Government of the People's Republic of Bangladesh

Ministry of Local Government, Rural Development & Cooperatives

Local Government Division

MIRPUR PAURASHAVA

MASTER PLAN: 2011-2031

March 2015

Technical Assistance: Local Government Engineering Department (LGED)

Government of the People's Republic of Bangladesh

Ministry of Local Government, Rural Development & Cooperatives

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MIRPUR 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

MIRPUR PAURASHAVA

MIRPUR, KUSHTIA

MIRPUR PAURASHAVA MASTER PLAN: 2011-2031

Published by:
Mirpur 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

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, Mirpur 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 Mirpur Paurashava.

Master Plan of Mirpur 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 Mirpur 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 Mirpur Paurashava will be necessary to implement this Master Plan successfully and make this Paurashava developed and livable. I hope Mirpur Paurashava will be a model Paurashava in Bangladesh through building itself green and sustainable by successful implementation of this Master Plan.

Md. Enamul Hoque
Mayor
Mirpur Paurashava

Executive Summary

Mirpur Paurashava is located in the northern part of Mirpur Upazila and north-western part of Kustia Sadar upazila under Kustia district. It is situated at the middle of Kustia District H.Q. and around 23 km of it. It is bounded by Boholbaria Union in the North, Vubail Union at West, Fulbaria Union at South and both Fulbaria and Barui Para at East. Mirpur Paurashava is connected with surrounding areas by both Roads and and well connected with District Headquarter with Rail network. This Paurashava lies on $23^0$56' north latitude and $88^0$59' east longitude.

According to the BBS 2011 (Kustia District), the population of Mirpur Paurashava is 22,417 of which 16,045 (48.96%) are male and 16,729 (51.04%) are female. The projected population of Mirpur Paurashava would be 31777 with a growth rate of 1.76%. The population of Mirpur is Muslim, Hindu, Buddhist and other tribal people. At present the density of population is 2568 per sq.km. Mirpur Paurashava consists of 09 mouzas with an area of 8.73 sq. km. as per area calculation of GIS data.

Mirpur Thana was turned into an upazila in 1983 and the Paurashava was established in 1998. Its present status is **"B" Class** Paurashava.

Under such circumstances a Master Plan can help creating advantages for living and working in the Paurashava 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 include 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 Paurashava and ensure good collection and utilization of its resources and thus enhance the development activities.

The Master Plan has been 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 Paurashava. In the Structure Plan of Mirpur Paurashava 8.26% land is kept as core area, 52.53% as fringe and peripheral area, 2.88% as new urban area, 15.47% as circulation network and remaining 13.32% as agricultural area and 7.54% as 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 Paurashava and inclusion of town planning department comprising 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 Paurashava is proposed according to the fixed standards during the interim phase of the Master Plan.

Land Use Plan proposes the Paurashava land to be earmarked under Urban Residential Zone and Rural Settlement. These two zones will form the future residential areas of the Paurashava. Proposals for other land uses like Commercial Zone, Education and Research Zone, Open Space,

Circulation Network etc. are made. Under the Land Use Plan the development proposals to support the future needs of the people are also given. It proposes one general industrial zone, one heavy industrial zone, neighborhood market, super market, stadium, hospital, waste disposal ground, land for poor people, bus terminal, truck terminal, tempo stand, parking area, central park, college, high school, primary school, neighborhood park, community centre 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 69.39 km of road for widening and 11.13 km for construction of new road is proposed. The road hierarchy is also proposed in this plan. The proposed road network will comprise of primary road (100-150 ft. RoW), secondary road (60-100ft. RoW) and local road (20-40 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 bus terminal, truck terminal,bus-stand, auto-rickshaw/tempo/microbus stands, parking area and some other proposals.

Under the Drainage and Environmental Management Plan, the drainage network of the Paurashava has been 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 9.1 km pucca drain in the Paurashava and the natural canals cover 10.29 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 **10.77 km** of primary drains, **24.41 km** of secondary drain and **22.50 km** of tertiary drain are proposed in the plan to support the drainage network.

Ward Action Plan is the third and final tier of the Master Plan which 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 support the particular ward in the first phase of the Master Plan period of twenty years.

Previously no Master Plan was prepared for Mirpur Paurashava town. This is the first Master Plan of the Paurashava prepared by LGED under Package 12 of the Upazila Towns Infrastructure Development Project (UTIDP. It is expected that the implementation of the plan will ensure planned development with compatible land use, development control, optimum utilization of land resources and socio-economic development of the urban dwellers.

FINAL MASTER PLAN REPORT OF MIRPUR 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. The Country urban population has grown at a yearly average rate of 6 percent since independence, at a time when the national population growth was 2.2 percent. As a result, urban population has grown six-fold, compared with a 70 percent increase in rural population. As per UN data, about 35 million people, or approximately 25 percent of Bangladesh's population, currently live in urban areas, compared to only 8 percent at the time of independence: the number is projected to cross 80 million by the year 2030 (source: UN World Urbanization prospects, 2010). 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 319. 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 Mirpur is one of 20 Paurashavas within Khulna Region under Package 12. The Planning Area location of Mirpur within Bangladesh is shown in Map 1.1.

Map no. 1.1: Planning Area Location of Mirpur Paurashava

Thus the Master Plan of Mirpur 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 Mirpur Paurashava are to:

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

b. Plan for the people of Mirpur 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 people of all sorts of group for better quality of life;

c. 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;

d. Provide controls for private sector development, with clarity and security in regard to future development;

e. Provide guideline for development considering the opportunity and constrains of future development of the Upazila Town; and

f. Prepare a 20-year Master Plan to be used as a tool to ensure and promote growth of the Mirpur 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

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.

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

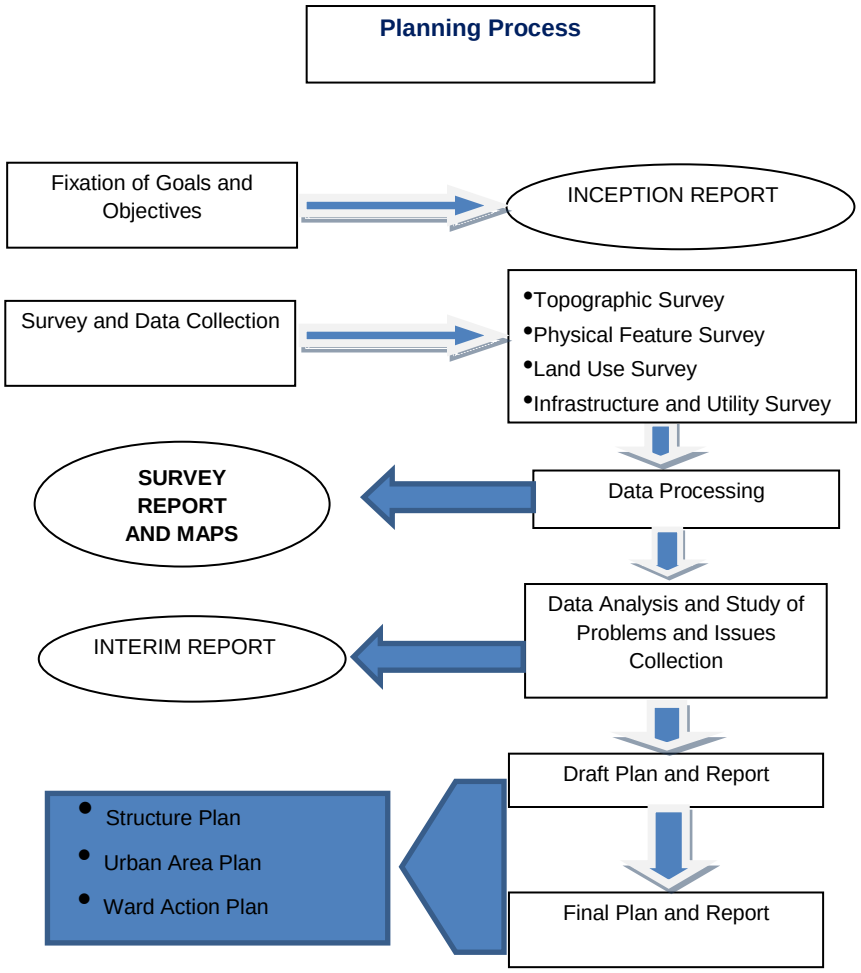

Figure 1.1: Flow Chart of Planning Process

Information from secondary sources. The data is presented through maps, text and tabular form. Than 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:

1. Visits have been made to the Paurashava at different stages of work of the preparation of Master Plan of Mirpur Paurashava.
2. Feasibility for preparation of Master Plan has been submitted to the office of the PD, UTIDP.
3. 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.
4. 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:

a. 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.

b. 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.

c. 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.

d. 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.

e. 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.

f. 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.

g. 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.

h. 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.

i. 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.

j. 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.

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

l. 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.

m. 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.

n. 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.

o. 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.

p. 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 Mirpur 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) Plan 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 Mirpur Paurashava Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan)”. Part A of this report describes the Structure Plan of Mirpur Paurashava and Chapter 2 describes the conceptual issues related to the preparation of Structure Plan for Mirpur 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.

Mirpur Paurashava is located at Mirpur Upazilla of the Kushtia District. Mirpur Township located at the

Middle part of the Upazilla by the Kushtia-Mirpur Road with an area of 8.716 Sq. Km. The purashava is comprised of 9 Wards and 11 Mouzas. Geographically it is located between 23º 24’ North latitude and 89º 08’ East longitude.

Mirpur Paurashava has been established in 1998 as a “B” class Paurashava. Nothing is definitely known about the origin of the Upazila name. It is learut that in the post there lived a Mir family in this locality. They were very influential and friendly to all. It is generally believed that the Upazila might have originated its name from their name of that family.

Mirpur Paurashava is comparatively a newly formed Class “B” Paurashava. This Paurashava came into being during the year of 1998. Therefore, its history goes back only 14 years. To cite the only national importance is the Regional road, Kushtia-Meherpur Road and rail line passes through the Paurashava (Vide Map 2.1). The Paurashava is connected with Kushtia, Meherpur, Bheramara and Daulatpur with road network. This Paurashava is also connected with Khulna, Jessore, Dhaka, and Rajshahi with railway network. The total number of holding in the Paurashava is 5293 including business holding. Therefore, Mirpur Paurashava carries national importance.

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.

Map 2.1: Location Map of Mirpur Paurashava within Kushtia District

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 Mirpur 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 Mirpur 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 Mirpur 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), Mirpur.

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

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. Consultant 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 consultant has 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 Mirpur Paurashava. As per population census 2001, average household size of the Paurashava is 4.46.

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 42.57% of the Paurashava area is under agriculture. About 39.18% people's main income sources are agro forestry and agricultural labor. So a major portion of the people is engaged in agriculture for their livelihood. About 33.19% people are engaged in business and service related activities. So, the economic picture of the Paurashava suggests that the economy is still much dependent on the agriculture and service sector have not yet gained momentum.

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 Mirpur bazar is located at the middle of town. This is also a largest wholesale market.

Agriculture

Sample survey by the consultants reveals 39.18% income earners in the Paurashava are engaged in farming occupation. The farmers and farm laborers work in farm lands, both, within and outside the Paurashava. It is evident from land use survey of the Paurashava that about 42.57% 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 Mirpur, 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. Agriculture is the prominent occupation here. Out of the employed population 39.19% is engaged in this sector. Business plays the next role after agriculture as the part of main sources of income.

3.3 Population

According to BBS 2001 population census the total population of Mirpur Paurashava was 18,835 and the density of population was 2161 persons/sq. km with annual growth rate of 1.76. At present, ward no. 05 is the mostly densely populated area. The density per acre is 21.49 in this ward. Table 3.1 is shows the detail:

Table 3.1: Population Distribution in Mirpur Paurashava

Ward No.	Area (in acre)	Population 2001 (BBS)	Density (ppa)	Population 2011 (estimated)	Density (ppa)
Ward - 01	379.827	3059	8	3222	8
Ward - 02	250.256	1557	6	1839	7
Ward - 03	326.445	2489	8	2782	9
Ward - 04	109.278	1663	15	1781	16
Ward - 05	86.429	1592	18	1907	22
Ward - 06	181.335	1670	9	2258	12
Ward - 07	157.238	1769	11	2192	14
Ward - 08	223.877	1477	7	1666	7
Ward - 09	438.518	3559	8	4770	11
Total	**2153.203**	**18835**	**9**	**22417**	**10**

Size and Type of the Family

The average household size of the project area is about 4.46 according to the BBS population Census, 2001. According to the BBS population Census, 2001 the family size consisting of 3-4 members is found highest (48.11%) and the family size of 5-6 members found second highest (26.92%) in the Paurashava. Socioeconomic survey reflects that few of the household have family size of 11+ members (0.81%).

Sex Ratio

According to BBS 2001, combined age-group 0-9 comprises 11.04% and the age-group 10-17 years comprises the 18.86% of the total population of the Paurashava. The age-group 18-34 shows 33.21%, of which 15.57% are male and 17.64% are the female of total population. The age-group 35-59 is another group to be mentioned here which comprises the 21.79% of which 12.63% are male and the 9.16% are the female. Besides the population above 60 years is found comparatively lower which constitute only 5.21% of the population of the Paurashava.

Marital Status

In the Paurashava 21.26% of male and 11.76% of female population of age 10 years and over was never married. In the same age group percentage of married male and female were 31.21% and 31.84% respectively. Percentage of widowed and divorced male was 0.13% and 0.07% respectively and percentage of widowed and divorced female was 0.53% and 3.20% respectively.

Religious Status

According to latest population census report (2001), 91.64% of the population of this Paurashava belongs to Muslim community and 8.35% to Hindu community. Population belonging to other religion such as Buddhist and Christian are very insignificant in number.

Education

According to the BBS report 2001 among the male population of the age of 5-24 years, school attending male population found 45.18% and not attending male population found 54.82%. Again among the total female population of the age of 5-24 years, school attending female population found

40.54% and not attending female population found 59.51%. The educational status in Mirpur Paurashava is not in well position as it is found from the Household Survey. 11.91% of the surveyed population reported as the illiterate. About 40.14% of the surveyed population reported having education below/equal to primary level. Another 28.20% population has the education up to class X. But the percentage of the people having education at the graduation level and above is not that satisfactory and it is only 5.08%. Women are lagging behind in respect of education in all the levels.

Monthly Income and Expenditure of the Household

The income and the expenditure pattern of an area is the index of the socio-economic status of that Area. The data collected in this regard from the study area show that the maximum of the population falls within the range of low to middle income group. About 56.10% of the total surveyed household is in the income level BDT 5001-10000 which is the highest share of percentage. The study reveals that only a small number of people, household as well earn BDT. 20,000 and above (2.10%). Moreover, around 46.1% people in Mirpur Paurashava expend in the range of 5000-10000 tk. and they share the main part in the Paurashava. There are 29.5% people in the expenditure level of below 5000 tk. Only 2.1% people expends above 20000 tk. in the study area.

Migration Pattern

Migration is one of the most important aspects for analyzing the demographic pattern of any place. From the socio economic survey 9.85% of the surveyed population (1% HH according to the BBS 2001) in Mirpur Paurashava found to be migrants. Out of the total migrated people, 52.38% are reported to have migrated within the same Upazila. Only 21.43% of the total migrated population reported to have migrated in the Paurashava from other districts. This reflects that still no such economic activities have been developed in this Paurashava to attract people from other places. Survey reveals that maximum migrated household settled in the Ward Nos. 1 and 5 which is the Core

Area of the Paurashava. 57.14% of the total migrated household found migrated after the year of 2000.

3.4 Physical Infrastructure Development

Building and Structures

Mirpur Paurashava has mainly grown following the road transport networks. The households by type of structure in the project area are dominated by semi-pucca (52.01%) and kutcha (31.67%) type, where as only 16.33% is pucca. Katcha structures are made of temporary materials. Ward no. 9 possesses maximum no. of structures (2420 nos) whereas ward no. 4 possesses minimum no. of structures (766 nos). Residential structures contribute the major share which is around 84.82% of total structures whereas commercial structures took second position (12.50%) with total 1334 in no.

Transport and Communication

Total length of road network is 84.01 km. Among these 32.59 km is katcha road, 25.67 km semi pucca road and rest 25.74 km is pucca road in Mirpur Paurashava. The highest katcha road about 6.91km, semi pucca (5.90km) and the highest pucca road about 6.20 km. exists in 09 exists in Ward no. 09.

There is 1.75 km of Railway found in Mirpur Paurashava. Mirpur Paurashava is connected with Khulna, Rajshahi and Dhaka by the rail network. There is no river for waterways in Mirpur Paurashava.

3.5 Utility Services

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

Electricity

In Mirpur Paurashava electricity is provided only in all wards by the Rural Electrification Board (REB). There is no electric sub-station in the Paurashava area. It has a total of 925 electric poles to facilitate electricity throughout the Paurashava area.

Water Supply

Piped water supply system is not introduced within the Paurashava area. Residents of the Paurashava use tube-well water for drinking purposes while deep tube-well and shallow tube-wells are used for irrigation.

Telecommunication

There is a telephone exchange having a capacity of 200 lines maintained by Bangladesh Telecommunication Company Limited (BTCL) in the Paurashava area with 102 telephone poles. At present there are nearly 50 land telephone users in the area. There are also mobile phone networks of Grameen Phone, Robi, Citycell, Banglalink, Airlel and Teletalk with several mobile towers, which cover the entire study area.

Solid Waste Management

Solid waste collection and disposal in Mirpur Paurashava is the responsibility of Paurashava authority. The logistics for collection and disposal of solid wastes include 4 sweepers for collection and and 1 garbage truck for transportation. There is no dustbin and dumping site in the Paurashava. The collected waste is dumped into the lowland. CBO or NGO based collection system does not exist within the Paurashava area.

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 few LPG retail shops within the Paurashava area serving the local demands.

3.6 Environmental Issues

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

Mirpur 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 Mirpur Paurashava.

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

The town of Mirpur 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 Mirpur 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

Local Government allows distribution of work on a territorial basis prevents the central bureaucracy from forcing an unhealthy administrative uniformity on the country and facilitates use of knowledge of local conditions in tackling problems. A lack of expertise and modern techniques create problems in executing Paurashava activities. According to standard Paurashavas are classified into three categories, i.e. Class A, Class B and Class C (Kamal, 1984). Mirpur belongs to class- “B” which needs a Chairman and a Chief executive officer for overall supervision. The Assistant Engineer would lead the Engineering Department. Under the assistant engineer, there would be Water supply and sewerage section, Civil/Electrical/Mechanical Section. The Secretary would lead the Administrative Department. Under the secretary there would be General Section, Accounts Section, Assessment Section, Tax Collection / Licensing Section, Education/ Cultural/ Library Section. A Medical Officer would lead the Health, Family Planning and sanitary department. The Medical Officer would lead the conservancy section and health and family planning section. Under these sections and department some expertise are required. The Government generally prescribes the number of officials and employees that a local Government body can engage, sanctions new posts, decides the manner in which these posts are to be filled up and the qualifications their incumbents’ should posses and determines their service conditions. Like most other Paurashava, Mirpur Paurashava has these sections but lacking adequate personnel. Plan implementation problems are severe for Mirpur Paurashava for lack of manpower.

Mirpur is suffering from lack of manpower to conduct the municipal activities efficiently. It is a class “B” Paurashava. The actual manpower working in the Mirpur Paurashava is far below the sanctioned manpower. The important posts lying vacant are the Posts of Assistant Engineer, Secretary, Town Planner and Adminstrative Officer; though in the “B” class Paurashava there is no options for the post of Town planner. Though a standard “B” class Paurashava comprises of 32 personnel in Engineering Department, but Mirpur Paurashava has to depend on 12 personnel in Engineering Department. Again in the administrative section the Paurashava has to depend on only 13 personnel for the administrative works. The conditions of existing manpower scenario have been shown in the Table 3.2.

Table 3.2: Comparison of Provision of Manpower in a class "B" Paurashava and Existing Manpower in Mirpur Paurashava

No.	Department/Section/ Designation	Proposed for "B" class Paurashava	Exists in Mirpur Paurashava	Existing Manpower (%)
Engineering Department		32	12	37.50
1	Asst. Engineer	1	0	0
2	Sub. Asst. Engineer	2	1	50
3	Other staffs	29	10	34.48
Administrative Department		35	13	37.14
5	Secretary	1	0	0
General Section		10	5	50
6	Administrative Officer	0	0	0
7	Head Assistant	1	1	100
8	Other staffs	9	4	44.44
Accounts Section		3	3	100
9	Accounts Officer	1	1	100
10	Accounts asstt.	1	1	100
11	Other staffs	1	1	100
Assessment section		3	0	0
12	Assessor	1	0	0
13	Asstt. Assessor	1	0	0
14	MLSS	1	0	0
Tax Collection/License Section		7	5	71.43
15	Tax collector	1	1	100
16	License Inspector	1	1	100
17	Asstt. Collector	4	3	75
18	Other staffs	1	0	0
Market Inspection section		2	1	50
19	Market Inspector	1	1	0
20	Collector	1	0	0
Education/Library/Cultural		9	0	0
21	Education and Cultural Officer	0	0	0
22	Librarian	1	0	0
23	Teacher	5	0	0
24	Other staffs	3	0	0
Health, Family Planning and Sanitary Department		22	11	50
25	Health Officer	1	0	0
26	Conservancy Inspector	1	1	100
27	Sanitary Inspector	1	0	0
28	Health Assistant	1	1	100
29	Vaccination Supervisor	1	1	100
30	Booster	4	4	100
31	Health visitor	2	1	50
32	Other staffs	5	3	60

Source: Mirpur Paurashava, 2011

Paurashava Town Planning and Implementation Capacity of Master Plan

At present, the Paurashava has no town planning department 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

Mirpur Paurashava has a conservancy section to manage the solid waste management system like many other Paurashavas of Bangladesh, but 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. People are used to manage their household generated solid wastes either with their own efforts or through out here and there. The conservancy department of Mirpur Paurashava has only 1 garbage truck, and 2 vans for solid waste management which is too poor to manage the whole system properly. The municipal authority could not take any measures to prohibit its inhabitant from indiscriminate dumping of solid wastes into the canals which results in blocking of drainage system.

Logistic Support/Equipment

Local Government should have the right to mobilize resources from various sources in addition to the conventional ones which are mostly top down, guided and controlled allocation of the central government. Such top down resources are generally tied and the local government have limited discretionary authority to use such resources. Local governments need additional resources to address the growing needs and demand for goods and services at the local level. But conventional sources of local resources would hardly be enough to respond to the growing demand and expectation of the local community. According to Paurashava organogram every Paurashava should have three motor cycles, four bicycles and two photocopiers, feeder machines, duplicating machine whereas Mirpur Paurashava has no such machineries to support its official activities. The Paurashava possesses 3 computers however. For proper conduction of survey and construction work Paurashava should have some rudimentary survey and construction equipments. This Paurashava unfortunately has no such equipments. Table 3.3 shows the logistic facilities available in Mirpur Paurashava.

Table 3.3: Logistic Support of Mirpur Paurashava

Equipment	Number
Road roller (5-7 ton)	1 no.
Motor cycle	2 no.
Computer	3 no.

Source: Mirpur Paurashava, 2011

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 Kustia-Meherpur highway. The present growth direction also follows Kustia meherpur road to Bheramara road. This road is running through the market place of the town. The commercial activities are expanded along the road towards the south-eastern side. However, minor developments follow the recently developed Mirpur to Montola road towards the south eastern corner of the poura area, though the area around the road is low and in agricultural use.

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 cities and 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.

The Paurashava is connected with regional road networks connecting Kushtia, Meherpur, Bheramara and Daulatpur with road. This Paurashava is also connected with Khulna, Jessore, Dhaka and Rajshahi with railway. The Paurashava is an administrative centre from British times. The growth of Paurashava in terms of population and administrative status started from colonial times.

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, 15 types of land uses are found. It is clearly evident from the table that agricultural land use (about 42.71%) dominates the Paurashava area, followed by residential (31.69%), water bodies (7.48%), vacant place (7.71%), circulation network (only 3.75%), and government services and educational land use occupy 1.34% and 0.76% 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 no. 3.1: Regional Connectivity of Mirpur Paurashava

The aim of the Structure Plan is to prepare a development plan for Mirpur 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 Mirpur 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 Mirpur, 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.

Mirpur 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 Mirpur is directed by Polli Biddutayan Board (Rural Electrification Board-REB) has a master plan to avail 100% electrify the whole Upaziala 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 Mirpur Paurashava provide mainly micro credit service. ASA only provide micro credit service and money transfer service of Wstern Union. Grameen Bank of Mirpur 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

4.0 Introduction

Chapter 4 of the planning report introduces the critical planning issues of Mirpur Paurashava. The discussion has been carried out on sectoral basis.

4.1 Transport

As a small town the Paurashava is yet to encounter critical transport and traffic problems as faced by large cites with huge traffic population. Sources of Mirpur transport problems are associated with admixture of contrasting traffic modes, faulty road network and disobedience of traffic rules.

4.1.1 Traffic Conflict

Traffic conflict is common and frequent phenomena in towns where there is admixture of transport vehicles-slow and fast-in the streets. Areas of conflict occur at point where there intensity of traffic movement is high. The consultant studied the traffic movement in all over the town and has identified main points where the traffic conflict is the highest. These are Bazar road Intersection, Bus stand More and Nimtola/Thana More etc. At these points the slow moving vehicles, like, rickshaw and vans come in conflict with motor vehicles, creating traffic congestion. Besides, bus and CNGs remain standing on these points for long time for boarding and descending of passengers. Upcoming other vehicles do not get required road space to cross the standing vehicles smoothly. For this reason, a sudden but short time jam has occurred. As the number of slow moving vehicles is higher the conflict is usually frequent.

The identified reasons for traffic conflict are, improper intersection design, parking of vehicles on the street, waiting of operators on the roads looking for possible passengers, absence of traffic signal, disobedience of traffic rules etc.

4.1.2 Unplanned and Narrow Roads

Road network in the town is not planned nor standardized. As there was no town plans earlier covering road network, roads were developed in an unplanned manner. No standards have been followed in determining road width, network design. Road widths are of rural type. More than 84% roads of entire project area is less than or equals to 10 feet. Besides, more than 49% roads in Paurashava is less than or equals to 8 feet width. These roads are not capable to serve an Upazila town like Mirpur. Therefore, narrow widths of roads and poor maintenance have been marked everywhere. These also have been expressed in opinion survey of the households.

Narrow widths of roads have marked by most respondents as major road problems in the town. About 11% 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 grows and density of population

increases in future. As field survey shows, 30.87% of the households of the town reported that the road widths in front of their houses are 8 ft. or less. This is alarming, as there will be increase in population leading to higher density. In future traffic will rise and will create serious traffic congestion on the narrow streets. There is little chance that the authority will be able increase the road width in highly built up areas- especially in the crossing point of main bazaar area, as there will be high cost involvement and social-pressure on any attempt to demolition.

4.2 Environment

4.2.1 Drainage Problem

The condition of drainage service in the Paurashava is in critical shape. There is no hierarchy of drains and they are not properly connected. Therefore, water logging occurs at various points. Only in Paurashava Office area there are a few pucca drains. In rest of the town, either there is no drains or where exist, they are all katcha or semi-pucca. As a result during the concentrated heavy rainfall the water stagnation is frequent. Major natural drainage channels have been encroached (mainly in the Bazar area as well as the adjacent khals) causing their width to become narrow reducing the flow of water. Reoccupying the drainage encroachments and opening up of the system is highly lacking. Powerful encroachers often hinder such attempts. As a result problems of the primary drains remain unresolved.

4.2.2 Waste Management

The Paurashava has only 7-8 mobile and fixed dustbins at different locations. It was reported and proved that, the authority did not maintain formal dumping system so that there is no formal dumping ground. A portion of the wastes were dumped on the canal beside the road. The Poura authority could not ensure the prohibition of waste dumping along the entire length of the canal, which has blocked the canals at several points. The authority only collects waste from road side points and dustbins. Door to door collection system is yet to start in the Paurashava. Negligence of duties/responsibilities of staff is another main problem for inadequate operation and maintain of the drainage system.

Mirpur Paurashava suffers from the shortfall of funding to provide sufficient drainage system as well as its proper operation and maintenance. Only 4 staff including 3 contractual 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 do cleaning and maintenance. Negligence of duties/responsibilities of staff is another major problem for the drainage system.

4.2.3 Water Supply

Most of the people of Mirpur Paurashava use surface water from ponds. But with the advent of urbanization these ponds are likely to get filled up as land prices go up. Besides, in the face of increasing population the existing ponds are unlikely to serve as the only sources of water supply for the constantly growing population. This will create problem regarding water supply in the town in future.

4.3 Land Use Control

Misuse of land as well as failure of land use control in Bangladesh is a common scenario. It is problem for the Development Authorities (RAJUK, KDA, CDA etc.) where master plans have existed. The major reasons for this failure are ignorance of existing laws, lacks of proper control mechanism, and absence of land use plan as well as Master Plan. However, Master Plan approach did not satisfactory work in Bangladesh mainly because cities and towns have grown much faster than the Master Plan could even foresee. Lack of regular revision of Master Plan is another reason.

4.4 Disaster

Bangladesh is a land of abundant and regular rainfall and the annual inundation of the rivers. The whole district is practically free from drought. Water, however, subsides rapidly and the damage caused is not mostly very serious. The southern part is exposed to cyclones which sweep across the Bay of Bengal, driving the waters before them in great waves which sometimes overflow vast tracts of country, drowning men and cattle, destroying crops and often leaving behind them a residue of salt which interferes with cultivation for some time. In the year 1797 there was such a cyclone, described as the most destructive in the memory of men. Severe cyclones occurred in 1822, 1825, 1848, 1867, 1876, 1893, 1895, 1941, 1958, 1960, 1961, 1963, 1965, 1966, 1968, 1970, 1988, 1991, 1997 and 2008. These years are not only memorable years curse for the people of Kustia including Mirpur. These years are synonymous with the death and cataclysm. Besides, earthquake of 1762 and 1897 came to the people as a scene of great shock wave but a little injury as the district lies outside the main earthquake zone of the country.

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 t0o 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 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 2009 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 it's 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 it's manpower to execute the Master Plan of the Paurashava Town.

Madhabpur 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 favorable 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 access 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 or 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 Mirpur 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	Makes provision for having a Master Plan of the Paurashava Town. Provides legal basis for the preparation and implementation of Paurashava Master Plan. Suggests on the content and structure, and other relevant issues, such as provision for qualified Town Planner in the Paurashava staff.
National Land Use Policy 2001	Formulation and effective execution of Land Use Plan in order to ensure planned use of land. Suggests for a forestation, conservation and development of land maintaining landscape.
National Housing Policy, 1993	To create affordable housing through controlling

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
	unplanned and haphazard housing area development. 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.
Population Policy 2004	To improve the living standard of the people through a desirable balance between population and development. 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.
Transportation Policy 2004	To provide a safe and dependable transport service for all. 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.
National Environment Policy 1992	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.
Industrial Policy 2005	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. 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.
National Tourism Policy 1992 and 2010	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.
Agriculture Policy 1999	To strengthen land zoning program, ensure maximum utilization of land through bottom up planning and

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
	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.
Urban Forest Policy 1994	To afforest about 20% of the total area of the country by initiating various aforestation 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; Strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources; and implement a forestation programs on both public and private lands.
National Plan for Disaster Management, 2008-15	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.
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

Act/Ordinance, Policies, Rules	Relevance with Paurashava Master Plan
	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	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. To ensure healthy and environment-friendly building development. To empower special power to remove any building that did not follow the specified rules of the Act. To take action against any building owner who constructs building violating the rules after approval of the building plan. To forbid cutting of any hill without prior permission of appropriate authority. To keep provision for appeal, if the owner finds himself aggrieved due to any action by the authority.

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 Mirpur.

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.

Pn = Po (1+ r)t where,

Po = The base year population (2001, 18835),

Pn = The projected year population (2031, 31777)

t = Time period (20 Year),

r = Annual growth rate (1.76).

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 b y 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.

Ward wise Projected Population

The existing estimated population of Mirpur Paurashava is 22417 in 2011 within an area of 2153.204 acres. According to 2001 Population Census, the population was 18835. With an annual growth rate of 1.76%, the forecasted population of Mirpur Paurashava will be 31777 in the year 2031. The gross density of the area will be 15 ppa (person per acre). Though maximum concentration of population will be in the ward no. 9 but the population density will be highest ward no. 5. Table 6.1 shows ward wise population distribution of Mirpur Paurashava based on medium growth rate.

Table 6.1: Population Projection with Density of Mirpur Paurashava Up to 2031

Ward no.	Area(In Acre)	2001		2011		2016		2021		2026		2031	
		Pop	PPA	Pop	PPA	Pop	PPA	Pop	PPA	Pop	PPA	Pop	PPA
Ward -01	379.827	3059	8	3222	8	3516	9	3836	10	4186	11	4567	12
Ward-02	250.256	1557	6	1839	7	2007	8	2190	9	2389	10	2607	10
Ward-03	326.445	2489	8	2782	9	3036	9	3312	10	3614	11	3944	12
Ward-04	109.278	1663	15	1781	16	1943	18	2120	19	2314	21	2525	23
Ward-05	86.429	1592	18	1907	22	2081	24	2271	26	2477	29	2703	31
Ward-06	181.335	1670	9	2258	12	2464	14	2688	15	2933	16	3201	18
Ward-07	157.238	1769	11	2192	14	2392	15	2610	17	2848	18	3107	20
Ward-08	223.877	1477	7	1666	7	1818	8	1984	9	2164	10	2362	11
Ward-09	438.518	3559	8	4770	11	5205	12	5679	13	6197	14	6762	15
Total	**2153.203**	**18835**	**9**	**22417**	**10**	**24462**	**11**	**26690**	**12**	**29122**	**14**	**31778**	**15**

Source: 1. BBS, 2001 & Paurashava. Estimation by the Consultant
***Note**: Growth rate for Population projection has been considered as 1.76%.*

With an annual growth rate of 1.76%, the forecasted population of Mirpur Paurashava will be 31777 in the year 2031. The gross density of the area will be 15 ppa (person per acre).

6.2 Identification of Future Economic Opportunities

The contribution of the small towns to the economic development of their hinterlands depends largely on the urban development in these urban centers. Depending on transport, communication and storage facilities, this Paurashava can play a vital role in linking rural farmers to the urban market. For instance, development of road network between this small town and its rural hinterlands may greatly benefit rural farmers as it enables them to transfer their agro produces to bigger markets. The industrial development in the Paurashava will have significant impact on the demand for raw materials that are required for the industrial production. All sorts of production materials, like brick, wood, bamboo etc. are produced in the countryside, serving as supply centers for urban demand. To support urban industries and related activities, it requires adequate infrastructure, such as urban rural transfer routes, communication and information structures. Investments in these projects result in enhanced productivity in both urban and rural areas.

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

LAND USE 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

Mirpur Paurashava is located in the Middle of Meherpur-Kustia Highway. This town is expanding based on the high way and Mirpur bazaar. But its main development constraint is low land within the Paurashava and the maximum of this land is in agricultural practice. Meherpur-Kustia Highway passing through this Paurashava and availability of gas connection create ample opportunity for industrial development. 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 Paurashava 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 Paurashava.

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 Mirpur Paurashava.

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.	177.910	8.26
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 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.	920.86	42.77

Zoning	Description of the Zone	Area (acre)	%
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.	210.07	9.76
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.	62.10	2.88
Agriculture	Agricultural land (also agricultural area) 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.	286.86	13.32
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.	162.37	7.54
Major Circulation	Major circulation contains major road network and railways linkage with regional and national settings.	333.04	15.47
Total		**2153.204**	**100**

7.2.1 Core Area

Total is only 177.91 acres of land, which covers 8.26% 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, 5and 6. It includes the highest concentration of service area for an example upazila health complex, upazila complex, schools Mirpur Bazar area etc. and it has the highest potentiality of development because the town developed based on the Mirpur Bazar and Kustia-Meherpur Highway, which is passing through the Paurashava 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.

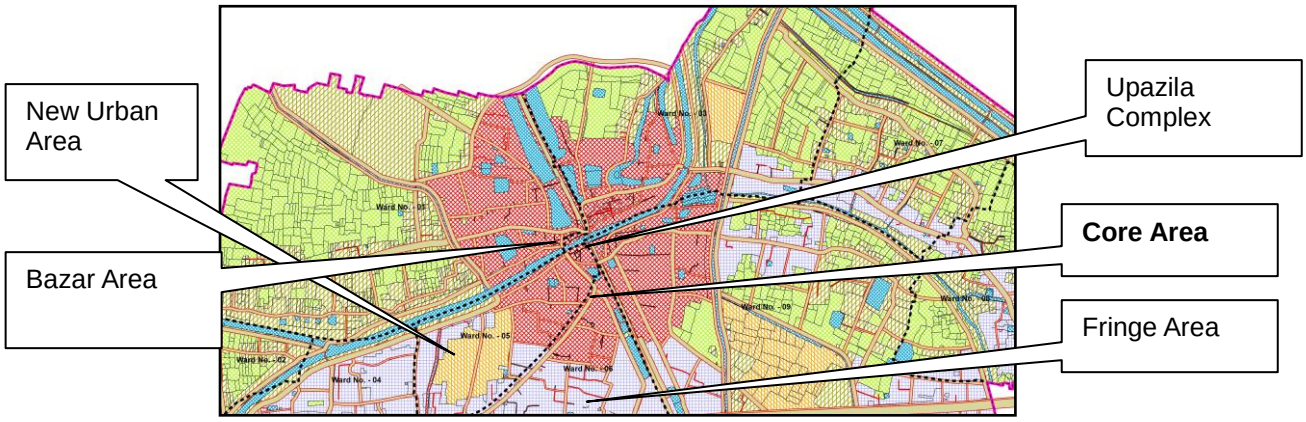

Figure 7.1: Core Area of Mirpur Paurashava

Map no. 7.1 Structure Plan of Mirpur 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 920.86 acres of land covering 42.77% of Structure Plan area is declared as Fringe Area (Map 7.1 and Figure 7.2). Fringe area is proposed both side of the Khustia-Meherpur highway and maximum fringe area of proposed structure plan is along with north side and south side of Khustia-Meherpur high way. It covers area of Ward no. 4, 6 and 9 and identified in the Structure Plan as the likely choice for new urban development beyond the core area. Khustia-Meherpur high way as influential factors of development. Road network and other infrastructures developed based on this high way. 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.

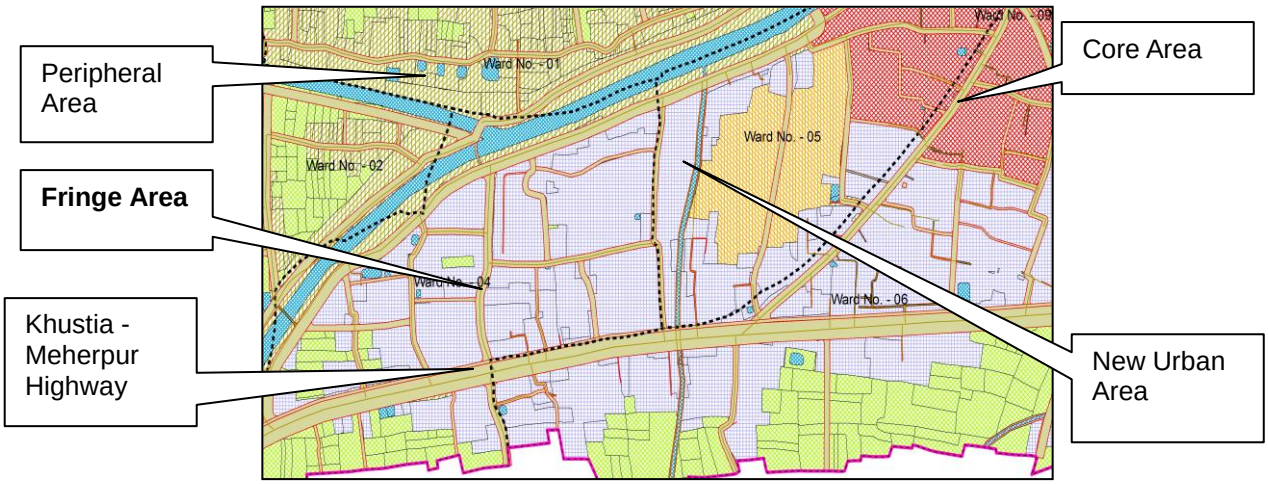

Figure 7.2: Fringe Area of Mirpur Paurashava

7.2.3 Peripheral Area

A total of 210.07 acres of area, which covers 9.76% of Structure Plan area, is declared as Urban Peripheral Area (Map 7.1 and Figure 7.3). First peripheral zone located in ward no. 01, a scattered settlement from urban core area and surrounded by agricultural area, second peripheral area is located eastern portion of ward no. 07 and third one is in south west corner 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.

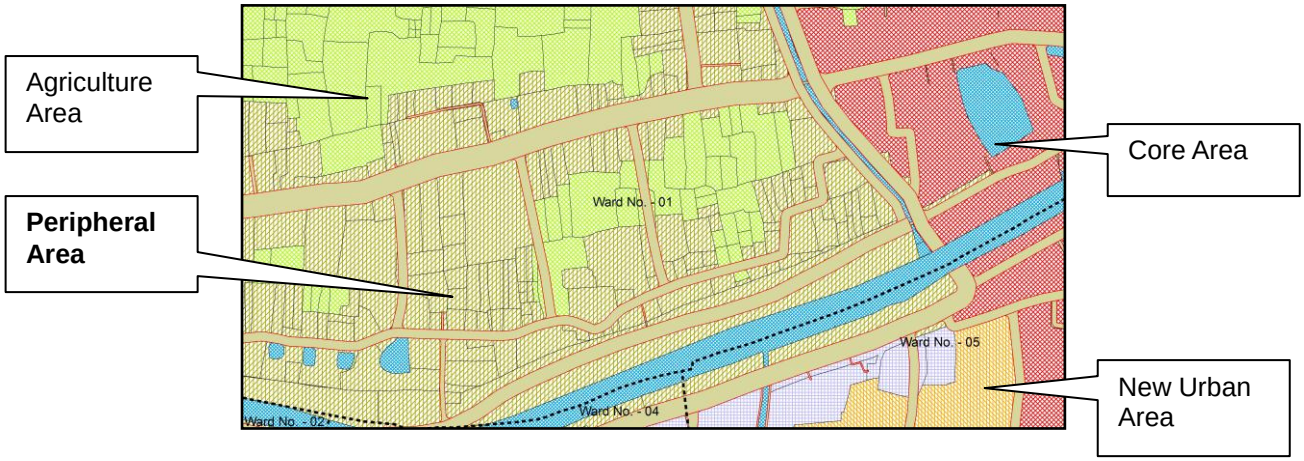

Figure 7.3: Peripheral Area of Mirpur Area

7.2.4 New Urban Area

Total 62.10 acres of land covering 2.88% of Structure Plan area is declared as New Urban Area (Map 7.1 and Figure 7.4).

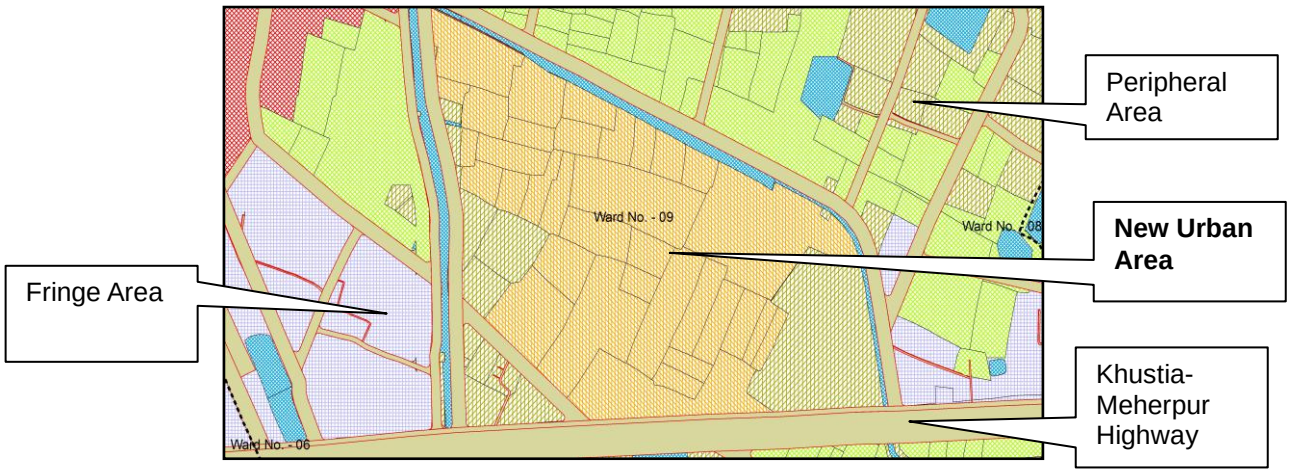

Figure 7.4: New Urban Area

7.2.5 Agriculture

Total 286.86 acres of land covering 13.32% of Structure Plan area is declared as Agriculture Area (Map 7.1 and Figure 7.5). North-eastern portion of the Paurashava is mostly declared as agriculture area.

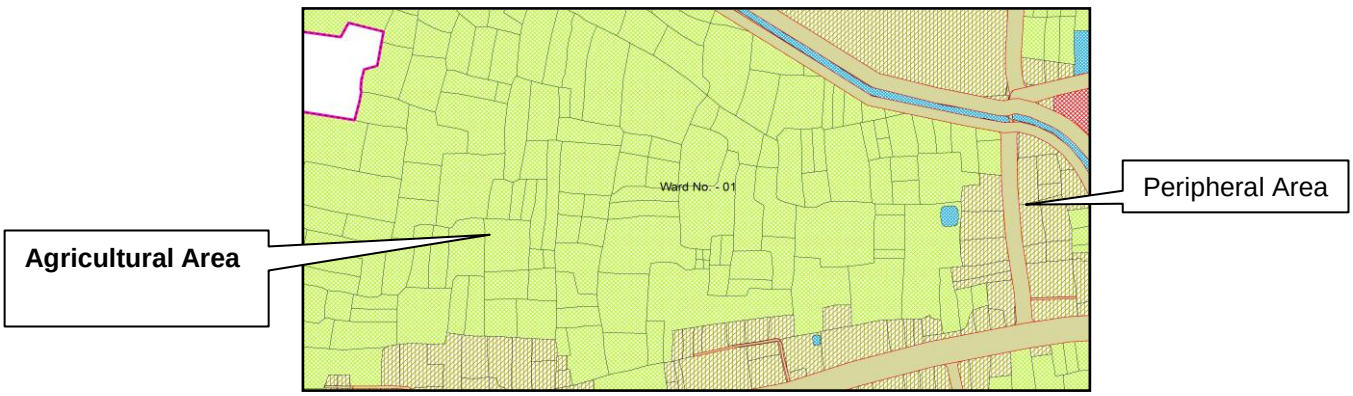

Figure 7.5: Agriculture Area

7.2.6 Water body/Retention Area

Total 162.37 acres area, which covers 7.54% 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.

7.2.7 Major Circulation Network

It contains major road network with Khustia and other neighbouring urban centers and also includes the major road way network required for maintaining existing internal communication. Total 333.04 acres of land which covers 15.47% of total structure plan area. Map 7.1 shows major circulation network.

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 centers, 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. Mirpur 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
Policy UA/1: Optimization of Available Land Resources Growth within the established urban area is not compact in Mirpur. 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.	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.	Control: 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. Promotion:	- Mirpur Paurashava; - Ministry of Land

		The public sector should develop infrastructure facilities and services in deprived areas to enable the land owners for development.	
Policy UA/2: Utilisation of Khas Land for Urban Development	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 be used as much as possible.	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 concerned authority that will implement the particular development proposals.	-Mirpur Paurashava -Ministry of Land -DC, Sylhet

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
POLICY UA/3: INITIATIVES FOR NEW URBAN AREA DEVELOPMENT	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.	- Mirpur 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
Loss of Productive Agricultural Land: The Master Plan area has a vast agricultural land in the northern side of this project. After implementation of the project, environment of agriculture will be converted into non-productive urban and semi-urban area.	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.	- Mirpur Paurashava - DOE.
Low Land, Pond and Drainage Path: A total 152.47 acres with an area equal to or more than 0.25 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.	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.	- Mirpur Paurashava - Water Development Board
Green Belt: The Bank of the Kapatakkho river 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.	This area is declared as green belt in the Master Plan.	- Mirpur Paurashava

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
Popu/1: Declaring population as one of the most critical sectors of national development	- Ministry of Planning - Ministry of Health and Family Planning
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.	
Popu/2: Putting more efforts and resources in raising the level of education.	- Ministry of Education - Ministry of Planning - Ministry of Health and Family Planning
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.	
Popu/3: Creation of well paid and well trained grassroots level family planning workers for motivational work.	- Ministry of Planning - Ministry of Health and Family Planning
Justification: 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.	

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 Mirpur 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, Shayastaganj, Bramanbaria, Habiganj, Nasirnagar, and Sreemongal. 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
Econ/1: Provision of bank loans on easy terms to attract prospective investors in the SME sector.	- Ministry of Industries - Ministry of Commerce
Justification: Easy loans would encourage and attract prospective investors for investment in small scale industries.	
Popu/2: Taking of measures to channelize remittance to value adding productive sectors.	- Ministry of Industries - Ministry of Commerce
Justification: 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.	
Popul/3: Arranging entrepreneurship training programs for prospective investors.	- Ministry of Industries. - Ministry of Commerce.
Justification: 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.	

Housing

As the town has low level of population, housing is yet to become a problem here. Housing policy and programs are provided and executed by the national government. There is no local office of the National Housing Authority to execute housing programs at Upazila level. As a local government, Paurashava can facilitate housing area development by means of providing road infrastructure, drainage, water 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: Policy for Housing and Slum Improvement

Policy	Executing Agency
Policy House/1: Provision of necessary services and facilities to promote housing at private sector.	- National Housing Authority - Ministry of LGRD - Mirpur Paurashava
Justification: 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.	
Policy House/2: 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.	- National Housing Authority - Ministry of LGRD - Mirpur Paurashava

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 programs 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 programs. 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 councilor'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: Policy for Social Amenities and Community Facilities

Policy	Executing Agency
Policy-Amenity/1: Procurement of khas and other public land for park, playfield, community centre.	- Ministry of Land - DC Office, Kustia - Ministry of LGRD - Mirpur Paurashava
Justification: Since above facilities are non-revenue earning, they should be procured at least cost.	
Policy-Amenity/2: 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.	- DC Office, Kustia - Ministry of Land - Ministry of LGRD - Mirpur Paurashava

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
Policy-Transport/1: Development of efficient inter-city road network with standard road.	- Roads and Highways Department (RHD)
Justification: Increased inter-city mobility will increase business transactions and generate investment and employment.	
Policy-Transport/2: Promotion of efficient road transport facilities between urban centers.	- Bangladesh Road Transport Authority (BRTA) - Kustia District

Policy	Executing Authority
Justification: Not only that communication is needed between urban centers, but to attract investment, emphasis must be laid on quality of roads built.	
Policy-Transport/3: Development of local road network through participatory approach.	- Mirpur Paurashava - Local Government Engineering Department (LGED)
Justification: Development of roads will involve huge cost. Participatory development will enable cost sharing, which will reduce cost of road construction substantially.	

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

Policy-Utility/4: Protection of natural drainage system and preparation of hierarchical drainage network.	- LGED - Mirpur Paurashava
Justification: 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.	

7.4.3 Environmental Issues

From environmental point of view Mirpur 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.

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

Chapter- 8

IMPLEMENTATION ISSUES

8.0 Introduction

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't 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't 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't 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 Mirpur 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 Mirpur 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't 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 to reform the organogram 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 appropriate section/units/divisions within the Paurashava framework. Planning unit or division will be necessary to set sequentially as the authority can perform it's mandatory responsibility 'town development and control' well and serve the inhabitants presently as well as in the future. The planning unit/division may have some sections that are as follows:

Planning unit/Division:
a) IT Section
b) Planning Section
c) Beautification and recreation Section

According to the division and it's relevant sections, what so ever appropriate with the necessity and capacity over time, it is recommended to set up necessary manpower for each category of Paurashava. Possible scope of proposed planning unit/division is given bellow.

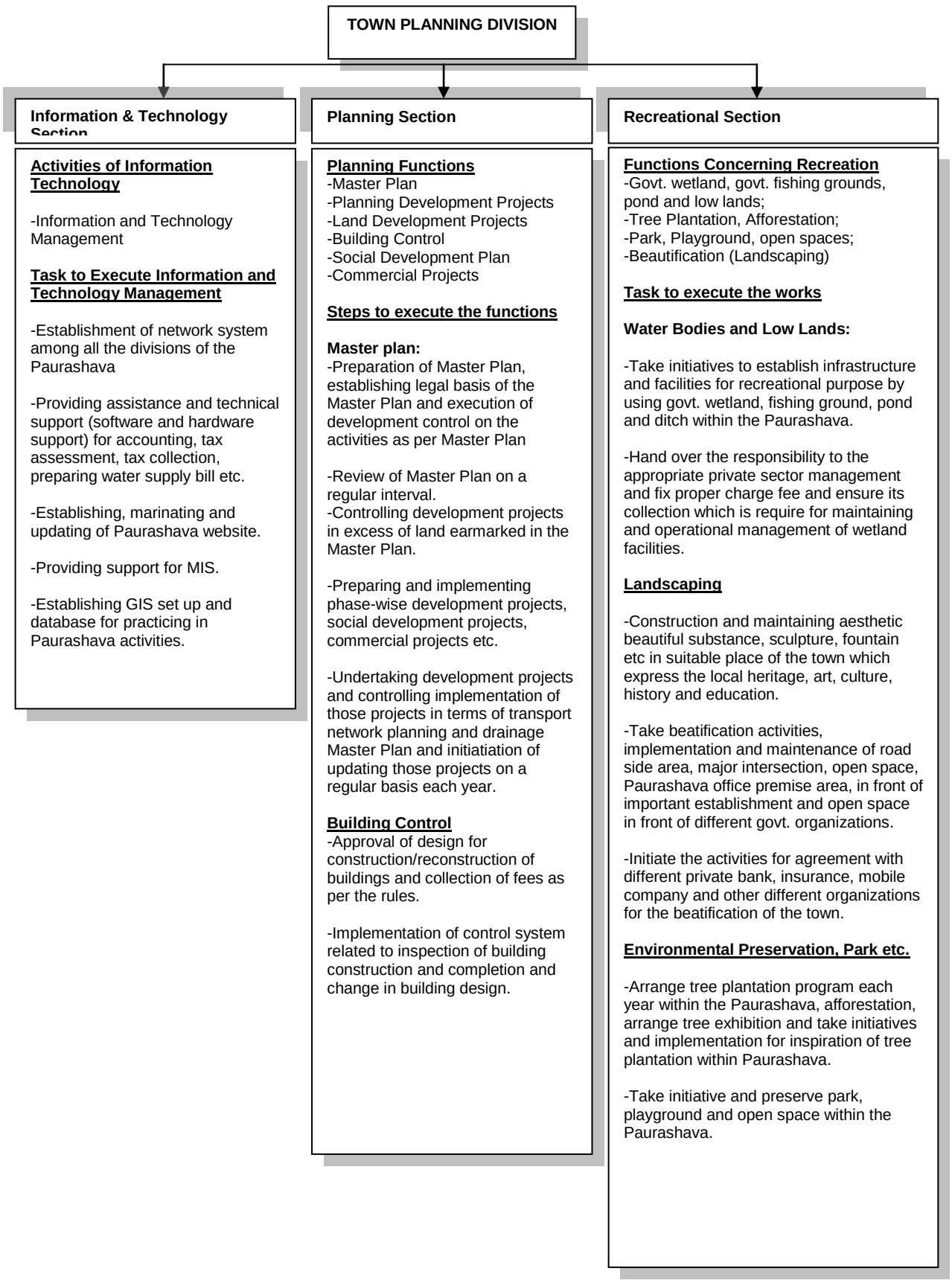

Figure 8.1: Scope of Work for Planning Division

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.

Mirpur is a 'B' class Paurashava. For the 'B' 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 Program (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 Progamme (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 Poura 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 land use 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 programs 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 Local Government (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 Local Government (Paurashava) Act, 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 Mirpur 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.

The Ministry of Local Government, Rural Development and Cooperative has undertaken a number of projects in respect of establishing governance in upgrading Paurashava accounts system, like, UGIIP, STIFPP. Computer and accessories are supplied under these projects for automation of the accounts system. Besides, trainings are also offered to the Paurashava accounts staff for enabling introduction of automation in accounts system. But all these services have not yet reached Mirpur Paurashava.

Revenue Management

The Paurashava still follows a traditional management system in tax collection and revenue management though a scheme of computerized automotive financial system has already been introduced in this Paurashava. Assessment section is responsible to asses the tax of the Paurashava and tax collection, and license and bazar section are responsible to collect the tax of the Paurashava. The public is mainly informed about tax collection during the presentation of annual budget. They may, however, get information from the councilor 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 have been supplied and installed in the Paurashavas covered by financial automotive projects. The projects also provided training to the relevant staffs 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, Mirpur 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 Mirpur 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. 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 Mirpur Paurashava. As there is one town planner in the Paurashava, review and updating of the Master Plan will require service of senior level planners that Paurashava might be able to provide. But more planner is needed for this Paurashava. 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

9.0 Introduction

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 Paurashava. 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 Mirpur Paurashava. 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 Mirpur 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;
- 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 colour 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 Mirpur 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 Mirpur 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 Poura 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 No.	Mouza Name
01	Sultanpur JL 11, Nowpara Puran JL 38_01, Kuripole Bijnagor JL 42
02	Kuripole Bijnagor JL 42
03	Nowpara Puran JL 38_01
04	Mirpur JL 41_01, Mirpur JL 41_02
05	Mirpur JL 41_01, Sultanpur JL 11, Nowpara Puran JL 38_01
06	Mirpur JL 41_01, Mirpur JL 41_02
07	Nowpara Puran JL 38_02
08	Nowpara Krishnopur JL 37, Jogipal JL 39
09	Mirpur JL 41_01, Shimulia Fulbari JL 39, Khondobaria JL 40

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 2153.204 acres with a present population of 22417 of Mirpur Paurashava.

The Urban Area Plan of the Master Plan of Mirpur 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 42.43%) dominates the Paurashava area, followed by residential (31.83%), water bodies (7.49%), Urban Green Space (0%), circulation network (3.76%) and government services and educational land use occupy 1.34% and 0.76% respectively.

Table 10.1: Existing Land use Classification of Mirpur Paurashava

No.	Land use	Area in Acre	Area (%)
01	Agricultural use	913.50	42.43
02	Circulation Network	80.876	3.76
03	Commercial	23.903	1.11
04	Community Services	3.236	0.15
05	Education & Research	16.358	0.76
06	Forest Area	0.000	0.00
07	Government Services	28.894	1.34
08	Industrial/ Manufacturing Processing	4.060	0.19
09	Miscellaneous / Others	0.000	0.00
10	Mixed Use	0.000	0.00
11	Non Government Services	0.721	0.03
12	Recreational Facilities	0.000	0.00
13	Residential	685.36	31.83
14	Restricted Area	58.034	2.70
15	Service Activity	10.010	0.46
16	Transport and Communication	0.788	0.04
17	Urban Green Space	0.000	0.00
18	Vacant Land	166.237	7.72
19	Water body	161.227	7.49
Total		**2153.204**	**100.00**

Source: Land use Survey, 2009.

Map no. 10.1: Existing Land use of Mirpur 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 (31777) in the year 2031 will be 211.850 acres. But survey of existing land use has identified 682.543. The consultant considered the standard for general housing as 200 persons/acre. Considering this standard, the land requirement for residential use will be 158.887 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	211.850	685.36	Existing land is more than enough
	200 persons/acre	158.887		

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 37.45 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	1.00 acre/ 10000 population	3.18	0	3.18
Retail sale Market	1.00 acres/ 1000 population	31.78	23.903	7.87
Super Market	1.50 – 2.50 acres/per super market	2.50	0	2.50
Total		**37.45**	**23.903**	**13.55**

General Industrial Zone

According to approved planning standard, the total land for industries is estimated to be 79.45 acres with 47.67 acres for small scale industries and 31.78 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	47.67	4.06	43.61
Cottage/agro-based	1.00 acres /1000 population	31.78	0	31.78
Total		**79.45**	**4.06**	**75.39**

Education and Research Zone

Estimation of land according to standard indicates that there will be a land requirement of 49.48 acres to accommodate educational facilities by the year 2031. If we deduct the already available 16.358 acres of existing land uses under various education facilities, there will be need of additional 33.13 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
Primary School/ kindergarten	2.00 acres/5000 population	12.71	3.817	8.89
Secondary/High School	5.00 acres/ 20,000 population	7.94	4.393	3.55
College	10.00 acres/20,000 population	15.89	3.429	12.46
Vocational Training Centre	5 - 10 acres / Upazila	5	0	5
Other	5.00 acres/ 20,000 population	7.94	4.719	3.23
Total		**49.48**	**16.358**	**33.13**

Health Services

There already exists an Upazila health complex on an area of 6.165 acres and permanent Health Complex. According to the proposed standard, it would be 10 acres. Paurashava requires additional 6.36 acres of land for the Health centre 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	6.165	3.84
Health centre/ Maternity clinic	1.00 acre/ 5,000 population	6.36	-	6.36
Total		**16.36**	**6.165**	**10.2**

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. Additional 10 acres land is required for Sub-Jail in the Poura area. 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	16.636	-
Paurashava office	3-5 acres	3	0.865	2.135
Jail/Sub-Jail	10 acres/Upazila HQ	10	0	10
Total		**28**	**17.501**	**12.135**

Community Facilities

For various community facilities, the total land requirement has been fixed at 12.35 acres. About 0.79 acres have been earmarked for mosque, 1.59 acres for eidgah/graveyard, 1.59 for Paurashava provided community centre. No additional land is required for mosque, church and temple. A total of 1.59 acres have been reserved for police boxes, 3 acres of land is required for fire station including an additional 0.79 acres for post office. Table 10.8 shows the details.

Table10.8: 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	0.79	3.236	Existing land is more than enough
Eidgah / Graveyard	1.0 acre/20,000 population	1.59	0	1.59
Community centre	1.00 acre /20,000 population	1.59	0	1.59
Police Station	3 – 5 acres/Upazila HQ	3	0	3
Police Box/outpost	1.00 acre/ 20,000 population	1.59	0	1.59
Fire Station	3 – 5 acres/Upazila HQ	3	1.934	0.09
Post office	0.5 acre /20,000 population	0.79	1.5	-
Total		**12.35**	**6.67**	**7.86**

Open Spaces

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 recommended by client stands at 75.32 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

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Required
Play field/ground	3 acres/20,000	4.77	0	4.77
Park	1 acre/1000 pop	31.78	0	31.78
Neighborhood park	1 acre/1000 pop	31.78	0	31.78
Stadium	6-10 acre/upazila	7.00	0	7.00
Total		**75.32**	**0**	**75.32**

Utility Services

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 1.59 acres for water supply installations, like, pump stations and other establishments related to water supply; and 1.59 acres have been fixed for gas related facilities. A dumping site is proposed to be developed over an area of 1.59 acres for final disposal of the solid waste. The total land requirement for electric substation is 1.59 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	1.59	0	1.59
Gas	1.00 acre /20,000 population	1.59	0	1.59
Solid waste disposal site	1.00 acre /20,000 population	1.59	0	1.59
Waste transfer station	4-10 acres/Upazila HQ	4	0	4
Electric sub-station	1.00 acre /20,000 population	1.59	0	1.59
Telephone exchange	1.00 acre/20,000 population	1.59	0	1.59
Fuel Station	0.5 acre /20,000 population	0.79	0	0.79
Total		**12.74**	**0**	**12.74**

Transportation Facilities

Estimation of land according to standard indicates that there will be a land requirement of 7.63 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	1.59	-	1.59
Truck terminal	0.50 acre /20,000 population	0.79	-	0.79
Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand	0.75	-	0.75
Railway Station	4.00 acre / per Station	4	0.423	3.577
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	0.5	-	0.5
Total		**7.63**	**0.423**	**7.207**

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. Mirpur 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 Mirpur 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.

10.2.2.1Types 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 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 Mirpur Paurashava.

Table 10.12: Land Use Plan of Mirpur 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.	801.60	37.23
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.	133.50	6.20
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	30.04	1.40

SL. No.	Land use Category	Remarks	Area (acre)	%
		includes established markets and areas earmarked for markets.		
04	Mixed Use Zone	Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.). In this Paurashava, Ward Center has been included in mixed use zone because several uses like community clinic, individual Ward councillor's office have been included into Ward Center.	17.73	0.82
05	General Industrial Zone	Green and Orange A categories as per The Environment Conservation Rules, 1997	25.57	1.19
06	Heavy Industrial Zone	Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997)	19.25	0.89
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.	25.65	1.19
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.	67.95	3.16
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.	286.86	13.32
10	Water body	Equal or More than 0.25 acre and justification by the consultant and wet land will merge with water body	162.37	7.54
11	Open Space	Playground, Botanical Garden, Stadium, Zoo etc. (Facilities without or with minimum building structure)	99.11	4.60
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.	0.00	0.00
13	Circulation Network	Road and Rail communication	333.04	15.47
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.	14.98	0.70
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.	14.11	0.66
16	Health Services	This land will be used to provide health facility.	6.45	0.30
17	Community	All community facilities including funeral places	9.57	0.44

SL. No.	Land use Category	Remarks	Area (acre)	%
	Facilities	and other religious uses		
18	Historical and Heritage Site	The entire mentionable historical and heritage site.	0.00	0.00
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.	57.02	2.65
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	0.00	0.00
21	Urban Deferred	Optional depending on the Paurashava and the Consultant's judgment	46.48	2.16
22	Forest	Designated Forest Area	0.00	0.00
23	Beach	Sea Beach	0.00	0.00
24	Miscellaneous	Any other categories which are not related to above 23 categories.	1.92	0.09
Total			**2153.204**	**100.00**

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 Mirpur Paurashava is given in Map 10.2 and Appendix-2.

Urban Residential Zone

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 801.60 (31.23%) 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. A Low Income Housing, an Old Rehabilitation Center and a Resettlement Housing have been proposed in this Zone. Detailed mouza schedule are shown in Annexure-F.

Rural Settlement

Mirpur 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. Mirpur Paurashava is mostly rural in character. About 42.43% 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 Mirpur Paurashava, portion of lands has been declared as rural settlement. This settlement occupies acres 133.50 of land, which comprises 6.20% 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 Mirpur 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 30.04 acres (1.40%) 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 Mirpur Paurashava.

Table 10.13: New proposal of Commercial Zone of Mirpur Paurashava

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Corner Shop	0.15	01	Sultanpur_11_02	1469		Land acquisition and establish	Continue the development
	0.16	01	Sultanpur_11_02	748			
	0.58	05	Mirpur_41_01	435, 436			
	0.58	09	Khondobaria_40_00	324			
Slaughter House	0.35	09	Mirpur_41_01	684	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
Paurashava New Market	7.16	06	Mirpur_41_01	737-741, 891-895, 897-899		Land acquisition and establish	Continue the development
Super Market	4.031	03	Nowapara Puran_38_01	356, 365-371		Land acquisition and establish	Continue the development
Neighborhood Market	1.34	06	Mirpur_41_01	632-635		Land acquisition and establish	Continue the development
	2.09	02	Kuripole Bijnagor_42_01	391			
	1.13	04	Mirpur_41_01	49-51, 57, 58, 60, 62			
	1.60	07	Nowapara Puran_38_02	1614-1617, 1624, 1628			
Total	**19.152**	**3 Corner Shops, 1 Slaughter House, 1 Paurashava New Market, 1 Super Market and 4 Neighborhood Markets**					

Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Mirpur, 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 17.73 acres which share 0.82% of total area, including both, existing and proposed land uses. This zone will allow residential structures together with commercial uses as listed in A.12, Annexure.

Civic center will treated as the hub of local civic functions and it will provide the following facilities as per the requirements of the locality:

- Counselor office
- Community Center
- Community Clinic
- Post Box
- Police Box
- Small shops
- Club and
- Office of Utility Services

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 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 10.14 shows new land proposal for manufacturing and processing activity in Mirpur Paurashava. This land will be used for established general industrial area.

Table 10.14: New Land Proposal for Heavy Industrial Zone Area

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Heavy Industrial Zone	19.25	01	Sultanpur_11_02	795-834	Land acquisition and developed basic infrastructure	Establish Industry	Ensure full functioning of industrial area
General Industrial Zone	25.57	01	Sultanpur_11_02	761, 762, 781-794, 839, 840, 842, 844, 845, 846, 848-891, 894, 895, 1617	Land acquisition and developed basic infrastructure	Establish Industry	Ensure full functioning of industrial area
Total:	**44.82**						

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 25.65 acres that include existing and proposed land uses. Table 10.15 shows the new land proposal for governmental services/ administrative area in Mirpur Paurashava. This land will be used for extension of Upazila Complex and Paurashava office premise in Mirpur Paurashava. Annexure-D shows the planning schedule of Government Services area in Mirpur Paurashava.

Table 10.15: New Land Proposal for Governmental Services

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Extension of Upazila Complex	5.12	01	Sultanpur_11_02	915-917, 940-949		Land acquisition and establish	Continue the development
Extension of Paurashava Office	1.31	03	Nowapara Puran_38_01	390, 392-397	Land acquisition and establish	Provide more facilities	Readjust with new facilities if required
Total	**6.43**	**Extension of Upazila Complex and Paurashava Office**					

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 67.95 acres that include existing 16.355 acres land uses. Detail new land proposal for education and research is shown in Table 10.16. Total seven primary schools, three high schools, 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 Mirpur Paurashava.

Table 10.16: New Land Proposal for Education and Research Zone

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
College	4.882	02	Kuripole Bijnagor_42_01	703-708, 711-723, 753			Land acquisition and establishment
High School	2.189	06	Mirpur_41_01	660-664			Land acquisition and establishment
	2.908	09	Shimulia Fulbari_39_01	169, 171, 176, 177			
	2.25	07	Nowapara Puran_38_02	1788-1793, 1816, 1818-21			

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
College	4.882	02	Kuripole Bijnagor_42_01	703-708, 711-723, 753			Land acquisition and establishment
	1.70	02	Kuripole Bijnagor_42_01	595, 596, 687-89, 693-95, 697, 700, 701, 783			
	2.64	09	Shimulia Fulbari_39_01	176			
Primary School	2.50	06	Mirpur_41_01	838-42, 748, 750, 751, 817, 818, 843, 939,		Land acquisition and establishment	Continue the further development of the primary school.
	1.79	01	Sultanpur_11_02	1361-65, 1369-71			
	3.25	04	Mirpur_41_01	205-208, 218-225, 229, 230			
	1.73	05	Mirpur_41_01	395-400, 403, 405-407			
	2.108	01	Sultanpur_11_02	1361-1365, 1371			
	2.81	02	Kuripole Bijnagor_42_01	207-211, 234, 254, 255, 256			
	1.07	07	Nowapara Puran_38_02	1797-1801, 1803			
	2.22	03	Nowapara Puran_38_01	466, 467, 469-472			
Nursery school	0.721	05	Mirpur_41_01	367, 368, 376		Land acquisition and establishment	Continue the further development
Extended College	10.22	03	Nowpara Puran_38_01	228-235, 238-42, 244, 247		Land acquisition and establishment Continue the further development	
	1.75	09	Mirpur_41_01	683			
Extended High School	0.86	08	Nowpara Krishnapur_37_01	324, 326		Land acquisition and establishment Continue the further development	
Extended Primary School	0.86	08	Nowpara Krishnapur_37_01	327-29, 336-37			
Vocational Training Institute	9.07	09	Shimulia Fulbari_39_01	309, 317-327, 330-31, 334-37, 340, 342-43	Land acquisition and establishment	Continue the further development of Vocational Training Institute	
Total	**57.528**	**1 College, 5 High Schools, 8 Primary schools, 1 Nursery School and 1 Vocational Training Institute, Extension of Existing College, High**					

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
College	4.882	02	Kuripole Bijnagor_42_01	703-708, 711-723, 753			Land acquisition and establishment
		School and Primary School					

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 286.86 acres land which covers 13.32% of total land will be use as agricultural use.

Water Body and Retention Area

Total 162.37 acres of water body which cover 7.54% 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. Details of Water body have been shown in Annexure-F.

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 99.11 acres (4.60%). The details of permitted and conditional permits have been presented in Annexure- F. Table 10.17 shows the detail of new land proposal for open space proposal in Mirpur Paurashava. There are 1 Stadium, 3 Playgrounds, 7 Neighborhood Parks and 1 Central Park newly established to fulfill the need of the resident. Annexure-F shows the planning schedule of open space in Mirpur Paurashava.

Table 10.17: New Land Proposal for Open Space

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Stadium	6.27	06	Mirpur_41_01	907-910, 914, 918-925			Land acquisition and establishment
Playground	1.99	04	Mirpur_41_01	201, 202, 205-11, 214-218			Land acquisition and establishment
	0.75	07	Nowapara Puran_38_02	1813-15	Land acquisition and establishment	Maintaining the playground and improve facilities	
	1.70	01	Sultanpur_11_02	1360-61, 1370-75			Land acquisition and

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
							establish ment
Neighbor hood Park	1.08	09	Mirpur_41_01	719, 721-22		Land acquisition and establishm ent	
	1.91	06	Mirpur_41_01	675, 730, 731			
	2.52	02, 04	Mirpur_41_01	2, 3, 4, 929,			
			Kuripole Bijnagor_42_01	759-61			
	0.76	02	Kuripole Bijnagor_42_01	391-95			
	4.45	01, 02, 04	Mirpur_41_01	1,	Land acquisition and establishment		
			Sultanpur_11_02	756, 1408-10, 1414-17, 1618			
			Kuripole Bijnagor_42_01	755, 757			
	2.01	02, 04	Mirpur_41_01	1, 2			
			Kuripole Bijnagor_42_01	749-50, 752, 754, 755, 757, 407-9, 429, 431, 431-34, 466-69, 471, 473, 478, 487-90, 494,		Land acquisition and establishment	
	0.48	08	Nowpara Krishnpur_37_01	207, 309-13, 316-20,			Land acquisiti on and establish ment
	0.18	08	Nowpara Krishnpur_37_01	162, 207, 470-73, 476-78			
	3.65	08	Nowpara Krishnpur_37_01	208, 209, 234, 236			
			Jogipol_39_00	81			
	3.64	01	Sultanpur_11_02	1650			
	4.50	07, 08, 09	Nowpara Krishnpur_37_01	1, 10, 193-4, 196, 198, 207, 234,			
			Jogipol_39_00	81			
			Nowpara Puran_38_02	1778-82,			
	7.07	03, 07, 08, 09	Jogipol_39_00	4-6, 29-33, 79, 81,			

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
			Khondobaria_40_00	163, 164, 166, 170-72, 198-200, 366,	Land acquisition and establishment		
			Nowpara Puran_38_02	1781			
			Nowpara Puran_38_01	643,			
	1.46	03, 07, 09	Nowpara Puran_38_02	1781			
			Nowpara Puran_38_01	643			
	0.29	01	Nowpara Puran_38_01	114		Land acquisition and establishment	
	0.36	03	Nowpara Puran_38_01	274			
	0.17	03	Nowpara Puran_38_01	269			
	0.34	03	Nowpara Puran_38_01	264-67			
	0.60	03	Nowpara Puran_38_01	281, 295, 296, 298-301			
	2.01	03	Nowpara Puran_38_01	301, 302, 304			
	1.14	03	Nowpara Puran_38_01	305			
	2.08	03	Nowpara Puran_38_01	339, 357, 359-361, 365			
	1.35	03	Nowpara Puran_38_01	313, 314, 317, 319-20, 324, 325, 334, 335, 338, 406, 693-98			
	0.872	04	Mirpur_41_01	50, 57, 58, 60-63			Land acquisition and establishment
Central Park	4.43	4	Mirpur_41_01	237			Land acquisition and establishment
Total	**58.06**	**1 Stadium, 3 Playgrounds, 22 Neighborhood Parks and 1 Central Park**					

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 333.04 acre land which covers 15.47% of total planning area of Mirpur Paurashava. Details are given in Chapter

11, Part B of this report. At present only 80.876 acres of land uses for circulation network in this Paurashava.

Transportation Facilities

Ttransportation 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 14.98 acres land (0.70% of total area) will be used for this purpose. Annexure-F shows the planning schedule of Transportation Facilities in Mirpur Paurashava. Table 10.18 shows the new transportation facilities for Mirpur Paurashava.

Table 10.18: New Land Proposal for Transportation Facilities

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Bus & Truck Terminal	3.149	06	Mirpur_41_01	732-735, 916	Land acquisition and establishment	Maintaining and improvement of Parking facilities	
Bus Bay	0.247	03	Nowapara Puran_38_01	305, 306	Land acquisition and establishment	Maintaining and improvement of bus bay facilities	
Rickshaw Stand	0.408	06	Mirpur_41_01	648			Land acquisition and establishment
	0.393	01	Sultanpur_11_02	972			Land acquisition and establishment
	2.39	03	Nowapara Puran_38_01	227			Land acquisition and establishment
	0.49	04	Mirpur_41_01	123	Land acquisition and establishment	Maintaining and improvement	
	0.432	05	Mirpur_41_01	433, 434, 436			Land acquisition and establishment
	0.230	07	Nowapara Puran_38_02	1811	Land acquisition and establishment	Maintaining and improvement	
Tempo Stand	0.46	04	Mirpur_41_01	121-124		Land acquisition and establishment	Maintaining and improvement of auto stand facilities
	0.44	02	Kuripole Bijnagor_42_01	393, 395	Land acquisition and establishment	Maintaining and improvement	
	0.46	05	Mirpur_41_01	437			Land acquisition and establishment
	1.27	09	Khondobaria_40_00	4, 5			Land acquisition and establishment
	0.32	01	Sultanpur_11_02	970, 971			Land acquisition and establishment
	0.39	07	Nowapara Puran_38_02	1812	Land acquisition and establishment	Maintaining and improvement	
	2.56	03	Nowapara Puran_38_01	225-228			Land acquisition and establishment
	0.41	06	Mirpur_41_01	602, 603			
	0.28	06	Mirpur_41_01	648			
Railway Station	0.31	01	Nowpara_Puran_38_01	115	Land acquisition	Establishment	
Total	**14.63**	**1 Bus & Truck Terminal, 6 Rickshaw Stands, 9 Tempo Stand, 1 Bus Bay and extension of existing Railway Station**					

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 14.11 acres land which covers 0.66% total area of Mirpur Paurashava. Annexure-D shows the planning schedule of Utility Services in Mirpur Paurashava.

Table 10.19: New Land Use Proposal for Utility Services

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Waste Dumping Ground	8.04	02	Kuripole Bijnagor_42_02	639-669		Land acquisition and establishment	Maintaining and improvement of waste dumping ground
Waste Transfer Station	0.404	02	Kuripole Bijnagor_42_02	570-572	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
	0.262	06	Mirpur_41_01	628, 630			
	0.403	01	Sultanpur_11_02	1446-1448			
	0.432	09	Khondobaria_40_00	120, 124, 125			
	0.288	08	Nowapara Krisnopur_37_01	190			
	0.126	03	Nowapar Puran_38_01	194, 676			
	0.489	07	Nowapar Puran_38_02	1616-1618			
	0.492	04	Mirpur_41_01	118-119			
	0.460	09	Khondobaria_40_00	14, 15			
Public Toilet	0.69	06	Mirpur_41_01	915, 917	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Extension of Fire Service Station	0.649	06	Mirpur_41_01	900, 901, 912	Land acquisition and establishment	Maintaining and improvement of waste transfer station	
Total	**12.73**	**1 Waste Dumping Ground, 9 Waste Transfer Stations, 1 Public Toilet and Extension of Fire Service Station**					

Health Services

This land will be used to provide health facility. Total 6.446 acre land 0.30% 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. Annexure-D shows the planning schedule of Health Services in Mirpur Paurashava.

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 9.57 acres land which covers 0.44% of

total planning area will be used for this purpose. Annexure-D shows the planning schedule of Community Facilities in Mirpur Paurashava.

Table 10.20: New Land Use Proposal for Community Facilities

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No. (Part)	Phasing
Cinema Hall	0.99	06	Mirpur_41_01	917	1st phase
Central Graveyard	2.76	09	Shimulia_Fulbaria_39_01	159	1st phase
			Khondobaria_40_00	88, 89, 90	
Central Eidgah	2.58	09	Khondobaria_40_00	272, 273, 274, 275, 276	1st phase
Total:	**6.33**				

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.

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 46.48 (2.16%) acres that include existing and proposed land uses. Annexure-D shows the planning schedule of Urban Deferred Area in Mirpur 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.

Map no. 10.2: Land Use Plan of Mirpur Paurashava

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. 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 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.

a. 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 eviction.

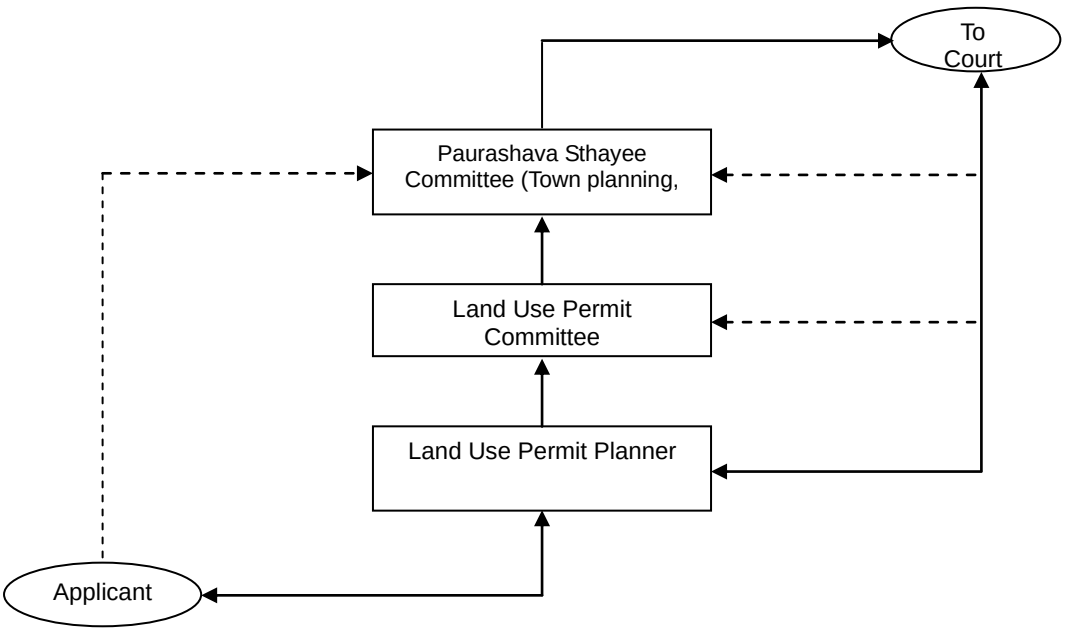

Figure 10.1: Structure of Land use Permit Authority Showing Linkages

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 10.2.

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

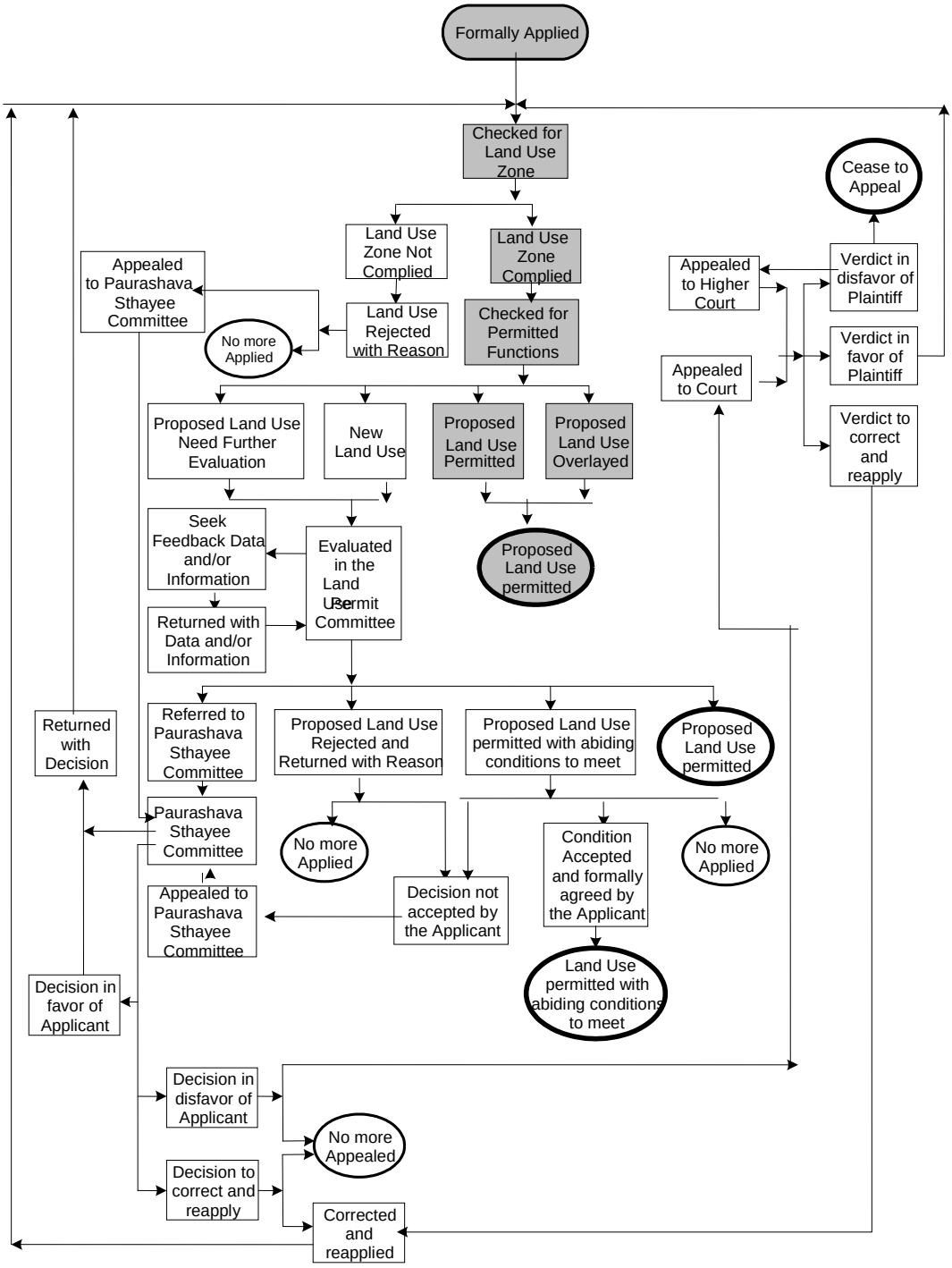

Figure 10.2: Flow Diagram Showing Activity Linkage of Plan Permit Procedure

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 Mirpur 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, BDR, Police Stations

BDR, 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 Mirpur 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 Mirpur 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 Mirpur Paurashava 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 Bus Stand Intersection and Mirpur Bazar Intersection. 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 Paurashava/District Administration. Year wise data of non-motorized traffic were collected from the Mirpur Paurashava, 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 Paurashava, LGED and RHD. The same sources also provided information about future road projects in and around the Paurashava. 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

Mirpur is a small town which is situated along the Meherpur-Kushtia Regional Road. Mirpur Paurashava is located in Mirpur Upazila about 40 km from District Headquarter, Kushtia. The growth of this urban centre has been based on an old 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,

- Meherpur to Kushtia Road
- T & T Road
- Bheramara Road
- Poradoho Road

The T & T road connects with Meherpur to Kushtia Road at Bus Stand interaction (Map-11.1). Apart from major roads, especially from Meherpur to Kushtia Road large number of local roads having varying width from 10 ft. to 20ft width, give access to individual houses and establishments and connect them to major roads.

11.2.1.2 Roads in Mirpur Paurashava

Total length of road network is 84.012 km. Among these 32.593 km are katcha road, 25.675 km semi pucca road and rest 25.744 km is pucca road in Mirpur Paurashava. Table 11.1 shows the picture of road network of the Paurashava.

Table 11.1: Road Network in Mirpur Paurashava

Type of Road	Length (km)	Percentage (%)
Pucca	25.744	30.64
Semi-pucca	25.675	30.56
Katcha	32.593	38.80
Total	**84.012**	**100.00**

Source: Physical Feature Survey, 2008.

Map no. 11.1: Existing Road Network of Mirpur Paurashava

Roads of Roads and Highways Department

The Paurashava has about 3.91 Km. of roads within the town owned and maintained by the Roads and Highways Department (RHD). This road passes beside the town to important urban centers including Meherpur and Kushtia. The width of this road is 20-30 m.

Roads of Local Government Engineering Department (LGED)

LGED maintains about 2.61 km of roads within the Mirpur Paurashava. These are, T & T Road, Poradoho Road and Bheramara Road.

Important Local Roads

The Paurashava has 84.012 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

Mirpur Paurashava is a small town. Non Motorized Transport (NMT) is currently dominating in the town's internal traffic. The traffic volume survey at Mirpur Bus Stand intersection presents that, the NMT is higher than MT in every traffic flow directions. Average daily traffic volume of Bus stand intersection is showed in Table 11.2.

Table 11.2: Average Daily Traffic Volume of Bus Stand 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			
Bus Stand Intersection	North-South	0	0	0	1764	0	2552	1764	41	2784	1764	7141	8905
	South-North	0	0	0	258	0	2659	1874	42	3115	258	7690	7948
	East-West	293	236	523	424	0	2506	1654	29	3027	1476	7216	8692
	West-East	290	245	541	809	0	2806	1681	37	3070	1885	7594	9479
Sub Total		**583**	**481**	**1064**	**3255**	**0**	**10523**	**6973**	**149**	**11996**	**5383**	**29641**	**35024**
Percentage		**1.66**	**1.37**	**3.04**	**9.29**	**0.00**	**30.05**	**19.91**	**0.43**	**34.25**	**15.37**	**84.63**	**100.00**

Source: Traffic Volume Count Survey by DDC, 2010

In the Table 11.3 it is also showed that NMT dominates in the Bazar intersection.

Table 11.3: Average Daily Traffic Volume of Bazar 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			
Bazar Intersection	North-South	0	0	0	345	0	2284	1508	25	2664	345	6481	6826
	South-North	0	0	0	242	0	1556	1541	25	2728	242	5850	6092
	East-West	0	0	0	364	0	2433	1588	22	2623	364	6665	7028
	West-East	0	0	0	360	0	2466	1646	22	2759	360	6893	7253
Sub Total		0	0	0	1311	0	8739	6282	93	10774	1311	25887	27198
Percentage		0.00	0.00	0.00	4.82	0.00	32.13	23.10	0.34	39.61	4.82	95.18	100.00

Source: Traffic Volume Count Survey by DDC, 2010

It is clearly evident from the survey that majority of the people choose non-motorized vehicle to go their desired destinations and hence NMT (Non-motorized transport) is the most widely used transport mode for Mirpur 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 Bus stand intersection and Mirpur 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 that Bus Stand Intersection exhibits the highest Peak Hour traffic volume 946.01 per hour in hatday, whereas Bazaar Intersection has the lowest traffic volume 736.43 per hour in non-hatday.

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 two main points where the traffic conflict is the highest. These are located Bus Stand intersection and Bazar Intersection 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 Bus Stand intersection and Mirpur Bazar intersection.

11.2.5 Facilities for Pedestrians

The town does not have any footpath anywhere. In small towns like Mirpur, 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, Mirpur 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. About 23% 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, 76.79% of the households of the town reported that the road widths in front of their houses are 8 ft. or less. This is alarming, as this condition will become a source of traffic problem, when road traffic will increase.

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, Mirpur 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)

10.2.7.1 Railway Network

Mirpur Paurashava has a strong Rail network. Mirpur is connected with Khulna, Dhaka, Rajshahi and Syedpur by the railway network. On average more than 940 people travel everyday by railway from Mirpur Railway Station.

11.2.7.2 Waterway Network

No river is available in Mirpur Paurashava.

11.3 Future Projections

This section presents future projection on transportation requirement of Mirpur 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 Mirpur, which are as follows:

Table 11.4: 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.

Mirpur 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.

10.3.2 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 Mirpur 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 Mirpur Paurashava.

10.4.1 Plans for Road Network Development

Following are the suggested planning standards (Table 11.5) 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 11.5: Proposal for Road Standard in the Project area

Types of Road	Recommended width
Paurashava Primary Roads	30.48-45.73 meter (100'-150')
Paurashava Secondary Roads	18.29-30.48 meter (60'-100')
Local Roads	6.10-12.20 meter (20'-40')

Source: UTIDP Planning Standard, LGED

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

Meherpur to Kushtia Road is passing through the Mirpur Paurashava which connected Paurashava with two district town. The other major roads are also connected with this regional road and connected the town with different urban centers including upazila headquarters. Main intersections are located at the center of the town, known as Mirpur Bazar Intersection and Bus Stand Intersection. Planning team initiates to confirm uninterrupted traffic flow through this Meherpur to Kushtia Road. To ensure this the high way will be widening up to 150 ft. Several new roads are constructed with different width to provide free flow connectivity. Hatipara road are proposed to be widen up to 100 ft and Nowapar road are proposed to widen up to 80 ft. Map 11.2 shows the road network plan of Mirpur Paurashava.

Paurashava Primary Road

Meherpur to Kushtia road (4.756 km) is proposed to be widening up to 150 ft. Hatipara road (2.834 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. 5 roads are proposed to be widening up to 80 ft which are also considered as primary road for this Paurashava.

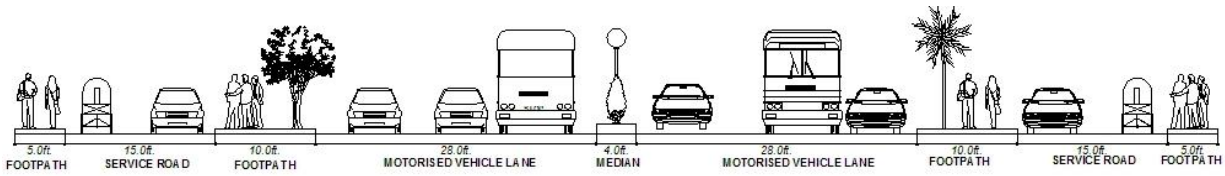

Figure 11.1: Primary Road with 100 ft RoW

(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 Mirpur Paurashava.

Map no. 11.2: Road Network Plan of Mirpur Paurashava

Paurashava Secondary Road

Total secondary road is 24.116 km with 60 ft RoW. Within 23.99 km secondary road will be widening and rest 5.518 km new secondary road will be constructed. Figure 11.2 shows the layout design of secondary road with 60 ft RoW.

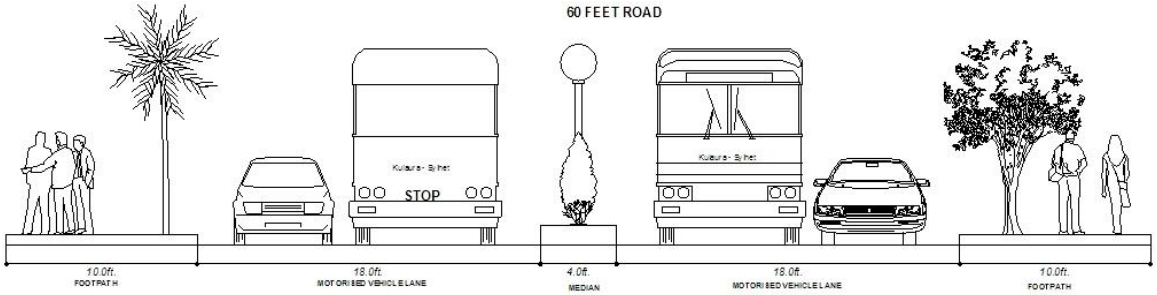

Figure 11.2: Secondary Road with 60 ft RoW.

Tertiary Road

Total 33.176 km Tertiary Road is proposed with 30-40 ft RoW within in the Paurashava of which 27.626 km road will widening and rest 5.55 km road will be newly constructed in on different phases to fulfill the future needs of the Paurashava. Figure 11.3 and 11.4 shows the layout design of Tertiary road with 40 ft and 30 ft RoW.

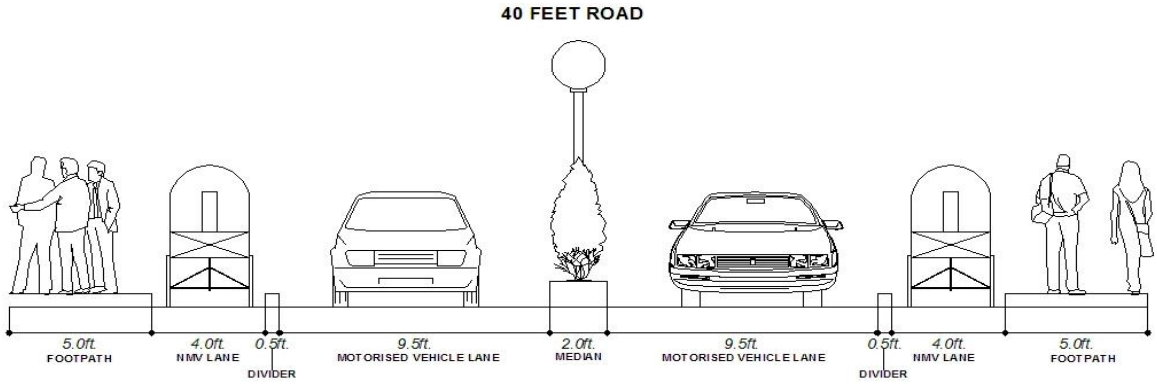

Figure 11.3: Tertiary Road with 40 ft RoW.

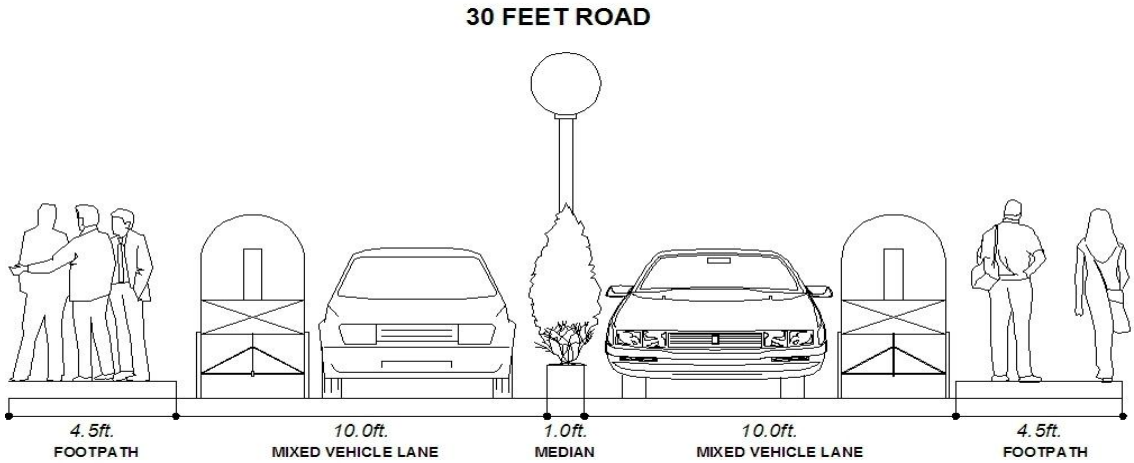

Figure 11.4: Tertiary Road with 30 ft RoW.

Access Road/ Local Road

Total Local road/Access road is 12.501 km with 12-20 ft RoW. Of which total 11.593 km road will widening existing road and 0.908 km road will newly construct to fulfill the future need of the Paurashava. Figure 11.5 shows the layout design of Local road with 20 ft RoW.

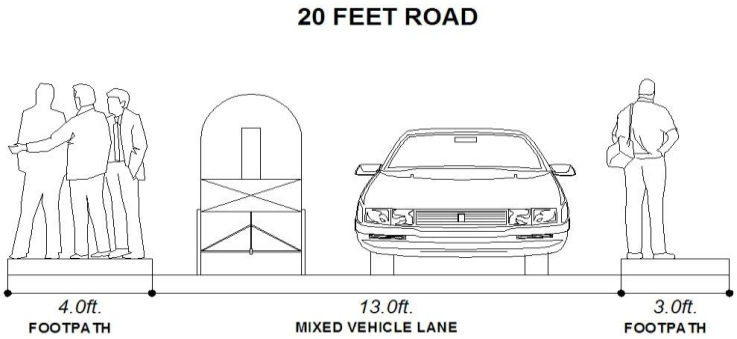

Figure 11.5: Access/Local Road with 20 ft RoW.

11.4.1.2 Proposal for Improvement of the Existing Road Networks

Most of the road in Mirpur Paurashava is very narrow and it creates tremendous transportation problem. To improve this situation about 70.94 km road is proposed for widening in the transport development plan. The highest 27.503 km (38.77%) and 18.598 km (26.22%) is proposed for widening up to 40 ft and 60 ft, which will function as Tertiary and Secondary road. Then 8.342 km (11.65%) km and 5.529 km (7.79%) is proposed for widening up to 20 ft and 80 ft, which will function as local and primary road. Table 11.6 shows the summary of road widening proposal.

Table 11.6: Summary of road widening proposal in Mirpur Paurashava

RoW (in ft)	Length (in Meter)	Percentage	Proposed Road Type
12	3251.464	4.04	Local Road
20	9201.953	11.43	
30	122.9923	0.15	Tertiary Road
40	32807.073	40.74	
60	23103.881	28.69	Secondary Road
80	5431.371	6.75	Primary Road
100	2583.547	3.21	
150	4017.144	4.99	
Total	**80519.425**	**100.00**	**-**

Table 11.7 shows widening proposal of road which have proposed length more than 2000 metre in Mirpur Paurashava along with proposed width and development phasing. Details of road widening proposal have been given in **Annexure-D.**

Table 11.7: Existing road width and proposed RoW of roads in Mirpur Paurashava

Road Type	Road ID	Width (ft)	Proposed Type	Length (m)	Development Phasing
Primary Road	PR-169	150	Widening Road	4017.144	Phase-2
Primary Road	PR-174	100	Widening Road	2583.547	Phase-2
Secondary Road	SR-19	60	Widening Road	2381.869	Phase-3
Secondary Road	SR-8	60	Widening Road	2076.384	Phase-1
Tertiary Road	TR-116	40	Widening Road	1844.008	Phase-3
Tertiary Road	TR-75	40	Widening Road	2029.916	Phase-3
Total:				**14932.87**	

10.4.1.3 List of Proposed New Roads

To improve existing transportation system about 11.975 km new road is in the transport development plan. The highest 5.55 km (46.35%) and 5.52 km (46.08%) new road is proposed with 40 ft and 60 ft right of way (RoW), which will function as Tertiary road and Secondary road. Again 0.91 km (7.58%) new road is proposed as Local Road with 20 ft width. Table 11.8 shows the summary of road widening proposal.

Table 11.8: Summary of new road proposal in Mirpur Paurashava

RoW (in ft)	Length (in meter)	Percentage	Road Type
20	907.17	8.15	Local Road
40	5550.13	49.86	Tertiary Road
60	4673.347	41.99	Secondary Road
Total	**11130.65**	**100.00**	**-**

Table 11.9 shows new proposal of road which have proposed length more than 500 metre in Mirpur Paurashava along with proposed width and development phasing. Details of new road proposal have been given in **Annexure-D.**

Table 11.9: New Road Proposal in Mirpur Paurashava

Road Type	Road ID	Width (ft)	Proposed Type	Length (m)	Development Phasing
Secondary Road	SR-10	60	New Road	1084.819	Phase-1
Secondary Road	SR-17	60	New Road	604.176	Phase-1
Secondary Road	SR-26	60	New Road	1653.641	Phase-1
Tertiary Road	TR-80	40	New Road	626.619	Phase-3
Total:				**3969.26**	

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.

10.4.2.1Transportation Facilities Plan

Following are the suggested planning standards (Table 11.10) 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 11.10: Estimation of Land Requirement for Transportation Facilities

Use/Facility	Recommended standard	Land in Acres		
		Required Land	Existing Land	Add. Required
Bus terminal	1.0 acre /20,000 population	1.59	-	1.59
Truck terminal	0.50 acre /20,000 population	0.79	-	0.79
Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand	0.75	-	0.75
Railway Station	4.00 acre / per Station	4	0.423	3.577
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	0.5	-	0.5
Total		**7.63**	**0.423**	**7.207**

11.4.2.2 Parking and Terminal Facilities

Bus Terminal

The only bus stand of Mirpur Paurashava is located beside the Meherpur to Kushtia Road. It is known as 'Mirpur bus stand'. The buses are normally parked beside station road or on street, with a capacity of accommodating 5-10 buses at a time. Considering needs of the Paurashava 3.149 acres of land is proposed for bus terminal in Mirpur Paurashava. Location of bus cum truck terminal is given in Map 11.3 and detail land proposal was given in Table 10.18, Chapter 10, and Part-B of this report.

Truck Terminal

Though Mirpur Paurashava is a trading center and located at an advantageous position along the highway, but it has no formal truck terminal for loading and unloading of trading materials. So a land for truck and bus terminal is proposed with an area of 3.149 acre, which will act as Truck Terminal also. Location of bus cum truck terminal is given in Map 11.3 and detail land proposal was given in Table 10.18, 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. Though there are few non formal tempo stands exists here, nine new Tempo stand is proposed. Location of Tempo is given in Map 11.3 and detail land proposal was given in Table 10.18, Chapter 10, and Part-B of this report.

Rickshaw Stand

Rickshaw is the cheapest mode for local transportation. Eight rickshaw stand is proposed in Mirpur Paurashava for future development. Location of rickshaw stands were given in Map 11.3 and detail land proposal was given in Table 10.18, Chapter 10, and Part-B of this report.

Bus Stoppage

A bus stop is a designated place where buses stop for passengers to board or disembark a bus. A bus stoppage should be a place for safe passengers as well as free the traffic movement on the road. Usually a bus bay is designed off the main road. The construction of bus stops tends to reflect the level of usage. Stops at busy locations will have bus bay designated along with intersection design. About 0.247 acres of land is proposed for bus stoppage. Location of bus stoppage is given in Map 11.3 and detail land proposal was given in Table 10.18, Chapter 10, and Part-B of this report.

Parking Facilities

As the town dies not have large number of traffic so the local government did not feel it necessary to reserve parking space. There no formal parking reserves for non-motorized transports a well. However, tempo and baby taxis are informally parked in particular areas. It is proposed that Rickshaws and Tempos will be parked only in the proposed stands and Bus & Trucks will be only parked in proposed Bus cum Truck Terminal.

Map no. 11.3: Proposed Transportation Facilities of Mirpur Paurashava

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. Standard design of footpath has been enclosed in Annexure- A 2. 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 Mirpur Paurashava transport network plan.

11.4.3 Waterway Development/Improvement Options

There is no waterway network in Mirpur Paurashava.

11.4.4 Railway Development Options

There has an existing railway station with the area of 0.22 acres at ward no. 01. Proposal of 0.34 acres of land has been given as extension of this railway station. So overall the area of the railway station has been 0.56 acres. The proposed railway station is in Nowpara mouza and the plot no. is 115.

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 Mirpur 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 Tempos.

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.

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.

10.5.3 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

The section describes the plan implementation strategies of transportation plan of Mirpur Paurashava. This also describes the regulation to implement transport pan, evaluation and coordination to implement the transport plan in the Paurashava.

11.6.1 Regulations to Implement the Transportation Plan

Following regulations will be needed for implementation of the plan.

Public Roads Act, 2004: Objectives of the Public Roads Act, 2004 is prescribed in the section 2. Those objectives are to:

a) Establish ownership and responsibilities for roads;

b) Establish the framework for managing the road network;

c) Establish general principles for road management;

d) Provide for general design and planning principles for roads;

e) Confer powers and responsibilities on road authorities;

f) Commit road authorities to provide and maintain safe roads, and to do so using resources efficiently;

g) Provide for the establishment and classification of public roads;

h) Provide for data bases of public roads, and public access to them;

i) Set out rights and duties of road users;

j) Control activities on roads;

k) Make special provision for restriction on access to roads;

l) Identify characteristics of new road types;

m) Provide a legal framework for private sector participation in road construction, operation and maintenance, including tolling of roads;

n) Establish defences for civil liabilities; and

o) Create offences and provide for penalties.

Section 5 has defined public roads as-

1) The Government may declare a public road.

2) The declaration may be made in relation to land, whether or not it is currently used for passage by members of the public.

3) In the declaration, the Government shall classify the public road as:

   i. A national Road;

   ii. A regional Road;

   iii. A Zila Road;

   iv. An Urban Road;

   v. An Upazila Road;

   vi. A Union Road;

   vii. A Village Road.

Motor Vehicles Ordinance, 1983 (Ordinance No. LV of 1983) was enacted in 22nd September, 1983. The Ordinance will be needed mostly for the registration of motor vehicles and issuing of driving license.

Stage Carriages Act, 1861 (Act No. XVI of 1861) was enacted in 7th July 1861. Section 1 of the Act has defined the term Stage Carriage and said, "every carriage drawn by one or more horses which shall ordinarily be used for the purpose of conveying passengers for hire to or from any place in Bangladesh shall, without regard to the form or construction of such carriage, be deemed to be a Stage Carriages within the meaning of this Act." Again, according to the section 2, no carriage shall be used as a Stage Carriage unless licensed by a Magistrate.

The Paurashava may, in communication with the RHD and LGED and with the prime approval from the Government may enforce the regulations as mentioned above. Again, some of the relevant regulations of developed countries may be enforced by the appropriate authority for the betterment of accessibility, road safety and road management. In connection with this concept,

Highways Act of England and Wales may be followed.

According to the section 70 (1a) of the **Highways Act of England and Wales**, the owner or occupier of any structure and the owner or occupier of any land on which a structure is situated shall take all reasonable steps to ensure that the structure or the use of the structure is not a hazard or potential hazard to persons using a public road and that it does not obstruct or interfere with the safe use of a public road or the maintenance of a public road.

(b) Where a structure or the use of a structure is a hazard or potential hazard to persons using a public road or where it obstructs or interferes with the safe use of a public road or with the maintenance of a public road, a road authority may serve a notice in writing on the owner or occupier of the structure or on the owner or occupier of any land on which the structure is situated to remove, modify or carry out specified works in relation to the structure within the period stated in the notice.

(2a) The owner or occupier of land shall take all reasonable steps to ensure that a tree, shrub, hedge or other vegetation on the land is not a hazard or potential hazard to persons using a public road and that it does not obstruct or interfere with the safe use of a public road or the maintenance of a public road.

(b) Where a tree, shrub, hedge or other vegetation is a hazard or potential hazard to persons using a public road or where it obstructs or interferes with the safe use of a public road or with the maintenance of a public road, a road authority may serve a notice in writing on the owner or occupier of the land on which such tree, shrub, hedge or other vegetation is situated requiring the preservation, felling, cutting, lopping, trimming or removal of such tree, shrub, hedge or other vegetation within the period stated in the notice.

Again, section 71 (1a) said that, any person who, without lawful authority or the consent of a road authority-

i. Erects, places or retains a sign on a public road, or

ii. Erects, places or retains on a public road any caravan, vehicle or other structure or thing (whether on wheels or not) used for the purposes of advertising, the sale of goods, the provision of services or other similar purpose, shall be guilty of an offence.

Section 76 (1) of the **Highways Act of England and Wales** have provisioned regulations for a road authority and said, a road authority may -

(a) Construct and maintain drains in, on, under, through or to any land for the purpose of draining water from, or preventing water flowing onto, a public road,

(b) Use any land for the temporary storage or the preparation of any gravel, stone, sand, earth or other material required for the construction or maintenance of a public road.

11.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

Implementation through Multi-Sectoral Investment Program: Major infrastructure development works such as primary roads, secondary roads, transportation facilities etc., will largely be controlled by Government. Public works requires efficient co-ordination through the Multi-Sectoral Investment Programme (MSIP).

Objective of a Multi-Sectoral Investment Programme (MSIP) is to match a list of the development projects with the funding stream necessary to implement them. There are two basic activities that would determine the contents of MSIP. One activity would be to prioritize and schedule the investment projects of all public agencies so they will collectively help to achieve the development goals and objectives of the Transportation and Traffic Management Plan. Second activity would be to analyze the source and availability of fund for the prioritized list of development projects.

Implementation through Action Plans and Projects: Action Plans and Projects will be the implementation plans to solve problems at the local level. Action plans will take a direct approach toward plan implementation with a minimum of research, reports or elaborate planning methods. These projects will be easily identifiable and will require minimum resource.

Implementation through Development Control: Land use zoning is one of several methods of plan implementation to be considered. In all cases where some form of development, landuse control may be applied; careful consideration requires the following ideologies:

- The purpose to be achieved by the development controls;
- Where controls should be applied;
- What aspect of development needs to be controlled;
- What type of development controls are required;
- What degree or level of development control is required;
- Who will be affected by the required control;

- Who will be affected by the controls and in what manner;
- When the controls should be applied;
- What will be the likely impact of the controls;
- How and by whom will the controls be administered and enforced.

Development control as an instrument of plan implementation may be selectively applied within the Urban Area Plans. Development controls would also be varied in intensity and detail to suit the particular circumstances. It is important that they should be clear and easily understood by all parties concerned. Since the entire Paurashava Master Plan 'package' has become statutory, development controls associated with its component plans would also be statutory.

Implementation by Facilitating Private Investment: Another approach that would be taken by government toward plan implementation will be to guide and facilitate investments made by the private sector. Government can achieve this with relative ease and at very low cost by setting up a legal and operational framework, coupled with suitable incentives, to facilitate land consolidation, plot boundary readjustment, efficient lay out of plots and provision of local infrastructure by the private sector. The benefits of this approach would be:

- Increased efficiently of the urban land market would make, more private land available to urban households;
- Would pass much of the development costs for local infrastructure to the private sector and land market mechanisms;
- Would increase in land for development without large cash outlays by government to purchase land for development schemes; and
- Would keep provision of land for community facilities virtually no cost to government.

Plan Monitoring

The Transportation and Traffic Management Plan would simply be tools for guiding and encouraging the growth and development of an urban area in a preferred manner. In a rapidly changing urban environment, the Transportation and Traffic Management Plan would require to keep up to date. If this is not done, within a few years it will be obsolete. Therefore, it is imperative that the requirement for regular updating of the Transportation and Traffic Management Plan be made a legal requirement.

For implementation of the various programme components of the Transportation and Traffic Management Plan appropriate administrative measures will have to be undertaken. This will essentially include project preparation and monitoring of their execution and evaluation. For carrying out all these activities appropriate institutional measures are also be needed.

Evaluation

Monitoring and evaluation of on going and implemented projects is essential to keep the future course of action on the right track. An on going project should be regularly monitored and handicaps identified to enable taking appropriate measures at the right time.

Post implementation evaluation is also needed to take appropriate measures correcting past errors-from project preparation to implementation.

The top level supervision has to be done by a high level supervisory committee headed by the Paurashava Mayor, LGED representative, RHD and Local Government Ministry. Other members of the committee will be local Ward Councilors, local community leader/social workers and the Town Planner of the Paurashava. The committee will supervise implementation works regularly and issue necessary instructions to expedite the works of implementation.

Co-ordination

A Planning Section of Paurashava should have close interaction with the citizen of Paurashava at large in order to make people aware of the benefits of a good plan and, therefore, their social responsibility to promote plan implementation in one hand and also resist contraventions on the other. A specific interactive cell is recommended to operate in this regard with following responsibilities:

- Provide pre-application advice to residents, consultants and developers about landuse management issues and application procedures for the submission of development applications.
- Enforce planning and landuse management related legislation and zoning scheme regulations.
- Issue of property zoning certificates.
- Investigate and resolve landuse management complaints, illegal landuse and prosecuting contraventions.

Such interactive windows may be opened in various convenient locations to ensure ease of the answers to commonly asked questions may be shown in the internet. Besides, those may be shown in the print and electronic media time to time.

In spontaneous areas, while all out people's co-operation is needed for project implementation; there will also be some elements of negotiation. Negotiation will be particularly needed in case of road widening projects. It will be a crucial task for Paurashava to convince the affected people to give up their land for road use. Efforts should be made to convince the land owners on the ground of enhancement of property value due to road widening. In case people refuse to offer land free of cost necessary arrangements may have to be made for payment of compensation. This process of negotiation will be very critical, cumbersome and time consuming, and therefore, has to be handled with utmost care and patience. The best results can be accrued only by wining people's confidence. In case the authority fails to get peoples co-operation they should

exercise power of compulsory acquisition of land through Acquisition of Requisition of Immovable Property Ordinance, 1982. Attempts may be made to engage NGOs / CBOs / RHD / LGED to work as catalysts in negotiation.

Capter-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 Mirpur 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. The objectives of drainage planning are described as follows:

- To analyze drainage aspects in the planning of the Paurashava.
- 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 Paurashava plan.
- To present planning options for drainage of the future Paurashava 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 Mirpur Paurashava has been carried out through the guideline of ToR .In this survey explore the existing drainage network system at Mirpur Paurashava. The main vision of this survey is explored the length, depth, flow direction, coverage area and satisfactory level of the Paurashava 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 Mirpur 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, Mirpur Paurashava 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 Mirpur Paurashava is 10.57 km. The length of manmade pucca drain is 9.10 km (86.11%) and Katcha drain is 1.47 km (13.89%). Table 12.1 shows major drain in Mirpur Paurashava.

Table 12.1: Type and length of Drainage Network of Mirpur Paurashava

Type	Length (m)	Percentage (%)
Pucca	9103.376	86.11
Katcha	1467.823	13.89
Total	10571.20	100.00

Source: Physical Feature Survey by DDC, 2009-2010

12.2.2 Natural Canal and River

General Description of Natural Canals

The existing GK khal and few other narrow canals at present are trying to serve the drainage requirements. These canals pass through the Paurashava area and are linked with GK khal. 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

Map no. 12.1: Existing Drainage Network of Mirpur Paurashava

with existing drains/ canals. Lack of drainage network is causing water logging for 4 months in the Paurashava 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.

River

There is no River within the Mirpur Paurashava area.

Beel/ Marsh Land

There is no beel/ marsland found in the Mirpur Paurashava.

Other Element (Ponds, Deghee-Ditch and Dyke)

Ponds are abundant in numbers in the Paurashava which is evident from the existing drainage network map (Ref. Map 12.1) of Mirpur Paurashava. The Paurashava has, in addition, few natural canal and numerous large Ponds/ Dighies, Ditches. These water bodies account for 162.37 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 Paurashava.

Table 12.2: List of Water bodies in the Study Area (Paurashava as a whole)

Type	Number	Area	
		Acres	Percentage
Ditches	37	22.293	37.28
Pond	107	37.508	62.72
Total	144	59.801	100.00

Source: Environment Survey by DDC, 2009

12.2.3 Analysis on land level Topographic contour

A total of 1984 spot heights are considered in the contour survey that shows the mean height of the area as 11.33m. It further shows that the minimum height of the area is 2.36m and the maximum 19.99m, which indicates that there are differences in the height levels of the land within the Paurashava. 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.

Table 12.3: Contour derived from the spot elevation

Sl. No.	Spot Unit	Value (meter)
01	Total Spot Number	1984
02	Average Spot Height	11.33
03	Maximum Height	19.99
04	Minimum Height	2.36
05	Variance	9.58
06	Standard Deviation	3.10

Source: Topographic Survey by DDC, 2009

Map no. 12.2: Topographic Map of Mirpur Paurashava

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 Mirpur Paurashava. 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 m3 / 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, Tc 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,	0.10-0.35
	cemeteries, playgrounds	0.20-0.40
	Rail road yard areas	0.10-0.30
	Unimproved areas	0.10-0.95
	Streets; Driveways and roofs	
Lawns:	Sandy soil, flat, 2 %	0.05-0.10
	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 Mirpur Paurashava 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 Paurashava people so the 100% coverage is bare need of the built up area. It will fulfill the primary demand of the Paurashava residence and also save the loss of public and private property.

12.3 Plans for Drainage Management and Flood Control

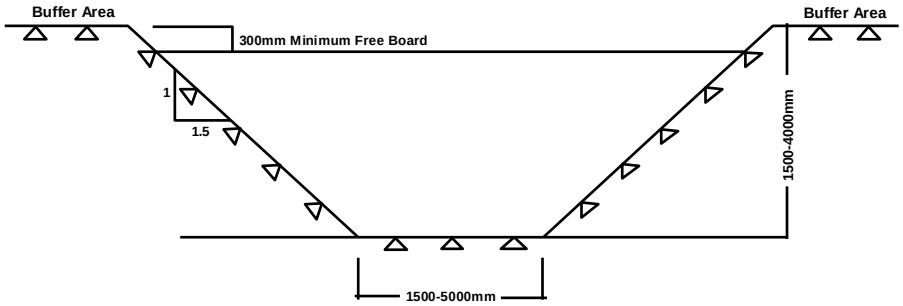
12.3.1 Plan for Drain Network Development

Drainage Network Plan

The Paurashava 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.

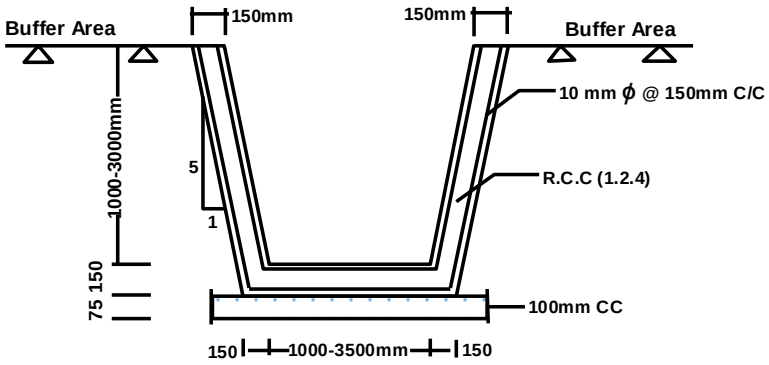
Primary Drain

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

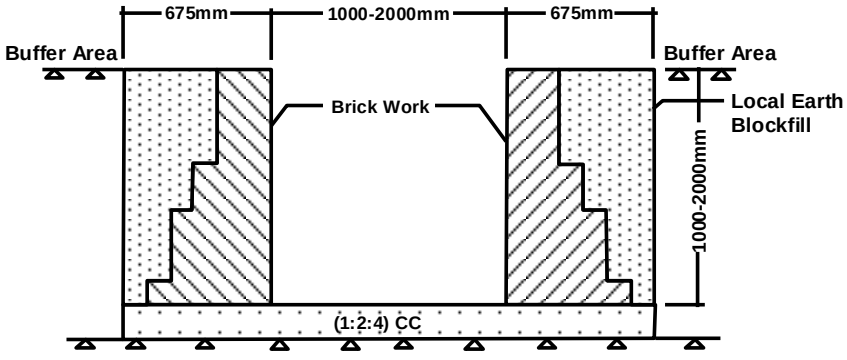


A Typical RCC Primary Drain (Dimensions in mm)

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:

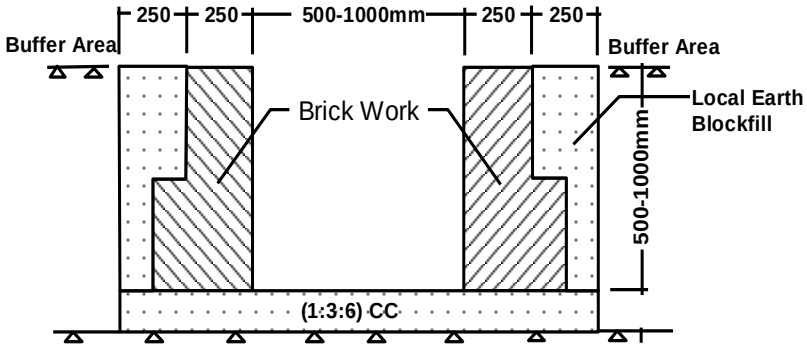


A Typical Secondary Drain (Dimensions in mm)

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. 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:



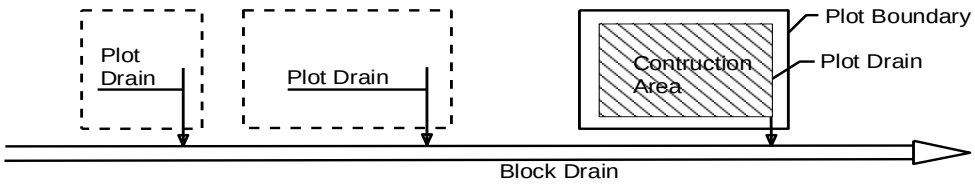
A Typical Tertiary Drain (Dimensions in mm)

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.



A Sketch Showing Plot and Block 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 neighboring 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

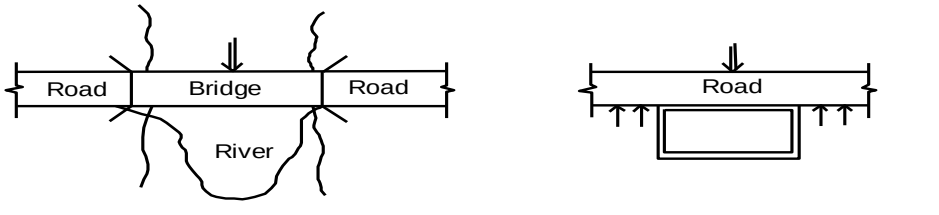
iii. Flood protection embankments and flood walls

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.



Definition Sketch Bridge **Definition Sketch Culvert**

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.

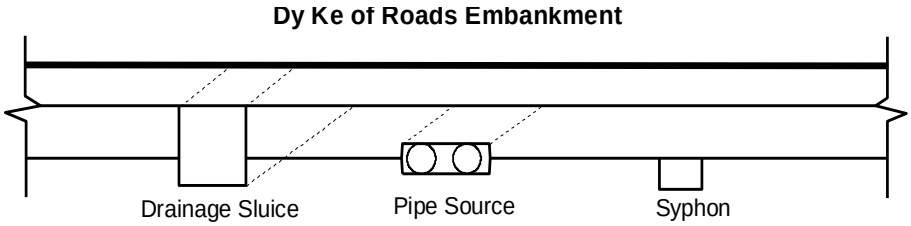


Figure 12.7: A Schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion.

12.3.2 Outfall of Drains

GK khal and few other canals play as formal outfall of drains of Mirpur Paurashava. 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

Paurashava has only 10.57 km drainage network at Mirpur Paurashava. Of these 1.47 km is Katcha drain and 9.10 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

The existing canals will be served as natural drain. Based on this natural drain drainage network system of Mirpur Paurashava will be established. Total 12.98 Km Primary drains, 14.04 Km Secondary drains, 8.06 Km tertiary drain proposed in drainage development plan. Map 12.3 shows the drainage network Plan of Mirpur Paurashava.

Table 12.5: Summary of proposed drain

Type of Drain	Length (m)	Length (km)	Percentage
Primary Drain	10778.12	10.78	18.69
Secondary Drain	24410.33	24.41	42.31
Tertiary Drain	22508.48	22.51	39.01
Total	**57696.92**	**57.70**	**100**

Table 12.6 shows a portion of the proposal of new drains equal to or above length of 0.888 km. Details of drain proposal has been given **Annexure-E**.

Table 12.6: Proposal of new drain

Drain Type	Drain ID	Width (m)	Length (m)	Priority
Secondary Drain	SD-11	1.50	1079.943	Priority-1
Primary Drain	SD-21	1.50	1037.434	Priority-3
Secondary Drain	PD-03	2.00	2029.637	Priority-3
Secondary Drain	SD-12	1.50	1091.088	Priority-2
Tertiary Drain	SD-09	1.50	2048.737	Priority-1
Primary Drain	TD-71	1.00	1686.767	Priority-3
Primary Drain	PD-04	2.00	4804.423	Priority-3
Primary Drain	PD-05	2.00	1475.385	Priority-3
Secondary Drain	PD-06	2.00	1414.195	Priority-3
Secondary Drain	SD-20	1.50	1098.200	Priority-3
Secondary Drain	SD-14	1.50	1296.821	Priority-2
Primary Drain	SD-31	1.50	1038.665	Priority-1
Secondary Drain	PD-07	2.00	1579.867	Priority-3
Secondary Drain	SD-10	1.50	1315.101	Priority-1
Secondary Drain	SD-05	1.50	888.142	Priority-1
Secondary Drain	SD-18	1.50	1038.946	Priority-2
Secondary Drain	SD-25	1.50	2272.423	Priority-1
Secondary Drain	SD-27	1.50	1354.184	Priority-1
Total:			**28549.95**	

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 Mirpur Paurashava.

Map no. 12.3: Proposed Drainage Network of Mirpur 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 Mirpur 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 Mirpur 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 Paurashava consists of soil type, soil characteristics and its exact geological features.

Geological Condition

Being located in the Kushtia District, the general soil type is following. The Paurashava 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 Paurashava is basically a flat land and average 11.33 mPWD above the mean sea level and varying more than 3m in elevation. Small and narrow canals of the Paurashava have strong linkage with other canals.

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, Paurashava experiences cold periods when temperature varies from 12.5° C (December) to 14.1° C (February).

Rainfall and Humidity

The Mirpur Paurashava 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. Like other parts of Bangladesh, the Paurashava 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 Mirpur Paurashava

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 Paurashava. 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

Paurashava 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 Paurashava has no Brick-Fields within its vicinity.

Solid Waste

It was observed during the survey that Mirpur Paurashava does not possess a well managed system for managing solid wastes generated in the Paurashava area. Total population of Mirpur Paurashava is 22417 (BBS, 2011). Total daily generation of solid waste from Mirpur Paurashava is estimated to be 5.60 tons (considering a generation rate of 0.25 kg/person/day). There are 7 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 Paurashava. Paurashava 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

Paurashava consists of 6 sweepers and a garbage truck for transportation. The sites which are contaminated are Conservancy workers of low living areas around Paurashava.

Latrine

The sanitation facility of the Paurashava 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 Paurashava 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 Mirpur Paurashava there are 107 ponds, 37 ditches and 38 khals as sources of surface water. The type of surface water is fresh in Mirpur. 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 Paurashava authority has been not yet taken any initiatives to control surface water pollution.

Ground water pollution also exists in Mirpur Paurashava. A good number of hand tube wells are distributed all over the Paurashava 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.

Arsenic contaminated Tube wells are found in almost all the Wards in the Paurashava. Also agricultural land in Ward Nos. 1 and 2 has pollution from Chemical fertilizers dumping. No measure yet been taken for Arsenic clearance in the Paurashava. From Paurashava, no measure has yet taken except some awareness campaign.

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.

There are several saw mills and few rice husking mills located within the Paurashava area. Saw mills releases wooden dust as effluent into the air and polluting the surroundings.

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 Paurashava 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 Paurashava, shallow engine driven vehicles like Yame/ Nochiman/ Kariman are plying on roads as a mean of local transport. They are making more than 400 trips per day throughout the Paurashava. Engine generated sounds during their operational time on roads is both a matter of nuisance as well as a source of sound pollution. The Paurashava 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 Mirpur Paurashava. 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 Ashwain. 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 Riverup 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.

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

There is no river within the Paurashava area.

Other

There are no other hazards that can be seen in recent years.

12.4.3.5 Natural Hazards

The Paurashava area including the Mirpur 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 50 lac takas of damages. Around 50 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 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 Mirpur 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 1, 3, 5, and 9. 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 Mirpur 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 Others

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 Mirpur 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, of the Mirpur Paurashava it is 22417 populations and population will stand at 31777 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 7.94 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 Mirpur Paurashava in wet season is 11.59 metric tons/day.

So the required land for solid waste filling will be 7.768 acre. 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 7.768 acres land is proposed for solid waste dumping station South-West corner of the Mirpur Paurashava.

Table 12.8: New Land Proposal of Solid Waste Disposal Site

Type of Facilities	Area in Acre	Ward No.	Mouza Name	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Solid Waste Disposal Site	8.04	02	Kuripole Bijnagor_ 42_01	286, 639-668		Land acquisition and establishment	Maintaining and improvement of waste dumping ground

12.5.1.2 Open space, wet-land and relevant features protection Plan

The existing canals are great asset of Mirpur that plays multifaceted role for the town. It could be a source of water and also a source of recreation.

Mitigation:

- The canals 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 canals should be kept pollution free applying regulatory measures based on environmental regulations.

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.

11.5.1.3 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.

11.5.1.4 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

With implementation of Master Plan (MP) Project, the whole project area will be protected from flooding.

Enhancement Activities:

1. Arrangement of pump drainage to canals 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. Mirpur is located in the seismic zone 1 and so it is less vulnerable to earthquake. Unplanned and unregulated urbanization and disregard to BNBC rules in building construction aggravate the situation. 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 1 (BNBC Section 6 Chapter 2.25)".

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 Conversation Act (ECA), 1885
7. Propaganda for public awareness

Responsible Organizations: Paurashava, DOE and Forest Department

12.6 Drainage Plan Implémentation Stratégies

12.6.1 Regulations to Implement the Drainage and Flood Plan

For plan implementation the first requirement would be resources mobilization, which is highly lacking in the Paurashava. Mirpur is a small Paurashava with very limited holding tax realized. So, the first strategy will be to increase its revenue 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. 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 by imposing punitive measures like, fine on the waste disposer. The property owner beside the drains should be made responsible to look after the drains in front of his property and made responsible for any clogging.

The regulations which will be needed for the implement of drainage and flood plan are:

1. Section 3 of the Acquisition and Requisition of Immovable Property Ordinance, 1982 is needed for acquisition of land in view to construct drainage and flood control components. The Water Development Board, according to the demand, will apply to the Deputy Commissioner for such acquisition.
2. Water Development Board Ordinance, 1976 delegate power to the Water Development Board for construction of embankment. To control intrusion of flood water and improvement of drainage facilities, the Board is empowered to take necessary actions according to the regulations prescribed in the Ordinance.
3. Irrigation Act, 1876 has prescribed regulations for the improvement of irrigation facilities through the improvement of drainage facilities in view to increase agriculture production. Deputy Commissioner may enforce any regulations prescribed in the Act necessary for irrigation facilities.
4. Canal and Drainage Act, 1872 has enacted for excavation of canal and removal of drainage congestion from agriculture land. The Deputy Commissioner may authorize any person, through a written approval, for excavation of canal in view to improve irrigation facilities for agriculture practices.
5. Public Health (Emergency Provision) Ordinance, 1944 has enacted for the improvement of drainage and sanitation facilities. Department of Public Health Engineering (DPHE) is authorized to enforce the regulations prescribed in the Ordinance. The government approves project for DPHE mostly for the improvement of drainage and sanitation facilities in urban areas.

12.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

Implementation through Multi-Sectoral Investment Program: Major infrastructure development works such as primary roads, water supply, drainage, etc., will largely be controlled by Government. Public works requires efficient co-ordination through the Multi-Sectoral Investment Program (MSIP).

Objective of a Multi-Sectoral Investment Programme (MSIP) will match a list of the development projects with the funding stream necessary to implement them. There are two basic activities that would determine the contents of MSIP. One activity would be to prioritize and schedule the investment projects of all public agencies so they will collectively help to achieve the development goals and objectives of the Urban Area Plan. Second activity would be to analyze the source and availability of fund for the prioritized list of development projects.

Implementation through Action Plans and Projects: Action Plans and Projects will be the implementation plans to solve problems at the local level. Action plans will take a direct approach toward plan implementation with a minimum of research, reports or elaborate planning methods. These projects will be easily identifiable and will require minimum resource.

Implementation through Development Control: Land use zoning is one of several methods of plan implementation to be considered. In all cases where some form of

development, land use control may be applied; careful consideration requires the following ideologies:

- The purpose to be achieved by the development controls;
- Where controls should be applied;
- What aspect of development needs to be controlled;
- What type of development controls are required;
- What degree or level of development control is required;
- Who will be affected by the required control;
- Who will be affected by the controls and in what manner;
- When the controls should be applied;
- What will be the likely impact of the controls;
- How and by whom will the controls be administered and enforced.

Development control as an instrument of plan implementation may be selectively applied within the Urban Area Plans. Development controls would also be varied in intensity and detail to suit the particular circumstances. It is important that they should be clearly and easily understood by all parties concerned. Paurashava Master Plan 'package' has become statutory, development controls associated with its component plans would also be statutory.

Implementation by Facilitating Private Investment: Another approach that would be taken by government toward plan implementation will be to guide and facilitate investments made by the private sector. Government can achieve this with relative ease and at a very low cost by setting up a legal and operational framework, coupled with suitable incentives, to facilitate land consolidation, plot boundary readjustment, efficient lay out of plots and provision of local infrastructure by the private sector. The benefits of this approach would be:

- Increased efficiently of the urban land market would make, more private land available to urban households;
- Would pass much of the development costs for local infrastructure to the private sector and land market mechanisms;
- Would increase in land for development without large cash outlays by government to purchase land for development schemes; and
- Would keep provision of land for community facilities virtually no cost to government.

Plan Monitoring

The Urban Area Plan would simply be tools for guiding and encouraging the growth and development of an urban area in a preferred manner. In a rapidly changing urban environment, the Urban Area Plan would require to keep up to date. If this is not done,

within a few years it will be obsolete. Therefore, it is imperative that the requirement for regular updating of the Urban Area Plan be made a legal requirement.

For implementation of the various programme components of the Urban Area Plan appropriate administrative measures will have to be undertaken. This will essentially include project preparation and monitoring of their execution and evaluation. For carrying out all these activities appropriate institutional measures are also be needed.

Evaluation

Monitoring and evaluation of on going and implemented drainage projects is essential to keep the future course of action on the right track. An on going project should be regularly monitored and handicaps identified to enable taking appropriate measures at the right time. Post implementation evaluation is also needed to take appropriate measures correcting past errors-from project preparation to implementation.

The top level supervision has to be done by a high level supervisory committee headed by Paurashava Mayor, LGED representative and Local Government Ministry. Other members of the committee will be local Ward Councilors, local community leader/social workers and the Town Planner of the Paurashava. The committee will supervise implementation works regularly and issue necessary instructions to expedite the works of implementation.

Co-ordination

A Planning Section of Paurashava should have close interaction with the citizen of Paurashava at large in order to make people aware of the benefits of a good plan and, therefore, their social responsibility to promote plan implementation in one hand and also resist contraventions on the other. A specific interactive cell is recommended to operate in this regard with following responsibilities:

- Provide pre-application advice to residents, consultants and developers about landuse management issues and application procedures for the submission of development applications.
- Enforce planning and land use management related legislation and zoning scheme regulations.
- Issue of property zoning certificates.
- Investigate and resolve land use management complaints, illegal land use and prosecuting contraventions.

Such interactive windows may be opened in various convenient locations to ensure ease of the answers to commonly asked questions may be shown in the internet. Besides, those may be shown in the print and electronic media time to time. In spontaneous areas, while all out people’s co-operation is needed for project implementation; there will also be some elements of negotiation.

12.7 Implementation, Monitoring, Evaluation and Coordination of Environmental Plan

Implementation through Multi-Sectoral Investment Programme: Major infrastructure development works such as primary roads, water supply, drainage, etc., will largely be controlled by the Government. Public works requires efficient co-ordination through the Multi-Sectoral Investment Programme (MSIP).

Implementation through Development Control: Land use zoning is one of several methods of plan implementation to be considered. In all cases where some form of development, land use control may be applied; careful consideration requires the following ideologies:

- The purpose to be achieved by the development controls;
- Where controls should be applied;
- What aspect of development needs to be controlled;
- What type of development controls are required;
- What degree or level of development control is required;
- Who will be affected by the required control;
- Who will be affected by the controls and in what manner;
- When the controls should be applied;
- What will be the likely impact of the controls;
- How and by whom will the controls be administered and enforced.

Development control as an instrument of plan implementation may be selectively applied within the Urban Area Plans. Development controls would also be varied in intensity and detail to suit the particular circumstances. It is important that they should be clear and easily understood by all parties concerned. Since the entire Paurashava Master Plan 'package' has become statutory, development controls associated with its component plans would also be statutory.

Implementation by Facilitating Private Investment: Public-private partnership can be undertaken by government toward plan implementation. Government can achieve this with relative ease and at very low cost by setting up a legal and operational framework, coupled with suitable incentives, to facilitate land consolidation, plot boundary readjustment, efficient lay out of plots and provision of local infrastructure by the private sector. The benefits of this approach would be:

Plan Monitoring

For implementation of the drainage plan appropriate administrative measures will have to be undertaken. This will essentially include project preparation and monitoring of their

execution and evaluation. For carrying out all these activities appropriate institutional measures are also be needed.

Evaluation

Monitoring and evaluation of on going and implemented projects is essential to keep the future course of action on the right track. An on going project should be regularly monitored and handicaps identified to enable taking appropriate measures at the right time. Post implementation evaluation is also needed to take appropriate measures correcting past errors-from project preparation to implementation.

Co-ordination

A Planning Section of Paurashava should have close interaction with the citizen of Paurashava at large in order to make people aware of the benefits of a good plan and, therefore, their social responsibility to promote plan implementation in one hand and also resist contraventions on the other. A specific interactive cell is recommended to operate in this regard with following responsibilities:

- Provide pre-application advice to residents, consultants and developers about landuse management issues and application procedures for the submission of development applications.
- Enforce planning and land use management related legislation and zoning scheme regulations.
- Issue of property zoning certificates.
- Investigate and resolve landuse management complaints, illegal landuse and prosecuting contraventions.

Such interactive windows may be opened in various convenient locations to ensure ease of the answers to commonly asked questions may be shown in the internet. Besides, those may be shown in the print and electronic media time to time.

Chapter -13

Plan for Urban Services

This chapter describes the urban basic services development proposals for future development of the Paurashava. 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

The Paurashava is yet to develop its own network based water supply system. The entire water supply system of the Paurashava is based on household tube well and pond. 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 Mirpur Paurashava. 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 Mirpur Paurashava). 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 Mirpur Paurashava, special emphasis will be given to use surface water rather than use of ground water.

The Paurashava 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 Paurashava, the daily per capita consumption has been calculated as 53 liters (Source: Mirpur Paurashava). So it will require much less amount of water supply for the Paurashava town than a city consumption as assumed above. According to the estimation (on the basis of medium growth rate) the total population in 2011 of Mirpur Paurashava is 22417 and at the end of the project i.e. in 2031 this will be around 31777 on the basis of medium growth rate. So according to the above stated per

capita consumption the present water demand is 1188.10 m3 (22417x 53lt=882238lt) and this will be 1684.18 m3 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. Paurashava may take initiative to prepare a programme for popularizing rain water harvesting among the Paurashava people.

Map no. 13.1: Urban Services Plan of Mirpur Paurashava

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 Paurashava. Area for gas related facilities is not proposed in the plan, because there is no scope for installation gas facilities in this Paurashava 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 Paurashava 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 Mirpur Paurashava. Figure 13.1 shows cross section of road showing the sewerage network along the road.

According to 2001 Population Census, about 84% of the Paurashava 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 Paurashava. So, for long the sanitary system of the Paurashava will remain on site. To promote healthy sanitation, Paurashava 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.

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 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.

Chapter -14

WARD ACTION PLAN

14.1 Introduction

Chapter-14 is concerned about ward level action plans prepared under the frameworks of Structure Plan and Urban Area Plan. This Chapter describes the action plans undertaken for each of the nine wards of the Mirpur paurashava. The action plans contain details of development proposals at ward level that also include the proposals made in upper level plan that is in the Urban Area Plan.

14.1.1 Background

The Ward Action Plan component of the Mirpur Pourashava Master Plan has been prepared after a long process of survey and data collection, data analysis and consultation with the stakeholders with public representatives played the key role. It contains the detailed development proposal ward wise that follows the policy, principle and standard in the structure plan and the guidelines set in the Urban Area Plan.

14.1.2 Content and Form of Ward Action Plan

The Ward Action Plan is the plot to plot details of the Master Plan. On that sense it is a micro-level physical development plan. The contents of the Ward Action Plan have been set in the following manner. Prior to plan making a background was set with respect to the demography of the area, where basic statistics of the demographic parameters were discussed. Next, the most critical planning issues were highlighted and reviewed that included, the problems associated with poor conditions of road and drainage, water supply, unplanned development, lack of threshold population. The plan was followed next after review of existing land used and infrastructure. The plan includes, proposed land use zoning, circulation network, drainage plan, municipal services development recommendations, education infrastructure development proposals. The Ward Action Plans were prepared ward wise and all the above issues were repeated for each ward.

14.1.3 Linkage with Structure and Urban Area Plan

Structure Plan is the policy plan of the plan package. It gives the magnitudes and directions of urban growth and principles and policies for development on such issues as, infrastructure networks, the placement of major facilities such as open space, major road, embankment, etc. Taking these guidelines in consideration, the Ward Action Plan (WAP) makes proposals for development at the local level. WAP is the local level translation of the ideas expressed in Structure Plan.

Urban Area Plan is an attempts to guide and accomplishing a coordinated, adjusted, and harmonious development of an urban center and its environs in accordance with present and future needs, best promoting health, safety, morals, order, convenience, property, general welfare, as well as efficiency and economy in the process of development; the forecast of a city's future. The plan lays down the infrastructure and future land use zoning

of the planning area. The plan must have layer superimposed on mouza map. WAP details out the development proposals taking the framework plan proposed by Urban Area Plan. WAP makes further detailing of the Urban Area Plan as an upper level plan and takes it to links them to the micro level in order to address the local problems in more vivid fashion.

14.1.4 Approach and Methodology

The current plan package will follow a combined approach of professional led planning skill integrated with participatory approach. The intention behind such an approach is to make the plan professionally competent as well as reflecting the desires of the stakeholders. The first two plans, that is, structure plan and urban area plan will be framed by the professional planners using their skills and considering the prevailing critical issues and needs giving a technical and professional setting of the total plan. Next, for preparing the ward action plan intensive consultation will be carried out with the stakeholders to make the plan reflect stakeholders' anticipations in the local level development that will directly affect their wee being. Ward Action Plan is a kind of detailed area plan guided by the policies and proposals of upper level plans these are structure plan and urban area plan.

14.1.5 Derivation of Ward Action Plan

The basic theme of the WAP is derived from Urban Area Plan. Ward Action Plan (WAP) is the third and the last tier of the current plan package. It elaborates the development plan of an area at plot to plot level. WAP helps adopt the land use zoning prepared by urban area plan, the preceding upper level plan. Development proposals in a WAP will include, detailed infrastructure development plan of all kinds-road, drainage, water supply, sanitation, solid waste management, land allocation for future development and development control regulations. A WAP will be presented in various scales of maps. A plan in a scale of 1'=330' will be prepared for giving planning permission, while larger scale plans will also be prepared to help undertake direct field level development projects. The aim of a WAP is to prevent haphazard urban development and ensure livable environment in areas that are likely to be urbansined soon. Detailing of development proposals in WAP will make development control and implementation of the development proposals easier to identify their exact locations in the field.

14.1.6 Revisiting of Structure Plan and Urban Area Plan

Revisiting Structure Plan

As already stated, structure Plan is the strategic plan that gives the superstructure for the subsequent plan typologies, like, Urban Area plan and Ward Action Plan in the form of strategies and policies. All the strategies policies of Mirpur Structure Plan are incorporated in Chapter 7 of the Mirpur Master Plan report. Following is a sector wise brief revisit of the Structure Plan policies:

Population

- Declaration of population as the most critical sectors of development, emphasize on population control and stress on education promotion.

Economic

- Creation of investment climate and emphasize on SME sector investment.

Housing and Slum Improvement

- Empowering local government to play better role, emphasize on public private partnership.

Social Amenities and Community Facilities

- Using khas /public land and catching the unused/vacant land for providing amenities;

Transport

- Efficient inter-city and intra-city communication for easy transportation of goods and passengers.

Utility Services

- Increased revenue collection for providing better services and adoption of participatory approach in service provision.

Urban Area Plan

As an upper level plan, the Urban Area Plan sets forth the future land use and infrastructure development proposals in its Chapter-10, Chapter-11 and Chapter-12 and Chapter- 13. Following are the highlights of the Urban Area Plan proposals:

Chapter-10 of the Urban Area Plan is about land use proposals. The plan proposes 16 categories of land uses for future urban area. But over 13% of the available land has been retained as agricultural as much of the current land is under farm use. The population projection and estimated future urban space requirement did not allow more land for urban use reducing the farm land. Residential use fetched about 37.23% of the land excluding about 6.20% of the rural settlement, while about 7.54% land has been earmarked as water body already existing and also that they are non-urban use. Circulation network takes 15.47%, 2.08% manufacturing and processing (general & heavy industrial zone) and 1.40% to commercial along with 0.82% mixed use.

Transportation

Road right of way was fixed by the Urban Area Plan as follows:

- Primary Road: RoW 100 - 150 feet
- Pourashava Secondary Road: RoW 60-100 feet
- Pourashava Tertiary Road/Access Road: RoW 20-40 feet

The plan also proposed a road design standard.

The plan proposed a road network plan of about 82.91 km including 11.96 km of new and link road, comprising primary and secondary roads only to enable draw the lower level roads by Ward Action Plan.

14.1.7 Prioritization and Ward Wise Action Plan

Ward Action Plan prioritize first phase (2012 - 2016) development proposal. The plan proposes first phase development plan for transportation facilities including circulation network, drainage proposal, utility services proposal and other development proposals.

14.2 Ward Action Plan for Ward No. 01

Ward No. 1 is existed on Sultanpur, Nowpara Puran and Kuripole Bijnagor mouza and located on the upper north western part of the town with a total area of 379.827 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 01 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 01 is shows in **Map-14.1** & **Map-14.2** respectively.

14.2.1 Ward Action Plan Proposals

14.2.1.1 Proposed Circulation Network Development

11.66 km of circulation network has been proposed for this ward. Most of these roads will be developed during first phase (2017 - 2021).

Table 14.1: Road Proposals for Ward no. 01

Road ID	Road type	Length (m)	Proposed Width (RoW)	Road Proposal	Phasing
PR-1	Primary Road	348.838	80	Widening	01
PR-174	Primary Road	1124.809	100	Widening	01
SR-17	Secondary Road	604.176	60	New	01
SR-18	Secondary Road	361.574	60	New	01
SR-6	Secondary Road	607.288	60	Widening	01
SR-7	Secondary Road	252.907	60	Widening	01
SR-8	Secondary Road	664.46	60	Widening	01
SR-9	Secondary Road	1406.39	60	Widening	01
TR-34	Tertiary Road	597.622	40	Widening	01
TR-35	Tertiary Road	1347.035	40	Widening	01
TR-36	Tertiary Road	387.27	40	Widening	01
TR-37	Tertiary Road	69.812	40	Widening	01
TR-38	Tertiary Road	1247.595	40	Widening	01
TR-39	Tertiary Road	200.977	40	Widening	01
TR-40	Tertiary Road	235.309	40	Widening	01
TR-41	Tertiary Road	234.129	40	Widening	01
TR-42	Tertiary Road	128.475	40	Widening	01
TR-43	Tertiary Road	201.117	40	Widening	01
TR-71	Tertiary Road	468.859	40	Widening	01
TR-73	Tertiary Road	151.242	40	Widening	01
TR-74	Tertiary Road	148.596	40	Widening	01
TR-72	Tertiary Road	209.403	40	New	01
LR-147	Local Road	121.69	20	Widening	01
LR-148	Local Road	242.756	20	Widening	01
LR-166	Local Road	295.745	20	Widening	01
	Total:	**11658.08**			
Total new road proposal:		**1.18 km**			
Total widening proposal:		**10.48 km**			

Map no. 14.1: Land Use Plan of Ward No. 01

Map no. 14.2: Drainage and Urban Services Plan of Ward No. 01

14.2.1.2 Drainage Development Plan

Presently Ward number 01 of Mirpur has only 0.88 km of pucca drains. But sufficient drains are necessary for discharge all its waste water and storm water. The plan proposes 7.49 km. of new drains for ward no. 01 which will be developed during the first and second phase.

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.

Table 14.2: Proposed Drainage Development Plan for Ward 01

Drain Type	Length (m)	Phasing
Primary Drain	66.773	Phase -2
Secondary Drain	4211.026	Phase-1, 2
Tertiary Drain	3216.508	Phase 1, 2
Total:	**7494.307**	

Table 14.3: Proposals of Utility Services for Ward No. 01

Item	Existing	Proposed (Phase 01)	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.403 acre
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.4: Proposed Urban Services for Ward No. 01

Item	Existing		Proposed		Phasing
	No.	Area (acre)	No.	Area (acre)	
Neighborhood Park	-	-	3	3.64	01
	-	-		4.22	02
	-	-		0.29	01
Playground	-	-	1	1.7	01
Rickshaw Stand	-	-	1	0.39	01
Rail Station (extension)	1	0.22	1	0.31	02
Tempo Stand	-	-	1	0.32	01
Ward Center	-	-	1	2.09	01
Total:				**12.96**	

One of the 3 (three) parks proposed in this ward has also been shared with other wards.

14.3 Ward Action Plan for Ward No.2

Ward No. 2 is existed on Kuripole Bijnagor mouza and located on the western part of the town with a total area of 250.09 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 02 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 02 is shows in Map-14.3 & Map-14.4 respectively.

14.3.1 Ward Action Plan Proposals

14.3.1.1 Proposed Circulation Network Development

Total 10.44 km of circulation network has been proposed for this ward. The newly proposed roads (3.01 km) will be developed during second phase (2017 - 2021).

Table 14.5: Road Proposals for Ward 02

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
PR-169	Primary Road	484.832	150	Widening	Phase 02
PR-174	Primary Road	1458.738	100	Widening	Phase 02
PR-2	Primary Road	0.259	80	Widening	Phase 02
SR-10	Secondary Road	1024.360	60	New	Phase 02
SR-13	Secondary Road	592.105	60	New	Phase 02
SR-11	Secondary Road	391.871	60	Widening	Phase 01
SR-12	Secondary Road	603.825	60	Widening	Phase 01
SR-8	Secondary Road	1051.464	60	Widening	Phase 01
TR-45	Tertiary Road	327.558	40	New	Phase 02
TR-47	Tertiary Road	233.296	40	New	Phase 02
TR-50	Tertiary Road	250.424	40	New	Phase 02
TR-51	Tertiary Road	124.386	40	New	Phase 02
TR-54	Tertiary Road	217.828	40	New	Phase 02
TR-38	Tertiary Road	70.42	40	Widening	Phase 01
TR-44	Tertiary Road	712.338	40	Widening	Phase 01
TR-46	Tertiary Road	253.997	40	Widening	Phase 01
TR-48	Tertiary Road	399.314	40	Widening	Phase 01
TR-49	Tertiary Road	336.279	40	Widening	Phase 01
TR-52	Tertiary Road	360.267	40	Widening	Phase 01
TR-53	Tertiary Road	332.512	40	Widening	Phase 01
LR-123	Local Road	81.313	20	New	Phase 02
LR-125	Local Road	160.553	20	New	Phase 02
LR-119	Local Road	123.049	20	Widening	Phase 01
LR-120	Local Road	234.61	20	Widening	Phase 01
LR-121	Local Road	201.321	20	Widening	Phase 01
LR-122	Local Road	178.386	20	Widening	Phase 01
LR-124	Local Road	58.575	20	Widening	Phase 01
LR-145	Local Road	171.498	20	Widening	Phase 01
	Total:	**10438.11**			
Total New road proposal:		**3.01 km**			
Total widening proposal:		**7.42 km**			

Map no. 14.3: Land Use Plan of Ward No. 02

Map no. 14.4: Drainage and Urban Services Plan of Ward No. 02

14.3.1.2 Drainage Development Plan

The plan proposes 8.74 km. of new drains of ward no. 02. This drainage plan will be developed during the first and second phase.

Table 14.6: Proposed Drainage Development Plan Proposals for ward 02

Drain Type	Length (m)	Phasing
Primary Drain	516.438	Phase 02
Secondary Drain	3331.743	Phase 01, 02
Tertiary Drain	4891.941	Phase 01
Total:	**8740.12**	

Besides, it will be necessary to re-excavate the GK Khal that flows at southern side of this ward and acts as the outfall.

Table 14.7 Proposal of Utility Services of Ward No. 02

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.39 acres
Waste Dumping Ground	-	01	8.04 acres
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.8: Proposed Urban Services of Ward No. 02

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Neighborhood Park	-	-	4	0.76	Phase 01
	-	-		1.98	Phase 01
	-	-		0.49	Phase 01
	-	-		0.05	Phase 01
Tempo Stand	-	-	01	0.44	Phase 01
Ward Center	-	-	01	1.37	Phase 01
Total:				**5.09**	

Two of the 4 (four) parks proposed in this ward have also been shared with other wards.

14.4 Ward Action Plan for Ward No.3

Ward No. 3 is existed on Nowpara Puran and located on the upper north-eastern part of the town with a total area of 326.40 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 03 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 03 is shows in Map-14.5 & Map-14.6 respectively.

14.4.1 Ward Action Plan Proposals

14.4.1.1 Proposed Circulation Network Development

Total 1.78 km. of circulation network has been newly proposed for this ward. All of these roads will be developed during first and second phase.

Table 14.9: Road Proposals for Ward 03

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-135	Local Road	371.638	20	Widening	Phase 01, 02
LR-136	Local Road	86.148	20	Widening	Phase 01, 02
LR-137	Local Road	120.856	20	Widening	Phase 01, 02
LR-138	Local Road	329.234	20	Widening	Phase 01, 02
LR-151	Local Road	367.69	20	Widening	Phase 01, 02
LR-152	Local Road	139.615	20	Widening	Phase 01, 02
PR-3	Primary Road	176.307	80	Widening	Phase 01, 02
PR-4	Primary Road	339.451	80	Widening	Phase 01, 02
PR-5	Primary Road	379.738	80	Widening	Phase 01, 02
SR-19	Secondary Road	608.024	60	Widening	Phase 01
SR-21	Secondary Road	110.021	60	Widening	Phase 01
SR-22	Secondary Road	884.134	60	Widening	Phase 01
SR-6	Secondary Road	644	60	Widening	Phase 01
TR-80	Tertiary Road	626.619	40	New	Phase 02
TR-82	Tertiary Road	204.866	40	New	Phase 02
TR-84	Tertiary Road	340.527	40	New	Phase 02
TR-85	Tertiary Road	157.09	40	New	Phase 02
TR-87	Tertiary Road	448.271	40	New	Phase 02
TR-115	Tertiary Road	802.196	40	Widening	Phase 01
TR-116	Tertiary Road	743.886	40	Widening	Phase 01
TR-117	Tertiary Road	440.018	40	Widening	Phase 01
TR-37	Tertiary Road	3.598	40	Widening	Phase 01
TR-75	Tertiary Road	1014.364	40	Widening	Phase 01
TR-76	Tertiary Road	184.204	40	Widening	Phase 01
TR-77	Tertiary Road	557.439	40	Widening	Phase 01
TR-78	Tertiary Road	446.083	40	Widening	Phase 01
TR-79	Tertiary Road	641.527	40	Widening	Phase 01
TR-81	Tertiary Road	1006.78	40	Widening	Phase 01
	Total:	**12174.32**			
Total new road proposal		**1.78 km**			
Total widening proposal		**10.40 km**			

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Map no. 14.5: Land Use Plan of Ward No. 03

Map no. 14.6: Drainage and Urban Services Plan of Ward No. 03

14.4.1.2 Drainage Development Plan

The plan proposes 6.01 km. of new drains for ward no. 03. This drainage plan will be developed during the first and second phase.

Table 14.10: Proposed Drainage Development Plan Proposals for ward 03

Drain Type	Length (m)	Phasing
Primary Drain	1988.405	Phase 02
Secondary Drain	3149.244	Phase 01, 02
Tertiary Drain	879.069	Phase 01
Total:	**6016.72**	

Besides, it will be necessary to re-excavate the GK Khal that flows at the middle of this ward and acts as the outfall.

Table 14.11 Proposal of Utility Services of Ward No. 03

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.13 acres
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.12: Proposed Urban Services of Ward No. 03

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Bus Bay	-	-	01	0.25	Phase 01
Neighborhood Park	-	-	01	3	Phase 01
	-	-	10	0.67	Phase 01
	-	-		0.80	Phase 01
	-	-		0.36	Phase 01
	-	-		0.17	Phase 01
	-	-		0.34	Phase 01
	-	-		0.60	Phase 01
	-	-		2.01	Phase 01
	-	-		1.14	Phase 01
	-	-		2.08	Phase 01
	-	-		1.35	Phase 01
Rickshaw Stand	-	-	01	2.39	Phase 01
Tempo Stand	-	-	01	2.56	Phase 01
Total:				**16.92**	

Two of the 10 (ten) parks proposed in this ward have also been shared with other wards.

14.5 Ward Action Plan for Ward No.4

Ward No. 4 is existed on Mirpur Mouza and located on the lower south-western part of the town with a total area of 111.28 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 04 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 04 is shows in Map-14.7 & Map-14.8 respectively.

14.5.1 Ward Action Plan Proposals

14.5.1.1 Proposed Circulation Network Development

Total 0.87 km. of circulation network has been newly proposed for this ward. All of these roads will be developed during second phase.

Table 14.13: Road Proposals for Ward 04

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-126	Local Road	153.74	20	New	Phase 02
LR-131	Local Road	149.261	20	New	Phase 02
LR-133	Local Road	133.88	20	New	Phase 02
LR-134	Local Road	119.135	20	New	Phase 02
LR-127	Local Road	146.131	20	Widening	Phase 01
LR-128	Local Road	170.54	20	Widening	Phase 01
LR-129	Local Road	138.894	20	Widening	Phase 01
LR-146	Local Road	4.679	20	Widening	Phase 01
LR-147	Local Road	1.104	20	Widening	Phase 01
PR-169	Primary Road	547.39	150	Widening	Phase 01
PR-2	Primary Road	1169.049	80	Widening	Phase 01
SR-10	Secondary Road	57.726	60	New	Phase 02
SR-8	Secondary Road	360.459	60	Widening	Phase 01
SR-11	Secondary Road	21.285	60	Widening	Phase 01
SR-14	Secondary Road	404.517	60	Widening	Phase 01
SR-16	Secondary Road	188.997	60	Widening	Phase 01
TR-57	Tertiary Road	254.932	40	New	Phase 02
TR-55	Tertiary Road	350.031	40	Widening	Phase 01
TR-56	Tertiary Road	144.38	40	Widening	Phase 01
TR-58	Tertiary Road	143.56	40	Widening	Phase 01
TR-59	Tertiary Road	122.223	40	Widening	Phase 01
TR-61	Tertiary Road	381.098	40	Widening	Phase 01
TR-62	Tertiary Road	167.571	40	Widening	Phase 01
TR-63	Tertiary Road	258.613	40	Widening	Phase 01
TR-64	Tertiary Road	252.173	40	Widening	Phase 01
	Total:	**5841.368**			
Total new road proposal:		**0.87 km**			
Total road widening proposal:		**4.97 km**			

Map no. 14.7: Land Use Plan of Ward No. 04

Map no. 14.8: Drainage and Urban Services Plan of Ward No. 04

14.5.1.2 Drainage Development Plan

The plan proposes 5.65 km. of new drains for ward no. 04. This drainage plan will be developed during the first and second phase.

Table 14.14: Proposed Drainage Development Plan for ward 04

Drain Type	Length (m)	Phasing
Primary Drain	2054.936	Phase 02
Secondary Drain	2134.334	Phase 01, 02
Tertiary Drain	1467.006	Phase 01
Total:	**5656.276**	

Besides, it will be necessary to re-excavate the GK Khal that flows at the northern part of this ward and acts as the outfall.

Table 14.15 Proposal of Utility Services of Ward No. 04

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.492 acres
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.16: Proposed Urban Services of Ward No. 04

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Neighborhood Park	-	-	03	2.03	Phase 01
	-	-		0.18	Phase 01
	-	-		0.03	Phase 01
Play Ground	-	-	01	1.99	Phase 01
Rickshaw Stand	-	-	01	0.49	Phase 01
Tempo Stand	-	-	01	0.46	Phase 01
Ward Center	-	-	01	1.38	Phase 01
Central Park	-	-	01	4.43	Phase 01
Total:				**10.99**	

All these parks proposed in this ward have also been shared with other wards.

14.6 Ward Action Plan for Ward No.5

Ward No. 5 is existed on Mirpur, Sultanpur and Nowpara Puran Mouza and located on the middle part of the town with a total area of 86.60 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 05 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 05 is shows in Map-14.9 & Map-14.10 respectively.

14.6.1 Ward Action Plan Proposals

14.6.1.1 Proposed Circulation Network Development

Total 3.43 km. of circulation network has been proposed for widening in this ward. All of these roads will be developed during first phase.

Table 14.17: Road Proposals for Ward 05

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-129	Local Road	4.508	20	Widening	Phase 01
LR-130	Local Road	165.234	20	Widening	Phase 01
LR-149	Local Road	278.036	20	Widening	Phase 01
LR-150	Local Road	125.998	20	Widening	Phase 01
PR-2	Primary Road	432.606	80	Widening	Phase 01
SR-15	Secondary Road	190.196	60	Widening	Phase 01
TR-118	Tertiary Road	120.001	30	Widening	Phase 01
TR-60	Tertiary Road	450.348	40	Widening	Phase 01
TR-61	Tertiary Road	2.088	40	Widening	Phase 01
TR-65	Tertiary Road	371.228	40	Widening	Phase 01
TR-66	Tertiary Road	496.947	40	Widening	Phase 01
TR-67	Tertiary Road	431.037	40	Widening	Phase 01
TR-68	Tertiary Road	357.783	40	Widening	Phase 01
	Total:	**3426.01**			
Total road widening proposal:		**3.43 km**			

Map no. 14.9: Land Use Plan of Ward No. 05

Map no. 14.10: Drainage and Urban Services of Ward No. 05

14.6.1.2 Drainage Development Plan

The plan proposes 2.99 km. of new drains for ward no. 05. This drainage plan will be developed during the first and second phase.

Table 14.18: Proposed Drainage Development Plan Proposals for ward 05

Drain Type	Length (m)	Phasing
Primary Drain	488.904	Phase 02
Secondary Drain	716.669	Phase 01, 02
Tertiary Drain	1793.706	Phase 01
Total:	**2999.279**	

Besides, it will be necessary to re-excavate the GK Khal that flows at the northern part of this ward and acts as the outfall.

Table 14.19 Proposal of Utility Services of Ward No. 05

Item	Existing	Proposed	
	Area/length		Area/Length
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.20: Proposed Urban Services of Ward No. 05

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Rickshaw Stand	-	-	01	0.43	Phase 01
Tempo Stand	-	-	01	0.46	Phase 01
Ward Center	-	-	01	1.04	Phase 01
Total:				**1.93**	

14.7 Ward Action Plan for Ward No.6

Ward No. 6 is existed on Mirpur Mouza and located on the lower middle southern part of the town with a total area of 181.26 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 06 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 06 is shows in Map-14.11 & Map-14.12 respectively.

14.7.1 Ward Action Plan Proposals

14.7.1.1 Proposed Circulation Network Development

Total 6.82 km. of circulation network has been proposed for widening in this ward. All of these roads will be developed during first phase.

Table 14.21: Road Proposals for Ward 06

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-128	Local Road	19.114	20	Widening	Phase 01
LR-130	Local Road	25.54	20	Widening	Phase 01
LR-132	Local Road	159.66	20	Widening	Phase 01
LR-146	Local Road	117.777	20	Widening	Phase 01
LR-149	Local Road	31.945	20	Widening	Phase 01
LR-150	Local Road	28.367	20	Widening	Phase 01
LR-154	Local Road	151.289	20	Widening	Phase 01
LR-155	Local Road	105.053	20	Widening	Phase 01
LR-157	Local Road	203.196	20	Widening	Phase 01
LR-170	Local Road	189.803	12	Widening	Phase 01
LR-171	Local Road	169.088	12	Widening	Phase 01
LR-172	Local Road	72.703	12	Widening	Phase 01
LR-173	Local Road	97.832	12	Widening	Phase 01
PR-169	Primary Road	1535.959	150	Widening	Phase 01
SR-15	Secondary Road	928.271	60	Widening	Phase 01
SR-31	Secondary Road	679.727	60	Widening	Phase 01
SR-32	Secondary Road	301.156	60	Widening	Phase 01
TR-109	Tertiary Road	223.706	40	Widening	Phase 01
TR-110	Tertiary Road	303.929	40	Widening	Phase 01
TR-111	Tertiary Road	458.461	40	Widening	Phase 01
TR-112	Tertiary Road	303.808	40	Widening	Phase 01
TR-118	Tertiary Road	2.991	30	Widening	Phase 01
TR-60	Tertiary Road	23.427	40	Widening	Phase 01
TR-62	Tertiary Road	16.577	40	Widening	Phase 01
TR-66	Tertiary Road	42.064	40	Widening	Phase 01
TR-67	Tertiary Road	24.612	40	Widening	Phase 01
TR-68	Tertiary Road	30.192	40	Widening	Phase 01
TR-69	Tertiary Road	292.714	40	Widening	Phase 01
TR-70	Tertiary Road	278.989	40	Widening	Phase 01
	Total:	**6817.95**			
Total road widening proposal:		**6.82 km**			

Map no. 14.11: Land Use Plan of Ward No. 06

Map no. 14.12: Drainage and Urban Services of Ward No. 06

14.7.1.2 Drainage Development Plan

The plan proposes 6.64 km. of new drains for the ward no. 06. This drainage plan will be developed during the first and second phase.

Table 14.22: Proposed Drainage Development Plan Proposals for ward 06

Drain Type	Length (m)	Phasing
Primary Drain	1102.832	Phase 02
Secondary Drain	2866.51	Phase 01, 02
Tertiary Drain	2671.454	Phase 01
Total:	**6640.796**	

Table 14.23 Proposal of Utility Services of Ward No. 06

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.262 acre
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.24: Proposed Urban Services of Ward No. 06

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
BUS & Truck Terminal	-	-	01	3.16	Phase 01
Cinema Hall	-	-	01	0.99	Phase 01
Extended Fire Service	-	-	01	0.65	Phase 01
Neighborhood Park			01	1.91	Phase 01
Public Toilet			01	0.69	Phase 01
Rickshaw Stand			01	0.41	Phase 01
Stadium			01	6.27	Phase 01
Tempo Stand			01	0.69	Phase 01
Ward Center			01	0.92	Phase 01
Total:				**15.69**	

14.8 Ward Action Plan for Ward No.7

Ward No. 7 is existed on Nowpara Mouza and located on the upper eastern part of the town with a total area of 158.39 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 07 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 07 is shows in Map-14.13 & Map-14.14 respectively.

14.8.1 Ward Action Plan Proposals

14.8.1.1 Proposed Circulation Network Development

Total 0.88 km. of circulation network has been newly proposed for this ward. All of these roads will be developed during second phase.

Table 14.25: Road Proposals for Ward 07

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-140	Local Road	109.291	20	New	Phase 02
LR-139	Local Road	103.965	20	Widening	Phase 01
PR-4	Primary Road	683.641	80	Widening	Phase 01
PR-5	Primary Road	913.166	80	Widening	Phase 01
SR-28	Secondary Road	98.382	60	New	Phase 02
SR-19	Secondary Road	901.509	60	Widening	Phase 01
SR-23	Secondary Road	327.599	60	Widening	Phase 01
TR-84	Tertiary Road	13.284	40	New	Phase 02
TR-90	Tertiary Road	299.977	40	New	Phase 02
TR-92	Tertiary Road	222.5	40	New	Phase 02
TR-94	Tertiary Road	140.483	40	New	Phase 02
TR-116	Tertiary Road	1100.122	40	Widening	Phase 01
TR-117	Tertiary Road	17.558	40	Widening	Phase 01
TR-83	Tertiary Road	428.71	40	Widening	Phase 01
TR-88	Tertiary Road	428.944	40	Widening	Phase 01
TR-89	Tertiary Road	365.406	40	Widening	Phase 01
TR-91	Tertiary Road	235.129	40	Widening	Phase 01
TR-93	Tertiary Road	181.979	40	Widening	Phase 01
	Total:	**6571.645**			
Total New Road Proposal:		**0.88 km**			
Total road widening proposal:		**5.69 km**			

Map no. 14.13: Land Use Plan of Ward No. 07

Map no. 14.14: Drainage and Urban Services Plan of Ward No. 07

14.8.1.2 Drainage Development Plan

The plan proposes 3.14 km. of new drains for the ward no. 07. This drainage plan will be developed during the first phase.

Table 14.26: Proposed Drainage Development Plan Proposals for ward 07

Drain Type	Length (m)	Phasing
Primary Drain	1583.967	Phase 01
Tertiary Drain	1563.565	Phase 01
Total:	**3147.532**	

Table 14.27 Proposal of Utility Services of Ward No. 07

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.49 acre
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.28: Proposed Urban Services of Ward No. 07

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Play Ground	-	-	01	0.75	Phase 01
Rickshaw Stand	-	-	01	0.25	Phase 01
Tempo Stand	-	-	01	0.39	Phase 01
Ward Center	-	-	01	1.93	Phase 01
Neighborhood Park	-	-	03	2.42	Phase 01
	-	-		0.19	Phase 01
	-	-		0.45	Phase 01
Total:				**6.38**	

All these parks proposed in this ward have also been shared with other wards.

14.9 Ward Action Plan for Ward No.8

Ward No. 8 is existed on Nowpara Krishnonagor and Jogipol Mouza and located on the lower south eastern part of the town with a total area of 224.84 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 08 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 08 is shows in Map-14.15 & Map-14.16 respectively.

14.9.1 Ward Action Plan Proposals

14.9.1.1 Proposed Circulation Network Development

Total 0.72 km. of circulation network has been newly proposed for this ward. All of these roads will be developed during second phase.

Table 14.29: Road Proposals for Ward 08

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-144	Local Road	146.926	20	Widening	Phase 01
LR-161	Local Road	295.064	20	Widening	Phase 01
LR-162	Local Road	350.679	20	Widening	Phase 01
LR-163	Local Road	491.716	20	Widening	Phase 01
PR-4	Primary Road	838.198	80	Widening	Phase 01
PR-5	Primary Road	150.118	80	Widening	Phase 01
SR-26	Secondary Road	573.951	60	New	Phase 02
SR-19	Secondary Road	872.336	60	Widening	Phase 01
TR-100	Tertiary Road	142.593	40	New	Phase 02
TR-103	Tertiary Road	323.852	40	Widening	Phase 01
TR-114	Tertiary Road	628.772	40	Widening	Phase 01
TR-116	Tertiary Road	293.313	40	Widening	Phase 01
	Total:	**5107.518**			
Total New Road Proposal:		**0.72 km**			
Total Road widening Proposal:		**4.39 km**			

Map no. 14.15: Land Use Plan of Ward No. 08

Map no. 14.16: Drainage and Urban Services Plan of Ward No. 08

14.9.1.2 Drainage Development Plan

The plan proposes 3.17 km. of new drains for the ward no. 08. This drainage plan will be developed during the first and second phase.

Table 14.30: Proposed Drainage Development Plan Proposals for ward 08

Drain Type	Length (m)	Phasing
Primary Drain	524.306	Phase 02
Secondary Drain	1564.522	Phase 02
Tertiary Drain	1081.91	Phase 01
Total:	**3170.738**	

Table 14.31 Proposal of Utility Services of Ward No. 08

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.29 acre
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.32: Proposed Urban Services of Ward No. 08

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Neighborhood Park	-	-	05	0.48	Phase 01
	-	-		0.18	
	-	-		3.65	
	-	-		2.08	
	-	-		3.41	
Ward Center	-	-	01	1.29	Phase 01
Total:				**11.09**	

All these parks proposed in this ward have also been shared with other wards.

14.10 Ward Action Plan for Ward No.9

Ward No. 9 is existed on Mirpur, Shimulia Fulbari and Khondobaria Mouza and located on the lower middle southern part of the town with a total area of 439.66 acres. After reviewing and commensuration the policies and proposals of Structure Plan and Urban Area Plan the following proposals are made in the Action Plan of Ward No. 09 for implementation within next 5 (five) years up to 2016. Land use Plan & Utility Services Plan for Ward No. 09 is shows in Map-14.17 & Map-14.18 respectively.

14.10.1 Ward Action Plan Proposals

14.10.1.1 Proposed Circulation Network Development

Total 2.69 km. of circulation network has been newly proposed for this ward. All of these roads will be developed during second phase.

Table 14.33: Road Proposals for Ward 09

Road ID	Road Type	Length (m)	Proposed Width (RoW)	Road Proposal Type	Phasing
LR-141	Local Road	176.703	20	Widening	Phase 01
LR-142	Local Road	106.481	20	Widening	Phase 01
LR-143	Local Road	115.509	20	Widening	Phase 01
LR-144	Local Road	4.274	20	Widening	Phase 01
LR-153	Local Road	190.218	20	Widening	Phase 01
LR-156	Local Road	165.007	20	Widening	Phase 01
LR-158	Local Road	258.641	20	Widening	Phase 01
LR-159	Local Road	111.449	20	Widening	Phase 01
LR-160	Local Road	275.871	20	Widening	Phase 01
LR-164	Local Road	231.199	20	Widening	Phase 01
LR-165	Local Road	100.816	20	Widening	Phase 01
LR-167	Local Road	105.491	20	Widening	Phase 01
LR-168	Local Road	144.895	20	Widening	Phase 01
LR-175	Local Road	318.101	12	Widening	Phase 01
LR-176	Local Road	149.414	12	Widening	Phase 01
LR-177	Local Road	598.798	12	Widening	Phase 01
LR-178	Local Road	363.595	12	Widening	Phase 01
LR-179	Local Road	228.79	12	Widening	Phase 01
LR-180	Local Road	81.535	12	Widening	Phase 01
LR-181	Local Road	85.233	12	Widening	Phase 01
LR-182	Local Road	416.931	12	Widening	Phase 01
LR-183	Local Road	183.506	12	Widening	Phase 01
LR-184	Local Road	102.321	12	Widening	Phase 01
LR-141	Local Road	176.703	12	Widening	Phase 01
PR-169	Primary Road	1448.963	150	Widening	Phase 02
SR-25	Secondary Road	252.273	60	New	Phase 02
SR-26	Secondary Road	1079.69	60	New	Phase 02
SR-28	Secondary Road	26.377	60	New	Phase 02

SR-20	Secondary Road	566.763	60	Widening	Phase 01
SR-21	Secondary Road	1012.229	60	Widening	Phase 01
SR-24	Secondary Road	894.236	60	Widening	Phase 01
SR-27	Secondary Road	1381.749	60	Widening	Phase 01
SR-29	Secondary Road	756.088	60	Widening	Phase 01
SR-30	Secondary Road	829.474	60	Widening	Phase 01
SR-33	Secondary Road	589.557	60	Widening	Phase 01
TR-100	Tertiary Road	106.626	40	New	Phase 02
TR-101	Tertiary Road	121.007	40	New	Phase 02
TR-95	Tertiary Road	366.023	40	New	Phase 02
TR-96	Tertiary Road	190.424	40	New	Phase 02
TR-97	Tertiary Road	302.7	40	New	Phase 02
TR-99	Tertiary Road	249.314	40	New	Phase 02
TR-102	Tertiary Road	561.484	40	Widening	Phase 01
TR-103	Tertiary Road	112.69	40	Widening	Phase 01
TR-104	Tertiary Road	146.351	40	Widening	Phase 01
TR-105	Tertiary Road	265.351	40	Widening	Phase 01
TR-106	Tertiary Road	86.535	40	Widening	Phase 01
TR-107	Tertiary Road	203.594	40	Widening	Phase 01
TR-108	Tertiary Road	186.825	40	Widening	Phase 01
TR-113	Tertiary Road	422.086	40	Widening	Phase 01
TR-75	Tertiary Road	1015.552	40	Widening	Phase 01
TR-76	Tertiary Road	426.207	40	Widening	Phase 01
TR-98	Tertiary Road	175.663	40	Widening	Phase 01
	Total:	**18484.42**			
Total New Road Proposal:		**2.69 km**			
Total road widening Proposal:		**15.79 km**			

Map no. 14.17: Land Use Plan of Ward No. 09

Map no. 14.18: Drainage and Urban Services Plan of Ward No. 09

14.10.1.2 Drainage Development Plan

The plan proposes 13.83 km. of new drains for the ward no. 09. This drainage plan will be developed during the first and second phase.

Table 14.34: Proposed Drainage Development Plan Proposals for ward 09

Drain Type	Length (m)	Phasing
Primary Drain	2451.563	Phase 02
Secondary Drain	6436.277	Phase 02
Tertiary Drain	4943.316	Phase 01
Total:	**13831.16**	

Table 14.35 Proposal of Utility Services of Ward No. 09

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	01	0.93 acre
Water Supply Network	-	As per the design of DPHE	
Electricity Line	-	As per existing program of PDB	

Table 14.36: Proposed Urban Services of Ward No. 09

Item	Existing		Proposed		Phasing
	Number	Area (Acre)	Number	Area (Acre)	
Central Eidgah	-	-	01	2.58	Phase 01
Central Graveyard	-	-	01	2.76	Phase 01
Tempo Stand	-	-	01	1.27	Phase 01
Ward Center	-	-	01	1.61	Phase 01
Neighborhood Park	-	-	04	1.08	Phase 01
	-	-		0.01	Phase 01
	-	-		2.8	Phase 01
	-	-		0.21	Phase 01
Total:				**12.32**	

All these parks proposed in this ward have also been shared with other wards.

14.11 Implementation Guidelines

The Master Plan of Mirpur 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 Local Government (Paurashava) Act 2009 can effectively be applied in the implementation of the Master Plan of Mirpur Pouashava 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 Mirpur 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.

14.11.1: 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.

14.11.2: 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 Mirpur 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.

14.12 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 Mirpur Paurashava must avail this opportunity for its progress in the future by implementing the Master Plan.