be established in Ward no. 01. A total of 3.10 acres of area will be used for ward center at ward no. 01. The ward center having corner shop, councilor office and community center will serve this ward and people in the adjoining areas.

**Map- 14.02 Drainage and Service facility at ward no. 01**



## 14.4 Ward Action Plan for Ward No. 02

### 14.4.1 Demography

Ward no. 02 is located on the northern part of the town and between Ward No. 01 and 03. It has a very low gross density of population but moderate density of population. In 2001, the Ward had a population of 2281 persons only. Population projection shows that in the year 2011, the population of the Ward is 2886 and the density 26 persons per acre gross density. Table 14.9 shows the detail.

**Table 14.8: Population Statistics of Ward No. 02**

Item	Year		
	2001	2011	2031
Area (acre)	109.95	109.95	109.95
Population	2281	2886	4968
Density of Population (acre)	21	26	45

### 14.4.2 Critical Issues and Opportunities of the Ward

#### Critical Issues

There is shortage of basic facilities and infrastructures required for the area. There is no systematic drainage and solid waste management facilities, and the area lacks in planned recreational facilities. Even the road network and other basic facilities are not up to the mark. The very low gross density of population but moderate density of net density of population and surrounding low lying area are the main obstacle for infrastructure development in this Ward. Major problems and opportunities of the Ward no. 02 are described below.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 6.05. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in the movement, when population will increase in the Ward. The quality of roads on an average is not satisfactory in this Ward. Only about 2.27 km road is paved and 3.78 km road is unpaved.

#### ii. Lack of Drainage

The ward has no drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future, due to building construction, the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

### **iii. Haphazard Development**

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no Land Use Plan, and therefore, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area, but also its livable environment.

**Map 14.03: Land Use Plan of Ward no. 02**



#### iv. Water Supply

There is no piped water supply system in Ward no. 02.

#### v. Lack of Threshold Population for Business

The town possesses a very low level of population, which is not adequate to run large retail business activities. This size of population will not help grow the local economy. Besides, the average income of the people is also very low, which is not conducive to economic flourishing of the town. The higher the size of population, the more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

#### Development Opportunities

##### i. Low Density of Population

The present gross density of population in the ward is very low, only 21 persons/acre. From environmental point of view, this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

### 14.4.3 Ward Action Plan Proposals

#### 14.4.3.1 Review of Existing Land Use

Maximum land of this Ward is at present used for residential purpose. It occupies 55.43 acres of agricultural land covering 50.42% of the total land. Water body occupies 15.53 acres of land. About 27.05 acres of land is used for Agricultural purpose. Urban Green Space is 2.30 acres which is 2.09%. Circulation network occupies 3.50 acres of land which covers 3.19% of total land. Table 14.10 shows the details.

**Table 14.9: Existing and Proposed Land Uses of Ward No. 02**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	55.43	50.42	01	Urban Residential Area	17.00	15.47
				02	Rural Settlement	38.52	35.03
02	Education and Research	0.86	0.78	03	Education and Research Zone	0.70	0.63
03	Governmental Services	0.66	0.60	04	Governmental Services	0.64	0.58
04	Non Government Services	0.26	0.24	05	Non Government Services	0	0
05	Commercial Activity	0.88	0.80	06	Commercial Zone	0.65	0.59
06	General Industrial Zone	0.96	0.88	07	General Industrial Zone	0.87	0.79
07	Heavy Industrial Zone	0.00	0.00	08	Heavy Industrial Zone	0	0
08	Mixed Use	1.70	1.54	09	Mixed Use Zone	1.40	1.28
09	Circulation Network	3.50	3.19	10	Circulation Network	10.66	9.70
10	Transport and	0.00	0.00	11	Transportation	0	0



Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
	Communication				Facilities		
11	Service Activity	0.10	0.09	12	Health Services	0.14	0.13
12	Health Services	0.00	0.00	13			
13	Community Facilities	0.21	0.19	14	Community Facilities	0.12	0.11
14	Recreational Facilities	0.00	0.00	15	Recreational Facilities	0	0
15	Historical and Heritage Site	0.00	0.00	16	Historical and Heritage Site	0	0
16	Restricted Area	0.00	0.00	17	Restricted Area	0	0
17	Agriculture	27.02	24.57	18	Agricultural Zone	0.80	0.73
18	Urban Green Space	2.30	2.09	19	Open Space	1.85	1.68
19	Water Bodies	15.53	14.13	20	Water body	10.35	9.41
20	Vacant Land	0.00	0.00	21	Utility Services	0.01	0.00
		0.00	0.00	22	Urban deferred	25.57	23.26
21	Forest	0.00	0.00	23	Forest	0	0
22	Beach	0.00	0.00	24	Beach	0	0
23	Miscellaneous	0.54	0.49	25	Miscellaneous	0.66	0.60
<b>Total</b>		<b>109.95</b>	<b>100.00</b>		<b>Total</b>	<b>109.95</b>	<b>100.00</b>

#### 14.4.3.2 Proposed Land Use Zoning

##### i. Urban Residential Zone

Present residential of ward no. 2 is 55.43 with 26 ppa gross density and about 52 ppa of net density. In 2031 gross density of this ward will be 45 ppa and net density within the existing land will be 89 ppa. Considering the existing and proposed road way network and growth pattern about 17.00 acres of land is proposed as urban residential zone which will cover 15.47 % of total land. Here net density will be 293 ppa and gross density will be 45 ppa.

##### ii. Rural Settlement

About 38.52 acres of land is earmarked as rural homestead.

##### iii. Education and Research Zone

About 38.52 acres of land is earmarked as rural homestead.

##### iv. Commercial Zone

About 0.70 acres of land is proposed as commercial zone.

##### v. Circulation Network

For any type of development, circulation net work is an important facility. To improve the efficiency of transport network of the ward, more roads are proposed which will consume almost 10.66 acres of land and more than 9.70 % of the total area.

##### vi. Community Facilities

Total .12 acre land will use as community facilities which cover .11 % of total land of ward no. 02.

**Map 14.04: Drainage and Urban Services Plan of Ward no. 02**



#### vii. Agricultural Zone

About .80 acre of land is earmarked as Agriculture zone which will remain for 2031 and 0.73% of total land.

#### viii. Open Space

Total 1.85 acre land will use as open space which covers 1.68% of total land of ward no. 02.

#### ix. Water body

The plan suggests for preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 10.35 acres of land which covers almost 9.41 % of the total ward area.

#### x. Utility Services

A total of 0.01 acre of land is proposed for one waste transfer station.

#### 14.4.3.3 Proposed Road Infrastructure Development

A total of 5.33 km or 5327.78 meters of road development proposal have been made for Ward no. 02 of Morrelganj Paurashava. Length of the local roads is 2.62 km and width of these roads will be 20 ft covering 49.12% of the area proposed for total road network development. The total length of secondary road will be 3.48 km and width of these roads will be 40ft for this Ward. The detailed scenario of road network development proposal is given in Table 14.11.

**Table 14.10: Summary of Road Network Proposal at Ward no. 02 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
20	Local Road	2617.18	49.12	1042.89	87.14	1574.29	38.11
40	Secondary Road	185.18	3.48	0	0.00	185.18	4.48
80	Tertiary Road	2525.42	47.40	153.87	12.86	2371.55	57.41
<b>Total</b>		<b>5327.78</b>	<b>100.00</b>	<b>1196.76</b>	<b>100.00</b>	<b>4131.02</b>	<b>100.00</b>

Again, the total length of new road proposal for ward no. 02 is 1.19 km, of which 1.04 km local road and the rest secondary and tertiary road. The detailed scenario is given in Table 14.12.

**Table14.11: New Road Proposal for Ward no. 02**

Road ID	RoW (in Ft)	Length (in Meter)	Type of Road	Remarks
R33	30	153.86	Tertiary Road	
R89	15	38.26	Local Road	
R91	20	46.98	Local Road	
R92	20	122.64	Local Road	
R93	15	48.51	Local Road	
R94	15	26.93	Local Road	
R95	20	91.03	Local Road	
R100	15	425.61	Local Road	
R103	20	118.82	Local Road	
R105	15	101.01	Local Road	
R239	15	23.11	Local Road	
<b>Total</b>		<b>1196.76</b>		

Total length of road widening proposal for ward no. 02 is 4.13km. Proposed Right of Way (RoW) of road widening proposal will be 20 ft to 80 ft. Here 20 ft RoW for local road and length of road widening proposal for this ward is 1.57 km. Rest of the roads are tertiary and secondary roads, the The right –of-way (RoW) for the widening of roads varies from 40 ft to 80 ft. The detailed scenario is shown in Table 14.13.

**Table 14.12: Road Widening Proposal for Ward no. 02**

Road ID	Length (in m)	Width in ft	Type of Road
R18	185.178	60	Secondary Road
R31	1667.540	30	Tertiary Road
R32	311.549	30	Tertiary Road
R33	392.464	30	Tertiary Road
R89	31.956	15	Local Road
R91	72.926	20	Local Road
R92	59.582	20	Local Road
R93	217.737	15	Local Road
R94	174.306	15	Local Road
R95	86.233	20	Local Road
R99	60.653	15	Local Road
R100	62.836	15	Local Road
R101	320.819	20	Local Road
R102	102.727	15	Local Road
R103	174.771	20	Local Road
R104	100.019	15	Local Road
R105	70.879	15	Local Road
R106	38.848	15	Local Road

#### 14.4.3.4 Drainage Development Plan

There is only 0.87 km man-made drainage facility at Ward no. 02 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage facilities. The

proposed drainage facilities will be developed based on some natural channels. .19 km is primary, 0.48 km tertiary in ward no. 02. Table 14.14 shows the details.

**Table14.13: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	877.75
Proposed Drainage (Primary)	191.37
Proposed Drainage (Tertiary)	479.09

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified all existing khals that need to be re-excavated to allow smooth flow of Water through them.

#### 14.4.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases, the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. There is one solid waste transfer station is proposed in this Ward which will cover .005 acre of land. It is recommended that home collection system is introduced in the Ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

**Table14.14: Solid Waste Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Waste Transfer Station	0.34	2
Community Clinic	2.713	2
Ward Center-02	0.91	2

##### b. Water Supply

It is proposed to install a water supply system as per the design of DPHE and it will follow the proposed road network of this ward. Here it is highly encourage using the fresh water and ensure the best utilization of fresh water available from Baraikhali River and ponds through out the ward and also introduce rain water harvesting in this ward.

##### c. Sanitation

It is apprehended that the government would not be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet is meant for public use and as well as the passengers waiting for departure.

##### d. Education Facility

There are secondary school in this Ward with an area of 0 .86 acres.

## 14.5 Ward Action Plan for Ward No.03

### 14.5.1 Demography

Ward No. 3 is located on the north-western part of the town. In 2001, the Ward had a population of 2302 persons. Population projection shows that 2912 people will be living in the Ward in the year 2011 with a density of 13 persons per acre. Table 14.17 shows the detail.

**Table 14.16: Population Statistics of Ward No. 03**

Item	Year		
	2001	2011	2031
Area (acre)	227.02	227.02	227.02
Population	2302	2912	5015
Density of Population (acre)	10	13	22

### 14.5.2 Critical Issues and Opportunities of the Ward

#### Critical Issues

Maximum land of ward no. 03 is in agricultural use and mostly rural settlement in nature. So there is shortage of basic facilities and infrastructures are required to be developed for a healthy urban area. There is no systematic drainage and solid waste management facilities, lack of recreational facilities. Even the road network and other basic facilities were not up to the mark. Again, very low density and scattered settlements are the main obstacle infrastructure development. Major problems and opportunities of the ward no. 03 describe in below.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 6.94 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 18 ft wide. Another problem of roads is that they are meandering at their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on an average is not satisfactory. Only about 1.44 km road is paved and 5.49 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

The ward has adequate drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

### **iii. Haphazard Development**

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no affective land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

### **iv. Water Supply**

There is no water supply system in this ward.

### **v. Low Density of Population: Problem for Providing Infrastructure**

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

### **vi. Lack of Threshold Population for Business**

The town possesses a quiet low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

## **Development Opportunities**

### **i. Low Density of Population**

The present density of population in the ward is very low, only 21 persons /acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

## **14.5.3 Ward Action Plan Proposals**

### **14.5.3.1 Review of Existing Land Use**

Out of total 227.02acre of land of this Ward about 103.74 acre of land i.e. 45.70% is used as agricultural purpose. The residential land is 86.48 acres which is 38.09%. The next use is waterbody with an area of 27.19 acres of land which covers 11.98% of total land. Circulation network is 1.68% and urban green space covers 1.56% of land.



### **14.5.3.2 Proposed Land Use Zoning**

#### **i. Urban Residential Zone**

Present residential of ward no. 2 is 86.48 with 13 ppa gross density and about 34 ppa of net density. In 2031 gross density of this ward will be 22 ppa and net density within the existing land will be 58 ppa. Considering the existing and proposed road network and growth pattern 3.56 acres of land is proposed as urban residential zone which will cover 1.57% of total land. Here net density will be 22 ppa and gross density will be 58 ppa.

**Map- 14.5: Land Use Plan of Ward no. 03**



**ii. Rural Settlement**

About 83.28 acres of land has been proposed for rural homestead which will cover 36.68% of total land.

**iii. Education and Research**

About 0.51 acres of land is proposed for Education and Research.

**iv. Governmental Services**

There are not any Governmental Services for ward no. 03.

**v. Commercial Zone**

About 0.07 acres of land is proposed as commercial zone for ward no. 03.

**vi. Heavy Industrial Zone**

There is not any Heavy Industrial Zone for ward no. 03.

**vii. Mixed Use Zone**

About 0.46 acres of land is proposed for Education and Research.

**viii. Circulation Network**

For any type of development, circulation net work is an important facility. To improve the efficiency of transport network of the ward, more roads are proposed which will consume almost 13.03 acres of land and more than 5.74 % of the total area.

**ix. Transportation Facilities**

Total 1.13 acres of lands will be used for transport and communication in ward no. 03. One tampo stand and one bus bay will be established.

**x. Community Facilities**

Total 2.29 acres of lands will be used community facilities in ward no. 03.

**xi. Agriculture Zone**

About 87.29 acres of land will remain as agricultural zone for the 2031.

**xii. Open Spaces**

Total 14.78 acres land which covers 6.51 % land will be used for recreational facilities. There are one stadium will be established. Detail was given in Table 10.18, Chapter 10 and Part-B of this planning report.

**xiii. Utility Services**

There are not any **Utility Services** for ward no. 03.



**Map- 14.6: Drainage and Urban Services Plan of Ward no. 03**



#### vi. Water body

Total 19.80 acres land which covers 8.72% of total land in ward no. 03 will be reserve as water body. Detail schedule of waster body is given in Annexure-D of this report.

**Table14.17: Comparative Scenario of Existing Land Use and Proposed Land Use of Ward No. 03**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	86.48	38.09	01	Urban Residential Area	3.56	1.57
				02	Rural Settlement	83.28	36.68
02	Education and Research	0.61	0.27	03	Education and Research Zone	0.51	0.23
03	Governmental Services	0.00	0.00	04	Governmental Services	0	0
04	Non Government Services	0.19	0.08	05	Non Government Services	0	0
05	Commercial Activity	0.16	0.07	06	Commercial Zone	0.07	0.03
06	General Industrial Zone	0.00	0.00	07	General Industrial Zone	0	0
				08	Heavy Industrial Zone	0	0
07	Heavy Industrial Zone	0.00	0.00	09	Mixed Use Zone	0.46	0.20
08	Mixed Use	0.56	0.24	10	Circulation Network	13.03	5.74
09	Circulation Network	3.81	1.68	11	Transportation Facilities	1.13	0.50
10	Transport and Communication	0.10	0.04	12	Health Services	0.33	0.14
11	Service Activity	0.00	0.00				
12	Health Services	0.00	0.00	13	Community Facilities	2.29	1.01
13	Community Facilities	0.30	0.13	14	Recreational Facilities	0	0
14	Recreational Facilities	0.00	0.00	15	Historical and Heritage Site	0	0
15	Historical and Heritage Site	0.00	0.00	16	Restricted Area	0	0
16	Restricted Area	0.00	0.00	17	Agricultural Zone	87.29	38.45
17	Agriculture	103.74	45.70	18	Open Space	14.78	6.51
18	Urban Green Space	3.53	1.56	19	Water body	19.80	8.72
19	Water Bodies	27.19	11.98	20	Utility Services	0	0
20	Vacant Land	0.00	0.00	21	Urban deferred	0	0
21	Forest	0.00	0.00	22	Forest	0	0
22	Beach	0.00	0.00	23	Beach	0	0
23	Miscellaneous	0.37	0.16	24	Miscellaneous	0.50	0.22
<b>Total</b>		<b>227.02</b>	<b>100.00</b>	<b>Total</b>		<b>227.02</b>	<b>100.00</b>

#### 14.5.3.3 Proposed Road Infrastructure Development

Total 6.75 km or 6754.75 meters road development proposal have been proposed in first ward action plan for war no. 03 of Morrelganj Paurashava. Length of the tertiary road will be 3.32 km and RoW of these roads will be 30 ft and it covers 49.22% of total road network development proposal. Total length of primary road will be 0.30 km and RoW of these roads will be 60 to 80ft for this ward. Detail scenario of road network development proposal is given in table 14.19.



**Table 14.18: Summary of Road Network Proposal at Ward no. 03 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
15-20	Local Road	3133.02	46.38	550.93	74.07	2582.09	42.96
40-60	Secondary Road	296.78	4.39	0.00	0.00	296.78	4.94
20-30	Tertiary Road	3324.95	49.22	192.82	25.93	3132.13	52.11
<b>Total</b>		<b>6754.75</b>	<b>100.00</b>	<b>743.75</b>	<b>100.00</b>	<b>6011.00</b>	<b>100.00</b>

Again length of new road for ward no. 03 is 0.74 km. Of these 74.07% road will be local roads and rests of them are tertiary road. Detail shows in the Table 14.20.

**Table 14.19: New Road Proposal for Ward no. 03**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R34	30	158.02	Tertiary Road	
R51	30	34.80	Tertiary Road	
R110	20	123.63	Local Road	
R112	20	293.32	Local Road	
R116	20	133.99	Local Road	
<b>Total</b>		<b>743.75</b>		

Total length of road widening proposal for ward no. 03 is 6.01 km. Detail shows in the Table 14.21.

**Table 14.20: Road Widening Proposal for Ward no. 03**

Road ID	Width in ft	Length (in m)	Type of Road
R18	60	296.779	Secondary Road
R34	30	1379.270	Tertiary Road
R37	35	812.429	Tertiary Road
R38	30	939.915	Tertiary Road
R51	30	0.515	Tertiary Road
R107	15	187.258	Local Road
R108	20	223.990	Local Road
R109	20	272.518	Local Road
R110	20	70.678	Local Road
R111	15	122.926	Local Road
R112	20	421.825	Local Road
R113	15	132.926	Local Road
R114	15	149.123	Local Road
R115	15	96.442	Local Road
R116	20	176.552	Local Road
R117	15	80.392	Local Road
R118	20	201.374	Local Road
R119	20	194.449	Local Road
R240	15	251.640	Local Road
		<b>6011.001</b>	

#### 14.5.3.4 Drainage Development Plan

There is only .12 km manmade drainage facility at ward no. 03 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage facilities. Table 14.22 shows the detail.

**Table 14.21: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	125.13

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified that the existing khals need to be re-excavated for the smooth flow of water through them.

#### 14.5.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposes waste transfer station with 0.68 acre of land. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

**Table 14.22: Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Tempo Stand	0.46	3
Community Clinic	2.713	3
Bus Bay	. 0.59	3
Stadium	12.74	3
Central Eidgah	2.05	3
Ward Center-03	0.59	3

##### b. Water Supply

It is proposed to install a water supply system as per the design of DPHE and it will follow the proposed road network of this ward. Here it is highly encourage using the fresh water and ensure the best utilization of fresh water available from Baraikhali Khal and ponds through out the ward and also introduce rain water harvesting in this ward.

##### c. Sanitation

It is apprehended that there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

##### d. Education Facility

About 0.51 acres of land is proposed for Education and Research.

## 14.6 Ward Action Plan for Ward No.4

### 14.6.1 Demography

Ward No. 4 is located on the western part of the town. In 2001 the Ward had a population of 2600 persons. Population projection shows that 3289 people will be living in the Ward in the year 2011 with a density of 12 persons per acre. Table 14.25 shows the detail.

**Table 14.23: Population Statistics of Ward No. 04**

Item	Year		
	2001	2011	2031
Area (acre)	271.99	271.99	271.99
Population	2600	3289	5664
Density of Population (acre)	9	12	21

### 14.6.2 Critical Issues and Opportunities of the Ward

Ward no. 04 is located on the western south side of the Paurashava. Land use of this ward is mostly agricultural in nature and most of the settlement is rural in nature. There is no systematic drainage and solid waste management facilities, lack of recreational and educational facilities. Even the road network and other basic facilities were not up to the mark. Again, very low density and scattered settlements are the main obstacle infrastructure development. Major problems and opportunities of the ward no. 04 describe in below.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 11.9 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 10 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only about 1.29 km road is paved and 10.63 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

The ward has no drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

#### iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use

plan, no adherences to building constructions are observed. This is not only destroying the aesthetic beauty of the area but also its livable environment.

#### **iv. Water Supply**

The water supply network is not established yet in this ward.

#### **v. Low Density of Population: Problem for Providing Infrastructure**

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

#### **vi. Lack of Threshold Population for Business**

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

### **Development Opportunities**

#### **i. Low Density of Population**

The present density of population in the ward is medium, only 20persons/acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

#### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive. There is also have the scope of development ago based small scale industry.

### **14.6.3 Ward Action Plan Proposals**

#### **14.6.3.1 Review of Existing Land Use**

Most of the lands of this ward are used as agricultural use. Out of total 271.99 acre 81.52 acre of land i.e. 29.97% is used as agricultural use. The residential land is 136.99 acres which covers 50.37% of total land. 11.47 acres of lands are used for Urban Green Space which occupies 4.22% of total land.

#### **14.6.3.2 Proposed Land Use Zoning**

##### **i. Urban Residential Zone**

Present residential of ward no. 4 is 136.99 with 12 ppa gross density and about 24 ppa of net density. In 2031 gross density of this ward will be 21 ppa and net density within the existing land will be 42 ppa. Considering potentiality and growth pattern about 28.96 acres

land is proposed for urban residential zone, which will cover 10.65% of total land. Here net density will be 195 ppa and gross density will be 22 ppa.

#### **14.7: Land Use Plan of Ward No. 04**



## **ii. Rural Settlement**

About 98.04 acres of land has been proposed for rural homestead which will cover 36.04 % of total land.

## **iii. Education and Research Zone**

About 11.07 acres of land is proposed for a primary school and a high school. This will be established on third ward action plan. Detail was given in Table 10.17, Chapter 10 and Part-B of this planning report.

## **iv. General Industrial Zone**

About 0.17 acre of land is proposed for Government office in ward no. 04 of Morrelganj Paurashava.

## **v. Commercial Zone**

About 1.01 acres of land is proposed for commercial zone in ward no. 04 of Morrelganj Paurashava.

## **vi. Mixed Use Zone**

About 0.31 acres of land is proposed as mixed use zone in this ward.

## **vii. Circulation Network**

Total 23.47 acres land will use for circulation network which covers 8.63% total land of this ward.

## **viii. Transport Facilities**

About 0.56 acres of land is proposed for transport facilities.

## **ix. Community Facilities**

Total 1.24 acre land will use as community facilities which covers 0.45 % land of ward no. 04.

## **x. Agricultural Zone**

Only 63.05 acre land which covers 23.18 % of total land of the ward 04 of Morrelganj Paurashava will be use as agriculture use.

## **xi. Open Space**

About 16.49 acres of land is proposed for recreational facilities. There is one Neighborhood Park, two play ground is proposed for this ward. Detail was given in Table 10.18, Chapter 10 and Part-B of this planning report.

## **xii. Water body**

Total 18.95 acres land which covers 6.97 % land of ward no. 04 will be reserve as water body up to the planning period 2031.



### xiii. Utility Services

One water treatment plant is proposed in this ward with an area of 7.49 acres of land. Table 14.26 shows the detail.

**Table 14.24: Comparative Existing Land Use and Proposed Land Use of Ward No. 04**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	136.99	50.37	01	Urban Residential Area	28.96	10.65
				02	Rural Settlement	98.04	36.04
02	Education and Research	1.36	0.50	03	Education and Research Zone	11.07	4.07
03	Governmental Services	0	0	04	Governmental Services	0	0
04	Non Government Services	0.15	0.05	05	Non Government Services	0	0
05	Commercial Activity	1.46	0.54	06	Commercial Zone	1.01	0.37
06	Manufacturing and Processing activity	0.18	0.07	07	General Industrial Zone	0.17	0.06
				08	Heavy Industrial Zone	0	0
07	Heavy Industrial Zone	0	0	08	Heavy Industrial Zone	0	0
08	Mixed Use	0.47	0.17	09	Mixed Use Zone	0.31	0.11
09	Circulation Network	7.20	2.65	10	Circulation Network	23.47	8.63
10	Transport and Communication	0.15	0.06	11	Transportation Facilities	0.56	0.21
11	Service Activity	0	0	12	Health Services	0.77	0.28
12	Health Services	0	0				
13	Community Facilities	0.50	0.18	13	Community Facilities	1.24	0.45
14	Recreational Facilities	0	0	14	Recreational Facilities	0	0
15	Historical and Heritage Site	0	0	15	Historical and Heritage Site	0	0
16	Restricted Area	0	0	16	Restricted Area	0	0
17	Agriculture	81.52	29.97	17	Agricultural Zone	63.05	23.18
18	Urban Green Space	11.47	4.22	18	Open Space	16.49	6.06
19	Water Bodies	30.21	11.11	19	Water body	18.95	6.97
20	Vacant Land	0	0	20	Utility Services	7.49	2.75
				21	Urban deferred	0	0
21	Forest	0	0	22	Forest	0	0
22	Beach	0	0	23	Beach	0	0
23	Miscellaneous	0.33	0.12	24	Miscellaneous	0.43	0.16
<b>Total</b>		<b>271.99</b>	<b>100.00</b>	<b>Total</b>		<b>271.99</b>	<b>100.00</b>

**Map 14.8: Drainage and Urban Services Plan for Ward no. 04**



### 14.6.3.3 Proposed Road Infrastructure Development

Total 11.14 km or 11147.79meters road development proposal have been proposed in first action plan for war no. 04 of Morrelganj Paurashava. Length of the local road will be 5.69 km and width of these roads will be 20 ft and it covers 51.02% of total road network development proposal. Length of tertiary road for this ward will be 3.77 km. Total length of secondary road will be 1.69 km and width of these roads will be 40ft for this ward. Detail scenario of road network development proposal was given in Table 14.27.

**Table 14.25: Summary of Road Network Proposal at Ward no. 04 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
20	Local Road	5688.07	51.02	878.32	99.83	4809.75	46.84
30	Tertiary Road	3768.85	33.81	1.52	0.17	3767.33	36.69
40	Secondary Road	1690.88	15.17	0.00	0.00	1690.88	16.47
<b>Total</b>		<b>11147.79</b>	<b>100.00</b>	<b>879.83</b>	<b>100.00</b>	<b>10267.96</b>	<b>100.00</b>

Again length of new road for wad no. 04 is .88 km. Of these 99.83% road will be local road and rests of them are secondary and tertiary road. Detail shows in the Table 14.28.

**Table 14.26: New Road Proposal for Ward no. 04**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R39	30	1.52	Tertiary Road	
R123	15	62.51	Local Road	
R124	15	23.17	Local Road	
R127	20	138.33	Local Road	
R134	20	212.03	Local Road	
R136	20	53.74	Local Road	
R140	20	189.53	Local Road	
R142	20	156.30	Local Road	
R145	20	42.71	Local Road	
<b>Total</b>		<b>879.83</b>		

Again length of road widening proposal for wad no. 04 is 10.26 km. Of these 46.84% road will be local road and rests of them are tertiary and secondary road. Detail shows in the Table 14.29.

**Table 14.27: Road Widening Proposal for Ward no. 04**

Road ID	RoW in Ft	Length in Meter	Road type
R18	60	23.099	Secondary Road
R19	45	147.017	Secondary Road
R25	45	1520.764	Secondary Road
R36	35	1272.206	Tertiary Road
R39	30	689.535	Tertiary Road

Road ID	RoW in Ft	Length in Meter	Road type
R40	30	1770.156	Tertiary Road
R51	30	35.431	Tertiary Road
R119	20	40.205	Local Road
R120	15	27.284	Local Road
R121	15	93.655	Local Road
R122	15	48.332	Local Road
R123	15	50.947	Local Road
R124	15	105.007	Local Road
R125	15	59.410	Local Road
R126	20	431.766	Local Road
R127	15	70.176	Local Road
R128	20	258.836	Local Road
R129	15	92.764	Local Road
R130	15	78.174	Local Road
R131	15	107.974	Local Road
R132	15	171.075	Local Road
R133	20	202.656	Local Road
R134	20	110.047	Local Road
R135	15	47.522	Local Road
R136	20	180.051	Local Road
R140	20	98.979	Local Road
R142	20	140.825	Local Road
R145	20	122.943	Local Road
R146	15	47.597	Local Road
R147	15	63.880	Local Road
R148	20	202.896	Local Road
R149	20	196.243	Local Road
R183	15	68.621	Local Road
R184	15	150.916	Local Road
R185	20	184.261	Local Road
R186	15	512.979	Local Road
R187	15	138.388	Local Road
R188	15	112.011	Local Road
R189	20	213.872	Local Road
R244	15	379.457	Local Road
Total		10267.957	

#### 14.6.3.4 Drainage Development Plan

About 0.24 .km man made drainage facility is available at ward no. 04 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage. The proposed drainage facilities will be developed based on this natural channel. Table 14.30 shows the detail.

**Table 14.28: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	239.28

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

#### 14.6.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

**Table 14.29: Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Central Shahid Minar	0.52	4
Shahid Smriti Soudha	0.4	4
Secondary School	8.19	4
Playground	1.3	9
Playground	2.88	4
Playground	3.16	4
Park	5.59	4
Neighborhood Park	0.37	4
Waste Dumping Ground	6.97	4
Waste Transfer Station	0.15	4
Fuel Pump	0.17	4
Community Clinic	2.713	4
Ward Center-04	1.184	04

##### b. Water Supply

It is proposed to install a water supply system as per the design of DPHE and it will follow the proposed road network of this ward. Here it is highly encourage using the fresh water and ensure the best utilization of fresh water available from Nobboi Roshi River and ponds through out the ward and also introduce rain water harvesting in this ward.

##### c. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

## 14.7 Ward Action Plan for Ward No.5

### 14.7.1 Demography

Ward No. 5 is located on the middle part of the town. In 2001, the Ward had a population of 2870

Persons. Population projection shows that 3631 people will be living in the year 2011 with a density of 61 persons per acre only. Table 14.33 shows the detail.

**Table 14.30: Population Statistics of Ward No. 05**

Item	Year		
	2001	2011	2031
Area (acre)	59.28	59.28	59.28
Population	2870	3631	6252
Density of Population (acre)	48	61	105

### 14.7.2 Critical Issues and Opportunities of the Ward

#### Critical Issues

Ward No. 5 is one of the most important areas of the Paurashava. The main commercial area is located in this ward. Narrow roads, traffic congestion, lack of adequate drainage facilities, absent of water supply network, unplanned and haphazard development are main feature of this ward. Following are the major problems and opportunities of the ward.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 5.05 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 25 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only about 2.73 km road is paved and 2.30 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

#### iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

#### **iv. Water Supply**

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. Moreover, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

#### **Development Opportunities**

##### **i. Density of Population**

The present gross density of population in the ward is quiet low, 61 persons /acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

##### **ii. Potential for Small Scale Manufacturing**

Cheap labor, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

### **14.7.3 Ward Action Plan Proposals**

#### **14.7.3.1 Review of Existing Land Use**

This ward is rural in character. Out of total 59.28 acre of land 39.66 acre of is used in residential purpose which occupy 66.91% of total land. Water Body is 12.90%, Commercial Activity consists 4.03% of total land. The Mixed Use is 6.73%, circulation network is 5.37%. Other facilities are almost absent here.

#### **14.7.3.2 Proposed Land Use Zoning**

##### **i. Urban Residential Zone**

About 39.13 acres of land is proposed for urban residential zone.





**Map 14.9: Land Use Plan of Ward No. 05**



## ii. Education and Research

About 0.57 acre of land is proposed for education and research zone. Detail was given in Table 10.17, Chapter 10 and Part-B of this planning report.

## iii. Circulation Network

Total 7.86acres land will use as circulation network which cover 13.26% of total land of ward no. 05 of Morrelganj Paurashava.

## iv. Community Facilities

Total 0.54 acre land will use for provide community facilities which cover 0.90% of total land of ward no. 05 of Morrelganj Paurashava.

## v. Open Space

About 0.10 acres of land is proposed for open space.

## vi. Water body

Total 5.22acres land will preserve as water body cover 8.80 % of total land of ward no. 05 of Morrelganj Paurashava. Table 14.34 shows the detail.

**Table 14.31: Comparative Existing Land Use and Proposed Land Use of Ward No. 05**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	39.66	66.91	01	Urban Residential Area	39.13	66.00
				02	Rural Settlement	0.00	0.00
02	Education and Research	0.68	1.15	03	Education and Research Zone	0.57	0.96
03	Governmental Services	0.08	0.14	04	Governmental Services	0.07	0.12
04	Non Government Services	0.15	0.25	05	Non Government Services	0.00	0.00
05	Commercial Activity	2.39	4.03	06	Commercial Zone	1.76	2.96
06	General Industrial Zone	0.24	0.40	07	General Industrial Zone	0.16	0.27
				08	Heavy Industrial Zone	0.00	0.00
08	Mixed Use	3.99	6.73	09	Mixed Use Zone	3.16	5.33
09	Circulation Network	3.18	5.37	10	Circulation Network	7.86	13.26
10	Transport and Communication	0.00	0.00	11	Transportation Facilities	0.00	0.00
11	Service Activity	0.12	0.21	12	Health Services	0.06	0.10
12	Health Services	0.00	0.00				
13	Community Facilities	0.57	0.96	13	Community Facilities	0.54	0.90
14	Recreational Facilities	0.00	0.00	14	Recreational Facilities	0.00	0.00
15	Historical and Heritage Site	0.00	0.00	15	Historical and Heritage Site	0.00	0.00
16	Restricted Area	0.00	0.00	16	Restricted Area	0.00	0.00
17	Agriculture	0.00	0.00	17	Agricultural Zone	0.00	0.00
18	Urban Green Space	0.21	0.36	18	Open Space	0.10	0.17
19	Water Bodies	7.65	12.90	19	Water body	5.22	8.80
20	Vacant Land	0.09	0.15	20	Utility Services	0.25	0.42
				21	Urban deferred	0.00	0.00
21	Forest	0.00	0.00	22	Forest	0.00	0.00
22	Beach	0.00	0.00	23	Beach	0.00	0.00
23	Miscellaneous	0.27	0.45	24	Miscellaneous	0.42	0.70
<b>Total</b>		<b>59.28</b>	<b>100.00</b>	<b>Total</b>		<b>59.28</b>	<b>100.00</b>



**Map 14.10: Drainage and Urban Services Plan for Ward no. 05**



### 14.7.3.3 Proposed Road Infrastructure Development

Total 4.40 km or 4402.58 meters road development proposal have been proposed in first ward action plan for war no. 05 of Morrelganj Paurashava. Length of the local road will be 2.83 km and width of these roads will be 20 ft and it covers 100% of total road network development proposal. Detail scenario of road network development proposal was given in Table 14.35.

**Table 14.32: Summary of Road Network Proposal at Ward no. 05 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
15-20	Local Road	2830.29	64.29	339.58	68.41	2490.70	63.76
30-35	Tertiary Road	1523.65	34.61	108.20	21.80	1415.45	36.24
50	Secondary Road	48.64	1.10	48.64	9.80	0.00	0.00
<b>Total</b>		<b>4402.58</b>	<b>100.00</b>	<b>496.43</b>	<b>100.00</b>	<b>3906.15</b>	<b>100.00</b>

Again length of new road for wad no. 05 is .49 km. Of these 68.41% road will be local road and rests of them are secondary and tertiary road. Detail shows in the Table 14.36.

**Table14.33: New Road Proposal for Ward no. 05**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R16	50	48.64	Secondary Road	
R34	30	108.20	Tertiary Road	
R136	20	20.84	Local Road	
R142	20	168.15	Local Road	
R145	20	28.22	Local Road	
R163	20	122.37	Local Road	
Total		496.43		

Total length of road widening proposal for ward no 05 is 3.9 km. Detail shows in table 14.37.

**Table 14.34: Road Widening Proposal for Ward no. 05**

Road ID	Width in ft	Length (in m)	Type of Road
R35	35	325.19	Tertiary Road
R36	35	279.42	Tertiary Road
R42	30	240.14	Tertiary Road
R43	30	255.11	Tertiary Road
R44	30	315.59	Tertiary Road
R137	15	97.29	Local Road
R138	15	136.52	Local Road
R139	15	189.23	Local Road
R140	20	572.27	Local Road
R141	15	207.51	Local Road
R143	15	162.41	Local Road



R144	15	82.65	Local Road
R145	20	65.33	Local Road
R148	20	139.40	Local Road
R150	15	116.14	Local Road
R162	20	286.94	Local Road
R163	20	220.45	Local Road
R164	15	106.20	Local Road
R246	15	36.33	Local Road
R247	15	23.34	Local Road
R249	15	17.46	Local Road
R250	15	31.25	Local Road
		3906.15	

#### 14.7.3.4 Drainage Development Plan

There is 1.92 km manmade drainage facility at ward no. 05 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage facilities. Table 14.38 shows the detail.

**Table 14.35: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	1929.78
Proposed Drainage (Primary)	1123.47

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

#### 14.7.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. Table 14.39 shows the detail.

**Table 14.36: Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Waste Transfer Station	0.09	5
Ward Center-05	0.961	5

**b. Water Supply**

Water supply lines in this ward will be established along all categories of roads as per the growth of the settlement from this water treatment plan. Water supply network supply will be established at 2nd phase of water supply installation in Morrelganj Paurashava.

**c. Sanitation**

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

## 14.8 Ward Action Plan for Ward No.6

### 14.8.1 Demography

Ward No. 6 is located on the south-western part of the town. In 2001, the Ward had a population of 2929 persons. Population projection shows that 3706 people will be living in the year 2011 with a density of 15 persons per acre only. Table 14.40 shows detail.

**Table 14.37: Population Statistics of Ward No. 06**

Item	Year		
	2001	2011	2031
Area (acre)	245.59	245.59	245.59
Population	2929	3706	6382
Density of Population (acre)	12	15	26

### 14.8.2 Critical Issues and Opportunities of the Ward

Ward no. 06 is located on the south-western part of the Paurashava. Land use of this ward is mostly agricultural in nature and most of the settlement is rural in nature. There is no systematic drainage and solid waste management facilities, lack of recreational and educational facilities. Even the road network and other basic facilities were not up to the mark. Again, very low density and scattered settlements are the main obstacle infrastructure development. Major problems and opportunities of the ward no. 04 describe in below.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 8.13 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 10 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only about 1.42 km road is paved and 6.71 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

The ward has no drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

#### iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use

plan, no adherences to building constructions are observed. This is not only destroying the aesthetic beauty of the area but also its livable environment.

#### **iv. Water Supply**

The water supply network is not established yet in this ward.

#### **v. Low Density of Population: Problem for Providing Infrastructure**

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

#### **vi. Lack of Threshold Population for Business**

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

### **Development Opportunities**

#### **i. Low Density of Population**

The present density of population in the ward is medium, only 20persons/acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

#### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive. There is also have the scope of development ago based small scale industry.

### **14.8.3 Ward Action Plan Proposals**

#### **14.8.3.1 Review of Existing Land Use**

Most of the land of this ward is residential. About 93.26 acres of lands are using as residential land which is occupied 37.97 % of the total land. About 9.05% is water body, 0.08acres of land is commercial use, 121.34 acres are agricultural use, about 2.07% of land is using as circulation network, 1.25% land is laid Urban Green Space. The other facilities are in minimum amount.

#### **14.7.3.2 Proposed Land Use Zoning**

##### **i. Rural Settlement**

Present residential of ward no. 6 is 93.26 with 15 ppa gross density and about 40 ppa of net density. In 2031 gross density of this ward will be 26 ppa and net density within the

existing land will be 69 ppa. Considering potentiality and growth pattern about 94.19 acres land is proposed for urban residential zone, which will cover 38.35% of total land. Here net density will be 68 ppa.

**ii. Education and Research Zone**

About 0.27 acre of land is proposed for education and research zone which covers 0.11 % total land of ward no. 06. Detail was given in Table 10.17, Chapter 10 and Part-B of this planning report.

**iii. Commercial Zone**

About 0.04 acres of land is proposed for commercial zone. This will be the main commercial area of Morrelganj Paurashava. Detail was given in Table 10.13, Chapter 10 and Part-B of this planning report.

**Map 14.11: Land Use Plan of Ward no. 06**



**Table 14.38: Existing and Proposed Land Uses of Ward No. 06**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	93.26	37.97	01	Urban Residential Area	0.00	0.00
				02	Rural Settlement	94.19	38.35
02	Education and Research	0.30	0.12	03	Education and Research Zone	0.27	0.11
03	Governmental Services	0.00	0.00	04	Governmental Services	0.00	0.00
04	Non Government Services	0.00	0.00	05	Non Government Services	0.00	0.00
05	Commercial Activity	0.08	0.03	06	Commercial Zone	0.04	0.01
06	General Industrial Zone	0.00	0.00	07	General Industrial Zone	0.00	0.00
07	Heavy Industrial Zone	0.00	0.00	08	Heavy Industrial Zone	0.00	0.00
08	Mixed Use	0.00	0.00	09	Mixed Use Zone	0.00	0.00
09	Circulation Network	5.08	2.07	10	Circulation Network	16.15	6.57
10	Transport and Communication	0.00	0.00	11	Transportation Facilities	0.11	0.04
11	Service Activity	0.00	0.00	12	Health Services	0.15	0.06
12	Health Services	0.00	0.00				
13	Community Facilities	0.23	0.09	13	Community Facilities	2.04	0.83
14	Recreational Facilities	0.00	0.00	14	Recreational Facilities	0.00	0.00
15	Historical and Heritage Site	0.00	0.00	15	Historical and Heritage Site	0.00	0.00
16	Restricted Area	0.00	0.00	16	Restricted Area	0.00	0.00
17	Agriculture	121.34	49.41	17	Agricultural Zone	117.39	47.80
18	Urban Green Space	3.07	1.25	18	Open Space	1.05	0.43
19	Water Bodies	22.23	9.05	19	Water body	14.22	5.79
20	Vacant Land	0.00	0.00	20	Utility Services	0.00	0.00
		0.00	0.00	21	Urban deferred	0.00	0.00
21	Forest	0.00	0.00	22	Forest	0.00	0.00
22	Beach	0.00	0.00	23	Beach	0.00	0.00
23	Miscellaneous	0.00	0.00	24	Miscellaneous	0.00	0.00
	<b>Total</b>	<b>245.59</b>	<b>100.00</b>		<b>Total</b>	<b>245.59</b>	<b>100.00</b>

**iv. Circulation Network**

Total 16.15 acres of land is proposed for circulation network of ward no. 06 of Morrelganj Paurashava, which cover 6.57 % of total land of this ward.

**v. Community Facilities**

Total 2.04 acres of land is proposed for circulation network of ward no. 06 of Morrelganj Paurashava, which cover 0.83% of total land of this ward.





**Map 14.12: Drainage and Urban Services Plan for ward no. 06**



**vi. Agriculture Zone**

Total 117.39 acres of land is earmarked as agricultural zone which cover 47.80 % of total land of this ward.

**vii. Open Space**

Total 1.05 acre of land is proposed for recreational facilities.

**viii. Water body**

Total 14.22 acres of land will reserve as water body which cover 5.79% total land of the ward no. 06 of Morrelganj Paurashava.

**14.8.3.3 Proposed Road Infrastructure Development**

Total 7.45 km road development proposal have been proposed for war no. 06 in first ward action plan of Morrelganj Paurashava. Length of the local road will be 4.01km and RoW of these roads will be 20 ft and it covers 51.85% of total road network development proposal. Total length of tertiary road will be 1.22 km and RoW of these roads will be 30ft for this ward. Detail scenario of road network development proposal was given in table 14.42.

**Table 14.39: Summary of Road Network Proposal at Ward no. 06 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length(m)	%	Length(m)	%	Length(m)	%
15-20	Local Road	4014.45	53.84	448.12	100	3566.33	50.89
30-35	Tertiary Road	2501.46	33.55	0	0	2501.46	35.69
40-45	Secondary Road	940.46	12.61	0	0	940.46	13.42
<b>Total</b>		<b>7456.37</b>	<b>100</b>	<b>448.12</b>	<b>100</b>	<b>7008.25</b>	<b>100.00</b>

Again length of new road for wad no. 06 is 0.44 km. Of these 100% road will be local road. Detail shows in the Table 14.43.

**Table 14.40: New Road Proposal for Ward no. 06**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R197	20	240.085	Local Road	
R200	20	66.434	Local Road	
R201	15	25.492	Local Road	
R203	15	32.376	Local Road	
R241	15	83.737	Local Road	
Total		448.124		

Total length of road widening proposal for ward no 06 is 7.0 km. Detail shows in Table 14.44.

**Table 14.41: Road Widening Proposal for Ward no. 06**

Road ID	Width in ft	Length (in m)	Type of Road
R19	45	1684.653	Secondary Road
R20	40	15.243	Secondary Road
R21	40	801.562	Secondary Road
R41	30	810.908	Tertiary Road
R46	30	129.554	Tertiary Road
R151	20	200.153	Local Road
R152	15	130.685	Local Road
R155	15	77.191	Local Road
R156	20	199.507	Local Road
R177	20	95.101	Local Road
R190	20	156.629	Local Road
R191	15	187.228	Local Road
R192	20	235.743	Local Road
R193	15	61.753	Local Road
R194	15	91.511	Local Road
R195	20	1275.724	Local Road
R196	15	44.369	Local Road
R197	20	115.987	Local Road
R198	15	63.934	Local Road
R199	15	122.703	Local Road
R200	20	48.328	Local Road
R201	15	59.610	Local Road
R203	15	32.956	Local Road
R241	15	72.826	Local Road
R242	15	124.558	Local Road
R243	15	109.550	Local Road
R245	20	60.279	Local Road
Total		7008.245	

#### 14.8.3.4 Drainage Development Plan

There is no manmade drainage facility at ward no. 06 of Morrelganj Paurashava. Re-excavate of existing khals serve as primary drains and total drains need of this ward. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

#### 14.8.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future.

The consultant proposes solid waste transfer stations in this ward. Table 14.46 shows the detail.

**Table 14.42: Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Waste Transfer Station	0.09	6
Central Graveyard	1.8	6
Tempo Stand	0.11	6
Community Clinic	2.713	6
Ward Center-06	1.16	06

**b. Water Supply**

It is proposed to install a network based water supply system by exploring fresh water from Panguchhi River. Water supply lines in this ward will be established along all categories of roads as per the growth of the settlement from this water treatment plan. Water supply network supply will be established at 1<sup>st</sup> phase of water supply installation in Morrelganj Paurashava.

**c. Sanitation**

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

**d. Education Facility**

There is no additional land proposed for education facilities in ward no. 06.

## 14.9 Ward Action Plan for Ward No.7

### 14.9.1 Demography

Ward no.7 is located on the southern part of the town. In 2001, the Ward had a population of 2475

Persons. Population projection shows that 3131 people will be living in the Ward in the year 2011. Table 14.47 shows the details.

**Table 14.43: Population Statistics of Ward No. 07**

Item	Year		
	2001	2011	2031
Area (acre)	231.21	231.21	231.21
Population	2475	3131	5392
Density of Population (acre)	11	13	23

### 14.9.2 Critical Issues and Opportunities of the Ward

#### Critical Issues

Ward No. 7 is one of the most important areas of the Paurashava. The main commercial area is located in this ward. Narrow roads, traffic congestion, lack of adequate drainage facilities, absent of water supply network, unplanned and haphazard development are main feature of this ward. Following are the major problems and opportunities of the ward.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 7.15 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 25 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only about 1.63 km road is paved and 5.52 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

#### iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

#### **iv. Water Supply**

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. Moreover, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

#### **Development Opportunities**

##### **i. Density of Population**

The present gross density of population in the ward is quiet low, 13 persons /acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

##### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

### **14.9.3 Ward Action Plan Proposals**

#### **14.9.3.1 Review of Existing Land Use**

Out of total 231.21 acres of land about 54.31% is used as waterbody. Residential occupy about 32.40% land of the ward. About 6.19% of total land is laid Education & Research. About 2.40% land is used as Agriculture purpose. About 4.00 acre of land is used as Circulation Network.

#### **14.9.3.2 Proposed Land Use Zoning**

##### **i. Urban Residential Zone**

About 70.02 acres of land is proposed for urban residential zone which cover only 30.28% total land of ward no. 07, Morrelganj Paurashava. Present residential land of this ward is 74.91 acres with 13 persons per acre gross density and net residential density of this ward is 42 ppa (persons per acre). At the end of the planning period 2031 net density within the urban residential zone will be 44 ppa.





**Map 14.13: Land Use Plan of Ward no. 07**



**Table 14.44: Comparative Existing Land Use and Proposed Land Use of Ward No. 07**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	74.91	32.40	01	Urban Residential Area	70.02	30.28
				02	Rural Settlement	1.66	0.72
02	Education and Research	14.32	6.19	03	Education and Research Zone	9.54	4.13
03	Governmental Services	0.37	0.16	04	Governmental Services	0.97	0.42
04	Non Government Services	0.07	0.03	05	Non Government Services	0	0
05	Commercial Activity	1.00	0.43	06	Commercial Zone	0.97	0.42
06	General Industrial Zone	0	0	07	General Industrial Zone	0	0
				08	Heavy Industrial Zone	0	0
08	Mixed Use	2.43	1.05	09	Mixed Use Zone	1.88	0.81
09	Circulation Network	4.00	1.73	10	Circulation Network	17.04	7.37
10	Transport and Communication	0	0	11	Transportation Facilities	0	0
11	Service Activity	0.40	0.17	12	Health Services	0.54	0.23
12	Health Services	0	0				
13	Community Facilities	0.42	0.18	13	Community Facilities	0.43	0.18
14	Recreational Facilities	0	0	14	Recreational Facilities	0	0
15	Historical and Heritage Site	0	0	15	Historical and Heritage Site	0	0
16	Restricted Area	0	0	16	Restricted Area	0	0
17	Agriculture	5.55	2.40	17	Agricultural Zone	0	0
18	Urban Green Space	1.66	0.72	18	Open Space	2.71	1.17
19	Water Bodies	125.56	54.31	19	Water body	120.04	51.92
20	Vacant Land	0	0	20	Utility Services	0.34	0.15
				21	Urban deferred	4.56	1.97
21	Forest	0	0	22	Forest	0	0
22	Beach	0	0	23	Beach	0	0
23	Miscellaneous	0.53	0.23	24	Miscellaneous	0.51	0.22
<b>Total</b>		<b>231.21</b>	<b>100.00</b>	<b>Total</b>		<b>231.21</b>	<b>100.00</b>

**ii. Education and Research Zone**

Total 9.54acres of land is proposed for education and research zone. Detail was given in Table 10.17, Chapter 10 and Part-B of this planning report.

**iii. Government Services**

Total 0.97acre land will use as government services which covers 0.42% of total land of ward no. 07 in Morrelganj Paurashava. Main administrative area is located in this ward.



**Map 14.14: Drainage and Urban Services Plan of ward no. 07**



### **iii. Commercial Zone**

Total 0.97 acres of land is proposed for commercial zone which cover v% total land of ward no. 07 in Morrelganj Paurashava. A new commercial area is proposed at north of this ward.

### **iv. Mixed Use Zone**

Total 1.88 acre land will use as mixed use zone in this ward. One Kitchen Market and one new market are proposed. Detail was given in Table 10.14, Chapter 10 and Part-B of this planning report.

### **v. Circulation Network**

Total 17.04 acre land which covers 7.37 % land of ward no. 07 in Morrelganj Paurashava will use for circulation network.

### **vi. Health Facilities**

Total 0.54 acre land which covers 0.23% total land of Ward no. 07 in Morrelganj Paurashava will use as health facilities.

### **vii. Community Facilities**

Total 0.43 acre land which covers 0.18% land of ward no. 07 in Morrelganj Paurashava will use for community facilities.

### **viii. Water Body**

Total 120.04 acre land which covers 51.92% total land of ward no. 07 in Morrelganj Paurashava will reserve as water body.

### **ix. Urban Deferred**

About 4.56 acres of land is proposed as urban deferred which is 1.97% of the total land.

### **x. Utility Services**

About 0.34 acres of land is proposed for utility services. There is two waste transfer station is proposed in ward no. 07.

#### **14.9.3.3 Proposed Road Infrastructure Development**

Total 8.06 km road development proposal have been proposed for war no. 07 of Morrelganj Paurashava in it's first ward action plan. Length of the local road will be 4.19 km and RoW of these roads will be 20 ft and it covers 52.05% of total road network development proposal. There is 1.65 km secondary road and 2.21 km tertiary road proposal in ward no. 07. Detail scenario of road network development proposal was given in table 14.49.



**Table 14.45: Summary of Road Network Proposal at Ward no. 07 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
15-20	Local Road	4197.52	52.02	867.45	40.12	3330.07	56.38
30-35	Tertiary Road	2218.88	27.50	2.66	0.12	2216.22	37.52
40-50	Secondary Road	1652.67	20.48	1292.21	59.76	360.46	6.10
<b>Total</b>		<b>8069.06</b>	<b>100.00</b>	<b>2162.32</b>	<b>100.00</b>	<b>5906.75</b>	<b>100.00</b>

Total length of new road proposal for ward no. 07 of Morrelganj Paurashava is 2.16 km. Detail scenario is given in Table 14.46 and Table 14.50.

**Table 14.46: New Road Proposal for Ward no. 07**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R16	50	1292.21	Secondary Road	
R47	30	2.66	Tertiary Road	
R157	15	82.59	Local Road	
R159	20	256.57	Local Road	
R165	15	13.13	Local Road	
R172	15	189.49	Local Road	
R174	20	73.76	Local Road	
R182	20	29.87	Local Road	
R204	15	80.07	Local Road	
R202	15	72.28	Local Road	
R205	20	69.68	Local Road	
<b>Total</b>		<b>2162.32</b>		

Again total length of road widening proposal for ward no. 07 of Morrelganj Paurashava is 5.90 km. Detail scenario is given in Table 14.49 and Table 14.51.

**Table 14.47: Road Widening Proposal for Ward no. 07**

Road ID	RoW in Ft	Length in Meter	Road type
R16	50	42.45	Secondary Road
R20	40	318.01	Secondary Road
R42	30	364.57	Tertiary Road
R44	30	850.65	Tertiary Road
R45	30	485.31	Tertiary Road
R46	30	274.53	Tertiary Road
R47	30	241.16	Tertiary Road
R153	15	114.77	Local Road
R154	15	97.79	Local Road
R157	15	65.33	Local Road
R158	15	259.30	Local Road
R160	15	257.66	Local Road
R161	15	137.97	Local Road

Road ID	RoW in Ft	Length in Meter	Road type
R165	15	23.90	Local Road
R166	15	69.81	Local Road
R167	15	42.46	Local Road
R168	15	56.13	Local Road
R169	15	61.51	Local Road
R170	20	169.34	Local Road
R171	20	172.01	Local Road
R173	15	159.19	Local Road
R174	20	137.90	Local Road
R175	20	107.98	Local Road
R176	15	85.15	Local Road
R178	20	115.84	Local Road
R179	15	586.05	Local Road
R180	15	49.84	Local Road
R181	15	52.58	Local Road
R182	20	326.13	Local Road
R202	15	21.37	Local Road
R204	15	74.54	Local Road
R205	20	85.54	Local Road
		5906.75	

#### 14.9.3.4 Drainage Development Plan

There is 0.88 km manmade drainage facility at ward no. 07 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage facilities. The proposed drainage facilities will be developed based on this natural channel. 0.32km drain is proposed as secondary drain, 0.22 km drain as quaternary in ward no. 07. Table 14.52 shows the detail.

**Table 14.48: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	887.06
Proposed Drainage (Secondary)	327.35
Proposed Drainage (Quaternary)	223.78
Proposed Drainage (Tertiary)	123.4

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

#### 14.9.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in

the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposes solid waste transfer stations in a suitable location. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

**Table 14.49: Solid Waste Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Waste Transfer Station	0.16	7
Paurashava Office Premise	0.43	7
Auto Stand	0.11	7
Community Clinic	2.713	7
Poura Auditorium	0.1	7
Slaughter House	0.15	7
Paurashava Market	0.13	7
Ward Center-07	0.80	07

#### **b. Water Supply**

It is proposed to install a network based water supply system by exploring fresh water from the Water supply lines in this ward will be established along all categories of roads as per the growth of the settlement from this water treatment plan. Water supply network supply will be established at 1<sup>st</sup> phase of water supply installation in Morrelganj Paurashava.

#### **c. Sanitation**

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

## 14.10 Ward Action Plan for Ward No.8

### 14.10.1 Demography

Ward No. 8 is located on the north-eastern part of the town. In 2001, the Ward had a population of 1984 persons. Population projection shows that 2510 people will be living in this Ward in the year 2011 with a density of 5 persons per acre. The estimated population for the year 2031 will be 4321 with a density of 9 persons per acre. Table 14.54 shows the detail.

**Table 14.50: Population Statistics of Ward No. 08**

Item	Year		
	2001	2011	2031
Area (acre)	470.23	470.23	470.23
Population	1984	2510	4321
Density of Population (acre)	4	5	9

### 14.10.2 Critical Issues and Opportunities of the Ward

#### Critical Issues

Ward No. 8 is located on the north-eastern part of the Paurashava. Most of the area now in agriculture practice. There is acute shortage of basic infrastructure and facilities necessary for a livable urban environment. Following are the major problems of the ward.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is 11.59 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 10 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only about 0.98 km road is paved and 10.6km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

The ward has no drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

#### iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

#### **iv. Water Supply**

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. Moreover, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

#### **v. Low Density of Population: Problem for Providing Infrastructure**

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

#### **vi. Lack of Threshold Population for Business**

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

### **Development Opportunities**

#### **i. Low Density of Population**

The present density of population in the ward is very low, only 5 persons /acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

#### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

### **14.10.3 Ward Action Plan Proposals**

#### **14.10.3.1 Review of Existing Land Use**

Ward no. 08 is mainly rural in character. Out of total 470.23 acres of land of this Ward more than 193.66 acres of land i.e. 41.18% is used as agriculture. The next use is residential; 95.07 acres are used as residential purpose. It occupies almost 20.22% of total land. Water bodies occupies 30.43 % land of the ward where as 4.83% is laid Urban Green Space. Only 0.44 acre is used as commercial purpose.

**Map 14.15: Land Use Plan for ward no. 08**



### **14.10.3.2 Proposed Land Use Zoning**

#### **i. Urban Residential Zone**

About 1.63 acres of land is proposed for urban residential zone which covers only 0.35% total land of ward no. 08 in Morrelganj Paurashava. Present residential land of this ward is 95.07 acres with 5 persons per acre gross density and net residential density of this ward is 27 ppa (persons per acre). At the end of the planning period 2031 net density within the urban residential zone will be 50 ppa.

#### **ii. Rural Settlement**

About 86.82 acre of land is proposed for rural settlement.

#### **iii. Education and Research Zone**

A vocational training institute is proposed in this ward which will cover 2.04 acres of land. Detail was given in Table 10.17, Chapter 10, and Part B of this report.

#### **iv. Government Office**

A police outpost is proposed with an area of 1.87 acre of land.

#### **v. Commercial Zone**

About 0.85 acres of land is proposed for commercial zone which covers 0.18% total land of ward no. 08 in Morrelganj Paurashava.

#### **vi. Circulation Network**

Total 33.75 acres land will use as circulation network. It covers 7.18% total land of ward no. 08 of Morrelganj Paurashava.

#### **vii. Community Facilities**

Total 0.35 acre land which covers 0.07% land of ward no. 08 in Morrelganj Paurashava.

#### **viii. Agricultural Zone**

About 167.35 acres of land is earmarked as agricultural zone which covers 35.59% total land of ward no. 08 in Morrelganj Paurashava.

#### **ix. Open Space**

Total 23.68 acres of land is proposed for open space which will cover 5.03% of total land. There is one park and one play ground is proposed.

#### **x. Water Body**

Total 127.62 acres of land is reserve for water body which will cover 27.14 % of total land. There is one neighborhood park and one play ground is proposed.

#### **xi. Utility Services**

Total 0.54 acres of land is proposed for recreational utility services which will cover 0.11% of total land.

#### **xii. Urban Deferred**

About 18.07 acres of land is proposed as urban deferred which cover 3.84% of total land.





**Map 14.16 Drainage and Urban Services Plan for ward no. 08**



**Table 14.51: Existing and Proposed Land Use of Ward No. 08**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	95.07	20.22	01	Urban Residential Area	1.63	0.35
				02	Rural Settlement	86.82	18.46
02	Education and Research	0.07	0.01	03	Education and Research Zone	3.18	0.68
03	Governmental Services	1.92	0.41	04	Governmental Services	1.87	0.40
04	Non Government Services	0.00	0.00	05	Non Government Services	0.00	0.00
05	Commercial Activity	0.44	0.09	06	Commercial Zone	0.85	0.18
06	General Industrial Zone	1.78	0.38	07	General Industrial Zone	1.61	0.34
				08	Heavy Industrial Zone	0.00	0.00
07	Heavy Industrial Zone	0.00	0.00	09	Mixed Use Zone	0.19	0.04
08	Mixed Use	0.40	0.08	10	Circulation Network	33.75	7.18
09	Circulation Network	8.09	1.72	11	Transportation Facilities	0.90	0.19
10	Transport and Communication	0.19	0.04	12	Health Services	0.51	0.11
11	Service Activity	1.09	0.23				
12	Health Services	0.00	0.00	13	Community Facilities	0.35	0.07
13	Community Facilities	0.44	0.09	14	Recreational Facilities	0.00	0.00
14	Recreational Facilities	0.00	0.00	15	Historical and Heritage Site	0.00	0.00
15	Historical and Heritage Site	0.00	0.00	16	Restricted Area	0.00	0.00
16	Restricted Area	0.00	0.00	17	Agricultural Zone	167.35	35.59
17	Agriculture	193.66	41.18	18	Open Space	23.68	5.03
18	Urban Green Space	22.71	4.83	19	Water body	127.62	27.14
19	Water Bodies	143.10	30.43	20	Utility Services	0.54	0.11
20	Vacant Land	0.99	0.21	21	Urban deferred	18.07	3.84
		0.00	0.00	22	Forest	0.00	0.00
21	Forest	0.00	0.00	23	Beach	0.00	0.00
22	Beach	0.00	0.00	24	Miscellaneous	1.32	0.28
23	Miscellaneous	0.30	0.06				
<b>Total</b>		<b>470.23</b>	<b>100</b>	<b>Total</b>		<b>470.23</b>	<b>100</b>

#### 14.10.3.3 Proposed Road Infrastructure Development

Total 12.85 km road development proposal have been proposed for war no. 08 of Morrelganj Paurashava. Length of the local road will be 5.39 km and width of these roads will be 20 ft and it covers 41.21% of total road network development proposal. Total length of secondary road will be 6.23 km and width of these roads will be 40ft for this ward. There is .55 km primary road proposal in ward no. 08. Detail scenario of road network development proposal was given in table 14.56.

**Table 14.52: Summary of Road Network Proposal at Ward no. 08 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
15-20	Local Road	5294.1	41.21	1595.69	48.4	3698.41	38.73
30-35	Tertiary Road	768.25	5.98	0	0	768.25	8.04
40-50	Secondary Road	6236.9	48.55	1701.45	51.6	4664.42	47.49
100	Primary Road	547.55	4.26	0	0	547.55	5.73
<b>Total</b>		<b>12846.8</b>	<b>100</b>	<b>3297.14</b>	<b>100</b>	<b>9678.63</b>	<b>100</b>

Total length of new road proposal for ward no. 08 of Morrelganj Paurashava is 3.29 km. Detail scenario is given in Table 13.56 and Table 14.57.

**Table 14.53: New Road Proposal for Ward no. 08**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R11	50	1308.98	Secondary Road	
R13	50	392.47	Secondary Road	
R213	15	274.73	Local Road	
R214	15	59.08	Local Road	
R215	15	25.28	Local Road	
R225	15	66.48	Local Road	
R229	15	299.36	Local Road	
R230	15	112.32	Local Road	
R231	15	309.91	Local Road	
R235	15	448.54	Local Road	
<b>Total</b>		<b>3297.14</b>		

Again total length of road widening proposal for ward no. 08 of Morrelganj Paurashava is 9.67 km. Detail scenario is given in Table 14.56 and Table 14.58.

**Table 14.54: Road Widening Proposal for Ward no. 08**

Road ID	RoW in Ft	Length in Meter	Road type
R01	100	547.55	Primary Road
R11	40	1873.94	Secondary Road
R12	40	1192.31	Secondary Road
R23	40	838.28	Secondary Road
R24	40	764.84	Secondary Road
R53	30	763.29	Tertiary Road
R212	15	447.43	Local Road
R214	15	234.62	Local Road
R215	15	275.18	Local Road
R225	15	225.22	Local Road
R226	15	245.75	Local Road
R227	15	78.66	Local Road
R228	15	184.79	Local Road
R229	15	65.03	Local Road
R230	15	209.50	Local Road

Road ID	RoW in Ft	Length in Meter	Road type
R231	15	254.52	Local Road
R232	20	228.60	Local Road
R233	15	28.80	Local Road
R234	20	244.08	Local Road
R235	15	433.51	Local Road
R236	15	92.70	Local Road
R237	15	271.68	Local Road
R238	15	178.35	Local Road
Total		9678.63	

#### 14.10.3.4 Drainage Development Plan

There is .48 manmade drainage facility at ward no. 08 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage facilities. Table 14.59 shows the detail.

**Table 14.55: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	483.5
Proposed Drainage (Primary)	900.91
Proposed Drainage (Quaternary)	441.46
Proposed Drainage (Secondary)	2264.94
Proposed Drainage ( Tertiary)	379.94

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

#### 14.10.3.5 Urban Services

##### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposes solid waste transfer stations in a suitable location.

**Table 14.56: Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Vocational Training Institute	2.24	8
Primary School	0.89	8
Playground	0.81	8
Park	3.23	8
Bus Terminal	0.29	8
Auto Stand	0.57	8
Fuel Pump	0.53	8
Community Clinic	2.7	8
Ward Center-08	1.67	08

**b. Water Supply**

Water supply lines in this ward will be established along all categories of roads as per the growth of the settlement from this water treatment plan. Water supply network supply will be established at 2nd phase of water supply installation in Morrelganj Paurashava.

**c. Sanitation**

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

**d. Education**

There is one vocational training institute is proposed in ward no. 08 which will cover 2.24 acres of land.

## 14.11 Ward Action Plan for Ward No.9

### 14.11.1 Demography

Ward No. 9 is located on the south-eastern corner of the town. It has least density of population along with largest size in area with 649.95 acres of land. In 2001 the Ward had a population of 1988 persons. Population projection shows 2515 populations for the year 2011. For the same year, it has a density of about 4 persons per acre. The estimated population for the year 2031 will be 4331 with a density of 7 ppa.

**Table 14.57: Population Statistics of Ward No. 09**

Item	Year		
	2001	2011	2031
Area (acre)	649.95	649.95	649.95
Population	1988	2515	4331
Density of Population (acre)	3	4	7

### 14.11.2 Critical Issues and Opportunities of the Ward

#### Critical Issues

Ward No. 9 is located on the south-eastern corner of the town. Most of the area now in agriculture practice. There is acute shortage of basic infrastructure and facilities necessary for a livable urban environment. Following are the major problems of the ward.

#### i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is 14.76 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is above 10 ft wide, except RHD road. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Only about .99 km road is paved and 13.77 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

#### ii. Lack of Drainage

The ward has no drainage network serving the area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

#### iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.



#### **iv. Water Supply**

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. Moreover, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

#### **v. Low Density of Population: Problem for Providing Infrastructure**

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

#### **vi. Lack of Threshold Population for Business**

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

### **Development Opportunities**

#### **i. Low Density of Population**

The present density of population in the ward is quite low, only 18 persons /acre. From environmental point of view this population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

#### **ii. Potential for Small Scale Manufacturing**

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

### **14.11.3. Ward Action Plan Proposals**

#### **14.11.3.1 Review of Existing Land Use**

Ward no. 09 is mainly rural in character. Out of total 649.95acre of land of this Ward about 303.35 acre of land is under agricultural use. The next use is residential; 126.74acres are used as this purpose. It occupies almost 19.50 % of total land. Water bodies occupy 28.34% land of the ward. About 1.43% used as circulation network.

**Map 14.17: Land Use Plan of Ward no. 09**



### **14.11.3.2 Proposed Land Use Zoning**

#### **i. Urban Residential Zone**

There are 6.60 acres of land is proposed as urban residential zone which will cover 1.02% of total land.

#### **ii. Education and Research**

In Ward Action Plan, in education and research purpose 1.76 acres land with one high school. This is 0.27% of total land in Ward no. 01 of this Paurashava. Detail was given in Table 10.17, Chapter 10, and Part B of this report.

#### **iii. Governmental Service**

0.16 acres of land is preserving for governmental service which occupy 0.03% of total land. Detail was given in Table 10.16, Chapter 10, and Part B of this report.

#### **iv. Mixed Use Zone**

There are 0.02 acres of land are proposed as mixed use zone. Detail was given in Table 10.14, Chapter 10, and Part B of this report.

#### **v. Circulation Network**

Total 37.18 acres land will use for circulation network which covers 5.72% land of ward no. 09 in Morrelganj Paurashava.

#### **vi. Transportation Facilities**

There are not any proposal given for transportation facilities.

#### **vii. Community Facilities**

Total 0.16 acres land will use for communication facilities which covers 0.02% land of ward no. 09 in Morrelganj Paurashava.

#### **viii. Agricultural Area**

The Paurashava including Ward No. 09 has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. The highest amount of land of the Ward will remain for agricultural use up to the year 2031. The total area under this use has been estimated as about 233.50 acres of land covering 35.93% of the total land. Rural homestead will also perform some agricultural activities as farm, poultry or horticulture. This zone will serve as the hinterland for the town.

#### **viii. Open Space**

About 15.47 acres of land is proposed for open space. One play ground is proposed in this ward. Detail was given in Table 10.18, Chapter 10, and Part B of this report.

#### **ix. Water Body**

Total 170.67 acre land will reserve as water body which covers 26.26% total land of ward no. 09 in Morrelganj Paurashava.

#### x. Urban Deferred

Total 42.06 acre land will reserve as urban deferred which covers 6.47% total land of ward no. 09 in Morrelganj Paurashava.

**Table 14.58: Comparative Existing Land Use and Proposed Land Use of Ward No. 09**

Sl. no.	Existing Land use	Area in Acres	%	Sl. no.	Proposed Land Use	Area in Acres	%
01	Residential	126.74	19.50	01	Urban Residential Area	6.60	1.02
				02	Rural Settlement	113.18	17.41
02	Education and Research	0.69	0.11	03	Education and Research Zone	1.76	0.27
03	Governmental Services	0.24	0.04	04	Governmental Services	0.16	0.03
04	Non Government Services	0.00	0.00	05	Non Government Services	0.00	0.00
05	Commercial Activity	0.28	0.04	06	Commercial Activity	0.19	0.03
06	Manufacturing and Processing Activity	2.22	0.34	07	General Industrial Zone	11.11	1.71
				08	Heavy Industrial Zone	7.94	1.22
07	Mixed Use	0.04	0.01	09	Mixed Use Zone	0.02	0.00
08	Circulation Network	9.30	1.43	10	Circulation Network	37.18	5.72
09	Transport and Communication	0.00	0.00	11	Transport Facilities	0.00	0.00
10	Service Activity	5.09	0.78	12	Health Services	9.87	1.52
11	Community Facilities	0.21	0.03	13	Community Facilities	0.16	0.02
12	Recreational Facilities	0.00	0.00	14	Recreational Facilities	0.00	0.00
13	Restricted Area	0.00	0.00	15	Restricted Area	0	0
14	Agriculture	303.35	46.67	16	Agricultural Zone	233.50	35.93
15	Urban Green Space	17.50	2.69	17	Open Space	15.47	2.38
16	Water Bodies	184.20	28.34	18	Water Body	170.67	26.26
17	Vacant Land	0.00	0.00	19	Urban Deferred	42.06	6.47
18	Utility Services	0.00	0.00	20	Utility Services	0.00	0.00
19	Miscellaneous	0.08	0.01	21	Miscellaneous	0.08	0.01
<b>Total</b>		<b>649.95</b>	<b>100.00</b>	<b>Total</b>		<b>649.95</b>	<b>100.00</b>

#### 14.11.3.3 Proposed Road Infrastructure Development

Total 13.86 km road development proposal have been proposed in first ward action plan for war no. 09 of Morrelganj Paurashava. Length of the local road will be 3.84 km and RoW of these roads will be 20 ft and it covers 27.75% of total road network development proposal. Total length of secondary road will be 6.74 km and width of these roads will be 50-60ft for this ward. There is 3.27 km tertiary road proposal in ward no. 09. Detail scenario of road network development proposal was given in Table 14.63.

**Table 14.59: Summary of Road Network Proposal at Ward no. 09 of Morrelganj Paurashava**

Width in Ft	Type of Road	Total		New Road		Road Widening	
		Length (m)	%	Length (m)	%	Length (m)	%
15-20	Local Road	3847.45	27.75	1289.27	43.02	2558.19	23.54
30-35	Tertiary Road	3275.98	23.63	855.19	28.54	2420.79	22.28
40-50	Secondary Road	6740.55	48.62	852.19	28.44	5888.36	54.18
<b>Total</b>		<b>13863.98</b>	<b>100.00</b>	<b>2996.64</b>	<b>100.00</b>	<b>10867.34</b>	<b>100.00</b>

Total length of new road proposal for ward no. 09 of Morrelganj Paurashava is 2.99 km. Detail scenario is given in Table 14.63 and Table 14.64.

**Table 14.60: New Road Proposal for Ward no. 09**

Road ID	RoW in Ft	Length in Meter	Road type	Remarks
R13	50	175.765	Secondary Road	
R16	50	676.43	Secondary Road	
R47	30	689.56	Tertiary Road	
R49	30	165.627	Tertiary Road	
R206	15	350.11	Local Road	
R208	20	176.70	Local Road	
R209	15	66.51	Local Road	
R216	15	273.37	Local Road	
R219	15	76.44	Local Road	
R220	15	33.94	Local Road	
R223	15	108.02	Local Road	
R224	20	204.19	Local Road	
<b>Total</b>		<b>2996.64</b>		

Total Length of road widening proposal for ward no. 09 is 10.86 km. Details are given in Table 14.65.

**Table 14.61: Road Widening Proposal for Ward no. 09**

Road ID	RoW in Ft	Length in Meter	Road type
R12	40	604.10	Secondary Road
R13	50	1448.05	Secondary Road
R14	60	1695.43	Secondary Road
R20	40	445.37	Secondary Road
R23	40	1695.41	Secondary Road
R47	30	2.00	Tertiary Road
R48	30	461.44	Tertiary Road
R49	30	1438.23	Tertiary Road
R52	30	519.13	Tertiary Road
R205	20	119.75	Local Road
R206	15	44.17	Local Road
R207	15	153.46	Local Road
R208	20	141.08	Local Road

Road ID	RoW in Ft	Length in Meter	Road type
R209	15	125.35	Local Road
R210	20	238.50	Local Road
R211	15	305.12	Local Road
R216	15	32.62	Local Road
R217	15	99.88	Local Road
R218	15	100.69	Local Road
R219	15	84.98	Local Road
R220	15	32.18	Local Road
R221	20	216.47	Local Road
R222	15	152.22	Local Road
R223	15	186.21	Local Road
R224	20	269.24	Local Road
R248	15	256.30	Local Road
<b>Total</b>		<b>10867.34</b>	

#### 14.11.3.4 Drainage Development Plan

There is 1.45 km manmade drainage facility at ward no. 09 of Morrelganj Paurashava. Existing drainage is mostly depending on natural drainage facilities. The proposed drainage facilities will be developed based on this natural channel. Total 1.71 km drain is proposed as primary drain, 0.084 km drain is quaternary drain, and 2.37 km is secondary drain. Table 14.66 shows the detail.

**Table 14.62: Proposed Drainage Development Plan Proposals**

Item	Length in Meter
Available Drainage	1454.71
Proposed Drainage (Primary)	1714.82
Proposed Drainage (Quaternary)	84.88
Proposed Drainage (Tertiary)	1624.15
Proposed Drainage (Secondary)	2375.17

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

**Map 14.18 Drainage and Service facility of Ward no. 09**





### 14.11.3.5 Urban Services

#### a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the Paurashava are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to a problem in the future. The consultant proposes solid waste dumping ground in a suitable location. It is recommended that a home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering. The waste dumping station of the Paurashava is located at ward no. 09 in the south east corner of Paurashava.

**Table 14.63: Development Proposals**

Type of Facilities	Area in Acre	Ward No.
Playground	1.3	9
Nersary school	0.33	9
General Industrial Zone	9.5	9
Heavy Industrial Zone	7.94	9
Ward Center-09	0.71	9

#### b. Sanitation

It is apprehended that there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people. The existing toilet of bus terminal area has to be developed as public toilet for public purpose as well as the passengers waiting for departure.

#### c. Education

There is one high school in ward no. 09 of Morrelganj Paurashava.

## 14.12: Implementation Guidelines

The Master Plan of Morrelganj Paurashava will be an effective tool for planned urban development, if it is implemented properly with legal enforcement. The different components of the Master Plan have varied implications if they are not implemented in an integrated manner. There is no separate laws related directly to the implementation of Master Plan of the Paurashavas in the country other than the Paurashava Ordinance/Act 2009 and some relevant national policies and laws as discussed in chapter 5 under the Structure Plan.

However, the legal provisions that have been made in the Paurashava Ordinance/Act 2009 can effectively be applied in the implementation of the Master Plan of Morrelganj Paurashava for the time being along with other relevant national policies and laws that have also implications at Paurashava level, such as Wetland Conservation Act 2000 and

BNBC 1993. Other national policies, guidelines and laws relevant to population, agriculture, environment, tourism, building materials, building construction etc. have implications for the implementation of various components including the Ward Action Plan of the Master Plan of Morrelganj Paurashava.

Therefore, until specific laws and guidelines are made by the government for the Paurashavas in Bangladesh for the implementation of Master Plans, the existing laws, policies and guidelines should be strictly followed so that the goal and objectives of these plans are achieved. Effective application of the various existing policies and laws require prudent exercise of professional knowledge and expertise, which is lacking in the existing human resources of the Paurashavas in Bangladesh. In particular, the Paurashavas require professional urban/town planner(s) in the set up of their manpower. In this context, there is an urgent need for the creation of a planning division/section in the existing set up of the Paurashava Organogram.

#### **14.12.1: Proposals for Mitigation of Identified Issues**

The critical issues of planning and development identified in the Structure Plan have been addressed through the preparation of Urban Area Plan and Ward Action Plan. The proposals made in these plans resolve the issues rose in the Structure Plan.

#### **14.12.2: Comparative Advantage of Master Plan**

The Paurashavas in Bangladesh do not have any practicing plans at present in regard to organized development of land use or infrastructure. This situation has been continuing over a long period of time in the past promoting spontaneous land and infrastructure development. As a result, there are examples of unplanned development creating discomfort to the people living in almost all Paurashavas in the country. The implementation of the currently prepared Master Plan of Morrelganj Paurashava will remove those obstacles by applying the principles, guidelines and proposals of various components of its Master Plan. The Ward Action Plan prepared following the Urban Area Plan will solve the most pressing needs of the town in infrastructure development.

#### **14.13: Conclusion**

The Paurashavas in Bangladesh for the first time in its history are having their detailed Master Plans prepared scientifically using modern tools and techniques. These Master Plans will be effective tools for planned development of most of the urban centers in Bangladesh. The planned township development will also ensure required services for the rural areas of the country. This in turn will make a positive impact on economic growth, social progress and environmental sustainability. The Morrelganj Paurashava must avail this opportunity for its progress in the future by implementing the Master Plan.