



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

MIRZAPUR PAURASHAVA

MASTER PLAN: 2011-2031

March 2015



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STRUCTURE PLAN

URBAN AREA PLAN:

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

WARD ACTION PLAN

March, 2015



MIRZAPUR PAURASHAVA
MIRZAPUR, TANGAIL

MIRZAPUR PAURASHAVA MASTER PLAN: 2011-2031

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MIRZAPUR PAURASHAVA MASTER PLAN: 2011-2031

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, Mirzapur 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 Mirzapur Paurashava.

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

(Md. Sahidur Rahman)
Mayor, Mirzapur Paurashava

EXECUTIVE SUMMARY

The term “Master Plan” is a guideline for future development. This guideline is being resulted on specific issues. The Government of Bangladesh has committed to prepare the Paurashava master Plan for ensuring the Paurashava environment livable. At present, development scenery of the Paurashava shows a very grave situation. Primary and secondary drains and natural streams are not functioning as an integrated drainage system due partly to silting up and unplanned and deficient construction and lack of maintenance. Encroachment on drainage reservations causes inundation to many areas, including houses and roads, during heavy storms. There is hardly any roadside drain and if any, the roadside drains are inadequate due to insufficient capacities and incorrect gradients.

Equally, traffic and transportation problems in the Paurashavas in Bangladesh are continuously increasing as the development and management of road network has not been commensurate with the increasing demand for its usage. Traffic congestion, delay, accidents, pedestrian and parking difficulties, air and noise pollution are among the problems. Traffic congestion is one of the most important and critical problems now being identified in the Paurashavas. The situation has been steadily deteriorating over time, over large areas and for longer periods of the day. If this unplanned construction goes on unabated it will make the environment of the Paurashava unsuitable and inhabitable. At present, there is no proper Master Plan for development of Paurashava to overcome those problems. In the absence of proper Master Plan construction of all types of infrastructure like houses, roads, drains, markets are going on unabated in an unplanned manner. This situation is creating an adverse milieu in the original landscape thereby creating environmental hazards.

It appears that planned development of Paurashava is very important. In view of this grave situation it has, therefore, been contemplated that preparation of Master Plan is being made with projection for a period of 20 years. Master Plan is the combination of Structure Plan, Urban area Plan and Ward Action Plan to ensure operation and maintenance of the existing infrastructure along with those facilities proposed to be built up under the future investment program and above all, to suggest improvement of the management ability of the Paurashava Authority so that their revenue earning capability will be enhanced with a view to building up the Paurashava Authority as self-sustaining local government institution. The Master Plan will also suggest construction of roads and bridges / culverts, drainage facilities, streetlights, markets, bus stands, solid waste management, sanitation, water supply and other such infrastructure facilities.

This is the primary effort of planned development for the Mirzapur Paurashava, guided by the LGED under Package-01 of the Upazila Towns Infrastructure Development Project (UTIDP). It is expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future of the Paurashava inhabitants.

Mirzapur Paurashava is located within the Tangail District at a distance of about 35 km from the district town and on the south-east part of the district. On the other hand, Dhaka metropolitan area is at a distance of about 47 km to the south-east of the Paurashava. It lies between 24°12' and 24°03' north latitude and 89°58' and 90°07' east longitude.

Mirzapur Paurashava was established in 18 June 2000. It is bounded from the north by Bangshi River, from the south by Bhuria Union, from the East by Bangshi River and Aganogor union and from the West by the Bhatgram union. Total area of Mirzapur Paurashava is 7.74 Sq.km. with 9 mouzas and 9 wards. A national important highway namely Dhaka-Tangail highway passes through the Paurashava that has a great importance on national economy facilitating transportation between northern part and other parts of the country. The major problems of the Paurashava are lack of community facilities, lack of infrastructure facilities, unplanned drainage system, unplanned residential development, poor capacity of the Paurashava administration etc.

The Paurashava is a naturally developed area. Planning effort yet not been taken by the public authority. Therefore, a mixed landuse scenario is viewed all over the Paurashava. About 5 to 7 meter earth filling will be needed for every development activities in the Paurashava. So, bulk development should not be encouraged due to the huge cost involvement.

Almost all the Wards have no sewerage system and toilets are mostly consists of sock pits. Overall garbage disposal system is poor. Garbage Dumping Ground is not available and mostly disposes on open streets. Wastes collect by the NGOs but not well organized all over the planning area.

Mirzapur Paurashava bears rural influences and agriculture is the major source of income. Average monthly income per household is Tk.9000. No substantial saving of the income is found.

The Upazila Towns Infrastructure Development Project (UTIDP) of LGED requires that one of its outputs is a comprehensive set of plans for Mirzapur Paurashava. The proposed set of plans consists of Structure Plan, Urban Area Plan and Ward Action Plan.

The Structure Plan sets out a long-term strategy – covering the twenty years from 2011 to 2031 for urban development and the use of land in the Paurashava Town as a whole. It extends to the entire area demarcated by the Consultant. The document sets out a series of policies to be pursued, if the broad objectives set for development of the Paurashava to be achieved.

The Urban Area Plan elaborates policies of the Structure Plan as far as they affect the area where urban development activity will be concentrated. The plan, therefore, is limited to the existing urban area and its immediate surroundings. It is for a period of ten years, covering the period from 2011 to 2021. In providing more detailed guidance available in the Structure Plan, it gives greater precision to the spatial dimension of the Structure Plan policies. The Urban Area Plan includes landuse Plan, Traffic and Transportation Plan, Drainage and Environmental Management Plan and Plan for Urban Services.

The Ward Action Plan provides guidance for areas where major change or action is expected in the short-term (5 years). According to the individual Ward of the Paurashava, this plan provide further the policies and proposals of both the Structure Plan and Urban Area Plan in more detailed and guidance for the control, promotion and coordination of development.

MASTER PLAN REPORT FOR BHUAPUR PAURASHAVA

TABLE OF CONTENTS

Preface	i-ii
Executive Summary	iii-iv
Table of Contentst	v-ix
List of Tables	x-xi
List of Figures	xii
List of Maps	xiii
Annexure and Appendix	xiv
List of Abbreviations and Acronyms	xv

PART-A: STRUCTURE PLAN

CHAPTER-01: INTRODUCTION.....	1
1.1 Introduction.....	1
1.2 Philosophy of the Preparation of Master Plan	2
1.3 Objectives of the Master Plan.....	2
1.4 Approach and Methodology	3
1.6 Organization of the Master Plan Report	9
CHAPTER-02: INTRODUCTION TO STRUCTURE PLAN.....	11
2.1 Background of the Paurashava	11
2.2 Vision of the Structure Plan	11
2.4 Concepts, Content and Format of the Structure Plan.....	11
2.5 Duration and Amendment of the Structure Plan	17
2.6 Structure Plan Area	17
CHAPTER-03: PAURASHAVA'S EXISTING TREND OF GROWTH	19
3.1 Social Development	19
3.2 Economic Development	21
3.3 Physical Infrastructure Development	25
3.4 Environmental Growth	27
3.5 Population	27
3.6 Institutional Capacity	28
3.7 Urban Growth Area	30
3.8 Catchment area	31
3.9 Landuse and Urban Services.....	31
3.10 Paurashava Functional Linkage with the Regional and National network.....	40
3.11 Role of Agencies for Different Sectoral Activities.....	40
CHAPTER-04: CRITICAL PLANNING ISSUES	45
4.1 Transport.....	45
4.2 Environment	45
4.3 Landuse Control	45
4.4 Disaster (if any)	46
4.5 Laws and Regulations.....	47
CHAPTER-05: PAURASHAVA DEVELOPMENT RELATED POLICIES, LAWS AND REGULATIONS	49
5.1 Indicative Prescription of Policy for Paurashava in the light of the Different Urban Policies, Laws, Regulations and Guidelines	49
5.2 Laws and Regulations Related to -	65
5.2.1 Urban Development Control.....	65

5.2.2	Paurashava Development Management	69
5.3	Strength and Weaknesses of the Existing Policies	73
CHAPTER-06: PROJECTION OF FUTURE GROWTH BY 2031		75
6.1	Introduction.....	75
6.2	Projection of Population.....	75
6.3	Identification of Future Economic Opportunities.....	77
6.4	Projection of Landuse.....	77
6.5	Housing	80
CHAPTER-07: LAND USE ZONING POLICIES AND DEVELOPMENT STRATEGIES		85
7.1	Zone of Structure Plan Area.....	85
7.1.1	Core Area.....	85
7.1.2	Fringe Area	85
7.1.3	Peripheral Area	86
7.1.4	New Urban Area.....	89
7.1.5	Agriculture	89
7.1.6	Waterbody.....	89
7.1.7	Major Circulation Network	89
7.2	Strategies for optimum use of Urban Land Resources	89
7.2.1	Optimum use of Urban Land Resources	89
7.2.2	Plans for New Area Development	90
7.2.3	Areas for Conservation and Protection	91
7.3	Policies for Development.....	92
7.3.1	Policies for Socio-economic Sector.....	92
7.3.2	Physical Infrastructure Sector	95
7.3.3	Environmental Issues:	97
CHAPTER-08: IMPLEMENTATION ISSUES		99
8.1	Institutional Capacity Building of the Paurashava	99
8.1.1	Staffing and Training	100
8.1.2	Lack of Automation	100
8.1.3	Town Planning Capacity.....	100
8.1.3.1	Institutional Framework (Proposed by UGIIP, LGED).....	100
8.1.3.2	Lack of Paurashava Town Planning Capacity.....	102
8.1.4	Legal Aspects	104
8.1.5	Good Governance in Legal Provisions	104
8.1.6	Financial Issues	105
8.1.7	Monitoring, Evaluation and Updating	106
8.1.8	Periodic Review and Updating	106
8.2	Resource Mobilization.....	107
8.3	Concluding Remarks.....	107
CHAPTER-09: URBAN AREA PLAN.....		109
9.1	Goals and Objectives of Urban Area Plan	109
9.2	Methodology and Approach to Planning	109
9.3	Delineation of Planning Areas.....	110
9.4	Content and Form of Urban Area Plan	110

PART-B: URBAN AREA PLAN

CHAPTER-10: LANDUSE PLAN		113
10.1	Introduction.....	113
10.1.1	Goals and Objectives	113
10.1.2	Methodology and Approach	113
10.2	Existing and Projected Landuse.....	114
10.2.1	Introduction.....	114

10.2.2	Analysis and Projection on Existing and Proposed Landuses	114
10.2.3	Summary Showing Distribution of Land for Existing and Proposed Landuse	115
10.2.4	An estimate on the Requirement of Land for Different Landuses	126
10.3	Landuse Proposals.....	135
10.3.1	Introduction.....	135
10.3.2	Designation of Future Landuse	135
10.3.3	Landuse Zoning.....	136
10.4	Plan Implementation Strategy	137
10.4.1	Land Development Regulations to Implement the Landuse Plan.....	137
10.4.2	Implementation, Monitoring and Evaluation of the Landuse Plan	139
CHAPTER-11: TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN		143
11.1	Introduction.....	143
11.2	Approach and Methodology.....	143
11.3	Existing Conditions of Transportation Facilities	144
11.3.1	Roadway Characteristics and Functional Classification	144
11.3.2	Mode of Transport	145
11.3.3	Intensity of Traffic Volume	146
11.3.4	Level of Service: Degree of Traffic Congestion and Delay.....	147
11.3.5	Facilities for Pedestrians.....	148
11.4	Analysis of Existing Deficiencies.....	149
11.4.1	Roadway Capacity Deficiencies.....	149
11.4.2	Operational, Safety, Signal and other Deficiencies.....	149
11.5	Condition of other mode of transport (Rail/Water/Air)	150
11.6	Future Projections.....	150
11.6.1	Travel Demand Forecasting for Next 20 Years	151
11.6.2	Transportation Network Considered	151
11.6.3	Future Traffic Volume and Level of Service	151
11.7	Transportation Development Plan	152
11.7.1	Plan for Road Network Development.....	152
11.7.2	Road Network Plan.....	152
11.8	List of Proposed Roads	158
11.9	Plan for Transportation Facilities	160
11.9.1	Transportation Facilities Plan.....	160
11.9.2	Parking and Terminal Facilities.....	160
11.9.3	Development of Facilities for Pedestrian, Bicycle and Rickshaw.....	160
11.9.4	Other Transportation Facilities	164
11.10	Waterway Development / Improvement Options.....	164
11.11	Proposal for Improvement of the Existing Waterway.....	164
11.12	Proposal for New Waterway Development	164
11.13	Railway Development Options.....	165
11.14	Transportation System Management Strategy (TSMS).....	165
11.14.1	Strategies for Facility Operations	165
11.14.2	Strategies for Traffic Flow and Safety.....	165
11.14.3	Strategies for Traffic Management	165
11.15	Plan Implementation Strategies.....	166
11.15.1	Regulations to Implement the Transportation Plan	166
11.15.2	Implementation, Monitoring, Evaluation and Coordination of the Plan.....	170
CHAPTER-12: DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN.....		173
12.1	Introduction.....	173
12.1.1	Goals and Objectives.....	173
12.1.2	Methodology and Approach to Planning	173
12.2	Existing Drainage Network.....	182
12.2.1	Introduction.....	182
12.2.2	Existing Drainage System / Network	182
12.2.3	Analysis on Land Level Topographic Contour.....	183
12.3	Plan for Drainage Management and Flood Control	189
12.3.1	Plan for Drain Network Development	189

12.3.1.1	Drain Network Plan	190
12.3.1.2	Proposal for Improvement of the Existing Drain Networks	190
12.3.1.3	List of Proposed New Drains.....	193
12.3.1.4	List of Infrastructure Measures for Drainage and Flood Control Network.....	193
12.4	Plan Implementation Strategies.....	194
12.4.1	Regulations to Implement the Drainage and Flood Plan	194
12.4.2	Implementation, Monitoring, Evaluation and Coordination of the Plan	194
12.5	Environmental Management Plan.....	197
12.5.1	Introduction.....	197
12.5.2	Goals and Objectives.....	197
12.5.3	Methodology and Approach to Planning	197
12.6	Existing Environmental Condition	198
12.6.1	Introduction.....	198
12.6.2	Geo-morphology.....	198
12.6.3	Solid Waste and Garbage disposal	201
12.6.3.1	Household Waste.....	201
12.6.3.2	Industrial Waste.....	201
12.6.3.3	Kitchen Market Waste.....	201
12.6.3.4	Clinical / Hospital Waste.....	201
12.6.3.5	Waste Management System.....	201
12.6.3.6	Latrine	202
12.6.3.7	Industry	202
12.6.4	Brick Field	202
12.6.5	Fertilizer and Other Chemical Use.....	202
12.6.6	Pollutions.....	202
12.6.6.1	Water	202
12.6.6.2	Air	203
12.6.6.3	Sound	203
12.6.6.4	Land Pollution	204
12.6.6.5	Arsenic.....	204
12.6.6.6	Other Pollution	204
12.6.7	Natural Calamities and Localized Hazards	204
12.6.7.1	Cyclone.....	204
12.6.7.2	River Erosion.....	205
12.6.7.3	Flood	205
12.6.7.4	Earth Quake.....	205
12.6.7.5	Water-Logging	205
12.6.7.6	Fire Hazard	205
12.6.7.7	Other Hazards.....	205
12.7	Plan for Environmental Management and Pollution Control	206
12.7.1	Proposals for Environmental Issues	206
12.7.1.1	Solid Waste Management Plan	206
12.7.1.2	Open space, Wet-land and Relevant Features Protection Plan.....	207
12.7.1.3	Pollution Protection Proposals.....	207
12.7.1.3.1	Industrial / Brickfield	207
12.7.1.3.2	Air / Water / Land / Sound.....	207
12.7.1.3.3	Other Pollution.....	208
12.8	Natural Calamities and Regular Hazard Mitigation Proposals.....	208
12.8.1	Protection Plans Addressing Natural Calamities	208
12.8.2	Protection Plan Addressing Regular Hazards	211
12.8.3	Protection Plan Addressing Encroachment and Other relevant issues	211
12.9	Plan Implementation Strategies.....	212
12.9.1	Regulations to Implement the Drainage and Flood Plan	212
12.9.2	Implementation, Monitoring, Evaluation and Coordination of the Plan	212
CHAPTER-13: PLAN FOR URBAN SERVICES		217
13.1	Introduction.....	217
13.1.1	Introduction.....	217
13.1.2	Range and Content of the Urban Services	218

13.2	Analysis of Existing Condition and Demand of the Services.....	218
13.2.1	Introduction.....	218
13.2.2	Analysis and Projection on Existing and Proposed Urban Services.....	218
13.3	Proposals for Addressing Urban Services and Implementation Strategies.....	220
13.3.1	Introduction.....	220
13.3.2	Proposals for Urban Services	223
13.3.3	Regulations to Address the Proposals	224
13.3.4	Implementation, Monitoring and Evaluation of the Urban Services Plan.....	227

PART-C: WARD ACTION PLAN

CHAPTER-14: WARD ACTION PLAN..... 231

14.1	Introduction.....	231
14.1.2	Overview of Ward Action Plan.....	231
14.1.3	Linkage with the Structure and Urban Area Plan	231
14.1.4	Approach and Methodology.....	232
14.2	Prioritization	233
14.3	Ward-wise Action Plan for Next Five Years.....	235
14.3.1	Action Plan for Ward No. 1	235
14.3.3	Action Plan for Ward No. 3.....	251
14.3.4	Action Plan for Ward No. 4.....	257
14.3.8	Action Plan for Ward No. 8.....	285
14.5	Concluding Remarks.....	300

LIST OF TABLES

Part-A: Structure Plan

Table 3.1	: Population growth trend analysis of Mirzapur Upazila	20
Table 3.2	: Mouza-wise land value in the Study Area, 2011	21
Table 3.3	: Ward wise population of Mirzapur Paurashava, 2001	27
Table 3.4	: Ward Wise population density and percentage of Mirzapur Paurashava.....	27
Table 3.5	: Allocated and existing manpower for Mirzapur Paurashava	28
Table 3.6	: General Land Use of Mirzapur Paurashava (Area in Acre)	32
Table 3.7	: Agencies responsible for sectoral activities	43
Table 5.1	: Passenger Car Unit (pcu) Conversion factors for non-urban roads	58
Table 5.2	: Design applications	58
Table 5.3	: Existing and Recommended design lives	58
Table 5.4	: Functions in brief prescribed in the Local Government (Paurashava) Ordinance, 2009.....	69
Table 6.1	: Population growth of Mirzapur Upazila	75
Table 6.2	: Population growth of Mirzapur Paurashava	75
Table 6.3	: Population Projection of Mirzapur Paurashava (growth rate: 3.68%)	77
Table 6.4	: Standard of Landuse and future need.....	78
Table 6.5	: Ward-wise demand of housing areas (in acre)	81
Table 7.1	: Structure Plan Policy Zoning	86
Table 7.2	: Policy for optimum use of urban land resources	90
Table 7.3	: Policy for new area development	91
Table 7.4	: Area for conservation and protection	91
Table 7.5	: Policy for Population Sector	92
Table 7.6	: Policy for Economic Development and Employment Generation	93
Table 7.7	: Housing and Slum Improvement.....	94
Table 7.8	: Social Amenities and Community Facilities	95
Table 7.9	: Policy for Transport Sector	96
Table 7.10	: Policy for Utility Services	96
Table 7.11	: Policy for Natural Resources.....	98

LIST OF TABLES

Part-B: Urban Area Plan

Table 10.1	: Proposed new areas for residential development.....	117
Table 10.2	: Proposed facilities for commercial development.....	118
Table 10.3	: Proposed new area for industrial development.....	118
Table 10.4	: Proposed new area for government office.....	119
Table 10.5	: Proposed new facilities for educational development	119
Table 10.6	: Proposed new facilities for open space development.....	120
Table 10.7	: Proposed new transportation facilities.	121
Table 10.8	: Proposed new utility services.	122
Table 10.9	: Proposed facilities for residential development.....	123
Table 10.10	: Proposed new community facilities.	123
Table 10.11	: Proposed area for urban defferd.	124
Table 10.12	: Proposed landuse of the Mirzapur Paurashava	125
Table 10.13	: Existing and proposed landuses including standard.....	133
Table 11-1	: Description of the survey stations	144
Table 11-2	: Road network of Mirzapur Paurashava	145
Table 11-3	: Hierarchy of roads in Mirzapur Paurashava.....	145
Table 11-4	: Results of O-D Survey.....	148
Table 11-5	: Purposes of travelers in percentage.....	148
Table 11-6	: Hierarchy of road.....	149
Table 11-7	: Road standards for future development of the network.....	151
Table 11-8	: List of proposed new roads	159

Table 11.9	: Proposed new transportation facilities.	160
Table 12-1	: Manning's "N" Values for Channel Flow.....	176
Table 12-2	: Storage Coefficients for flat land	176
Table 12-3	: Modified Rational Method Runoff Coefficients	177
Table 12-4	: Existing natural drainage network of Mirzapur Paurashava	183
Table 12-5	: Existing man-made drains of the Mirzapur Paurashava	183
Table 12-6	: Spot Value and their Unit (Number of Spot (Z) Value and their Statistics)	184
Table 12-7	: Spot Interval and Frequency.....	184
Table 12-8	: Contour derived from the spot elevation.....	189
Table 12-9	: List of proposed new drains	193
Table 12-10	: List of existing and proposed infrastructures for drainage and flood control.....	193
Table 12-11	: SPT N-Values.....	199
Table 12-12	: Strength Characteristics	199
Table 13-1	: Standard of utility facilities and future need	219

LIST OF TABLES

Part-C: Ward Action Plan

Table 14.1	: Proposed landuse for Ward no-1.....	236
Table 14.2	: proposed facilities for ward no -1.....	236
Table 14.3	: Proposed road for ward no-1	237
Table 14.4	: Proposed drainage for ward no-1	237
Table 14.5	: Proposed landuse for Ward no-2	243
Table 14.6	: Proposed facilities for ward no -2	244
Table 14.7	: Proposed road for ward no-2	244
Table 14.8	: Proposed drainage for ward no-2	245
Table 14.9	: Proposed landuse for Ward no-3	251
Table 14.10	: Proposed facilities for ward no -3	252
Table 14.11	: Proposed road for ward no-3	252
Table 14.12	: Proposed drainage for ward no-3	257
Table 14.13	: Proposed land use for Ward no-4	258
Table 14.14	: proposed facilities for ward no -4	258
Table 14.15	: Proposed road for ward no-4	259
Table 14.16	: Proposed drainage for ward no-4	260
Table 14.17	: Proposed land use for Ward no-5	265
Table 14.18	: Proposed facilities for ward no -5	266
Table 14.19	: Proposed road for ward no-5	266
Table 14.20	: Proposed drainage for ward no-5	267
Table 14.21	: Proposed land use for Ward no-6	273
Table 14.22	: Proposed facilities for ward no -6	273
Table 14.23	: Proposed road for ward no-6	274
Table 14.24	: Proposed drainage for ward no-6	274
Table 14.25	: Proposed land use for Ward no-7.....	279
Table 14.26	: proposed facilities for ward no -7	279
Table 14.27	: Proposed road for ward no-7	280
Table 14.28	: Proposed drainage for ward no-7	280
Table 14.29	: Proposed land use for Ward no-8	285
Table 14.30	: Proposed facilities for ward no -8	285
Table 14.31	: Proposed road for ward no-8	286
Table 14.32	: Proposed drainage for ward no-8	286
Table 14.33	: Proposed land use for Ward no-9	291
Table 14.34	: Proposed facilities for ward no -9	292
Table 14.35	: Proposed road for ward no-9	292
Table 14.36	: Proposed drainage for ward no-9	297

LIST OF FIGURES

Part-A: Structure Plan

Figure 1-1	: Flow Chart of Planning Process.....	4
Figure 8-1	: Scope of Work for Planning Division	101

LIST OF FIGURES

Part-B: Urban Area Plan

Figure 11-1	: Cross-section of Dhaka-Tangail Road	163
Figure 11-2	: Cross-section of Highway to Sharifabad raod Road	163
Figure 11-3	: Long-section of Dhaka-Tangail Road	164
Figure 11-4	: Long-section of Highway to Sharifabad raod	164

LIST OF MAPS

Part-A: Structure Plan

Map 1-1	: The location of Mirzapur Paurashava within Bangladesh.....	5
Map 2-1	: Mirzapur Paurashava in Regional Setup	13
Map 2-2	: Jurisdiction of planning area of Mirzapur Paurashava.....	15
Map 3-1	: Existing Growth Potentiality of Mirzapur Paurashava.....	35
Map 3-2	: Existing Landuse of Mirzapur Paurashava.....	37
Map 3-3	: Regional/ National Road Network of Mirzapur Paurashava	41
Map 6.1	: Population Density of the study area	83
Map 7.1	: Structure Plan of Mirzapur Paurashava.....	87

LIST OF MAPS

Part-B: Urban Area Plan

Map 10.1	: Landuse Plan of Mirzapur Paurashava	129
Map 11-1	: Important Roads of Mirzapur Paurashava	153
Map 11-2	: Proposed Circulation Network for Mirzapur Paurashava	161
Map 11-3	: Proposed Transport Infrastructure of Mirzapur Paurashava	167
Map 12.1	: Existing Drainage Network of Mirzapur Paurashava	185
Map 12.2	: Land Level of Mirzapur Paurashava	187
Map 12.3	: Proposed Drainage and Flood Control Components	191
Map 13-1	: Existing Urban Services	221
Map 13-2	: Proposed Urban Services.....	225

LIST OF MAPS

Part-C: Ward Action Plan

Map 14.1	: Landuse Proposal for Ward No. 01	239
Map 14.2	: Proposed Road, Drainage and Utility Services Plan for Ward No. 01	241
Map 14.3	: Landuse Proposal for Ward No. 02	247
Map 14.4	: Proposed Road, Drainage and Utility Services Plan for Ward No. 02	249
Map 14.5	: Landuse Proposal for Ward No. 03	253
Map 14.6	: Proposed Road, Drainage and Utility Services Plan for Ward No. 03	255
Map 14.7	: Landuse Proposal for Ward No. 04	261
Map 14.8	: Proposed Road, Drainage and Utility Services Plan for Ward No. 04	263
Map 14.9	: Landuse Proposal for Ward No. 05	269
Map 14.10	: Proposed Road, Drainage and Utility Services Plan for Ward No. 05	271
Map 14.11	: Landuse Proposal for Ward No. 06	275
Map 14.12	: Proposed Road, Drainage and Utility Services Plan for Ward No. 06	277
Map 14.13	: Landuse Proposal for Ward No. 07	281
Map 14.14	: Proposed Road, Drainage and Utility Services Plan for Ward No. 07	283
Map 14.15	: Landuse Proposal for Ward No. 08	287
Map 14.16	: Proposed Road, Drainage and Utility Services Plan for Ward No. 08	289
Map 14.17	: Landuse Proposal for Ward No. 09	293
Map 14.18	: Proposed Road, Drainage and Utility Services Plan for Ward No. 09	295

LIST OF ANNEXURE AND APPENDIX

Annexure

- Annexure-A : Paurashava Gazettee
- Annexure-B : Permitted Landuse List
- Annexure-C : Resolution of Final Consultation Meeting and Attendance List.
- Annexure-D : Details of Road Network Proposal
- Annexure-E : Details of Drainage Network Proposal
- Annexure-F : Mouza Schedule of Development Proposal
- Annexure-G : Mouza Schedule of Water Retention Pond
- Annexure-H : List of Photographs

Appendix

- Appendix-1 : Structure Plan
- Appendix-2 : Landuse Plan
- Appendix-3 : Transportation & Traffic Management Plan
- Appendix-4 : Drainage & Environment Management Plan

List of Abbreviations and Acronyms

BBS	: Bangladesh Bureau of Statistics
BDT	: Bangladeshi Taka (Currency)
BM	: Bench Mark
BTCL	: Bangladesh Telecommunication Company Limited
BWDB	: Bangladesh Water Development Board
CBO	: Community Based organization
CS	: Cadastral Survey
DGPS	: Differential Global Positioning System
EMP	: Environmental Management Plan
EPA	: Environment Protection Authority
GCP	: Ground Control Points
GIS	: Geographic information System
Govt.	: Government
GPS	: Global Positioning System
H.Q.	: Head Quarter
H/hold	: Household
JICA	: Japan International Cooperative Agency
KM/ km	: Kilometer
LAN	: Local Area Network
LCC	: Lambert Conformal Conic
LGED	: Local Government Engineering Department
LPG	: Liquid Petroleum Gas
MV	: Motorized Vehicle
NGO	: Non-Government Organizations
NMV	: Non Motorized Vehicle
O-D	: Origin – Destination
Orgs.	: Organizations
PCU	: Passenger Car Unit
PD	: Project Director
PMO	: Project Management Office
R.F.	: Representative Fraction
RHD	: Roads and Highways Department
RoW	: Right of Way
RS	: Revenue Survey
RTK-GPS	: Real Time Kinematics Global Positioning System
SoB	: Survey of Bangladesh
SPSS	: Statistical Package for Social Science
TCP	: Temporary Control Point
TIN	: Triangulated Irregular Network
ToR	: Terms of Reference

CHAPTER-1

INTRODUCTION

1.1 Introduction

At present the rate of urbanization in Bangladesh is very high. Between 1961 to 1981, the average urban growth rate was 8%. The present average growth rate is about 4.5%. According to the population census of 2001, the share of urban population was about 23.29% and at present it is approximately 25%. By the year 2015, the share of urban population will be about 37% of the national population. The importance of urban development is emphasized in terms of its role in the national economy. More than 60% of the national GDP is derived from the non-agricultural sectors that are mainly based in urban areas. Again, the most foreign exchange earning sectors, like, garment and knitwear enterprises are agglomerated in urban areas. These sectors earn over 70% of the foreign exchange. Remittance is also a major sector of foreign exchange earning and a large share of the remittance goes into the purchase of urban land. Surplus remittance is invested in business and manufacturing located in urban areas. These phenomena indicate the increasing role of urban areas being played in the national economy. The expansion of urban economy leads to the growth of urban population and concomitant haphazard urban spatial growth without planning. The rapid urbanization is marked by the creation of Paurashavas, whose number at present stands at 312. 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 substandard 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 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 Mirzapur is one of 19 Paurashavas within Dhaka Region under Package-01.

Thus the Master Plan of Mirzapur 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 Mirzapur Paurashava are to:

- a) Find out development issues and potentials of the Mirzapur 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 Mirzapur Paurashava to develop and update provisions for better transport and communication network, housing, roads, markets, bus terminals, sanitation, water supply, drainage, solid waste management, electricity, education, leisure and such other infrastructure facilities for meeting the social and community needs of the poor and the disadvantaged groups for better quality of life;
- 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
- e) future development;

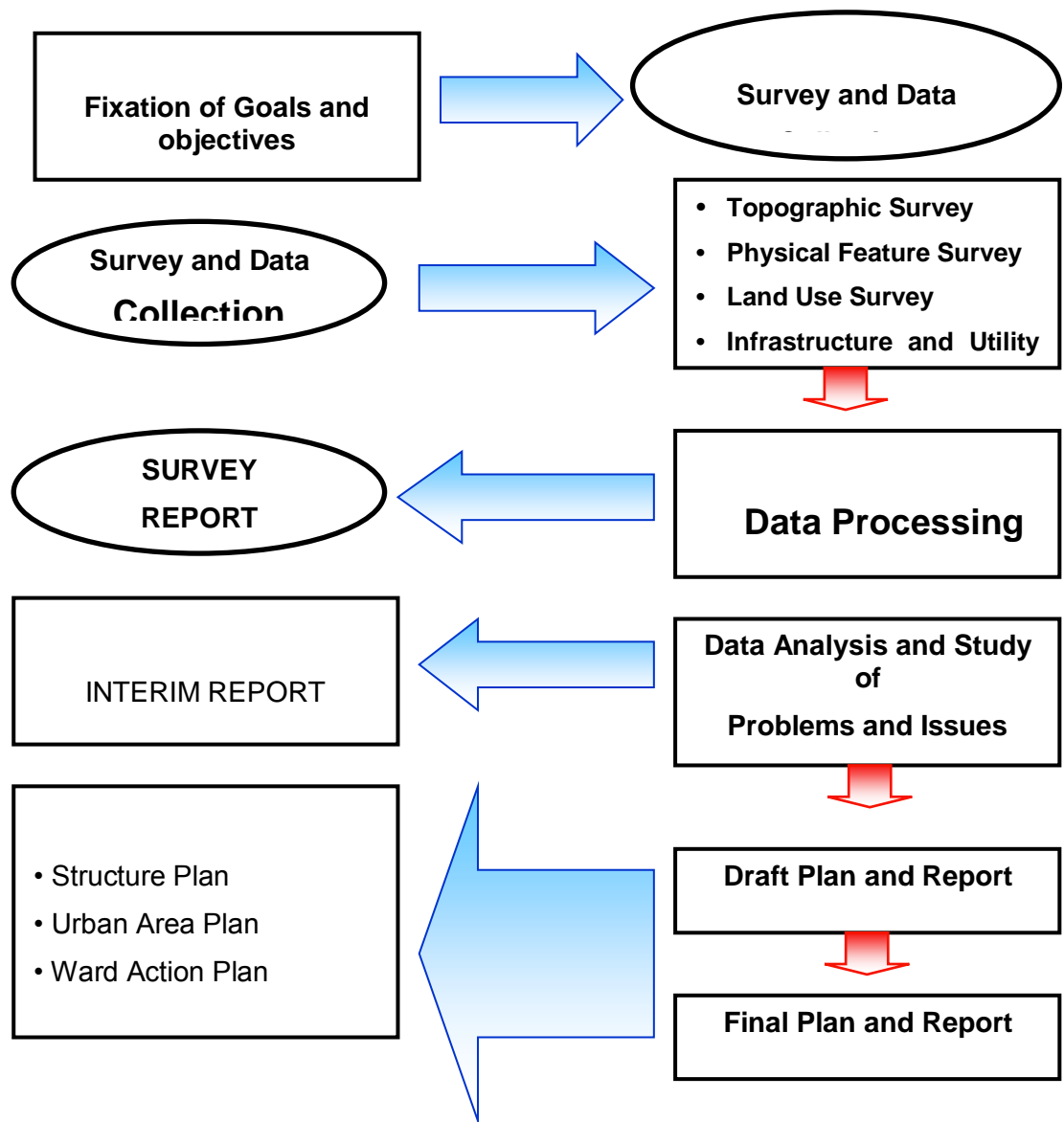
- f) Provide guideline for development considering the opportunity and constrains of future development of the Upazila Town; andf. Prepare a 20-year Master Plan to be used as a tool to ensure and promote growth of the

Mirzapur Paurashava in line with the guiding principles of the Master Plan and control anyunplanned 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 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.

Figure 1-1: Flow Chart of Planning Process



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.

Map 1-1: The location of Mirzapur Paurashava within Bangladesh

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:

- a) Visits have been made to the Paurashava at different stages of work of the preparation of Master Plan of Mirzapur Paurashava.
- b) Feasibility for preparation of Master Plan has been submitted to the office of the PD, UTIDP.
- c) 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.
- d) 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 centres and other environmental and social infrastructure. The following major tasks have been accomplished:
 - Identification and investigation of the existing natural and man-made drains, natural river system, the extent and frequency of floods, area of planning intervention have been done. Other works include study of the contour and topographic maps produced by the relevant agencies and review of any previous drainage Master Plan available for the Paurashava.
 - A comprehensive (storm water) Drainage Master Plan for a plan period of 20 years has been prepared considering all relevant issues including discharge calculation, catchments areas, design of main and secondary drains along with their sizes, types and gradients and retention areas with preliminary cost estimates for the proposed drainage system.
 - Recommendations have been made on planning, institutional and legal mechanisms to ensure provision of adequate land for the establishment of proper rights of way for (storm water) drainage system in the Paurashava.
 - Collection and assessment of the essential data relating to existing transport Land Use Plan, relevant regional and national highway development plans, accident statistics, number and type of vehicles registered for each Paurashava have been made.

- Assessment has been made on the requirements of critical data and data have been collected through reconnaissance and traffic surveys, which should estimate present traffic volume, forecast the future traffic growth, identification of travel patterns, areas of traffic conflicts and their underlying causes.
- Study has been conducted on the viability of different solutions for traffic management and development of a practical short term traffic management plan has been accomplished, including one way systems, restricted access for large vehicles, improved signal system, traffic islands, roundabouts, pedestrian crossings, deceleration lanes for turning traffic, suitable turning radius, parking policies and separation of pedestrians and rickshaws etc.
- Assessment has been done on the non-pedestrian traffic movements that are dominated by cycle rickshaw. Special recommendations should be made as to how best to utilize this form of transport without causing unnecessary delays to other vehicles. Proposals should also consider pedestrians and their safety, with special attention for the children.
- Assessment has been made on the current land use with regard to road transportation, bus & truck stations, railway stations etc, and recommendations to be provided on actions to optimize this land use.
- Preparation of a Road Network Plan based on topographic and base Map prepared under the project. recommendation has been made on the road development standards, which serve as a guide for the long and short term implementation of road. Also Traffic and Transportation Management Plan and traffic enforcement measure have been suggested.
- Preparation of the Master Plan with all suitable intervention, supported by appropriate strategic policy, outline framework, institutional arrangement and possible source of fund for effective implementation of the plan.
- Preparation of a plan has been set out proposed Master Plan at 3-levels namely Structure Plan, Urban Area Plan and Ward Action Plan.
- At the first level, policies and strategies have been worked out for the preparation of a Structure Plan for each Paurashava under the package. The Master Plan has been prepared consisting of Structure Plan, Land Use Plan, Transportation and Traffic Management Plan, Drainage and Environmental Management Plan and Ward Action Plan.
- A total list of primary and secondary roads, drains and other social infrastructures for each Paurashava for a plan period of next 20 years has been made. Examining and classifying according to the existing condition, long, medium and short term plans have been proposed and estimated cost for improvement of drain and road alignment and other infrastructures have been prepared.
- In line with the proposed Master Plan, a Ward Action Plan has been proposed with list of priority schemes for the development of roads, drains, traffic management and

other social infrastructures for implementation during the first five years of plan period.

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

1.6 Organization of the Master Plan Report

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

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

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

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

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

CHAPTER-2

INTRODUCTION TO STRUCTURE PLAN

The Draft Master Plan Report is the fourth of the series of the reports to be submitted as per the ToR of the project “Upazila Town Infrastructure Development Project - Preparation of Mirzapur Paurashava Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan)”. Part A of this report describes the Structure Plan of Mirzapur Paurashava and Chapter 2 describes the conceptual issues related to the preparation of Structure Plan for Mirzapur 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 Area (DMDA). Mirzapur Paurashava is a B class Paurashava was established in 2000. It is located within the Tangail zila at a distance about 35 km. from the zila shahar and on the south-east part of Tangail zila. It lies between 24°12’ and 24°03’ north latitude and 89°58’ and 90°07’ east longitude. It is bounded from the north by Bangshi River, from the south by Bhuria Union, from the East by Bangshi River and Aganogor union and from the West by the Bhatgram union. The Paurashava’s existing jurisdiction area as 7.74 sq km divided into nine ward. Among the nine Wards, Ward No. 5 has occupied largest area which is 378.07 acres and Ward No. 8 is the smallest (168.03 acres). The source of the naming of the Paurashava is not definitely known. It is learnt that during the Mughal period Mirza Hossain, a revenue collector took lease of this area. It is generally believed that the Upazila might have originated its name from the name of that man. Mirzapur Paurashava is connected with Tangail through a National Highway. Concentrated development is the common feature of the Paurashava. A National Highway named Dhaka-Tangail NHW Road passed through the central part of the Paurashava in east-west direction. So the agro product can easily transport in different districts.

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.

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 Mirzapur 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; catchments 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 Mirzapur
- 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 Mirzapur 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 lot by lot 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), Mirzapur. 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.

Map 2-1: Mirzapur Paurashava in Regional Setup

Map 2-2: Jurisdiction of planning area of Mirzapur Paurashava

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.

2.6 Structure Plan Area

According to the physical feature survey the Consultant has identified the Paurashava's existing jurisdiction area 7.74 sq. km. (1911.60 sq.m.). The existing Paurashava area is considered as structure plan area as there is no potentiality for further extension within near future. Physical development trend for next 20 years has been considered for such expansion.

CHAPTER-3

PAURASHAVA'S EXISTING TREND OF GROWTH

3.1 Social Development

Age-sex structure

Age-sex distribution indicates that population mostly increase naturally. The age-sex distribution implies that generally female population is less than male population in the Paurashava. But, in case of Mirzapur Paurashava, according to Population Census 2011; the number of female population (15455 persons) was found greater than the male population (13147 persons). 8.4% family members of the Paurashava have been found to belong to the age group of 0-4 years. On the other hand 7.4% peoples fall in the age group of 60 years and above. The highest population goes under the range of 30 to 49 years age group which consists of 27 % of the total population. So, in all the Wards the number of young and workable population is highest than any other aged group population (BBS, 2011).

Household size

Family size ranges from 1-4, 5-8, 9-11 and 11+ members, but most prevalent size is 1-4 and 5-8 members. There are both single and joint family systems. Ward No. 3 had major percentage of single family (92%) and Ward No. 5 had major percentage joint-family system (43%) compared to other Wards. Most of the families in the Paurashava are single family (78%) type and the average family member is 4.5 persons per family.

Migration pattern

According to the socio-economic sample survey-2009, about 94.5% households of Mirzapur Paurashava are permanent residents and 5.5% households are migrated. Migration occurred only in the ward no. 1, 2 and 3. In ward number 1, all the migrated households migrated after 2000 and in ward no. 2, all the migrations occurred during 1990 to 2000. In ward no. 3, 27.3% of the migrated households migrated from 1990 to 2000 and 72.7% of the migrations occurred after 2000. So the number of in-migrated population is going up. It is seen that in ward no. 1 and 2, all the migrations occurred from the other districts and from same Upazila respectively. In ward no. 3, 72.7% migrated households migrated from other districts. There are various reasons for the migration. It is found for ward no. 3 that migration occurred mainly for service or transfer and business or commerce purposes. In ward no. 1 and 2, the reasons for migration are mainly business or commerce and service or transfer respectively.

Growth rate

In the Mirzapur Upazila, from the year 1974-1981, annual growth rate of population was 1.69%, and from the year 1981-1991 the rate slightly decreased to 1.46%. In 2001 government notified the urban characterized area of the Upazila as Paurashava and surprisingly then the growth rate of the whole Upazila decreased to 0.83% during the

year 1991-2001 which became 1.05% during year 2001-2011. The population of Mirzapur Paurashava was 23537 in 2001 and it became 28602 at 2011(BBS, 2011). So the population growth rate was 1.97 annually which is very low considering urban population growth rate.

Table 3.1: Population growth trend analysis of Mirzapur Upazila

Year	Growth rate (Decadal)	Growth rate (Annual)
1974-1981	16.9	1.69
1981-1991	14.6	1.46
1991-2001	8.3	0.83
2001-2011	10.5	1.05

Source: BBS Population Census-2011 (Community Series, Zila: Tangail)

Educational status

Socio economic survey (by the consultant, 2010) reveals that about 21.4% household heads in Mirzapur are in class VI-X, 29% household heads are in class I-V, 17.6% household heads are in SSC/equivalent, 9.2% household heads are in HSC/equivalent, 6.3% household heads are in BSS/equivalent, 2.9% household heads are in MSS/equivalent, 0.4% household heads are above MSS and rest 13% household heads are illiterate.

The percentages of MSS and above MSS are nil in ward no. 1; 28% of the household heads are in class I to V. On the other hand both in ward no. 2 and ward no.3, the highest percentage of the household heads is 24% who studied in class VI-X. In ward no.4, there are no people above SSC level and the highest percentage is 64% that found for class VI-X. In ward no. 5, there are no educated people above HSC level; 33.3% of the household heads are illiterate and 23.8% household heads are in class I-V. In ward no.6, the percentage of SSC/equivalent passed household heads is the highest (38.1%). However, there is no educated person having a degree of MSS/equivalent and above. In ward no. 7, the percentage of household heads studied in class I-V is the highest (40%); 25% are in class VI-X and 15% are illiterate. In ward no. 8, the highest percentage is 36.7% that has been found for class I-V and in ward no. 9, the percentage of household heads with an education level of class VI-X is the highest (47.6%).

Religion

Mirzapur Paurashava is mixed with people of all religions. Among them 66.45% people were Muslim, 32.66% were Hindu, 0.74% and 0.12% were Buddhist and Christian respectively. The rest 0.04% people were found to have other religions.

Land Value

Land value is an important determinant for any project related to the physical development because; the development depends on project cost and the cost on land value. In recent time, a rapid change of land value is found in the Paurashava premises. Wealthy people of the community are investing on land and became landlord because they consider it as a safe investment. As a result, land value curve is on upward. Value of land depends on location, accessibility, height and free of natural hazards. Following paragraphs discuss on land value of the study area.

Official Values

The official land value uses for calculation and collection of land revenue. In the physical planning aspects, study of land value is necessary for land acquisition. For the preparation of physical development project including cost involvement, an idea on land value is necessary. In this study, the official land value is being quoted from the actual value considers by the Sub-registry Office of the Mirzapur Paurashava.

Table 3.2: Mouza-wise land value in the Study Area, 2011

Sl. No.	Mouza name	Bari/Vita	Kanda	Nama	Others
1.	Andhara	210972/-	78235/-	50000/-	
2.	Kathalia	49111/-	75000/-	4000/-	
3.	Garail	286945/-	162000/-	16739/-	Pond-46666/-
4.	Post Kumari	90421/-	176306/-	33715/-	
5.	Baoar Kumarjani	460000/-	200464/-	25570/-	
6.	Baimhati	300175/-	195370/-	50230/-	Shop-3450838/-
7.	Mirzapur	187045/-	100000/-	25000/-	
8.	Shorishadair	51140/-	47730/-	5153/-	
9.	Sri Horipara	100000/-	30030/-	16000/-	

Source: Mirzapur Sub-Registry Office.

In this study, four types of land in nine mouzas are being considered. In the natural land market, land for homestead / housing construction is higher than other type of land and this scenario is prevailing in the Paurashava also. In another scenario, commercial land value is higher than homestead / residential land value. Bari, Vita, kanda, nama, pond and shop are these types of land are under the jurisdiction of agriculture land. For development activities, in case of land cost, those lands should be emphasized, though land development cost is higher than other type of lands.

Existing Practice/ Unofficial Value

It is clearly observed that land value increases with the height of the land. It increases from low to medium high land. The maximum mean value is found for the high land (Tk.145714.29 per decimal) and lowest for the low land (Tk.104904.76 per decimal).

Land Ownership Types and Patterns

Most of the land in Mirzapur Paurashava are high and medium high land, about 45% land are medium high and 38% land are high and only 6% land are low land, rest of the land are habitable land. About 41.6% of households in Mirzapur Paurashava hold 0-10 decimals land, 47.90% households hold 10-20 decimal land and only 10.5% households hold more than 20 decimal land. So it can be said for Mirzapur that most of the land are in the hand of a few number of people.

3.2 Economic Development

Two basic elements of economic development i.e. employment generation and increase of productivity are found in the cities and urban areas than the rural areas. This is a common phenomenon for the developed and developing countries. Employment opportunities act as a strong pull factor for influx of job seekers in the cities and urban areas, the centers of productivity. Special features of the study area are that it covers a

vast rural area, besides a small urban center of Paurashava town. A National Highway (Dhaka-Tangail NHW) passes in the Paurashava and both the sides of the highway is occupied by huge tracts of agriculture land and sporadic homesteads, at places showing the signs of development along with the hats, bazars indicating the dominant role of agriculture and fishery. This indicates general feature of the study area as a mixture of rural and semi-urban nature. These special socio-economic features of the study area have been taken into consideration in conducting the study of the prevailing economic situation.

Industry

Survey revealed that there have several rice and saw mill in Paurashava area. Industrial/Processing and Manufacturing activity in Mirzapur Paurashava mainly includes rice mill, saw mill, ice factory, seed processing industry, bakery factory and other manufacturing and processing activities. Major industrial/manufacturing concentration is seen in Ward No 06. There is no industrial use in Ward No 01, 07 and 08.

Commerce

Commerce includes purchase and sale of various consumer and durable items performed by the business person. In the study area, such activities are wholesale and retail trade, hotel and restaurant business, transport, storage services, hat/bazar, etc. Major part of trade and commerce of the study area is conducted through hat / bazar where agriculture produces, consumer items, merchandise for household and other farm and non-farm items are transacted. The market / bazar performs significant role on the Paurashava economy. It is observed that market / bazar provide good number of employment and act as an economic centre for the area of influence of the market / bazar. This market / bazar remain open every day from morning to evening. Along with the daily business transactions, two market places are also used as hat which sits twice in a week. On the hat day farmers, traders, businessmen and many other informal professionals gather in the hats and run trades and business till evening. Actually, the market / bazar is the key supplying centres of all sorts of agro-products to the urban areas and other non-producing areas of the country, and similarly this market / bazar is the major distribution centres of industrial products to the vast majority of the rural people throughout the country at consumer levels. Importance of the market / bazar place can not be ignored, rather needs to be facilitated with provision of infrastructure facilities.

Two locations are found with agglomeration of commercial activities at hat / bazar area in the Paurashava. That hat / bazar are taking place in the core part of the Paurashava along with the road; tin-shed semi-pucca structures with parcels of open lands. Saturday, Monday and Wednesday of a week are the local Hat days. Those hat / bazars are prominent due to its availability of agro-product and fish. People from different Upazilas, Zilas and Capital City accumulate in those hat / bazars as a buyer.

Services

The service sector consists of the hotel and restaurant business; transport and communication, storage / godown, financial intermediaries, real estate, rental activities, public administration, education, health, community service and social work including social and personal services. The service sector significantly contributes to the local economy. Most of the service structures are housed in permanent structures. Also there are some temporary structures. It is found that 32% households are dependent on services and 30.6 percent are engaged in small business activities in Mirzapur Paurashava. For health services, Kumudini Medical College and Hospital have tremendous services of the Paurashava and surrounding areas.

There are different types of administration and government services like Paurashava Office, Upazila Headquarters, sub-registry office, Police station and non govt. establishments like banks and NGOs working throughout the study area. Major investment by the banks are in the field of cash credit in the form of running capital and capital loan for setting up of business establishments, besides general banking facility. Some NGOs have also disbursed agricultural loan. The NGOs are rendering services in the fields of poverty alleviation programs, awareness building, health care, education, sanitation, micro-credit and training on income generating activities including skill development. NGOs provide services in the field of micro-credit; encourage social services, advance loan for poultry, fisheries, livestock, agriculture, house building, land purchase and capital loan for running business. NGOs also take part in various social activities like awareness building on environment, natural calamities, health and many other fields. A good number of people special women and poverty-stricken has been getting various types of services from the NGOs for quite a long period.

Agriculture

Agriculture dominates the economy of this Paurashava. Among agricultural produces, important items besides paddy are vegetables, local fruits, sugarcane, jute and mustards. Among the agriculture products, paddy, local fruits, mustards and vegetables are consumed locally and a considerable percent are using by the inhabitants of adjacent Upazilas.

Agro-based

There are several types of agro based industry in the Paurashava. Rice mill, saw mill, ice factory, seed processing industry and bakery factory are prominent agro based industry here. The industrial activities cover 3.62 acres of the study area. Local woods are being processed in the Saw Mill and locally produced paddy are using in the Rice Mill. Those industries have been established all over the Paurashava. But there is no big industry within the Paurashava area.

Occupation

Occupation related to Business was found to be more prominent in Mirzapur Paurashava; about 27% households were involved in business of which 14% were involved in small

business and 13% in large business. Besides business, agriculture and farming was the major occupation of about 25% households. 18% of household heads were involved in private service; the other occupations are Govt. officer 2%, skilled labor 3%, house wife 4%, teaching 2%, other Govt. employee 8%, Rickshaw/ Vanpooler/ Driver 1%, Handicrafts 3% in Mirzapur Paurashava. There were also 6% unemployed/ retired household heads in Mirzapur Paurashava. The table 5.4 represents the main occupation of the head of households according to ward in Mirzapur Paurashava.

In ward no.1 there are no percentages of occupation of Govt. Officers, Other Govt. employee, Teaching, Unskilled Labor and Hawker/Vendor. The highest percentage is 28.0 of Private Service. 20.0 percent of occupation of Business is the highest in ward no.2. The highest percentages of occupation of Farming and Agriculture are 64.0, 61.9, 42.9 in ward no 4, 5 and 9 respectively. There are Govt. Officer and Teacher in ward no.5, 8 and 9 respectively. The highest percentages of occupation of Private Service are 33.3 and 30.0 in ward no. 6 and 8 respectively.

Income level

In Mirzapur Paurashava, about 94% families are single earned, 5% families are double earned and 1% families are triple earned. Major portion of income come from business, service and agriculture. About 32% incomes come from service, 30.7% come from business, 25.2% from agriculture and 11.8% from other sources. In ward no 4, 5 and 9 major portion of income comes from agricultures and in ward no 1 and 2 major portion of income comes from business. In ward no 3 and 6 major portion of income comes from service. In ward no 7 and 8 major portion of income comes from both business and service

About 2.1% households monthly earn tk.0-5000, 66.8% households earn tk.5001-10000, 24.8% households earn tk.10001-15000, 4.2% households earn tk.15001-20000, 1.7% households earn tk.20001-25000 and 0.4% households earn above tk.25000.

Expenditure

There are various kind of expenditure of individual household in an urban area such as food expenditure, house rent expenditure, water expenditure, electricity expenditure, gas expenditure, health expenditure, education expenditure, transport expenditure, recreational expenditure and others. Food expenditure is mandatory but other service-oriented expenditures depend on fiscal condition of the urban dwellers and provisional system of urban authority.

According to socio-economic field survey-2009, 94.1% household has no house rent expenditure, 99.2% household has no water expenditure, 8.8% household has no electricity expenditure, 69.7% household has no gas supply expenditure, 8.0% household has no health expenditure, 15.5% household has no educational expenditure, 63.0% household has no transport expenditure and 24.4% household has no recreational expenditure. In Mirzapur Paurashava, minimum value of monthly food expenditure is tk. 2000; median value is tk. 4700 and maximum value is tk. 40000.

Education, food, habitat, cloth, treatment are the basic needs of each individual. These are indispensable in everyday life. Similarly water, electricity, gas, transport, and recreation are also necessary in every household. In Mirzapur Paurashava the highest maximum value of food expenditure is seen in ward no. 3 which is tk.40000. On the other hand lowest minimum value is tk.2000 in ward no.4, 7 and 8 and the highest median value is tk. 6000 which is seen in ward no.5. There are no minimum expenditure for house rent, water, gas, education, transport and recreation in Mirzapur Paurashava. The highest maximum value of house rent expenditure is seen in ward no. 3 which is tk.3000. There is no water facility in Mirzapur Paurashava. The highest maximum value of electricity expenditure is seen in ward no. 1 and 3 which is tk.1200 and the highest median value is tk.300.

Informal Sector Economic Activities

Informal sector covers a lot of activities which may be classified as Trading and Services. Various type of mobile or fixed salable items like food, fish, nuts, coconut, vegetables, daily household items, old cloth / garment, repairing of household gadgets, electronic items repairing, hair cutting, shoe polishing, etc. are considered as informal economic activities.

Informal entrepreneurs encounter many problems like dull business, unfavourable weather, fear of eviction, extortion, lack of permanent business location, exorbitant rate of interest, lack of credit facilities and unhygienic residential areas. Informal sector covers a lot of activities which may be classified as Trading and Services. Various type of mobile or fixed salable items like food, fish, nuts, coconut, vegetables, daily household items, old cloth/ garment, repairing of household gadgets, electronic items repairing, hair cutting, shoe polishing, etc. are considered as informal economic activities.

In the Paurashava, informal entrepreneurs mainly perform their business in the market/ bazaars and males are dominating this sector. Mostly 18-34 age-groups run the informal activities followed by 35-59 age-group. In total, 18 types of occupation grouped under two major categories of Trade and Services, adopted by the informal entrepreneurs in the Paurashava. Of the various occupations, trade includes sale of various food items, clothes, vegetables, meat, seed, medicines, etc. and service includes hair cutting, shoe repairing, umbrella repairing, mobile phone service, tailoring, etc. Informal entrepreneurs encounter many problems like dull business, unfavorable weather, fear of eviction, extortion, lack of permanent business location, exorbitant rate of interest, lack of credit facilities and unhygienic residential areas.

3.3 Physical Infrastructure Development

The jurisdiction of Mirzapur Paurashava is in regular shape. The bus station adjacent with the Paurashava boundary will be developed as a growth centre in future. Mirzapur Paurashava is primarily an agricultural area covering 54.5% of its total area and is privately owned. On the other hand 23.4% area is used for residential purposes and is also privately owned. Only 0.25% of the Paurashava area is owned by the government.

The Paurashava is dominated by rural environment; as a result about 76.11% structures are found katcha, constructed with temporary materials like bamboo thatch, jute stick, C.I. Sheet and wood. The semi-pucca structures are 14.2% that have wall made with brick and the roof with C.I. Sheets. On the other hand, 9.68% houses are pucca that is constructed with bricks and concretes. The building materials used for the construction of houses reflects poor economic condition of the owners. A linear development is found along the existing Regional Highway (Dhaka-Tangail Highway) of the Paurashava, such development should be continued naturally. A planning control will be needed on those linear expansions. At present, some scattered development likes rural homestead is found in the Paurashava premises; those should be controlled with the infrastructural planning and development.

Road

A national highway (named Dhaka-Tangail Highway) Passed through the Mirzapur Paurashava and it is only one national highway in this Paurashava. Its length is 3.3 km and average width is 10.67 meter. The old Mirzapur-Tangail road is also important. It is about 2.78 km long and 9.14 meter wide. All other roads are local roads and their total length is 56.07 km and average width is 3.72 meter.

Road network is the main transportation facility in Mirzapur Paurashava. Roads are generally three types. They are Pucca road, Semipucca road and Katcha road. The field survey data reveals that total length of road in the Paurashava area is 56.07 km out of which 27.29 km is Pucca road, 4.63 km is brick soling Semipucca road, 24.20 km is Katcha road.

Road network has not developed in a planned manner and has not any definite street pattern. All the local roads are of irregular street pattern, which are also narrow and crooked in nature. The secondary/distributor roads are 16-20 feet width and the collector roads are 8-10 feet width. Road side vegetation and street light system were not found in the Paurashava area.

Waterway

Mirzapur Paurashava possess good river network to the north, west and middle . This river also connected with adjacent urban centers. Presently, this river is not used fully. Business men of construction material such as sand, brick, timber and logs are using this river mainly. It would be a wonderful resource if water transportation system can be improved with its loading-unloading facility.

Railway

There is a railway station at Mirzapur Paurashava and railway passes along with national highway at the northern portion of the Paurashava at east-west direction and well connected with Dhaka City and Jamuna Bridge.

Airway

No airway facility is in the Paurashava.

3.4 Environmental Growth

The study has documented Mirzapur Paurashava area's environmental conditions, determines potentiality for present and past site contamination (e.g., hazardous substances, petroleum products and derivatives) and identifies potential vulnerabilities (to include occupational and environmental health risks).

3.5 Population

According to the Population Census 2011, total population of the Mirzapur Paurashava was 28602, of which 13147 are males and 15455 females. The entire population is over 9 wards with different density. The most populous ward was ward no-03 having 5832 peoples, while the least population was found in ward no-09 which population was 1878. The following table (table 3.3) represents the overall demographic scenario of Mirzapur Paurashava.

Table 3.3: Ward wise population of Mirzapur Paurashava, 2001

Ward No	Male Pop.	Female Pop.	Both Sexes
1.	1226	1266	2492
2.	1722	3850	5572
3.	2942	2890	5832
4.	1400	1444	2844
5.	1001	1089	2090
6.	1647	1641	3288
7.	928	876	1804
8.	1355	1447	2802
9.	926	952	1878
Total	13147	15455	28602

Source: BBS Population Census-2001 (Community Series, Zila:Tangail)

Population distribution

Total population of Mirzapur Paurashava was 28602 according to population Census 2011. Table 3.4 represents area wise population and density per sq. km. in the Mirzapur Paurashava.

Table 3.4: Ward Wise population density and percentage of Mirzapur Paurashava

Ward No.	Area (sq. km)	Ward wise Population	Density /sq. km
1	0.79	2492	3154
2	0.83	5572	6713
3	0.81	5832	7200
4	1.45	2844	1961
5	1.53	2090	1366
6	0.94	3288	3498
7	0.72	1804	2506
8	0.68	2802	4121
9	0.83	1878	2263
Total	8.58	28602	3334

Source: BBS Population Census-2001 (Community Series, Zila:Tangail) and land use survey 2009

Population density

In the Mirzapur Paurashava, the average density was 3334 persons per sq.km according to the Population Census, 2011. Ward no-3 was found to have the highest density of 7200 persons per sq. km while the lowest density was found in ward no-4 consisting of 1961 persons per sq. km. ward no -2 and 8 had higher density, where as the rest of the wards had comparatively very low density (table 3.4).

3.6 Institutional Capacity

The Paurashava is responsible for Paurashava administration and also responsible for providing services, slum upgrading, infrastructure development and licensing of non-motorized transport within its jurisdiction. To perform the responsibilities efficiently as prescribed in the Paurashava Act, 2009 existing capacity of the Mirzapur Paurashava administration is not sufficient. The responsibility may be categorized as two broad heads named Revenue Collection including Budget Preparation and Delivery of Services. Three types of management system are involved with those two responsibilities and they are Top Management, Middle Management and Supervisory Management. A general scenario is found in those three category management system of the Paurashava i.e. lack of efficient manpower. Shortage of technical manpower in the Paurashava is also an administrative problem.

Allocated Manpower / Organogram

The manpower allocated by the Government for every Paurashava in the country except the Mayor and nine Counselors and the organogram according to the Paurashava Act, 2009 is presented in the Table-3.5.

Existing Manpower

Existing manpower except the Mayor and Councilors in the Mirzapur Paurashava is 37 of which 18 employees as permanent staffs and 19 are contractual. The permanent employees under the Administrative division, Health division and Engineering division are as.

Table 3.5: Allocated and existing manpower for Mirzapur Paurashava

Manpower Status	Allocated Manpower	Existing Manpower	Vacant Post
Mayor	1	1	0
Chief Executive Officer	1	0	1
Administrative Section			
Secretary	1	1	0
Administrative Officer	1	0	1
Head Assistant	1	0	1
Upper Division Assistant	1	0	1
Accountant	1	1	0
Assessor(Tax Assessor)	1	1	0
Tax Collector	1	0	1
Bazar Collector	2	0	2
Assistant Tax Collector	6	2	4
Bazar Inspector	1	0	1
License Inspector	1	1	0
Assistant License Inspector	1	1	0

Manpower Status	Allocated Manpower	Existing Manpower	Vacant Post
Accounts assistant	1	0	1
Assistant Assessor	1	0	1
Cashier	1	0	1
Steno Typist/ PA	1	0	1
Store Keeper	1	0	1
Lower Division Assistant/Typist	2	1	1
Jeep Driver	1	0	1
MLSS	5	1	4
Gateman	1	0	1
Gardener	1	0	1
Night Guard	2	0	2
Sub Total	35	9	26
*Part-time/ Contractual Staffs			
Education and Cultural Officer	1	-	1
*Librarian (if any)	1	-	1
*Teacher	18	-	18
*Other Officials	10	-	10
Total	30	-	30
Engineering Section			
Assistant Engineer	1	1	0
Water Super (SAE)	1	0	1
Sub-Assistant Engineer (Civil)	2	1	1
Sub-Assistant Engineer	1	0	1
Bill Clark	1	0	1
Draftsman	1	0	1
Mechanic (Pump/Vulb)	2	0	2
Pipe Line Mechanic	2	0	2
Tube-well Mechanic	2	0	2
Surveyor/ Sub Overseer	1	0	1
Lower Division Assistant/Typist	2	0	2
Work Assistant	2	1	1
Street Light Inspector	1	1	0
Electrician	2	0	2
Lineman	2	1	1
Electric Helper	1	0	1
Road Roller Driver	1	0	1
Mixture Machine Operator	1	0	1
Truck/Tractor Driver	2	1	1
Truck Helper	2	0	2
MLSS	2	0	2
Sub Total	32	6	26
Health, Family Planning & Conservancy Division			
Medical Officer	1	0	1
Conservancy Inspector	1	0	1
Sanitary Inspector	1	0	1
Slaughtering House Inspector	1	0	1
Moulvi (Contractual)	1	0	1
Lower Division assistant/Typist	1	0	1
Conservancy Supervisor	2	1	1
Vaccination Supervisor	1	0	1
Health Assistant	2	0	2
Vaccinator	6	2	4
Health Visitor	3	0	3
MLSS	2	0	2
Sub Total	22	3	19
Grand Total	91	18	73

Source: Local Government Ministry of Bangladesh, 2009.

*Part-time/ Contractual Staffs not included in grand total

From table 3.5 it is seen that there are shortage of manpower in administrative, engineering and license division. However, it is a matter of disappointment that there is no staff in any division. In addition, no water supply division is found in the Paurashava as there is no provision of water supply facilities yet. Hence, existing scenario deserves more involvement of employees as well as strengthening the divisions by recruiting allocated HR; otherwise execution of master plan will be very difficult through present manpower attachment of the Mirzapur Paurashava authority.

Paurashava Town Planning Capacity

In Mirzapur Paurashava, there is no Town Planner; even there is no surveyor and draftsman. Hence, it is not possible for only 1 technical person (Assistant Engineer) to monitor and execute all the activities related to development control as well as to follow the guidelines of Master Plan. So, indeed, no town planning capacity exists in the Paurashava.

Implementation Capacity of the Paurashava Master Plan

In implementation procedure, preparation of Project Proposal is the primary step of the Master Plan. Due to the absence of apposite employee for the purpose i.e. Town Planner, the Paurashava is not capable of implementation of the Master Plan.

Conservancy and Health Services

In the Mirzapur Paurashava, only 1 Conservancy Supervisor and 2 Vaccinator works under health division but there is no Conservancy Inspector to control and monitor the conservancy activities. In total, there are 19 employees for the purpose of street sweeping who works on casual basis. So, it is for sure, conservancy and health services are running in the Paurashava without any systematic procedure as well as following any healthy measures.

Logistic Support/Equipment

Logistic support and necessary equipment is limited for Mirzapur Paurashava which should be a really big concern. Two garbage trucks, three van and 19 conservancy worker and sweepers (on contract basis) are the only means of conservancy services. Except those trucks and road roller, other equipments are using for Paurashava administration.

3.7 Urban Growth Area

A trend of urban growth is found around the Mirzapur and along the National Highway. A tremendous development trend is generating in ward number three. If the communication system develops, Mirzapur Paurashava will become a very important transaction point because of its nearness to Dhaka city. Residential and commercial developments have enormous potential that can be flourished in the Paurashava.

After the year of 1980, when Upazila system imposes in consideration of the decentralization of administration, no internal road was developed and trend of development became frizzed. As a result, natural development prevails in the Paurashava.

After the year of 1990, development activities started sparsely due to the presence of vast low lands and due to construction of new railway line and Mirzapur railway station. But, this type of development also followed the proximity of Upazila Headquarters, south and water side of Kumudini Hospital and College.

3.8 Catchment area

Mirzapur Paurashava is a medium Paurashava comprising 7.74 sq. km area. There is a unique opportunity of growth of the Mirzapur Paurashava. It is located within a short distance from north-west of Dhaka district.

This Paurashava is also surrounded by Gazipur, Manikganj, Mymensingh, Jamalpur and Sirajganj districts. Obviously the physical growth will be occurred due to highly fertile agricultural land. As it is agriculture based Paurashava, its development mainly depend on the future road pattern and urban services. According to the demand of the dwellers, urban services may be provided by the Paurashava in any side. The jurisdiction of Mirzapur Paurashava is in regular shape. The bus station adjacent with the Paurashava boundary will be developed as a growth centre in future. Mirzapur Paurashava is primarily an agricultural area covering 54.5% of its total area and is privately owned. On the other hand 23.4% area is used for residential purposes and is also privately owned. Only 0.25% of the Paurashava area is owned by the government. The Paurashava is dominated by rural environment; as a result about 76.11% structures are found katcha, constructed with temporary materials like bamboo thatch, jute stick, C.I. Sheet and wood. The semi-pucca structures are 14.2% that have wall made with brick and the roof with C.I. Sheets. On the other hand, 9.68% houses are pucca that is constructed with bricks and concretes. The building materials used for the construction of houses reflects poor economic condition of the owners. A linear development is found along the existing Regional Highway (Dhaka-Tangail Highway) of the Paurashava, such development should be continued naturally. A planning control will be needed on those linear expansions. At present, some scattered development likes rural homestead is found in the Paurashava premises; those should be controlled with the infrastructural planning and development.

3.9 Landuse and Urban Services

Landuse

According to UTIDT Guideline for preparation of Paurashava Master Plan, land use of the study area should be divided into 19 major categories. But only 14 categories of land use are found in the study area. Recreational facility, non-governmental services, forest, miscellaneous and restricted land use are absent in Mirzapur Paurashava. The Table 3.7 and Map 3.2 present a clear picture of land use categories of the study area. Mirzapur Town centre area is the most built up area by comprising all kinds of urban and rural land uses.

Table 3.6: General Land Use of Mirzapur Paurashava (Area in Acre)

SL. No.	Land Use Category	Total	
		Area (acre)	(%)
1	Residential	447.4	23.4
2	Commercial Activity	12.18	0.64
3	Processing & Manufacturing	3.62	0.19
4	Education & Research	17.5	0.92
5	Community Services	5.5	0.29
6	Service Activity	19.2	1.00
7	Recreational Facility	0.00	0.00
8	Governmental Services	4.7	0.25
9	Non-governmental Services	0.00	0.00
10	Urban Green Space	5.3	0.28
11	Transport & Communication	6.83	0.36
12	Agricultural	1041.1	54.5
13	Mixed Use	35.4	1.85
14	Circulation Network	111.70	5.84
15	Water Body	183.86	9.00
16	Forest	0.00	0.00
17	Vacant Land	17.42	0.91
18	Miscellaneous	0.00	0.00
19	Restricted	0.00	0.00
Total Area		1911.6	100

Source: Land Use Survey, 2009

Major built up part of the Paurashava area is using for residential purposes. According to the land use survey table (Table-3.6) of the study area, it has been ascertained that 447.4 acres (23.4%) of land is presently under residential use. Commercial and Processing & Manufacturing use occupied 12.18 acres (0.64%) and 3.62 acres (0.19%) respectively. From the survey results, it is found that the study area is dominated by urban character. The circulation network and mixed use occupied 119.33 acres (6.24%) and 35.4 acres (1.85%) respectively. A large part of 176.3 acres (9.22%) is occupied by the water bodies including the two rivers. While 5.5 acres (0.29%) of land is available for community services, 17.5 acres (0.92%) of land for educational facilities has been found in the land use survey.

Residential

Residential use includes residential house, residential quarters, rest house, slum, mess etc. It has been appeared that Ward No 04 has the most residential concentration (16.77%) while Ward No 08 has the second highest concentration, i.e. 13.68% and Ward No 09 has the lowest residential concentration.

Commercial

Commercial land use mainly comprises of different types of shop (book shops, cloth shops, departmental store, grocery shops, stationary shop etc.), market, Katcha bazaar and other lands being used for commercial purpose. Survey result depicts that commercial activities are mainly concentrated in Ward No 03, 6.2 acres of total 12.18 acres which is 50.90% of total commercial area. Main bazaar area is also situated in this Ward. Ward No 08 has 18.31% area, which is second highest and third highest in Ward

No 06 (9.11%). Among rest of the wards, commercial land use is lowest at Ward No 04 (1.72%), where maximum land is use in agriculture.

Industrial

Survey revealed that there have several rice and saw mill in Paurashava area. Industrial/Processing and Manufacturing activity in Mirzapur Paurashava mainly includes rice mill, saw mill, ice factory, seed processing industry, bakery factory and other manufacturing and processing activities. Major industrial/manufacturing concentration is seen in Ward No 06. There is no industrial use in Ward No 01, 07 and 08.

Agricultural

Around 1041.1 acres of land is under agricultural use in Mirzapur Paurashava. It has been appeared from field survey that, Ward No 04 has maximum agricultural land 24.41% (254.1 acres) and after it comes Ward No 05 (215.9 acres). All wards have agricultural land use.

Map 3-1: Existing Growth Potentiality of Mirzapur Paurashava

Map 3-2: Existing Landuse of Mirzapur Paurashava

Minimum agricultural land use is found in Ward No 03 which is mainly occupied by commercial activities (50.9%).

Education

Land that used for Colleges, High School, Primary School, NGO School and Madrasa are considered in this section. Major concentration of educational institutes is found in Ward No 02 (28%) and Ward No 03 (23.37%). However, educational institutes spread over most of the wards of this Paurashava at certain percentage. Table 4.8 also revealed that, 13.54% educational institutions are situated in Ward No 08 and 8.86% are in Ward No 06 and 09. Ward No 01 is deprived of this facility.

Government Services

Mirzapur Paurashava office, UNO office, Food Office, Sub-Register Office, Upazila Primary and Secondary Education Office, Water Development Board, Rural Development Board and other Upazila level government offices come under this land use category. Government offices are located at Ward No 03, 05, 06 and 08. Mirzapur Paurashava Office is situated at Ward No 03 and Ward No 06 occupy largest amount (53.62%) of this type land use.

Non-Government Services

There is no particular land use for non-governmental services in Mirzapur Paurashava. Some of these facilities are provided with mixed land use.

Water Bodies

Water body of Mirzapur Paurashava is mainly consists of ponds, ditches, khals, dinghies, irrigation canal etc. It has 63 ditches, 6 canals, 167 ponds and a river named Bangshi. These water bodies cover 183.86 acres of land. Ward No 04 (17.48%), Ward No 02 (15.87%), Ward No 05 (14.52%) and Ward No 03 (12.83%) share that major percentage of water bodies in this Paurashava.

Recreational

There is no specific area of Mirzapur Paurashava is used as recreational facility. Some play grounds are found within the educational institution campus.

Mixed-Use

Mixed use land includes the lands with more than one use. Survey revealed that a total of 35.4 acre(1.85%) land are under this category of which high percentage are seen in Ward No. 03 (14.39 acre) and Ward No. 06(8.36 acre).

Circulation

Pucca road, Semi-Pucca road and Katcha road are constituents of this category of land use. Field survey revealed that, percentage of circulation network land use is around 5.84% (111.70) acre of the total land in Ward No. 03(19.3 acre), ward no.05 (19.4 acres) and in Ward No. 04(22.09 acres) is higher.

3.10 Paurashava Functional Linkage with the Regional and National network

National Linkage

Physical growth of Mirzapur Paurashava town depends on the road pattern. Mirzapur Paurashava is connected with Tangail through a National Highway. Concentrated development is the common feature of the Paurashava. A National Highway named Dhaka-Tangail NHW Road passed through the central part of the Paurashava in east-west direction. So the agro product can easily transport in different districts.

Soil of the Zila is mainly formed by the young Ganges flood plain but in some places the older jamuna flood plain. The western part of the Paurashava is covered by grey silty clay soil of the active and Jamuna-Banghi flood plain.

For a better living environment above environmental phenomenon should be considered with the systematic planning principles and regulatory measures. With these views, people's awareness should be increased about the fair living environment through different public activities. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

Mirzapur Paurashava is well connected with the National Highway and railway. Negligible urban facilities like water supply, cleaning of road, road lighting, dustbin facilities and road maintenance (constructed by the Paurashava, LGED and RHD) are the facilities provided by the Paurashava Authority. All urban facilities as a township development are necessary. Most of the urban services were developed when the Paurashava was formed as a growth centre.

Most of the areas in the Paurashava are low land needs sufficient earth filling to provide urban services. As a result, heavy construction cost should be considered to provide those facilities.

Regional Linkage

In the regional context, the location of Mirzapur Paurashava is very much important. A regional important highway namely Dhaka-Tangail national highway passes through the Paurashava which maintain the communication system of Dhaka city with the entire northern regions of Bangladesh.

It is bounded from the north by Bongshi River, from the south by Bhuria Union, from the East by Bangshi River and Aganogor union and from the West by the Bhatgram union. If the communication systems developed, Mirzapur Paurashava will become a very important transaction point that will maintain the communication with northern part of Bangladesh and the capital city Dhaka.

3.11 Role of Agencies for Different Sectoral Activities

Agencies responsible for utility facilities and municipal services are an important component for an area.

Map 3-3: Regional/ National Road Network of Mirzapur Paurashava

Utility services include water supply, gas supply, electric supply, sewerage and drainage system, telecommunication system, fire services, solid waste management, etc. The concerned departments / organizations responsible for planning and development of utility services are shown in the following table.

Table 3.7: Agencies responsible for sectoral activities

Sl. No.	Sectors	Responsible agencies
1.	Electricity Supply	Rural Electrification Board (REB)
2.	Water Supply	DPHE / Paurashava/ Private
3.	Telecommunication	BTCL / Mobile Phone Companies
4.	Sewerage and Sanitation	DPHE / Paurashava/ Private
5.	Solid Waste Disposal	Paurashava / Private
6.	Fire Service	Fire Services and Civil Defense
7.	Post office	Postal Department

Source: Physical Feature Survey, 2009.

The authorities (as presented in the Table-3.7) should perform other roles need to be carried out with the assistance and support of other relevant government agencies. Those roles are:

- Provide existing and future service areas with full complement of related services to ensure that they can function efficiently.
- Identify depressed areas in each of the Ward where no improvement is being made and provide services with ensuring benefits for the dwellers.
- Ensure that within specific time (may be project period or private sector involvement process and a guideline frame for them) services will be provided according to the demand of the Paurashava inhabitants.
- Identify the existing procedural and institutional constraints and resolve them with full cooperation of other responsible agencies.

CHAPTER-4

CRITICAL PLANNING ISSUES

4.1 Transport

Van and rickshaw are two major transport modes in the study area. Motorcycle and Bicycle is the main mode for private users. Movement of motorcycle is also identified as major private mode. Inadequacy of bus service found normal scenario in the study area. The peak hour traffic movement is found in morning from 7am to 9 pm and in the afternoon from 6 pm to 8 pm in general. Though overall traffic congestion is low, let it should not be increased. Establishment of bus route within the study area is another prior demand of the people.

From the physical feature survey, it is found that the hat / bazar in the study area is served by bituminous and brick soling roads. But the area is not served by well defined road hierarchy, nor is required now due to sparse use of roads by motorized vehicles. However, the induced activities due to the prospects of upward economic change may need to provide road network befitting with the need.

Highway traffic is comparatively high and dominated by mixed type of vehicles including non-motorized. Generally, surface of the highways is moderate. The road network is not facilitated by designated parking area, bus terminal and bus bay. The core urban area of this Paurashava is very congested and the road with of this area is very narrow and existing road network developed in an unplanned way. As a result, sometimes congestions and chaotic situation occurs for a little while. In spite of this situation, present road network is functioning well. But it has to be upgraded to accommodate the future increase of volume of traffic that is expected to increase due to the rapid growth of urban population and influence of Dhaka city growth.

4.2 Environment

In the Paurashava, water pollution and solid wastes are the major environmental problems. Pesticides use in agriculture land, chemicals and food use in pisciculture, poultry feed use in poultry farming and bathing and washing in river water are the causes of water pollution. Household garbages, kitchen market garbages and garbages produce by the pedestrians are producing solid waste problems. Systematic approaches will be needed to remove those problems.

4.3 Landuse Control

Accommodation of future thrust of growth due to the rapid growth of urban population and influence of Dhaka city demand for supply of safe drinking water, providing safe and easy accessibility, use of agriculture production in income generating activities and create provision for further investment will increase. About 2 to 3 meter earth filling will be needed for every development activities in the Paurashava. So, bulk development should not be encouraged due to the huge cost involvement. Poor soil condition is another problem of bulk development.

The primary motive is to exercise control over unorganized development and promotion of planned infrastructure development to accommodate future urban growth. The Paurashava will be developed as a self-contained town in rural environs.

To increase the agro-product and use them in income generating activities, a vast agriculture land will be used and at the sametime, the existing agriculture land should be preserved. Further residential expansion should be controlled through the imposition of development control. In this context, concept of cluster development and compact township approach should be provisioned in the plan. Vertical development will be encouraged rather than horizontal to save the agriculture land.

Major aim of the Landuse Policy 2001 was to prevent indiscriminate conversion of agricultural land in to non-agricultural use, because such conversion may be threatened for food security of the country. Such conversion should be prohibited with the multi-sectoral use of land. During implementation of Urban Area Plan / Ward Action Plan, necessary control should be imposed according to the following manner.

- a) High value agriculture land should be preserved only for agriculture purposes. The land produces three crops in a year are under this category. Any physical development activities should be prohibited by the Paurashava authority
- b) Drainage congestion due to the indiscriminate development activities is another critical issue. With the increase of population and commercial activities, lands of the Paurashava town are being converted for habitation. Natural development of those settlements somewhere creates drainage congestions. In the core urban area the existing roads are very narrow and there is an absence of drainage network. So, water logging is a common phenomenon in this area.
- c) Missing links in road transportation creates accessibility problem. In the intersections, lands are using by commercial activities including daily bazar and saw mill which are increasing traffic congestion.
- d) Easy accessibility with neighbouring Upazilas and a regional linkage is needed. Those linkages will grave huge amount of agriculture land. The single crop land may be used for this purpose.

4.4 Disaster (if any)

Disaster is the tragedy of a natural or man-made hazard that negatively affects society or environment. Disaster can be classified into two categories: natural disaster and man-made disaster. Natural disaster is the effect of flood, volcanic eruption, earthquake or landslide, draught, epidemic, etc. that affects environment and leads to financial, environmental or human losses. Man-made disasters is resulting from human intent, negligence or error, or involving a failure of a man-made system.

The Paurashava area including the Mirzapur Upazila has affected by the several major natural disasters ranging from Cyclone, Flood to Water logging and Draughts, etc. The periods of those disasters are 1998, 2000, 2004, 2007 and 2008. Very scanty attempt has been made by the government to rehabilitate people after the natural disaster.

Urbanization is converting lands for residential use. Agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban

settlement. In Mirzapur Paurashava, wet lands are being filled up and agricultural lands are being converted. This has been identified as the major man-made disaster accelerating the degree of conversion year to year. Use of poisonous insecticides on the agricultural land is another man-made disaster which will affect in the long-run.

4.5 Laws and Regulations

The regulations prescribed in the Local Government (Paurashava) Act, 2009 are not directly related with the physical development activities and their control. The East Bengal Building Construction Act, 1952 is called the mother regulation to control all type of physical development but no instruction is being included in the Paurashava Act, 2009 regarding EBBC Act, 1952. The Paurashava authority approves the building plan and excavation of tank without any regulatory control.

The regulation prescribed in the Paurashava Act, 2009 on the preparation of master plan is called traditional regulation. In the modern world, the concept of master plan became obsolete. In this project, the so called master plan, as mentioned in the Paurashava Act, 2009 considered as a package and the plan included in this package named Structure Plan, Urban Area Plan and Ward Action Plan, though there is no regulation in the country on the preparation and implementation of those plans.

In the Paurashava about 46% (except water bodies) land is under agriculture use. Most of those lands are private. Different type of help is necessary for the farmers involved with those agriculture lands. Section 13(1a) of the Agricultural Development Corporation Ordinance, 1961 prescribed regulation on the function of the Corporation and said that “the Corporation shall make suitable arrangements throughout East Pakistan (now Bangladesh), on a commercial basis, for the procurement, transport, storage and distribution to agriculturists of essential supplies such as seed, fertilizers, plant protection equipment, pesticides and agricultural machinery and implements.” Where the Corporation is absent, how the farmers will get benefit prescribed in the section 13(1a)? To increase the agricultural commodities such type of help is necessary.

Except the Paurashava Town (Township development areas), other areas are rural. To generate rural-based township environment, those rural areas should be preserved. Rural development components as prescribed in the section 7(1a) of the Bangladesh Rural Development Board Ordinance, 1982 should be provisioned to control those rural areas. As prescribed in the section 7(1a), functions of the Board shall be “to promote village-based primary co-operative societies and Thana Central Cooperative Association (TCCA) with a view to enabling them to be autonomous, self-managed and financially viable vehicles for increasing production, employment generation and rural development.”

CHAPTER-5

PAURASHAVA DEVELOPMENT RELATED POLICIES, LAWS AND REGULATIONS

5.1 Indicative Prescription of Policy for Paurashava in the light of the Different Urban Policies, Laws, Regulations and Guidelines

The preparation of Structure Plan, Urban Area Plan and Ward Action Plan for the Mirzapur Paurashava is highly depended on the policies and relevant contemporary rules and regulations prescribed by the government. In preparation of the above Plans, guidelines and strategies prescribed through the policies are considered carefully. Contemporary rules and regulations help to formulate the process and procedure for development control.

Urban Land Management Policy

It is necessary to impose control on the use and development of urban land. A range of urban planning tools including landuse planning, transportation planning and management, site planning, subdivision regulations and building regulations can be applied to minimize environmental impacts of urban development activities.

Policies

- Protect sensitive land resources by minimizing activities threatening environmentally sensitive areas.
- Manage hazard-prone lands through improvement of environmental management practices throughout the Paurashava.
- Conserve open space, as identified through a participatory planning process that will effectively preserve drainage system, provide greater opportunities for recreation and meet the minimum needs of aquifer recharge.
- Protect heritage structures and archaeological and cultural sites through appropriate schemes, projects and regulations.
- Control excessive urban sprawl and manage prime agricultural land through the implementation of regulatory reforms.
- Formulation of land information system, land market assessment regulations, efficient and transparent land record and registration system, etc.
- Increase the supply of land for the poor through reforming land transfer laws to counter trends towards land accumulation.
- Adoption of taxation policies that discourage speculative investments in land that is left undeveloped for extended periods of time.
- Implementation of land-banking and land-pooling programs that allow the government to increase its pool of land which can be exchanged for low-cost housing sites in the Paurashava;
- Undertaking land readjustment projects that include low-cost land and housing sites.

- Undertaking land-sharing schemes and tenancy reforms for establishing clear rights of tenants.
- Allocating khas land/acquired land for housing the poor.
- Allocating reasonable proportion of land in urban places for housing the poor.

Strategies

The strategies necessary to implement the policies of the urban land management is the use of planning tools in land management. Those planning tools may be structure planning, local planning and action planning. Second strategy is the landuse zoning. This tool may be used to:

- Protect productive agricultural lands by limiting the intrusion of non-agricultural uses;
- Manage floodplains by controlling uses of land within hydrologically defined areas subject to floods of a designated frequency;
- Preserve wetlands by limiting permissible uses to those that do not entail significant surface disturbance or runoff and substantially restricting land-disturbing uses within the areas identified as wetland areas;
- Restore and conserves natural canals and ponds.
- Facilitate planned unit development by allowing flexible design and clustering of residential development with higher densities on one portion of a land parcel so as to allow agricultural development or to provide increased open space or natural cover elsewhere on the parcel;
- Preserve open space by designating land areas for a variety of purposes such as recreation, future use, green belt, etc.

Strategies of land development for the Paurashava according to the Urban Land Management Policy may be followed through some techniques such as land pooling / readjustment, guided land development, land sharing, sites and services schemes, etc.

Landuse Policy

Bangladesh Landuse Policy was prepared and notified in the year 2001. Major aim of the policy is to prevent indiscriminate conversion of agricultural land in to non-agricultural use, because such conversion may be threatened for food security of the country. The expansion of residential, commercial, industrial and socio-economic uses will encourage the diminishing trend of agriculture land. Through the policy, government has encouraged Compact Township and vertical expansion of the different type of building rather than horizontal expansion.

Objectives

The objectives of the Landuse Policy are to:

- Prohibit the recent practice on conversion of agriculture land into non-agricultural use to ensure food security for the people.
- Impose zoning provision to control the better use of land according to the nature of land located in different regions.
- Rehabilitation of landless people on the alluvion lands alluviated from river, Haor or sea.
- Preserve khas land for future physical development activities.
- Confirm landuses in relation with the existing natural environment.
- Use of land in favour of job creation, landlessness and poverty alleviation.
- Control land pollution.
- Construction of multi-storied building with accommodation of various purposes in public and private sector for ensuring minimum land coverage.

About 46% land of the Mirzapur Paurashava is under the agricultural practices. According to the Landuse Policy, those lands should be preserved as agriculture land. For such preservation, some guidelines prescribed in the Landuse Policy will be considered they are – in case of rehabilitation of the landless people, Khas land will be emphasized for distribution by the government.

Housing Policy

Housing, in the context of overall improvement of human settlements, is considered by the Government of Bangladesh as an integral part of culture and planning for economic development. The Global Strategy for Shelter by the year 2000 adopted by the United Nations in November, 1988 calls upon governments to take steps for formulating a National Housing Policy, 2004 in the light of "the enabling approach" for achieving the goals of the strategy.

The housing problem in the country is of serious magnitude. In addition to the large number of homeless households; the rapid growth of slums and unauthorized squatter settlement; the increasing cost of land and construction materials; rampant speculation and the phenomenal increase in house rent, the problem is compounded by non-availability of basic civic services, including water and sanitation to the bulk of the population and acute shortage of affordable and adequate shelter for the poor and vulnerable groups. The housing shortage was estimated in 1991 to be about 3.10 million units, composed of 2.15 million units in rural areas and 0.95 million units in urban areas; with the bulk of the backlog consisting of katcha un-serviced units. The housing shortage is likely to exceed 5 million units by the year 2000 A.D. The current housing stock is deteriorating fast due to aging, general neglect, poverty and civic apathy on the part of the dwellers.

Objectives

The objectives of the National Housing Policy are to:

- Make housing accessible to all strata of society and to accelerate housing production in urban and rural areas with major emphasis on needs of the low and middle-income groups, the high priority target groups will be the disadvantaged, the destitute and the shelterless poor.
- Make available suitably located land at affordable price for various target groups, especially the low and middle-income group.
- Develop effective strategies for reducing the need to seek shelter through formation of slums, unauthorized constructions, encroachments and shanty dwelling units and to improve the existing ones environmentally and, where possible, to relocate them in suitable places.
- Rehabilitate disaster affected households and houses affected by fire accidents.
- Mobilize resources for housing through personal savings and other financial input's and by developing suitable financial institutions.
- Make effective implementation of the housing programs, promote use of locally developed materials and construction techniques and increase production of forest-based building materials such as timber, bamboo or grass. Attempts will be made to develop alternative and durable materials based on locally available raw material.
- Develop institutional and legal framework to facilitate housing.
- Improve and enhance the character, quality and environment of the existing residential areas.
- Develop new strategies and undertake revision of the policy from time to time to cope with the emerging housing needs and problems in the country.
- Undertake action-oriented research in all aspects related to housing and foster minimization of cost and rent.

Rural Homestead

Clause 5.9 of the Housing Policy describes about the rural housing. The Mirzapur Paurashava is rural based urban area. Rural character is the dominating issue in the housing sector. In the Housing Policy, following measures are suggested to improve rural housing:

- Avoiding unnecessary displacement of rural settlements due to development projects and where unavoidable, makes proper rehabilitation of the households, with full community involvement.
- Encroachment on agricultural land by proliferation of homestead should be discouraged. Efforts should be made for planned densification of rural homesteads. Subject to availability of khas lands, programmes similar to 'Adarsha Gram' programme of the Ministry of land will be undertaken in rural areas.

- The coordinated provision of water supply, sanitation, electricity, roads and other basic infrastructure services to existing and new habitations.
- Providing assistance by way of providing credit, dissemination of appropriate technology and delivery system for promoting housing.
- Initiating schemes for increased employment opportunities and income generation by extending appropriate credits and advice, so that housing affordability is enhanced.
- Establishing suitable institutional structure including strengthening of existing organizations at district and local level, with the responsibility for planning, financing, implementation, supervision and monitoring of rural housing schemes, and with the full involvement of beneficiaries, NGOs and CBOs, giving special attention to the needs of the poorest segments, specially women and disadvantaged persons.
- Linking the development of housing sites and the upgradation of rural housing with the activities under the Bangladesh Rural Development Board (BRDB) and other programmes for the creation of rural assets and employment.

Slums and Squatter Settlements

Clause 5.10 of the Housing Policy describes about the slums and squatter settlements.

The poor environmental condition in slums and squatter settlements create health problems for their residents and those in the adjoining areas. Those areas may be Paurashava Town. Keeping in view the policies of planned growth of urbanization, income support and poverty alleviation and together with steps to arrest the growth of new slums in urban areas, the Government would take steps to:

- Encourage in-situ upgradation, slum renovation and progressive housing development with conferment of occupancy rights, wherever feasible, and to undertake relocation of the squatter settlements from the sites that need to be cleared in public interest.
- Expand provision of water supply, sanitation and other basic services in slum and other settlements occupied by the poor.
- Ensure proper maintenance of amenities in slums and squatter settlements through community involvement and decentralized institutional arrangements.
- Integrate the provision of physical amenities slums and squatter settlements with basic services including maternal and child welfare services and health care, structured on community participation and involvement of voluntary agencies and management by local bodies.
- Provide night shelters and pay and use public toilet for the footpath dwellers and the homeless.

Infrastructure

Clause 5.2 of the Housing Policy describes about the infrastructures related with the housing. Most of those infrastructures are needful for housing construction and preparation of master plan. Following measures are recommended for development and improvement of infrastructure for housing:

- Increase investment by national and local government agencies in order to meet the rapidly growing needs of serviced land and to improve the availability of services in different settlements.
- Promote a balanced pattern of urbanization through a policy of decentralization of investments and incentives for the growth of secondary, intermediate and small towns so as to reduce pressure on metropolitan cities and to control unregulated conversion of agricultural and forest land for the purpose of housing.
- Develop economically buoyant and socially attractive secondary and intermediate towns by strengthening their linkages with contiguous rural areas and market centres as part of the integrated and planned development of the region and to reduce migration to the larger cities.
- Make necessary investments to increase within a reasonable time, the coverage of entire rural and urban population for potable water supply and basic sanitation.
- Increase investments in public transport and traffic network to improve mobility of people, particularly that of the poor.
- Encourage the use of infrastructure construction technologies, which are cost effective, incrementally upgradeable and environmentally appropriate.
- Provide government support for extension of infrastructure based on the participation of the people and private developers, NGOs, CBOs or on innovative systems of infrastructure leasing.
- Provide Government assistance to the local bodies for adequate cost recovery of investment on infrastructure, proper maintenance of services and upgradation of the capability of the personnel in local bodies and functional agencies.
- Provide opportunity for community participation and recognize people's initiative in the design, installation and the upkeep of services within the framework of the development programmes.

Strategies

The salient features of the housing strategy are:

- Housing will be given due priority in the national development plans treating it as a separate sector by itself.
- The role of the Government in housing will primarily be that of a facilitator or enabler in order to increase access to land, infrastructure, services and credit and to ensure availability of building materials at a reasonable price, specially for the low and

middle-income groups and to create and promote housing finance institutions; whereas actual construction of housing will generally be left to the private sector developers, the people themselves, and the NGOs.

- Greater emphasis will be laid on affordability, personal savings, self-help and cost recovery. Efforts would be made to enhance affordability of the disadvantaged and low-income groups, through provision of credit for income generation and income enhancement, housing loans at especially low interest, access to space for running workshops or business and such other facilities.
- Improvements and rehabilitation of the existing housing stock will be given priority by the Government alongside new housing.
- Encroachments on public land and formation of unauthorized constructions will be discouraged.
- Austerity will be maintained in building houses and efforts will be made to economize housing costs, discourage extravagant construction, facilitate incremental house building and ensure wider application of low cost technology and optimum use of resources at the individual and national levels both in public and private sectors.
- Regeneration of forest-based building materials would be planned and environmental conservation given due consideration.
- Due attention would be given to construction, protection, replacement and rehabilitation of shelter in disaster affected and fire prone areas.
- Special care would be taken for the preservation of cultural heritage and promotion of vernacular architecture in new housing projects.
- Universities, research institutes and centres will be encouraged to conduct research on housing issues.
- The National Housing Policy will be co-ordinated with other development policies e.g. land, environment, population, employment, social welfare, fiscal and monetary policies at national and local levels.

Population Policy, 2004

Realizing the importance of population and development, the government prepared a Population Policy in the year 1976 and identified population problem as a national problem. Objectives of the Population Policy are to improve the status of family planning, maternal and child health including reproductive health services and to improve the living standard of the people making a desirable balance between population and development in the context of Millennium Development Goals (MDGs) and Interim Poverty Reduction Strategy (IPRS). Economic growth, poverty reduction and social development has identified as national strategy through the Population Policy of 1976. In the Policy, urgent attention should be given on the gender equity and empowerment, welfare services for elderly and poor, control on rural to urban migration, human

resource development through skilled workforce and participation on NGOs and private sector in the process to control the population growth.

Aims

Aims of the Population Policy as presented are:

- Aware females about family planning to reduce Total Fertility Rate (TFR) and increase to use family planning devices among the fertile groups.
- Towards stable population within the year 2060 and the net growth rate not higher than 1% within the year 2010.
- Provide importance on mother's health to reduce maternal dead.
- To aware people about HIV / AIDS and to reduce it's chronological expansion.
- To help for providing gender equity and women empowerment in the society.
- To increase personal quality of the planners, administrators and service delivery agencies and to develop the information collection system, research and presentation.
- To control immigration from rural to urban and considers effective steps.
- Provisioning environmental sustainability including safe drinking water supply.

Agriculture Policy

Primary goal of the Agriculture Policy is to modernize and diversify the crop sector (including agricultural system) through initiation and implementation of a well-organized and well-coordinated Agriculture Development Plan. Overall objective of the Agriculture Policy is to make the nation self-sufficient in food increasing crop production (cereals also) and ensure a dependable food security system for all.

Aims

Clause 2 of the Agriculture Policy presents aims to increase crop production and maintain food security in the country. Some of those aims are:

- To increase income of the farmers and their buying capacity through stable and benefited agricultural development.
- To develop and preservation of productivity of the land.
- Removal of dependency on specific crop as a stable food.
- Introduces biological technologies, their use and expansion among the farmers.
- To encourage farmers for introducing irrigation from secondary sources during draught and introduces stable irrigation facilities for improving cropping intensity and crop production.
- Introduction of farming as an income generating sector through farming system and agro-forestry activities.

- To produce necessary agro-product for industrial use.
- To find out new opportunities for more export and minimum import of agriculture commodities.

Transportation Policy

For the country's economic and social development and for poverty alleviation, development of the road network is essential. For this reason the transport sector has been accepted as a priority sector. With the development of the economy the volume of vehicles, passengers and goods has been increasing. In the meantime a notification regarding classification, definition and responsible organizations for all roads was issued. In this context standardization and cost rationalization of the roads in the country, especially the Zila, Upazila, Union and village roads, have become very essential. For the development of Multimodal Transportation System (Road-Rail-River) such a standardization/ cost rationalization of roads and bridges / culverts is a need of the hour. Standardization including cost rationalization will provide the basis of appraisal of road / bridge projects leading to optimal development of the transport system as a whole. At present there is no standard design and national unit cost for construction and maintenance of various roads and bridges and culverts. As a result substantial cost difference has been proposed by the agencies for same type of road / bridges for the same area.

Summary of Issues Covered

Following tasks of a road projects will be adopted:

- The Committee reviewed the design standards for the Union, Upazila, Zila Roads, and concluded that the key design criteria for all roads should be traffic and axle loads, and not the classification of the roads.
- The six design standards agreed by the Committee to form a logical progression in terms of road width and pavement thickness, all based on traffic considerations. They are not directly related to road classification.
- The agreed design standards are to be used by all road agencies. Road agencies will be required to use appropriate standards for roads according to traffic criteria.
- Reconstruction- full pavement reconstruction on an existing embankment
- New road Construction - completely new embankment and road pavement, including bridges, culverts and any necessary slope protection. This is likely to prove a rare category of road project in Bangladesh
- Widening- road widening and upgrading, including full re-construction of the existing pavement
- Strengthening- removing existing road surfacing and providing a new base layer of Base Type-1 and surfacing.

A passenger car is 1.0 pcu. Larger vehicles have higher values. Conversion factors for vehicles to pcu's are shown in the following table.

Table 5.1: Passenger Car Unit (pcu) Conversion factors for non-urban roads

Vehicle Type	PCU factor	Vehicle Type	PCU factor
Car	1.0	Bicycle	0.3
Bus	3.0	Rickshaw	1.0
Truck	3.0	Motor Cycle	0.3
Autorickshaw	0.5	Tempo	1.0
		Bullock Cart	4.0

Source: Transport Research Laboratory (UK) Overseas Road Note 13.

Road design will henceforth be based on traffic criteria, as opposed to road classification, then in theory a road could take any of considerations mean that the typical applications of the designs will be as listed in the following table.

Table 5.2: Design applications

Roads class	Typical design applications
Zila	Types 5,4,3*
Upazila	Types 6,5,4*
Union	Types 8,7

*Special type to be used under special circumstances.

The design lives, based on the pavement thicknesses for each existing design and each recommended design are set out in Table-5.3 in terms of the cumulative number of equivalent standard axles (ESA's). Given typical traffic levels and a growth rate of 5% per year the expected design life for each type of existing road is provided. For each of the recommended designs the forecast ESA's have been calculated from the traffic capacity in the design year, to allow the design life to be estimated. Again, traffic growth of 5% on all roads is assumed.

Table 5.3: Existing and Recommended design lives

Road Class	Existing Design		New Class	Recommended Design		
	Cumulative Million ESA's	Typical Expected Design Life (Years)		Design Type	Design Life (Million ESA's)	Expected Design Life (years)
Rural Road/ union Road	0.5	10	Union	8	1.0	10
				7	1.0	10
Feeder Road B/ Upazila Road	1.0	10	Upazila	6	1.0	10
				5	1.6	10
Feeder Road A/ Zila Road	1.0	10	Zila	4*	2.0	10
				5	1.6	10
				4	5.0	20
				3	6.5	20

** Overlaying of 25-40mm BC will be required after every 7-8 yrs. * Special type to used under special circumstances.

Environment Policy

Bangladesh National Environment Policy was approved and published in 1992. Key elements of the Policy are –

- Maintain ecological balance and overall physical development progress of the country through protection and development of different sectors. Protection from natural disaster is one of them.
- Identification and regulation all type of activities which pollutes and degrade the environment.
- Ensuring proper Environment Impact Assessment prior to undertaking of industrial and other development projects.
- Ensuring sustainable use of natural resources.

Proposed Sectors

For the fulfillment of every component of Environment Policy, it has divided in to 15 sectors. Those sectors are – Agriculture, Industry, Health, Energy, Water Development, Flood Control and Irrigation, Land, Forest including flora and fauna, Fish and Livestock, Food, Seashore and Maritime, Transport and Communication, Housing and Urbanization, Population, Literacy and awareness, Science, Technology and Research, Legal framework and Institutional framework.

Strategies

For the implementation of policies, a large number of strategies have been framed according to the sector. Some of those strategies are:

Agriculture: Conduct field survey for imposing sustainable farming system and increase soil fertility. Necessary steps should be taken based on that survey. Control on the use of chemical insecticides and pesticides and encourage farmers using bio-chemical fertilizer. Such strategy may be implemented by the Agriculture Ministry, Bangladesh Agriculture Research Council, Directorate of Agriculture Extension, Bangladesh Rice Research Institute, Jute Research Institute, Bangladesh Agriculture Research Institute, Bangladesh Sugar and Food Industries Corporation.

Industry: The industries identified by the Directorate of Environment in the group of polluting industries, measures should be taken against them as early as possible. The strategy should be imposed by the Agriculture Ministry, Directorate of Forest, Commerce Ministry, Controller of Export Import, Plant Protection Wing, Directorate of Agriculture Extension, Bangladesh Sugar and Food Industries Corporation.

Health: Pure drinking water supply and sanitary latrine in urban and rural areas should be introduced. Industrial and agricultural wastes which are harmful for the health should not be dumped in the river, pond, canal and ditches. This should be controlled through the imposition of appropriate regulations. Those strategies will be maintained by the Local Government Division, Directorate of Public Health Engineering, Paurashava Authority and Directorate of Environment.

Water Development, Flood Control and Irrigation: For the expansion of the project on Water Development, Flood Control and Irrigation, environmental audit is necessary.

Based on that audit, environmental degradation areas will be identified and appropriate measures will be undertaken. Roads and Highways Department, Bangladesh Road Transport Authority, Directorate of Environment, Water Development, Flood Control and Irrigation Ministry and Bangladesh Water Development Board will responsible for implementation of those strategies.

Land: Landuse regulations should be prepared and their effective use will be confirmed for planned use of land. Land Ministry, Agriculture Ministry, Industrial and other relevant Ministries, Local Government Division, Works Ministry, Directorate of Forest and Zila Parishad will responsible for such strategies.

Industrial Policy

At first, in the year 1999, government of Bangladesh has approved and notified the Industrial Policy. Again, in the year 2005, Industrial Policy of Bangladesh was published by the government. Both the Policies are synonyms and foremost objective is to setup planned industries considering the domestic demand, prospect of exporting goods and discouraging unplanned industrial growth in the light of past experience.

Objectives

Objective of the industrial policy is –

- To expand the production-base of the economy by accelerating the level of industrial investment.
- To promote the private sector to lead the growth of industrial production and investment.
- To focus the role of the government as a facilitator in creating an enabling environment for expanding private investment.
- To permit public undertaking only in those industrial activities where public sector involvement is essential to facilitate the growth of the private sector and / or where there are overriding social concerns to be accommodated.
- To attract foreign direct investment in both export and domestic market-oriented industries to make up for the deficient domestic investment resources and to acquire evolving technology and gain access to export markets.
- To ensure rapid growth of industrial employment by encouraging investment in labour intensive manufacturing industries including investment in efficient small and cottage industries.
- To generate female employment in higher skill categories through special emphasis on skill development.
- To raise industrial productivity and to move progressively to higher value added products through skill and technology up gradation.

- To enhance operational efficiency in all remaining public manufacturing enterprises through appropriate management restructuring and pursuit of market-oriented policies.
- To diversify and rapidly increase export of manufactures.

Strategies

All regulatory barriers will be removed within the quickest possible time to facilitate easy and rapid flow of domestic private and foreign direct investment. Appropriate legal framework will be put in place to protect both investor and consumer rights to ensure proper market operation and consequently, for lowering cost of doing business.

- There will be no discrimination between domestic and foreign investment. Due emphasis will be given to promotion of regional and sub-regional cooperation.
- Existing public sector enterprises will be progressively privatized and public industrial investment will be limited to only those cases where there is special need to complement private investment or where there is an overriding social and national objective to be achieved.
- The capital market will be developed and strengthened to mobilize domestic savings and to attract foreign investment.
- Development of the infrastructure including port facilities, energy, transport and communication and human resource development will receive high priority Private investment including "Build, Operate and Own" (BOO) and "Build Operate and Transfer" (BOT) methods will be particularly encouraged in these sectors.
- Intensive industrial zones development will be undertaken together with balanced geographical dispersal of the zones in areas with growing potential to the utilization of local resources as more infrastructural and other facilities are put in place.
- Consistent with the charter of World Trade Organization (WTO), protection to domestic industries from external competition will be rationalized.
- To retain the competitive edge of domestic products, wage increases will be linked to productivity trends, and appropriate labour laws will be put in place to ensure congenial industrial relations.
- The industrial investment will be encouraged through tariff rationalization and (appropriate fiscal measures. The import and export policies will also be made supportive of and consistent with the Industrial Policy.

The Mirzapur Paurashava is agro-based urban area. To reduce poverty and generate employment opportunities, more efforts are needed to establish agro-based industries in the light of Industrial Policy, 2005. This effort will ensure protection and fair price of agro-products and employment opportunities for unemployed people. In order to create further employment opportunities beyond the agricultural sector, initiatives should be taken to setup small, medium and large industries across the country. A well organized linking among those industries in case of raw materials and supply of labour will be

needed. If these types of industries setup in a planned way, unemployment rate will decline and poverty alleviation will be accelerated.

Health Policy

National Health Policy was approved and published by the government in the year 2000.

Aim of the Health Policy is –

- To develop a system to ensure easy and availability of health services for the people living in urban and rural areas.
- To ensure optimum quality, acceptance and availability of primary health care including government medical services at the Upazila and Union level.
- To adopt satisfactory measures for ensuring improved maternal and child health at the Union level and install facilities for safe child delivery in each village.
- To improve overall reproductive health resources and services.
- To ensure the presence of full-time doctors, nurses and other officers / staffs, provide and maintain necessary equipment and supplies at each of the Upazila Health Complexes and Union Health and Family Welfare Centres.
- To formulate specific policies for medical colleges and private clinics, and to introduce appropriate laws and regulations for the control and management of such institutions including maintenance of service quality.
- To explore ways to make the family planning program more acceptable, easily available and effective among the extremely poor and low-income communities.
- To arrange special health services for mentally retarded, physical disabled and for elderly population.
- Strategies
- Some of the strategies of health policy are:
 - The aim “health for all” will be implemented through awareness building strategies. Cost-effective procedures to deliver health services will be the prime consideration.
 - A specific organization will perform responsibility for Epidemiological Surveillance to control the spread of epidemic diseases. Such concept will be included with different programs.
 - The services delivering by the health centers to the patient should be standard and a printed guideline on standard, monitoring and evaluation will be given to those health centers.
 - A Health Services Reforms Body will be formed based on the Health and Population Sector Strategy. This Body will responsible for infrastructural reformation, employment, development planning and implementation of human resources relevant with the health activities and development of carrier of workforces.

National Urban Policy

National urban policy aims to strengthen the aspects of urbanization and at the same time effectively deal with its negative consequences in order to achieve sustainable urbanization. Diffusion of urbanization and rural-urban linkages is an important issue in this regard. There is need for decentralization of power from central to local government. The major objectives of national urban policy will aim to:

- Ensure regionally balanced urbanization through diffused development and hierarchically structured urban system.
- Facilitate economic development, employment generation, reduction of inequality and poverty eradication through appropriate regulatory frameworks and infrastructure provisions.
- Ensure optimum utilization of land resources and meet increased demand for housing and urban services through public-private partnerships.
- Protect, preserve and enhance urban environment, especially water bodies.
- Devolve authority at the local urban level and strengthen local governments through appropriate powers, resources and capabilities so that these can take effective responsibility for a wide range of planning, infrastructure provision, service delivery and regulatory functions.
- Involve all sectors of the community, in participatory decision-making and implementation processes.
- Ensure social justice and inclusion by measures designed to increase the security of poor people through their access to varied livelihood opportunities, secure tenure and basic affordable services.
- Take in to account, particular needs of women, men, children, youth, elderly and the disabled in developing policy responses and implementation.
- Assure health, safety and security of all citizens through multifaceted initiatives to reduce crime and violence.
- Protect, preserve and enhance the historical and cultural heritage of cities and enhance their aesthetic beauty.
- Develop and implement urban management strategies and governance arrangements for enhancing complementary roles of urban and rural areas in sustainable development.
- Ensure good governance by enhancing transparency and establishing accountability.

Rural Development Policy

From the year 1987 to 2011, government has framed and implemented different projects and programs for the betterment of rural people. Those projects and programs as mentioned in the Rural Development Policy of Bangladesh are:

- Food for Works Program (কাজের বিনিময়ে খাদ্য কর্মসূচী)
- G.R Program (Gratuitous Relief Program)
- T.R Program (Test Relief Program)
- V.G.D Program (Vulnerable Group Development Program)
- V.G.F Program (Vulnerable Group Feeding Program)
- Single-House Single-Farm Program (একটি বাড়ী একটি খামার কর্মসূচী)
- Back to home Program (ঘরে ফেরা কর্মসূচী)
- Food for Education Program (খাদ্যের বিনিময়ে শিক্ষা কর্মসূচী)
- Rural Occupational Project (প-ী জীবিকায়ন প্রকল্প)
- Poverty Reduction Project (দারিদ্য বিমোচন প্রকল্প)
- Self-employment Program for Women (মহিলাদের আত্ম-কর্মসংস্থান প্রকল্প)
- Women Empowerment Program (মহিলাদের সামাজিক ক্ষমতায়ন প্রকল্প)
- Coordinated Women Development Program (সমন্বিত মহিলা উন্নয়ন প্রকল্প)
- Peace Home Program (শান্তি নিবাস কর্মসূচী)
- Shelter Support Program (আশ্রয়ন কর্মসূচী)
- Educational Allowance Program (শিক্ষা উপবৃত্তি কার্যক্রম)
- Aged-allowance Program (বয়স্কভাতা কার্যক্রম)
- Micro-credit Program (ক্ষুদ্রঋণ কর্মসূচী)
- Allowances for Widowed, Poor and Husband-renouncement Women Program (বিধবা, দুঃস্থ ও স্বামী পরিত্যক্তা মহিলাদের জন্য ভাতা প্রদান কর্মসূচী)

Aims and objectives

Some of the aims and objectives of the Rural Development Policy is presented here.

- To increase the income and provision of jobs for the Villagers, especially for women and people under low-living standard in the rural areas.
- To confirm sustainable economic and social development through poverty reduction.
- To encourage self-employment opportunities in the rural areas.
- To emphasize for the development of rural wealth according to the equal distribution of economy and national development as prescribed in the Constitution of Bangladesh.
- To give confirmation to the rural people about infrastructural development, equal distribution of wealth and marketing of the agricultural production.
- To produce technologically efficient people about education, technical education and trainings in rural areas.
- Identification of demand and their fulfillment for socio-economic development of rural poor, persons involved with the production, especially small farmers and landless people.

Programs

Programs for the rural development may be framed on Involvement of people with the decision-making and development activities, Poverty reduction, Rural infrastructural development, Agro-based rural economy, Rural educational system, Village health service and development of foodstuffs, Village population control, Development of village settlement, Land use and development, Village industrial expansion, Increase of capital and financing, Women empowerment, Development of village child and youth, Development of village backward population, Area-based special development program, Self-employment for self-dependent, Cooperative system for rural development and Conservation of rural environment.

5.2 Laws and Regulations Related to -

5.2.1 Urban Development Control

The President of Bangladesh is empowered through the Constitution (called constitutional Wright) to establish, control and removal of any government office. This is a part of national administration. The President of Pakistan, in the year 1960 was enacted the Municipal Administration Ordinance, 1960. In the year 1977, some of the Municipalities were upgraded and re-named as Paurashava and administered through the Paurashava Ordinance, 1977. Again, in the year 2009, Paurashava Ordinance, 1977 is re-named as Local Government (Paurashava) Ordinance, 2009 but the name remains same.

The Local Government (Paurashava) Ordinance, 2009 (Ordinance No. XLXVIII of 2009) was enacted in 6th October 2009 and this is the only regulation executes by the Paurashava authority. The Paurashava authority may provide the functions as prescribed in the Ordinance, no provision is being outlined to control and manage those functions. The jurisdiction of this Ordinance on other regulations includes following Acts and Ordinances. The Paurashava may enforce those regulations according to their capacity.

- আর্থিক প্রতিষ্ঠান আইন, ১৯৯৩ (১৯৯৩ সনের ২৭ নং আইন)
- অর্থ ঋণ আদালত আইন, ২০০৩ (২০০৩ সনের ৮ নং আইন)
- স্থানীয় সরকার কমিশন অধ্যাদেশ, ২০০৮
- বাংলাদেশ শ্রম আইন, ২০০৬ (২০০৬ সনের ৪২ নং আইন)
- Cantonments Act, 1924 (Act No. II of 1924)
- District Act, 1836 (Act No. I of 1836)
- The Penal Code, 1890 (Act No. XLV of 1890)
- Prevention of Corruption Act, 1947 (Act No. II of 1947)
- ব্যাংক কোম্পানী আইন, ১৯৯১ (১৯৯১ সনের ১৪ নং আইন)
- The Bangladesh Shilpa Rin Sangstha Order, 1972 (P.O. No. 128 of 1972)
- The Bangladesh Shilpa Bank Order, 1972 (P.O. No. 129 of 1972)

- The Bangladesh House Building Finance Corporation Order, 1973 (P.O. No. 17 of 1973)
- The Bangladesh Krishi Bank Order, 1973 (P.O. No. 27 of 1973)
- The Investment Corporation of Bangladesh Ordinance, 1976 (Ordinance No. XL of 1976)
- The Rajshahi Krishi Unnayan Bank Ordinance, 1986 (Ordinance No. LV III of 1986)
- কোম্পানী আইন, ১৯৯১ (১৯৯১ সনের ১৮ নং আইন)
- The Local Government (Paurashava) Act, 2009
- Paurashava Ordinance, 1977 (Ordinance No. XXVI of 1977) (see section 11)
- জন্ম ও মৃত্যু নিবন্ধন আইন, ২০০৪ (২০০৪ সনের ২৯ নং আইন) (see section 53-2)
- Evidence Act, 1872 (Act No. I of 1872) (see section 131)
- পশু রোগ আইন, ২০০৫

On the other hand, the Paurashava is empowered for delivery urban services, collection of taxes and tolls, preparation of budget, control development and other physical activities provide health and social services and electoral role. All of those activities are guided through this Ordinance. In case of regulatory involvement, the Ordinance is wide enough than other authorities. The Ordinance proves that the Paurashava is independent and self regulatory body, but due to the absence of necessary manpower, technological support and government initiative in financial matter, the Paurashava is dependent on central government.

Building Construction Rules, 1996

Building Construction: The Paurashava Authority is the custodian and enforcement authority of the Building Construction Act, 1952 and Building Construction Rules, 1996 for any construction in the Paurashava premises. Section 3(1) of the Act presents control on building construction in the country. Mostly approval system of the building plan prescribed in the Rules and punishment for the breach of regulation presented in the Act. But the approval system is lengthy and volume of punishment is poor.

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

Excavation of Tank: Section 3(2) of the Act presents control on the excavation of Tank in the urban area. Approval for such excavation will be needed from the concerned authority. The regulation mostly enforces by the Development Authority and the Deputy

Commissioner enforces on the areas other than the jurisdiction of Development Authority.

Raging of Hill: Section 3(3) of the Act presents regulation on the raging of hill. In the Act it is prescribed that anybody is not authorized for raging of hill without approval from the concerned authority. Development Authority and Deputy Commissioner is the concerned authority.

National Reservoir Protection Act, 2000

Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000 (Act No. XXXVI of 2000), enacted in 18th September 2000. In short, this Act may be called as National Reservoir Protection Act. The jurisdiction of this Act is covered Metropolitan City, Divisional and District level Cities and all urban areas including Paurashava area. Aim of the Act is to preserve play field, open space, park / garden and natural water reservoir. For the Paurashava premises, Paurashava Authority is empowered for enforcement of the said Act.

According to the section 5 of this Act, any area demarcated as Playfield, Open space, Garden and Natural Tank should not be changed with other use or it is prohibited for rent, leasing or any other procedure followed by, or handover to anybody for such changes. Again, according to the section 6, approval from concerned authority through application within stipulated time will be needed for any change of the area identified as play field, open space and natural tank. Punishment for such changes without approval from concerned authority is presented in the section 8. For such unlawful activities, punishment may be 5 years imprisonment or Tk 50,000 as a penalty or both. For preservation of natural water bodies in the Paurashava, this Act will be the important tool of the Paurashava authority.

Acquisition and Requisition of Immovable Property Ordinance, 1982

For any physical development activities, acquisition of land is needed primarily. In the Paurashava premises, for acquisition of land, the Paurashava Authority will request to the Deputy Commissioner to acquire the land needed. It is said in the section 3 of the Acquisition and Requisition of Immovable Property Ordinance, 1982, whenever it appears to the Deputy Commissioner that any property in any locality is needed or is likely to be needed for any public purpose or in the public interest, he shall cause a notice to be published at convenient places on or near the property in the prescribed form and manner stating that the property is proposed to be acquired.

Brick Burning (Control) Ordinance, 1989

Chairman of the Upazila Parishad is the enforcement authority of the Brick Burning (Control) Ordinance, 1989. In this Ordinance, control imposes only on the brick burning and said that no person should use wood for such purposes (section 5). For the violation of this regulation, the accused person may be punished with 6 months imprisonment or punished with a fine Tk. 10,000 or with both.

Conservation of Environment Act, 1995

Directorate of Environment is the enforcement authority of the Conservation of Environment Act, 1995. According to the Act, government can declare ecologically critical area through Gazette Notification (section 5(1)). Such critical environment may be created through human activities or climatic disturbances. Control on motorized vehicles who exhausts smoke dangerous for human health has prescribed in the section 6. Punishment for violation of any order presented in the Act may be 5 years imprisonment or fine with Tk. 1, 00, 000 or with both.

Rural Electrification Board Ordinance, 1977

Government of Bangladesh has enacted the Rural Electrification Board Ordinance on 29th October 1977. Section 8 of the Ordinance has presented functions of the Board and among them two functions are -

- a) To establish electricity generation transmission, transformation and distribution systems in the rural areas of Bangladesh.
- b) To take measures for effective use of electricity to foster rural development with special emphasis on increase of use of electric power for economic pursuits such as development of agriculture and establishment of rural industries and assisting the advantaged sections of the community for augmenting their income and standard of living.

Public Health (Emergency Provisions) Ordinance, 1944

Department of Public Health Engineering is the enforcement authority of the Public Health (Emergency Provisions) Ordinance, 1944. The Department is responsible for supply of drinking water also in the Paurashava premises. According to the section 7(1), “a local authority may supply water to any local authority or to any other authority or person within or without its local area upon such terms as may be agreed, notwithstanding any provision prohibiting or restricting such supply contained in any other law.” Based on such regulation, the Department is performing his duty in the Paurashavas.

Land Development for Private Housing Project Act, 2004

The Act was enacted on 1st March 2004 to control land under private housing and develop accordingly. The authority who has prepared master plan, the Act will be enforced on those areas. It is said in the section 1(2) of this Act that, this Act will be enforced under the jurisdiction of the master plan areas prepared under the guidance of The Town Improvement Act, 1953 (E.B.Act XIII of 1953) and The Building Construction Act, 1952 (E.B.Act II of 1952).” According to the regulation prescribed above, the private housing construction in the Paurashava area may be controlled through this Act but, an amendment will be necessary to include the name of Paurashava Act, 2009 under which the Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan) is being prepared.

5.2.2 Paurashava Development Management

After the independence (1971), all local government systems were abolished by the Presidential Order No. 7 in the year 1972 and appointed an administrator in each of the Municipality. After this Order, name of the Local Governments were changed as Town Panchayat instead of Union Committee, Shahar Committee instead of Town Committee and Paurashava instead of Municipal Committee. Shahar Committee was renamed as Paurashava in the year 1973 with a Presidential Order No. 22 and introduced election procedure for the Chairman and Vice-chairman. Thana Parishad Ordinance, 1976 (Ordinance No. XXXII of 1976) was enacted in 21st May 1976 to provide for the constitution of Thana Parishad. Paurashava Ordinance was enacted and notified in the year 1977. Nine Commissioner and selection of female Commissioner in every Paurashava was provisioned in the Ordinance. According to the Paurashava (amendment) Ordinance, 1998, re-distribution of Paurashava Wards was introduced and the Paurashava belongs with 3 Wards proposed for 9 Wards and 12 Wards instead of 4 Wards. One Commissioner for every Ward and one-third Ward of every Paurashava was reserved for female Commissioner who was elected by the general election of the country. Local Government (Paurashava) Ordinance, 2008 (Ordinance No. XVII of 2008) was provisioned 9 Wards, one Mayor and 3 female Councilors for every Paurashava. Mayor and Councilors will be elected through general election. The provision remains in the Local Government (Paurashava) Act, 2009.

From the year 1977 to 2009, Paurashava Ordinance, 1977 enforces by the Paurashava authority and the name of the statute was Paurashava Ordinance, 1977. After promulgation of the same statute, name of the Ordinance has changed as Local Government (Paurashava) Act, 2009. Generally, people call it Paurashava Act, 2009.

For the management of all physical development activities, a wide range of functions have been prescribed in the Second Schedule of the Ordinance. For efficient management of development, three major activities are prescribed and they are – Town Planning, Building Construction and Development. According to the Second Schedule, functions in brief are presented in the following table.

Table 5.4: Functions in brief prescribed in the Local Government (Paurashava) Act, 2009

Major activity	Specific functions	Functions in brief
Town planning	Master plan	The Paurashava shall draw up a master plan for the city which shall provide for a survey of the Paurashava including its history, statistics, public services and other prescribed particulars. Development, expansion and improvement of any area within the city; and restrictions; regulation and prohibitions to be imposed with regard to the development of sites, and the erection and re-erection of buildings within the Paurashava.
	Site development schemes	Where a master plan has been drawn up and approved by the government, no owner of lands exceeding such area as may be specified in this behalf in the master plan, shall develop the site or erect a building or any plot of land

Major activity	Specific functions	Functions in brief
		<p>covered by the provisions of a site development scheme sanctioned to area in the prescribed manner.</p> <p>Among other matters, a site development scheme may provide for-</p> <p>(a) the division of the site into plots;</p> <p>(b) the street, drains and open spaces to be provided;</p> <p>(c) the land to be reserved for public purposes and to be transferred to the Paurashava;</p> <p>(d) the land to be acquired by the Paurashava;</p> <p>(e) the price of plots;</p> <p>(f) the works that shall be executed at the cost of the owner or owners of the site or sites; and</p> <p>(g) the period during which the area shall be developed.</p>
	Execution of Site Development Schemes	<p>If any area is developed or otherwise dealt with in contravention of the provisions of the sanctioned Site Development Scheme, the Paurashava may by notice require the owner of such area or the person who has contravened the provisions to make such alteration in the site may be specified in the notice as where such alteration is not made or for any reason cannot be carried out, the Paurashava may, in the prescribed manner require and enforce the demolition of the offending structure; and notwithstanding anything to the contrary contained in any law, no compensation shall be payable for such demolition.</p>
Building construction	Building construction and re-construction	<p>Without approval of the building site and plan by the Paurashava, nobody can construct, re-construct any building in the Paurashava area. The Paurashava will approve the plan within sixty days or refund it within that specified time frame; otherwise the plan will be considered as approved.</p>
	Completion of construction and change, etc.	<p>After completion of the approved building, the owner will notify to the Paurashava within 15 days. The Paurashava may inspect the building and if found any violation of the provision prescribed in the Master Plan or in the Site Development Scheme, the Paurashava may demolish the building and the demolishing cost may be incurred from the building owner.</p>
	Building control	<p>If any building or anything fixed thereon, be deemed by the Paurashava to be in a ruinous state or likely to fall or in any way dangerous to any inhabitant of such building or any neighboring building or to any occupier thereof or to passers-by, the Paurashava may by notice require the owner or occupier of such building to take such action in regard to the building as may be specified in the notice, and if there is default, the Paurashava may take the necessary steps itself and the cost incurred thereon by the Paurashava shall be deemed to be a tax levied on the owner or occupier of the building.</p> <p>If a building is in dangerous condition, or otherwise unfit for human habitation, the Paurashava may prohibit the occupation of such building till it has been suitably repaired</p>

Major activity	Specific functions	Functions in brief
		to the satisfaction of the Paurashava.
Development	Development plans	The Paurashava shall prepare and implement development plans for specific time. Such Plans shall provide for- (a) the promotion, improvement and development of such function or functions of the Paurashava as may be specified; (b) the manner in which the plans shall be financed, executed, implemented and supervised; (c) the agency through which the plans shall be executed and implemented; and (d) such other matters as may be necessary.
	Community Development Projects	The Paurashava may, sponsor or promote community development projects for the Paurashava or any part thereof and may in this behalf perform such functions as may be prescribed.
	Commercial schemes	The Paurashava may, with the previous sanction of the Government, promote, administer, execute and implement schemes for undertaking any commercial or business enterprise.
Street	Public streets	The Paurashava shall provide and maintain such public street and other means of public commutation as may be necessary for the comfort and convenience of the inhabitants of the Paurashava and of the visitors thereto.
	Streets	No new street shall be laid out except with the previous sanction of the Paurashava. The Paurashava may by notice required that any street may be paved, matted, drained, channeled, improved or lighted in such manner as may be specified in the notice, and in the event of default, the Paurashava may have the necessary work done through its agency, and the cost incurred thereon by the Paurashava shall be deemed to be a tax levied on the person concerned.
	General provisions about streets	The Paurashava may assign names to streets and paint the names or fix the nameplates on or at conspicuous places at or near the end corner or entrance of the street. No person shall destroy, deface or in any way injure any street, name or name plate, or without the previous permission of the Paurashava, remove the same.
	Street lighting	The Paurashava shall take such measures as may be necessary for the proper lighting of the public streets and other public places vesting in the Paurashava.
	Street watering	The Paurashava shall take such measures as may be necessary for the watering of public streets for the comfort and convenience of the public, and for this purpose, maintain such vehicles, staff and other apparatus necessary.
	Traffic control	The Paurashava shall make such arrangements for the control and regulation of traffic necessary to prevent danger and ensure the safety, convenience and comfort of the public.
	Public vehicles	No person shall keep or let for hire or drive or propel within the limits of the Paurashava any public vehicle other than a

Major activity	Specific functions	Functions in brief
		motor vehicle except under a license granted by the Paurashava, and in conformity with the conditions of such license. No horse or other animal shall be used for drawing a public vehicle within the limits of the Paurashava except under a license granted by the Paurashava.
Water supply and drainage	Water supply	The Paurashava may provide supply of wholesome water sufficient for public and private purposes. Frame and execute water supply scheme for the construction and maintenance of such works for storage and distribution of water.
	Private sources of water supply	All private sources of water supply within the Paurashava shall be subject to control, regulation and inspection by the Paurashava. No new well, water pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Paurashava.
	Drainage	The Paurashava shall provide an adequate system of public drains in the and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the heal and convenience of the public. All private drains shall be subject to control, regulation and inspection by the Paurashava
	Drainage scheme	The Paurashava may prepare a drainage scheme in the prescribed manner of the construction of drains at public and private expense. The drainage scheme as approved by the government shall be executed and implemented within specified period.
	Bathing and washing place	The Paurashava may from time to time set a suitable place for use by the public for bathing, washing cloths, or for drying cloth. Specify the time at which and the sex of persons by whom such places may be used. No person shall establish, maintain or run a bath for public use except under a license granted by the Paurashava.
	Dhobi ghat and washer men	The Paurashava may provide dhobi ghats for the exercise of their calling by washer men, and may regulate the use of dhobi ghats and levy fees for their use.
	Public water-course	The Paurashava may declare any source of water, spring, river, tank, pond, or public stream, or any part thereof within the Paurashava, which is not private property, to be a public watercourse.
	Public ferries	The Paurashava may by by-laws provide for the licensing of boats and other vassals plying for hire in a public water-course to be a public ferry and may entrust the management thereof to the Paurashava, and there upon the Paurashava shall manage and operate the public ferry in such manner and levy such tolls as prescribed.
	Public fisheries	The Paurashava may declare any public watercourse as a public fishery, and there upon the right of fishing in such water course shall vest in the Paurashava which may exercise such right in such manner as may be prescribed.

5.3 Strength and Weaknesses of the Existing Policies

The Consultant has identified following weaknesses in the existing policies. These are – accommodation of future thrust of growth likely to arise due to construction of the Jamuna Bridge at Bhuyapur point, supply of safe drinking water, providing safe and easy accessibility, use of agriculture production in income generating activities and create provision for further investment.

The primary motive is to exercise control over unorganized development and promotion of planned infrastructure development to accommodate future urban growth. The Paurashava will be developed as a self-contained town in rural environs.

Impact of Jamuna Bridge influences the development of this area. Many factors are involved with this such as landuse change, increase of commuters, increase of vehicular movement, forward linkage of commodities and social changes of the Paurashava dwellers.

To increase the agro-product and use them in income generating activities, a vast agriculture land will be used and at the sametime, the existing agriculture land should be preserved. Further residential expansion should be controlled through the imposition of development control. In this context, concept of cluster development and compact township approach should be provisioned in the plan. Vertical development will be encouraged rather than horizontal to save the agriculture land.

CHAPTER-6

PROJECTION OF FUTURE GROWTH BY 2031

6.1 Introduction

The Chapter presents future growth of the Paurashava according to the population, economy and landuse. The projected period for those components has been considered for the year 2010 to 2031. In case of population and landuse, projection has been presented but in case of economy, opportunities have been considered. For the Mirzapur Paurashava, government policy is the prime focus as economic opportunity but that is not considered here. Existing local economic strength considers as the basis of economic opportunity. Agriculture, fish, livestock and poultry, local fruits and availability of labour force considers as a basic components of the economic opportunities.

6.2 Projection of Population

In the Mirzapur Upazila, from the year 1974-1981, annual growth rate of population was 1.69%, and from the year 1981-1991 the rate slightly decreased to 1.46%. In 2001 government notified the urban characterized area of the Upazila as Paurashava and surprisingly then the growth rate of the whole Upazila decreased to 0.83% during the year 1991-2001 which became 1.05% during year 2001-2011. The population of Mirzapur Paurashava was 23537 in 2001 and it became 28602 at 2011(BBS, 2011). So the population growth rate in 2001-2011 was 1.97 annually which very low considering national urban growth rate 3.43%.

Table 6.1: Population growth of Mirzapur Upazila

Year	Growth rate (Decadal)	Growth rate (Annual)
1974-1981	16.9	1.69
1981-1991	14.6	1.46
1991-2001	8.3	0.83
2001-2011	10.5	1.05

Source: BBS Population Census-2011 (Community Series, Zila: Tangail)

Table 6.2: Population growth of Mirzapur Paurashava

Items	2011	2001	Growth Rate	
			Decadal	Annual
Both sexes	28602	23537	19.70	1.97
Male	13147	11565	12.90	1.29
Female	15455	11972	25.80	2.58

Source: Population census-2011, Community Series and Consultants' Analysis

Basis of population projection:

The rate of migration is very important element for determining the rate of growth of urban population. The rate of growth is determined by adding migration rate with natural growth rate. Rural people expect comfort, amenity and security in the urban area. Opportunity of employment of any job attracts rural people to urban areas. The formal and informal economic activities also pull the people from rural area to urban area. The study of migration of Mirzapur Paurashava shows that there are 94.5 percent of the

residents are permanent in the Paurashava area, which means 5.5 percent are migrated population. The natural rate of growth of population of Mirzapur Upazila was recorded as 1.05 percent in the census report of 2011. Therefore, the rate of population growth of Mirzapur Paurashava Area is $5.5+1.05=6.53$ percent which is greater than national urban growth rate that is 3.43 percent. Therefore instead of migration rate; considering the urban growth rate of Mirzapur Paurashava and natural growth rate, the potential growth rate has considered 3.68 percent.

Method Used: For projecting the population of 2016, 2021, 2026 and 2031 the formula below was used. Population of 2011 was used as base population. Projections of population are done with assumed growth rate of growth low, medium and high projections. Projections are done up to the year 2031 with five years intervals.

The formula quoted in calculation of the population projection is -

$$F = A (1+r)^n$$

F=Projected population

A=Current population

R=Growth Rate

n=Year

Assumptions

The growth trend analysis of inter-censal periods indicates high growth rate from 1961-1974, but subsequently the growth rate shows declining trend. On the basis of the trend of the National urban population growth rate and Mirzapur Paurashava population growth rate, it has been projected that population growth rate will continue to rise. On this assumption and the trend indicated during previous inter-censal growth rates for the year 2001-2011, 20011-2021 and 2021-2031 have been shown in table-6.3.

Projected Population by Ward

The population is projected here by considering the base population of 2011 according to BBS 2011 (Community Series, Zila: Tangail) and annual growth rate 3.68. The projection shows that the population of the study area will be 37266 in 2016, 41078 in 2021, 49229 in 2026 and 58997 in 2031. The scenario proves that in next 20 years the Paurashava population will increase in a large number and it may be doubled. The projection is showing accepted estimation of population growth. Because of rapid expansion and population explosion in Dhaka City and huge traffic jam have already made it a functionally disabled city. Besides initiation and extension of mass transport system like Bus for Rapid Transit (BRT), Metro Rail etc, government policy on relocation of industries from Dhaka City to near outside and community facilities provided by the Paurashava according to the Master Plan; the people will prefer to stay in the Paurashava rather than coming to Dhaka and the growth in the Paurashava will be increased enormously rather than the normal rate at present.

Table 6.3: Population Projection of Mirzapur Paurashava (growth rate: 3.68%)

Ward No.	Area (sq.km)	Population 2011	Projected Population			
			2016	2021	2026	2031
1	0.79	2492	2986	3579	4289	5140
2	0.83	5572	6678	8003	9590	11493
3	0.81	5832	6989	8376	10038	12030
4	1.45	2844	3408	4085	4895	5866
5	1.53	2090	2505	3002	3597	4311
6	0.94	3288	3940	4722	5659	6782
7	0.72	1804	2162	2591	3105	3721
8	0.68	2802	3358	4024	4823	5780
9	0.83	1878	2251	2697	3232	3874
Total	8.58	28602	34277	41078	49229	58997

Source: BBS Population Census-2011 and Consultants' Analysis.

6.3 Identification of Future Economic Opportunities

Different types of industry are located in the Mirzapur Paurashava area. Good communication and huge agro based product are influencing for such type of industry. The productions are mostly used in the Dhaka City and Mymensingh Zila. Investment in this field will bring huge prospects of the Paurashava. Other economic prospect summarizes in the following discussions:

Availability of agriculture land. The land may be used for different agricultural production and those productions may be used for the input of agro-based industries.

Availability of unskilled and cheap manpower.

Due to the nearness of Dhaka City, the Paurashava may be developed as the fringe area of Dhaka City. This fringe area with its agriculture production will support to the Dhaka City where marketing for those productions are available such as railway and National Highway network.

The Paurashava has been developed as growth centre concept. Some cluster development is found around this growth centre. Through this master plan, planned development will initiate to arrange the growth component in a systematic manner. At the sametime, economic development parallel to the physical and social development will be encouraged.

6.4 Projection of Landuse

Landuse requirement

The Paurashava is not an ideal township due to the agriculture domination. Agriculture based township should be encouraged in the preparation of Master Plan. Growth of population is the natural trend and at the same time, expansion of non-agricultural use

on agriculture land is also natural tendency of the people. This will be controlled through the Compact Township concept with the encouragement of vertical development. In case of government services, specific building may accommodate different type of offices.

Future landuse will be calculated according to the development control for the masses and the standard supplied by the LGED. In case of public land, existing use and khas land will be emphasized. Willingness and participation of the people in development activities will be the key factor for future landuse demarcation. Slow change of landuse will be emphasized rather than rapid change. Let the people do whatever he likes on own land – such concept should not be considered for future projection of landuses. Three parts of the projection are landuse change, landuse control and landuse restriction will be included in the Master Plan. In any case, river front areas should be restricted for human habitation. As a result, river water will safe from contamination. The projection of landuse depends on the growth of population. After population projection it is found that, population of this area will be 58997 (according to the linear method) that belong to the trend line method in the year 2031. Projection on landuse also depends on present trend of migration.

Demand Analysis

In case of landuse change, the standard given by the LGED according to the projected population and area for the specific service will be calculated. But, the agriculture land should be preserved from any type of physical development. It should not be decreased. The vertical expansion will be emphasized rather than horizontal. In case of road network planning, missing links will be prescribed rather than new roads. For the development of pisciculture, all ponds and ditches may be preserved, in some exceptional cases; small number of ditches may be used for physical development activities. Landuse control and landuse restriction will be imposed by the Paurashava according to the prescribed plan.

Table 6.4: Standard of Landuse and future need

Types of Land Uses	Recommended Standard	Existing (acre)	future land requirement			
			2016	2021	2026	2031
Residential		429.74	342.77	410.78	492.29	589.97
General residential	100 persons/1 acre	-	342.77	410.78	492.29	589.97
Real Estate – Public/Private	200 population/ 1 acre	-		0.00	0.00	0.00
Roads		113.97		0.00	0.00	0.00
Paurashava primary roads	150 – 100 feet	-		0.00	0.00	0.00
Paurashava secondary roads	100 – 60 feet	-		0.00	0.00	0.00
Paurashava local roads	40 - 20 feet	-		0.00	0.00	0.00
Education		18.10	61.42	73.60	88.19	104.30
Nursery	0.5 acre/10,000 population	5.11	3.43	4.11	4.92	5.90
Primary School/ kindergarten	2.00 acres/5000 population		13.71	16.43	19.69	23.59

Types of Land Uses	Recommended Standard	Existing (acre)	future land requirement			
			2016	2021	2026	2031
Secondary/High School	5.00 acres /20,000 population	3.46	8.57	10.27	12.31	14.75
College	10.00 acres/20,000 population	8.51	17.14	20.54	24.61	29.49
Vocational Training Centre	5 - 10 acres / Upazila	-	10.00	11.98	14.36	15.83
Other	5.00 acres / 20,000 population	1.02	8.57	10.27	12.31	14.75
Open Space		61.68	73.70	88.31	105.83	126.82
Play field/ground	3.00 acres/20,000 population	-	5.14	6.16	7.38	8.85
Park	1.00 acre /1000 population	-	34.28	41.08	49.22	58.98
Neighborhood park	1.00 acre /1000 population	-	34.28	41.08	49.22	58.98
Recreational		0.03	11.71	14.04	16.82	18.78
Stadium/sports complex	5 – 10 acres/Upazila HQ	-	10.00	11.98	14.36	15.83
Cinema/ Theatre	1.0 acre /20,000 population	-	1.71	2.05	2.46	2.95
Health		19.56	6.86	8.22	9.84	11.80
Upazila health complex/ hospital	10 -20 acres/Upazila HQ	-		0.00	0.00	0.00
health centre/Maternity clinic	1.00 acre/ 5,000 population	-	6.86	8.22	9.84	11.80
Community Facilities		5.24	14.07	16.86	20.20	23.45
Mosque/Church/Temple	0.5 acre /20,000 population	-	0.86	1.03	1.23	1.47
Eidgah/	1.0 acre/20,000 population	-	1.71	2.05	2.46	2.95
Graveyard	1.00 acre /20,000 population	-	1.71	2.05	2.46	2.95
Community centre	1.00 acre /20,000 population	-	1.71	2.05	2.46	2.95
Police Station	3 – 5 acres/Upazila HQ	-	5.00	5.99	7.18	7.91
Police Box/outpost	0.5 acre/ per box	-	0.50	0.60	0.72	0.79
Fire Station	1.00 acre/ 20,000 population	-	1.71	2.05	2.46	2.95
Post office	0.5 acre /20,000 population	-	0.86	1.03	1.23	1.47
Commerce & Shopping		41.40	37.70	45.18	54.14	64.88
Wholesale market	1.0 acres/ 10000 population	-	3.43	4.11	4.92	5.90
Retail sale market	1.0 acres/ 1000 population	-	34.28	41.08	49.22	58.98
Corner shops	0.25 acre/per corner shop	-	0.00	0.00	0.00	0.00
Neighborhood market	1.00 acre/per neighborhood market	-	0.00	0.00	0.00	0.00
Super Market	1.50 – 2.50 acres/per super market	-	0.00	0.00	0.00	0.00
Industry		3.58	85.69	102.69	123.05	147.46
Small scale	1.50 acres /1000 population	-	51.42	61.61	73.83	88.48
cottage/agro-based	1.00 acres /1000 population	-	34.28	41.08	49.22	58.98
Transportation		7.09	8.78	10.53	12.61	14.50
Bus terminal	1.0 acre /20,000 population	-	1.71	2.05	2.46	2.95

Types of Land Uses	Recommended Standard	Existing (acre)	future land requirement			
			2016	2021	2026	2031
Truck terminal	0.50 acre /20,000 population	-	0.86	1.03	1.23	1.47
Launch/steamer terminal	1.00 acre /20,000 population	-	1.71	2.05	2.46	2.95
Railway station	4.00 acre / per Station	-	4.00	4.79	5.74	6.33
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	-	0.25	0.30	0.36	0.40
Passenger Shed	0.25 acre /one baby taxi/tempo stand	7.09	0.25	0.30	0.36	0.40
Administration		4.68	30.00	30.00	30.00	30.00
Upazila complex	15.00 acres	-	15.00	15.00	15.00	15.00
Paurashava office	3 – 5 acres	-	5.00	5.00	5.00	5.00

Source: LGED and Consultants' Analysis

6.5 Housing

Housing areas in the Paurashava are composition of an admixer of housing types. Mixed residential, poor dominated rural houses and semi-urban homesteads are found. Most housing areas have developed in a spontaneous fashion. In the rural part of the Paurashava, with its rural-agricultural character, has a different housing type. The dwellings, comprising homesteads, encompass larger areas having low density. The highest population density in the Paurashava is only 7588 persons per sq. km (31 persons per acre) in Ward No. 3 and the gross population density is 2743 persons per sq. km (11 persons per acre). Buildings in the Paurashava are dominated by tin-shed structures (56%) and another major type is semi-pucca structure (26%). Owners of the buildings have been found violated the setback rule by the construction. Except labor charge there is very little variation in building construction cost between Dhaka and Mirzapur Paurashava.

Problem relating to the housing are mostly concerned with the poor community. Apart from dwelling, poor piped water supply and frequent load shedding are daily problem for the inhabitants. Almost all the households use tubewell as their source of drinking water. In a nut shell, municipal services are not adequate. Among these, drainage and toilet facilities are two major problems in most part of the Paurashava. The Paurashava cannot solve the problems due to scarcity of fund.

In the study area almost all the households became land owners through inheritance. For effective promotion of housing the government should change its role to a facilitator instead of a provider. Government agencies should provide infrastructure and finance on soft terms and the rest should be left with the private sector. To realize the development and service costs of public sector infrastructure projects from the beneficiaries it is necessary to evolve new mechanism. If real estate developers encourage coming up with housing projects, the Paurashava should maintain some control over them to safeguard public interest. Public sector may take up innovative cost recovery housing programs for the rural poor.

Basis Projection of Housing

Existing landuse is the only basis for housing projection. Residential use and mixed-use have been considered for the year 2011 as base year and projected housing area is calculated considering 100 persons per acre provided by the LGED and there is no standard for industrial use, commercial use, etc.

Demand Analysis

It is estimated that housing demand stands at 589.97 acres at the end of project period 2031. The estimation is based on the assumption that the standard is supplied by the LGED for housing estimation where density is declared around 150 or 100 persons per acre. But for Mirzapur Paurashava it is not possible to attain such high density because of its agricultural nature. The existing net population density in the Paurashava is 64 person per acre. It is also observed that in the Paurashava new horizontal development is taking part mostly rather than the vertical expansion. Considering all these above facts, the consultants has proposed density of 100 person/acre. Ward wise projected housing area is shown in Table 6.5.

Table 6.5: Ward-wise demand of housing areas (in acre)

Year		2016	2021	2026	2031
Projected Population		34277	41078	49229	58997
Estimated Total		342.77	410.78	492.29	589.97
Housing Area (acre)					
Ward No.	Existing Housing 2011 Area (acre)	Estimated Ward wise Demand of Housing Area (acre)			
1	49.47	29.86	35.79	42.89	51.40
2	48.18	66.78	80.03	95.90	114.93
3	42.7	69.89	83.76	100.38	120.30
4	75.04	34.08	40.85	48.95	58.66
5	46.61	25.05	30.02	35.97	43.11
6	41.32	39.40	47.22	56.59	67.82
7	50.91	21.62	25.91	31.05	37.21
8	52.25	33.58	40.24	48.23	57.80
9	40.87	22.51	26.97	32.32	38.74
Total	447.4	342.77	410.78	492.29	589.97

Source: Landuse Survey, 2009 and Consultants' Analysis

Map 6.1: Population Density of the study area

CHAPTER-7

LAND USE ZONING POLICIES AND DEVELOPMENT STRATEGIES

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 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.

7.1.1 Core Area

Total 47.57 acres of land, which covers 2.49 % of Structure Plan area, is declared as Core Area. It includes major portion of ward 3. It is mainly the highest concentration of service area for an example paurashava, Mirzapur College, schools, post office, police station, bazar area etc. and it has the highest potentiality of development. Because the town developed based on the Dhaka Tangail Highway and three major roads namely Bazar Road, College Road and Bypass Road. Within this area, there are differences in levels of provision, particularly between the formally developed and planned areas and the majority of unplanned areas. Levels of provision should be maintained in the planned areas. Since these areas are forecasted to show density increase and increased demand and therefore will require regular upgrading. 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.

7.1.2 Fringe Area

A total of 642.91 acres of land are within this category. of area, which covers 33.61% of Structure Plan area, is declared as Urban Fringe Area which is located at the Ward no 1, 2,6,7,8 and 9 of the Paurashava. 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.

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.	47.57	2.49
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.	642.91	33.61
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.	49.14	2.57
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.	427.85	22.37
Agriculture	Agricultural land (also <i>agricultural area</i>) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock.	331.30	17.32
Water body	Water body containing an area equals to or more than 0.3 acres excluding those of khal, irrigation canal and river will be treated as this category.	176.00	9.20
Circulation Network	It covers all the major roads within the structure plan areas.	237.82	12.43
Total		1912.60	100

7.1.3 Peripheral Area

A total of 49.14 acres of land covering 2.57% of Structure Plan area is declared as Fringe Area. Maximum fringe area of proposed structure plan is located at Ward 4 and 7. This area mainly proposed, where a slow trend of urbanization is continuing in unplanned manner. The area is 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 encouraging a more rapid urbanization in a planned way.

Map 7.1: Structure Plan of Mirzapur Paurashava

7.1.4 New Urban Area

Total 427.85 acres of land covering 22.37% of Structure Plan area is declared as New Urban Area. New urban area mainly proposed in western side of Ward no. 02, northern portion of Ward no. 05. It is assumed that town will be developed on south side of Dhaka-Tangail Highway and northern side of present core area. So most of the new urban lands in Ward no. 2 and 5 will be use to meet the extra pressure of development trend for this reason. A large portion of land in Ward no. 01 will be used to establish industry and rest of the land will be used for future planned urban development as per population projection.

7.1.5 Agriculture

Total 331.30 acres of land covering 17.32 % of Structure Plan area is declared as Agriculture Area. North-east portion of the Paurashava is mostly declared as agriculture area.

7.1.6 Waterbody

Total 176.00 acres of land covering 9.20% of Structure Plan area is declared as waterbody Area. It includes ponds and ditches with an area equal to or more than 0.3 acres and river within the Paurashava. There is 236 khal, pond and ditches and a river exists in the Paurashava.

7.1.7 Major Circulation Network

It contains Portion of Dhaka-Tangail Highway passes through the paurashava area, road network with other neighboring urban centers and also includes the major road way network required for maintaining existing internal communication. Total 237.82 acres of land which covers 12.43% of total structure plan area.

7.2 Strategies for optimum use of Urban Land Resources

7.2.1 Optimum use of Urban Land Resources

With a limited land mass, Bangladesh is the most densely populated country in the world. The land area of the country remains static amid continuously increasing population. Such a situation calls for strict regulation to utilize its scarce land resources for non-agricultural purposes. Increase in urban population means more demand for houses, roads, schools, hospitals, factories, bazars, shops, business centres, offices, other service facilities etc. Providing all these facilities require land and that is at the cost of valuable agricultural land, as the country has hardly any fallow land to accommodate all these land uses. Mirzapur 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 Mirzapur. 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: The public sector should develop infrastructure facilities and services in deprived areas to enable the land owners for development.	-Mirzapur Paurashava; -Ministry of Land
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.	-Mirzapur Paurashava -Ministry of Land -DC, Tangail

7.2.2 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.	-Mirzapur Paurashava -DPHE -Private sector.

7.2.3 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.	-Mirzapur Paurashava -DOE.
Low Land, Pond and Drainage Path: A total of 92 pond and ditches with an area equal to or more than 0.3 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.	-Mirzapur Paurashava -Water Development Board

Type of Land	Means of Implementation	Implementing Agency
Green Belt: The Bank of the river Bangshi is declared as green belt. This area will be used for afforestation 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.	-Mirzapur Paurashava

7.3 Policies for Development

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

7.3.1 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 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.	-Ministry of Planning -Ministry of Health and Family Planning
Popu/2: Putting more efforts and resources in raising the level of education. Justification: Education would not only create awareness among the masses about the benefits of small family size, it will also help secure	-Ministry of Education -Ministry of Planning -Ministry of Health

Policy	Executing Agency
better job with higher pay that would reduce poverty.	and Family Planning
Popu/3: Creation of well paid and well trained grassroots level family planning workers for motivational work. 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.	-Ministry of Planning -Ministry of Health and Family Planning

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 very bright in Mirzapur as it is very close to Dhaka City. Besides, it has good communication with other adjoining urban centers. However, the Paurashava must ensure that any foreseeable opportunity in economic development is given due attention for its own growth and economic benefits.

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. Justification: Easy loans would encourage and attract prospective investors for investment in small scale industries.	-Ministry of Industries -Ministry of Commerce
Popu/2: Taking of measures to channelize remittance to value adding productive sectors. 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.	-Ministry of Industries -Ministry of Commerce
Popul/3: Arranging entrepreneurship training programmes for prospective investors. 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.	-Ministry of Industries. -Ministry of Commerce.

Housing

Being very close to Dhaka city there is an extreme demand of housing for the commuter people. Housing policy and programmes are provided and executed by the national government. There is no local office of the National Housing Authority to execute housing programmes at Upazila level. As a local government, Paurashava can facilitate housing area development by means of providing road infrastructure, drainage, water supply, etc in designated housing zones. The consultant supports the prevailing national housing policy and advocates its execution at all levels, which at the moment is highly lacking.

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

Strategy:

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

Table 7.7: Housing and Slum Improvement

Policy	Executing Agency
<p>Policy House/1: Provision of necessary services and facilities to promote housing at private sector.</p> <p>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.</p>	<p>- National Housing Authority</p> <p>- Ministry of LGRD</p> <p>- Mirzapur Paurashava</p>
<p>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.</p>	<p>- National Housing Authority</p> <p>- Ministry of LGRD</p> <p>- Mirzapur Paurashava</p>

Social Amenities and Community Facilities

Social amenities and community facilities include, education facilities, health facilities, open space recreation facilities like, park and playground, amusement park and community centre. For comfortable and healthy urban living, these facilities are the fundamentals. Since these are social services, they must be provided by the public sector agencies as public good. For education and health facilities, the national government have policies and there are separate ministries and their agencies to execute the policies through programmes and projects. There are also Upazila level offices of the concerned agencies to take care of the execution of national education and health policies and programmes. For providing amenities like, park and playground and community centre, the responsibility lies with the Paurashava. For park and playground, the Paurashava may secure local khas land. The open space recreation is difficult to provide as population expands and land price goes higher. Once time is lost, vacant lands are also lost. Amid soaring land price and absence of vacant land, it becomes extremely difficult to provide

open space recreation. So, it is better to secure vacant lands for open space before density of population increases and land becomes scarce and pricier. For community center, intensive use of land should be made by making multiple use of the same space, for example, providing community center, ward councillor's office, clinic or any other use in the same building.

Strategy:

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

Table 7.8: Social Amenities and Community Facilities

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

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

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. Justification: Amid constant rise of urban population, it is time to explore alternative sources of water like, rain water harvesting and surface water supply.	- LGED - Mirzapur Paurashava
Policy-Utility/2:	- Mirzapur Paurashava,

Policy	Executing Agency
<p>Involvement of beneficiaries in solid waste management.</p> <p>Justification: Involvement of beneficiaries in solid wastemanagement will make the operation more effective and reducefinancial responsibility of the Paurashava.</p>	- NGOs and CBOs
<p>Policy-Utility/3: Exploring re-use and recycling of waste materials to extract resources.</p> <p>Justification: Re-use and recycling of waste materials will produce resources and reduce cost of waste management.</p>	- Mirzapur Paurashava, - NGOs and CBOs
<p>Policy-Utility/4: Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.</p> <p>Justification: Motivation will encourage people to adopt healthy sanitation and reduce health risks.</p>	- LGED - Mirzapur Paurashava - NGOs and CBOs
<p>Policy-Utility/5: Protection of natural drainage system and preparation of hierarchical drainage network.</p> <p>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.</p>	- LGED - Mirzapur Paurashava

7.3.3 Environmental Issues:

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

Natural Resources

The Paurashava is not endowed with many natural resources that can be conserved. Among the major natural resources that are available, 59 number of ponds/ Ditches and 16.11 km of natural drainage canals can be mentioned. Out of the total ponds 21 with an area equal to or more than 0.25 acres and the natural khals need to be protected and conserved to ensure sustainability in drainage and water supply of the Paurashava.

Strategy:

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

Table 7.11: Policy for Natural Resources

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

CHAPTER-8

IMPLEMENTATION ISSUES

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

8.1 Institutional Capacity Building of the Paurashava

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

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

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

The present plan package imposes a large number of development projects on Mirzapur 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. The Paurashava is capable to collect the taxes and tolls prescribed by the government. But still they have lack of tax collection. There is no proper arrangement for staff training only few training are received by LGED which are not sufficient enough. As a result, the staffs are mostly unskilled. They can not deliver proper service to the citizens. Besides, most of them are not qualified enough to render proper services.

8.1.2 Lack of Automation

Still now 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

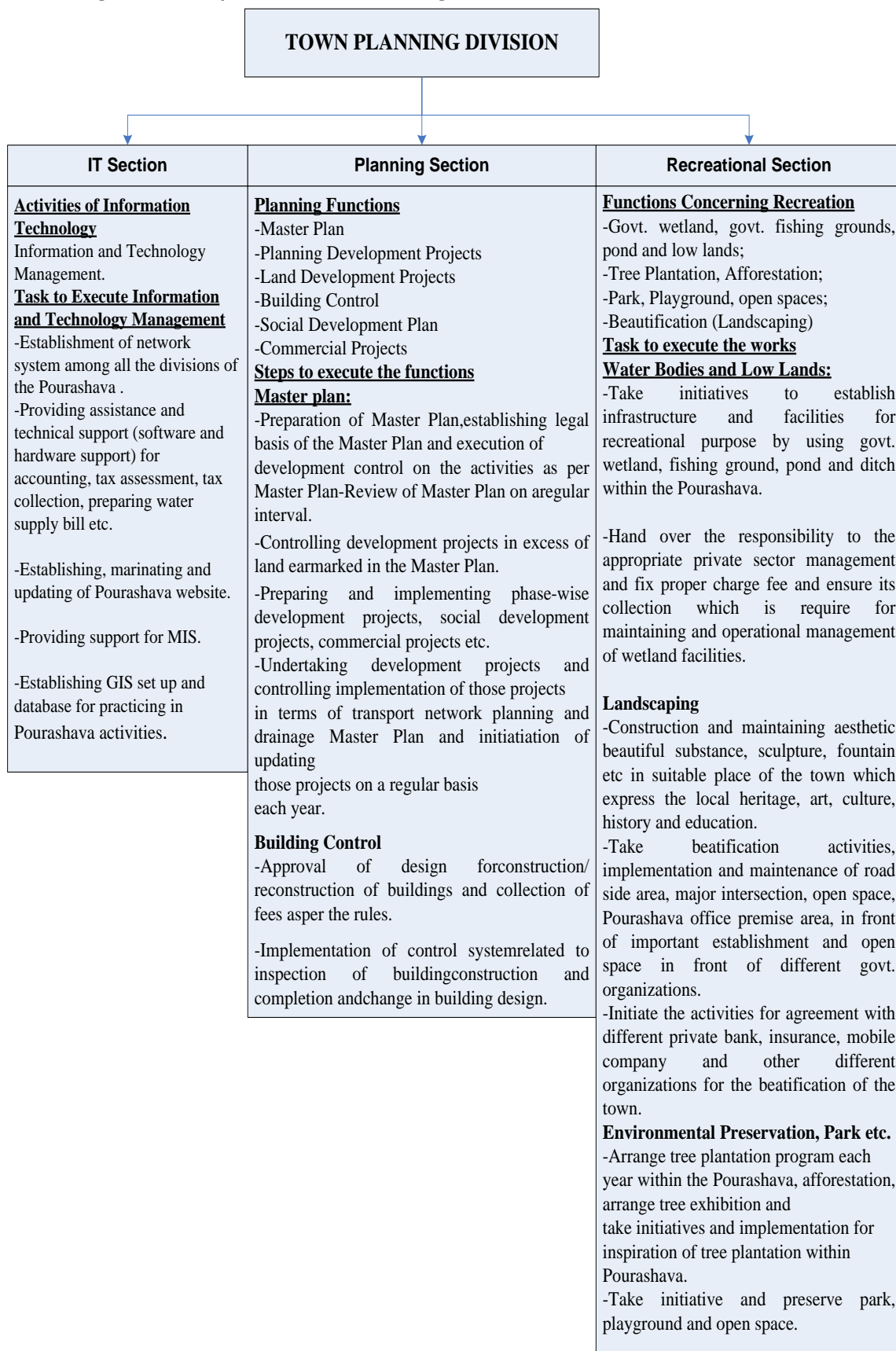
To rearrange the institutional framework for the Paurashavas recently the government has made a committee to reform the organogram of all the Paurashavas of Bangladesh. According to the clause no. 72-78 (Paurashava Officer & staff, provident fund etc) of Paurashava Act, 2009 and on the basis of the type 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 below:

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 section or any appropriate manpower to prepare and implement the Master Plan. For proper implementation of the Master Plan for each Paurashava under UTIDP, establishment of a separate planning unit 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.

Bhuapur 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 Programme (UGIAP)

- It is stipulated in the 6th 5 year plan 'the Key constraints to the effective functioning of the Paurashavas and City Corporations are unclear mandate and service responsibilities; lack of accountability; weak finances and financial autonomy; poor coordination and control among service agencies and weak management'.
- To overcome the challenges, the 6th Five year plan as well as Perspective Plan of Bangladesh, 2011-31 recommends the same issues mentioned below:

- the instructional reform and decentralization of responsibilities and resources to local authorities; participation of civil society including woman in the design, implementation and monitoring of local priorities; building capacity of all actors (Institutions, groups and individuals) to contribute fully to decision making an urban development process; and facilitate networking at all levels.
- It is already tested, proven and accordingly recognized in the 6th Five year plan that urban infrastructure improvements have been proved very successful introducing governance and performance-based approach adapted by UGIIP in selected ULBs in the country. Among other suggestions the 6th Five year plan also includes nature for Urban Governance Improvement Action Programme (UGIAP) and Capacity Building of Institutes at Municipality-level in particular.

Citizen Awareness and Participation

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

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

Urban Planning and Environmental Improvement

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

Urban Poverty Reduction

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

- Establishment of Slum Improvement Committee (SIC) in selected slums and scattered area.
- Preparation of poverty reduction action plan with guideline and necessary budget allocation.

Income Generating Activities

The income generating activities include:

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

Transparency and Accountability

Functions and activities perform by the Paurashava authority should be transparent and the persons responsible for performing activities for betterment of the society should maintain accountability to the Paurashava people as well as central government. Following guidelines may be followed for such performances:

- Administrative Reformation of Paurashava.
- Set Vision, Mission and functions for each department / section of the Paurashava.
- Functions to be decentralized, transfer and coordination with other authorities.
- Establishment of Capacity Development Committee in Paurashava-level.
- Establishment of Urban Information Services Center at Paurashava premises.
- Meet the Mass people of Paura-Parishad.

8.1.4 Legal Aspects

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

8.1.5 Good Governance in Legal Provisions

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

The Paurashava/Municipal Act/Ordinances prepared at different times since 1960's have iterated for the preparation of Master Plan by the Paurashava/Municipality for its planned development. So far urban local government Ordinances/Acts made in 1967, 1977, 2008 and 2009, all suggested for planned development. The Paurashava Act 2009

has made the provision of having a Master Plan prepared by a Paurashava within five years of its inception. The function of the Paurashava also includes that it ensures planned development following the rules of the Ordinance. But there is no provision for public participation in the Paurashava Ordinance 2009. In all these legal documents, people's role has been ignored which is the violation of the norms of good governance.

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

8.1.6 Financial Issues

Governance in Mirzapur 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 LGRD 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 Mirzapur 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 assess 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, Mirzapur 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 Mirzapur Paurashava is not equipped with qualified manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing as and when it is required.

8.1.8 Periodic Review and Updating

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

A new set of plans will have to be prepared replacing the old ones. This problem, however, can be overcome by undertaking another planning project by LGED. So, for regular updating and changes, and plan implementation monitoring, the Paurashava should immediately set up a planning section with a number of planners and other staff. The section will not only look after planning, but will also be responsible for development

control, estate management, and project preparation. Since the planners would be qualified and skilled in computer operation, they can also help achieving automation of the Paurashava functions.

8.2 Resource Mobilization

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

8.3 Concluding Remarks

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

CHAPTER-9

URBAN AREA PLAN

This is the first chapter of Part- B that starts with Urban Area Plan. Urban Area Plan is the mid level plan that covers the existing 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 Mirzapur 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 Mirzapur Paurashava is aimed towards its future development, and covers the areas that are likely to become urban in future.

The Urban Area Plan is aimed to:

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

9.2 Methodology and Approach to Planning

The base map supporting for land use survey was obtained from the physical feature survey that contained all categories of physical features within the planning area. 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. 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 Mirzapur 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.

9.3 Delineation of Planning Areas

Delineation of Urban Area Plan area of the Paurashava has been decided with the assistance and advises received from Mirzapur Paurashava Mayor, Councilors and other professional staffs. In order to delineate this boundary, there was a wide reconnaissance survey of the entire Paurashava area including those areas which have future potential growth. But since, the birth of Mirzapur Paurashava formed twelve years back (2000); the development trend do not took much momentum as it required. It is still in her infancy. In addition, the Mayor and the Councilors opinioned in favor of keeping the Paurashava area encompassing the nine Wards as exist for next 10 years. Strong arguments from Paurashava Mayor and Councilors were advised not to extend the boundary as it is not an old Paurashava and various developments has taken place, and the present area is enough as planning area. Though the 2000 Gazette has declared Mirzapur urban area as Paurashava composed of nine Wards where the adjoining areas are still rural in character; not having significant urban development trend. From the physical feature survey it is found that the present area of the Paurashava is 1911.60 acres so, this existing area has considered as area for Urban Area Plan of the Paurashava.

9.4 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.

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

- Land Use Plan;
- Transportation and Traffic Management Plan;

- Drainage and Environmental Management Plan; and
- Proposals for Urban Services.

The Urban Area Plan is concerned only with the area where the greatest change is expected in the medium-term (10 years). For this area, it indicates how the Structure Plan policies might be pursued whilst also giving greater precision to the spatial dimension of the policies.

The outline of the Urban Area Plan gives guidance to the Paurashava as to how it can develop the roles i.e. to promote development, to co-ordinate development and to control development.

The Urban Area Plan has been divided into four main parts. These are preceded by four introductory chapters which explain the scope of the report and provide background to the Urban Area Plan including its relationship with the Structure Plan.

The Landuse Plan is the first chapter of Part-B of this report. It identifies approaches of planning, existing and projected landuse and proposed landuse. Requirement of land for different purposes, landuse zoning and plan implementation strategies are also included here.

The Transportation and Traffic Management Plan includes existing conditions of transportation facilities, intensity of traffic volume, degree of traffic congestion and delay, analysis of existing deficiencies, travel demand forecasting for next 20 years, future traffic volume and level of services and transportation development plan. Moreover, transportation system management strategy and plan implementation strategies are also presented in this plan.

Drainage and Environmental Management Plan is the third chapter of the Urban Area Plan. The chapter again subdivided into two parts – drainage part and environment part. Existing drainage network, land level and topographic contour, plan for drainage management and flood control and plan implementation strategies are the components of the drainage part. Existing environmental condition, solid waste and garbage disposal, environment pollution, water logging, natural calamities and localized hazards, plan for environmental management and pollution control and plan implementation strategies are the key issues of the environment part.

Fourth part of this report is Plan for Urban Services. Existing condition and demand of the Services, projection on existing and proposed Urban Services, Proposals for Urban Services and Implementation, monitoring and Evaluation of the Urban Services Plan are the key issues of this part.

CHAPTER-10

LANDUSE PLAN

10.1 Introduction

The Landuse Plan is the first element of the Mirzapur Paurashava Urban Area Plan. The Landuse Plan is being prepared for managing and promoting development over medium-term on the basis of the strategies set by the longer-term Structure Plan. Basically the Landuse Plan is an interpretation of the Urban Area Plan over the medium-term (10 years). The coverage of the Landuse Plan considers existing urban areas and their immediate surroundings with the purpose of providing development guidance in the areas where most of the urban development activities are expected to take place over the next 10 years. Delineation of the Landuse Plan area is based on the urban growth area identified as the Urban area Plan. It contains more details about specific programs and policies that require to be implemented over the medium-term.

10.1.1 Goals and Objectives

The Landuse Plan is the first element of the Mirzapur Paurashava Urban Area Plan. The Landuse Plan is being prepared for managing and promoting development over medium-term on the basis of the strategies set by the longer-term Structure Plan. Basically the Landuse Plan is an plan over the medium-term (10 years). The coverage of the Landuse Plan considers existing urban areas and their immediate surroundings with the purpose of providing development guidance in the areas where most of the urban development activities are expected to take place over the next 10 years. Delineation of the Landuse Plan area is based on the urban growth area identified as the Urban area Plan. It contains more details about specific programs and policies that require to be implemented over the medium-term.

10.1.2 Methodology and Approach

For the preparation of Landuse Plan, spatial information or data of all existing landuses from landuse survey was processed and stored under a comprehensive GIS database component. GIS software such as PC ArcView and PC ArcInfo (Version as suggested in the ToR) has been used for processing of physical feature survey data. Data was stored in WGS-1984 format (latitude, longitude, ellipsoidal height in meter) and later on it was projected and stored in Lambert Conformal Conic (LCC) projection system.

Landuse map has prepared applying the appropriate systematic command through GIS. Landuse is transferred on CS Mouza map in a scale of RF 1:1980. Landuse is divided into different categories and subcategories approved by the LGED. Landuse colours and legend were also fixed by the PD (Project Director) of the UTIDP, LGED. Legend contains, necessary themes, features using different symbolize schemes. As per suggestion of the LGED for fixed legend and approved format for landuse, Consultants have prepared existing landuse map.

Based on the existing landuse map, the landuse plan is being prepared according to the guidelines given by the ToR. The planning starts from formulation of strategies to issues like functional quality (meeting of space requirements for different functions, relation between functions etc., aesthetic quality, flexibility, deviation, public agency support etc.) for plan implementation. The planning in detail also covers the delineated existing urban area and the new urban area.

One of the objectives of this project was to prepare a comprehensive set of Plans for development of Mirzapur Paurashava. Accordingly the Plan comprises a set of policies including a broad framework for development promotion, control and coordination.

10.2 Existing and Projected Landuse

10.2.1 Introduction

Details of landuse include structures and uses of land in multi-dimensions. Every individual structure and its details were surveyed during the survey period and find out the uses of land. Most of the landuse information was collected through physical feature survey. Later on, landuse map is prepared showing different use categories.

In Mirzapur Paurashava, major landuse is agriculture (54.5%). Residential landuse occupies second position (23.4%) of the category. Only 0.64% land is using for commercial activity. Though, agriculture landuse dominates the Paurashava but, after the preparation of Master Plan, a radical change in physical development will proceed. In consideration of such concept, the Master Plan will be delighted in favour to save the agriculture land.

Kumudini Hospital, Bharateswari Homes and nearness to Dhaka City are the main determining factors of landuse change of this Paurashava. The Paurashava was developed as a growth centre long before, than a police station. In the year 2000 it is notified as Paurashava. Radical change of landuse in the Paurashava is not found. Before it known as Paurashava, agricultural domination was the key landuse. During last ten years, development the landuse scenarios remain near about same. But due to rapid urbanization and nearness to Dhaka City the scenario of physical development will change within very short time.

10.2.2 Analysis and Projection on Existing and Proposed Landuses

The Paurashava is not an ideal township due to unplanned development and agriculture domination. But as this area is very near to Dhaka city and it is a influencing factor so the present Master Plan has prepared considering the probable housing development and as a satellite town of Dhaka city. Growth of population is the natural trend and at the same time, expansion of non-agricultural use on agriculture land is also natural tendency of the people. This will be controlled through the Compact Township Development concept with the encouragement of vertical development. In case of government services, specific building may accommodate different type of offices.

Future landuse has been calculated according to the development control for the masses and the standard supplied by the LGED. In case of public land, existing use and khas land have been emphasized. Willingness and participation of the people in development activities considers as a key factor for future landuse demarcation. Slow change of landuse emphasizes rather than rapid change. Let the people do whatever he likes on own land – such concept should not be considered for future projection of landuses. Three parts of the projection are landuse change, landuse control and landuse restriction is included in the Master Plan. In any case, river front areas should be restricted for human habitation. As a result, river water will safe from contamination.

According to the physical feature survey, the study area has as many as 8800 structures. It is found that 76.11% of the structures are Katcha or Tin-shed which is the highest amount. So, there is awide scope of new development. Due to the absence of airport and helipad, vertical expansion of the building will be easily encouraged in anywhere of the Paurashava. New innovation for increase the agriculture production may be encouraged easily.

The People of the Paurashava are not quite aware about the modern facilities available to their door step. It is easier to inject guiding principles, modern facilities and long run development control for the Paurashava as well as for the inhabitants.

10.2.3 Summary Showing Distribution of Land for Existing and Proposed Landuse

After a detailed consultation between the PMO and the consultants of the project, the land use classification for the Paurashava Master Plan has finalized. The followings are the finalized land use zone classification recommended by the PMO.

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Government Office
- Education & Research Zone
- Agricultural Zone
- Waterbody
- Open Space
- Circulation Network
- Transportation Facilities
- Utility Services

- Health Services
- Community Facilities
- Urban Deferred
- Recreational Facilities
- Forest
- Beach
- Miscellaneous
- Heavy Industrial Zone
- Historical and Heritage Site
- Restricted Area
- Overlay Zone

First 16 land use zoning of the above list are available and proposed for Mirzapur Paurashava Master Plan and the last 7 will not be applicable for Mirzapur. 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 permitted use of land under different category of land has shown in the **Annex-1**.

Following is a short description recommended land use zones.

1) 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. This includes single family housing or multi-family residential. Zoning for residential use will permit some services. The existing net population density in the Paurashava is 64 person per acre. It is also observed that in the Paurashava new horizontal development is taking part mostly rather than the vertical expansion. Considering all these above facts, the consultants has proposed net density of 100 person/acre. In the year 2031, total population of the Paurashava will be 58997. Existing Considering the standard and scenario of mirzapur Paurashava it is calculated that around 589.97 acres of land is needed for residential by the year 2031. Existing residential area of the Paurashava is 447.4 acres but deu to consideration some practical situation around 558.58 acres of land has proposed for resideltial purpose of which 480.21 acres are general residential, 81.30 acres are planned residential including low income housing and resettlement Zone.

Table 10.1: Proposed new areas for residential development

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Residential				
Planned Residential Area	4	Baorkumarjani_167_01	174-232	63.00
		Baorkumarjani_167_02	765 paer, 766, 768 part, 770-842, 897-898, 1061-1118	
Low Income Houseing Area	4	Baorkumarjani_167_02	920 part, 921 part, 922-923, 924 part, 938 part, 944 part, 945951, 952 part, 988, 989 part, 990 part, 992-1002, 1006 part, 1007-1008, 1009 part, 1010-1013	17.87
Re-Settlement Residential Zone	4	Baorkumarjani_167_02	952 part, 953-957, 961-987, 989 part, 990 part, 991	18.45

2) Rural Settlement

Rural settlement includes the low dense residential area which is scattered within Paurashava boundary and rural in nature. This use will have only low density uses and only up to double story building will be permitted aiming to control the growth in this zone. Less service and facilities will be provided. The zone of rural settlement is intended to provide locations, where rural settlement including agriculture can be set up and function. Without creating hazards and changes to surrounding land uses. A total of 44.80 acres of land under this category.

3) 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". Commercial land includes established markets and areas earmarked for markets. The commercial zone is intended to provide locations which can function without creating hazards to surrounding land uses. Existing commercial area of the Paurashava is 12.18 acres. If standard of area calculate according to the population for the year 2031, total 64.88 acres commercial land will be needed. These commercial activities may be market / bazar, different services relevant with daily needs and shops (include General store, Grocery, Stationary, Confectionary, Medicine Shop, Sweet Meat Shop, Fruit Shop, Fresh Corner (Vegetable, fish, meat, egg, chicken, etc.) but in present situation pure commercial development may not possible that's way more mixed used land(residential-commercial) land has proposed. A total 38.72 acres of land has proposed under this category including new area for whole sale maket and 2 super market.

Table 10.2: proposed facilities for commercial development

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Commercial Facility				
Poura Super Market	5	Baorkumarjani_167_02	615 fpart, 616, 617 fpart, 618 part, 1274 part, 1276 part, 1277-1278, 1280 part, 1411 part	2.12
Super Market	3	Baorkumarjani_167_01	377 paer, 382 part, 383 part, 384 part	3.59
Wholesale Market	5	Baorkumarjani_167_01	450, 451 part, 464 part, 465 part, 466 part, 467f part, 468-469	2.36

4) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Mirzapur, 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 to any particular use. Existing land under this use is 35.4 acres. Mostly central area of the Paurashava is under mixed-use zone. Besides around 30 meter both side of the major road has proposed as mixed use zone. A total 94.24 acres of land has proposed under this category.

5) General Industrial Zone

General industries are the Green and Orange A categories of industries as per The Environment Conservation Rules, 1997. The general industrial zone is intended to provide locations, where general industrial establishments can be set up and function without creating hazards to surrounding land uses. In the Paurashava, industries occupied 3.62 acres land. For the year 2031 a total of 147.46 acres land should be provisioned according to the standard for industrial development. The land has been provisioned for agglomeration of those industries. Considering the present situation a total of 122.09 acres of land has proposed under his category including a new industrial zone.

Table 10.3: Proposed new area for industrial development

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Industrial				
Small Scale Industrial Zone	1	Postkamuri_102_00	50-52, 53 part, 54-55, 60-65, 67-95, 99-107, 108 part, 109 part	34.02
Cottage/ Agro based Industrial Zone	1	Postkamuri_102_00	180-204, 230-249	25.38
	2	Postkamuri_102_00	261-295, 299-312	26.02
	9	Kantalia_107_00	1-63, 72 part, 73 part, 74 part, 76-84, 87-91, 310, 314, 321	36.55

6) Government Office

Government Office zone covers all kinds of government offices including existing and proposed (e.g. proposed neighbourhood center) in the town. The existing government offices are Upazila Tahsil Office, Upazila Agriculture Office, Upazila Livestock Hospital, PDB Office, Police Station, Post Office, Paurashava Office, Sub-registry Office, T & T Office, Upazila Parisad Office. Existing land under this use is 4.7 acres. For the year 2031, 15.00 acres land will be needed. The administration includes Paurashava office, Police station, Tahsil office and other utility offices. The standard prescribed for Upazila Complex is 10 acres but the present area is 1.59 acres. Again, standard for Paurashava Office is prescribed 3 to 5 acres but new poura bhaban is under construction only on 0.38 decimal land. The planning team has proposed a new area under this category. Total proposed land under this category is 22.83 including new area for administration and extension of existing upazilla complex and other government areas.

Table 10.4: Proposed new area for government office

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Administration				
Administrative Area	4	Baorkumarjani 167 01	284-307, 309, 321-322, 325 part, 331-337, 338 part, 339	13.80

7) Education & Research Zone

Educational & Research zone refers to mainly education & research and other social service facilities as listed in Table-A.13, ANNEX-A, and conditional uses as listed in Table-A.14, ANNEX-A. Mostly educational institutes such as primary school/kindergarten, secondary school, college and vocational training institute are in this group. Existing land under this use is 17.5 acres. For the year 2031, more 104.30 acres land will be needed if standard considers for this purpose. A total of 94.05 acres of land has proposed under this category including an university, a vocational institution, a high school, Two primary school and extension of existing area of educational institution.

Table 10.5: Proposed new facilities for educational development

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Educational Institution				
University	4	Baorkumarjani_167_02	902-903, 904 part, 905 part, 906 part, 907-914, 915 part, 916 part, 918-919, 920 part, 921 part, 925 part, 1004-1005, 1006 part, 1009f part, 1014-1057, 1058 part, 1059 part, 1060 part, 1413 part	29.77
Vocational Training Institution	1	Postkamuri_102_00	114 part, 115 part, 116 part, 626 part	5.62

High School	5	Baorkumarjani_167_02	1302, 1303 part, 1304-1306, 1307 part, 1310 part, 1311-1313, 1314 part, 1316	5.34
Primary School-1	1	Postkamuri_102_00	164-166, 173-176	2.19
Primary School-2	4	Baorkumarjani_167_02	851-852, 859, 893 part, 894-896	3.10

8) 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. The Paurashava has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. Agriculture zone is primarily meant for agriculture; land uses related to it and land uses that support it. Existing total area under agricultural use is 1041.1acres. After implementation of the Urban Area Plan up to the year 2031, it will be reduced. A total of 314.05 acres of land has proposed under this category.

9) Waterbody

These will act as water retention areas which include ponds, water tanks, natural khals and irrigation canals. 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 0.30 acres will be preserved as the water retention ponds. In the Paurashava, total water body is 183.86 acres and in urban area plan 169.88 acres land has proposed under this category.

10) Open Space

Open space includes play field/play ground, park, neighborhood park, community/reserve forest, tennis ground and open tourism components. At present there is 5.5 acres of land under this category. According to the prescribed standard a total of 120.17 acres of land is needed up to the year 2031. A total of 93.95 acres of land has proposed under this category including Community Park, stadium, central park, shisupark and playgrounds.

Table 10.6: Proposed new facilities for open space development

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Open Spce				
Stadium/Sports Complex	4	Baorkumarjani_167_02	1120-1163	23.81
Central Park	2	Baimhati_103_00	52 part, 53-63, 64 part, 65-67, 79-81	12.17

Paura Shisu Park	5	Baorkumarjani_167_02	693 part, 694-711, 712 part, 714 fpart, 715 part, 717 part, 718 , 1243, 1245-1254, 1255 part, 1256-1260, 1310 part, 1314 part, 1315 part, 1320-1321	23.63
Community Park-1	4	Baorkumarjani_167_01	93 part, 94 part, 98 part, 99-101	2.14
Community Park-2	5	Baorkumarjani_167_01	517, 520-522, 523 part, 524 part	2.24
Community Park-3	6	Baimhati_103_00	356 part, 357-358, 359 part	1.45
Community Park-4	9	Kantalia_107_00	135, 136 part, 137-139, 140 part	2.75
Community Park-5	5	Baorkumarjani_167_02	686 part, 1260 part, 1270, 1272, 1275, 1303 part	1.39
Playground-1	1	Postkamuri_102_00	97 part, 121 part, 154 part, 155-156, 157 part, 158 part, 161	3.29
Playground-2	5	Baorkumarjani_167_01	503-511, 512 part, 513, 514 part, 515 part, 516	4.73
Playground-3	9	Kantalia_107_00	185, 186 part, 197 part, 199-207, 209-210	3.73
Playground-4	5	Baorkumarjani_167_02	1262 part, 1363-1266, 1267 part, 1268 part, 1269	3.01

11) Circulation Network

Road network including primary, secondary, tertiary and local access road falls under this category. In the Paurashava, 111.70(5.84%) acres land is under regional and local roads. More land will be needed for provisioning proposed roads up to the year 2031. About 10-15% of the total land may be considered for road network. A total of 238.55 (12.47%) of land has proposed under this category.

12) Transportation Facilities

Under transportation facilities, both transport and communication services are considered. This category includes, bus terminal/ stand, filling station, garage, passenger shed, ticket counter, transport office, etc. In the Paurashava, 6.83(0.32%) acres land is under this use. For the year 2021, 10.18 acres land will be needed according to the standard. Including a bus terminal, truck terminal, tempo stand total 11.90 acres land has proposed under this category.

Table 10.7: Proposed new transportation facilities.

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Transportation				
Bus Terminal	1	Postkamuri_102_00	626 part	0.21
	3	Postkamuri_102_00	637 part	1.68

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
		Baimhati_103_00	657 part	
Track Terminal	5	Baorkumarjani_167_01	482 part, 483 part, 489, 490 part, 491-492, 493 part, 539 part, 540 part, 541 part	2.87
Tampo Stand-1	2	Baimhati_103_00	106 part	0.30
Tampo Stand-2	9	Kantalia_107_00	70 part, 71 part, 72 part, 73 part, 74 part	0.55

13) Utility Services

A number of utility establishments are required in a town to serve the people. Utility services include Overhead Tank, Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal, Water Pump House, Water Reservoir, Water Treatment Plant, Waste transfer station etc. A total of 7.40 acres of land has proposed under this category.

Table 10.8: Proposed new utility services.

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Utility & service facility				
Waste Dumping Ground	5	Baorkumarjani_167_02	1171 part, 1173, 1174 part, 1175 part, 1183, 1184	3.85
Slughter House	3	Baimhati_103_00	155	0.08
Public Toilet-1	1	Postkamuri_102_00	122 part, 153 part	0.03
Public Toilet-2	2	Baimhati_103_00	103 part	0.10
Public Toilet-3	6	Baimhati_103_00	456 part	0.10
Public Toilet-4	9	Kantalia_107_00	64, 66-67	0.38
Waste Transfer Station-1	1	Postkamuri_102_00	122 part, 124 part	0.67
Waste Transfer Station-2	2	Baimhati_103_00	103 part	0.27
Waste Transfer Station-3	6	Baimhati_103_00	456 part	0.19
Waste Transfer Station-4	9	Kantalia_107_00	70 part, 72 part	0.57
Water Station-1	1	Postkamuri_102_00	617 part	0.06
Water Station-2	2	Baimhati_103_00	54 part, 55 part	0.51

14) Health Services

The zone of health care facilities is intended to provide locations, where health facilities including upazila health complex and other maternity clinic can be set up and function. Existing land under this use 19.56 acres. For the year 2031, 21.80 acres land will be needed if standard considers for this purpose. Including a area for hospital zone a total of 21.54 acres of land has proposed under this category.

Table 10.9: Proposed facilities for residential development

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Helath Facilities				
Hospital Zone	4	Baorkumarjani_167_01	49 part, 50-51, 102 part, 103-107	1.94

15) Community Facilities

All community facilities, including funeral places (i.e. graveyards) and other religious uses denoted as community facilities. At present, 5.24 acres of land is under this category. There is no community center is in the Paurashava. The existing poura bhaban will shift near upazilla complex and the present area will use as community centre. Standard for post office will be 0.5 acre per 20000 populations. According to the standard, one police station may be covered 3 to 5 acres land for an Upazila. There is a formal poura graveyard in the Paurashava which has suggested for nessary expansion. One of the important philosophies of this plan is provisioning compact township development. Based on this concept, the Ward Councilor's Office building may be used including family planning clinic, Union Parishad Office and club. Land for such type of activities is not prescribed in the plan, land only allocated for Ward Councilor's Office building. Upto 2031 total land required under this category is 23.45 acres. A total of 21.13 acres of land has proposed under this category.

Table 10.10: proposed new community facilities.

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Community Facilities				
Fire Service	1	Postkamuri_102_00	47-49, 53 part	0.89
Poura Graveyard	3	Baorkumarjani_167_01	393 part, 438 part	1.07
	6	Baimhati_103_00	252 part, 253-257	2.89
Community Center-1	3	Baorkumarjani_167_01	387 part, 388 part	0.09
Community Center-2	8	Andhora_105_00	137-139	1.14
Central Mosque	6	Baimhati_103_00	321, 322 part	0.91
Poura Eidgah	4	Baorkumarjani_167_01	29-30, 279-283	2.46
Eidgah	8	Andhora_105_00	205-208	2.84
Cremation	3	Baorkumarjani_167_01	438 part	0.64
Ward Center	1	Postkamuri_102_00	606 part	0.16
	2	Postkamuri_102_00	554 part	0.16
	3	Postkamuri_102_00	637 part	0.17
	4	Postkamuri_102_00	751 part	0.18
	5	Baorkumarjani_167_01	414 part, 424 part	0.16
	6	Baimhati_103_00	534 part, 585 part	0.16
	7	Mirzapur_104_00	150 part	0.17
	8	Andhora_105_00	130 part	0.16
	9	Kantalia_107_00	260 part	0.19

16) Urban Deferred

According to planning standard provided by LGED seeks upto 10 percent of the total build up area. The total area under this use has been proposed as 29.59 acres (1.55%) of the existing Paurashava area that include existing and proposed land uses. A portion of this zone may use for housing of the poor, disadvantages and refugee for climate change and other disasters to fulfil National Housing Policy, Disaster Policy and other policy prescriptions of the Government. The following are permitted Uses within the Urban Deferred (UD) 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.

Table 10.11: proposed area for urban defferd.

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Urban Deffard				
Urban Defferd-1	2	Postkamuri_102_00	370-387, 390-392, 473-467, 478-491	13.61
Urban Defferd-2	5	Baorkumarjani_167_01	427 part, 429f part, 430-431, 432 part, 448 part, 451 part, 452, 454, 464 part, 465 part, 466, 495-500, 501 part, 530-538, 439 part, 540 part, 541-545, 673-645	15.91

17) 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 don't conform to surrounding land uses. No other use except the use of overlay site is permitted in this zone. There is no scope for permitting or conditionally permitting the functions or uses as the zone itself is an overlay. The present and proposed use of the zone will continue until the next zoning regulation is imposed on those specific parcels of land.

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

Environmental Protection Area

Environmental protection overlay areas refer to the areas that need to be preserved protected and manage for their natural resources. The purpose of this zone is to protect the areas of environmentally sensitive, areas critical to the ecosystems.

Graveyard Sites

The sites cover existing graveyards that imposes restriction on building or acquisition of such sites for their religious and emotional value.

Sports and Recreation Sites

Some existing open spaces, water bodies, etc. are delineated as overlay sites in order to protect them in consideration of their future need. These places are meant exclusively for sports and recreation.

Special Use Sites

There are some special use areas that need to be protected. Special and temporary events like, fair, hat etc. may be permitted in this zone. The purpose for delineating this zone is to preserve them and make them be able to render services to the present community and future generations.

Table 10.12: Proposed landuse of the Mirzapur Paurashava

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	314.05	16.42
Circulation Network	238.55	12.47
Commercial Zone	38.72	2.02
Mixed Use Zone	94.24	4.93
Community Facilities	21.13	1.10
Education and Research	94.05	4.92
General Industrial Zone	122.09	6.38
Governmental Services	22.83	1.19
Health Services	21.54	1.13
Open Space	120.30	6.29
Recreational Facilities	0.03	0.00
Urban Residential Zone	480.21	25.11
Rural Settlement	44.80	2.34
Planned Residential Zone	81.30	4.25
Urban Defferd	29.59	1.55
Utility Service	7.40	0.39
Transport & Communication	11.90	0.62
Water Body	169.88	8.88
Total	1,912.60	100.00

Source: Landuse Survey, 2009 and proposed by the Consultant.

10.2.4 An estimate on the Requirement of Land for Different Landuses

The Paurashava is not an ideal township due to the agriculture domination. Agriculture based township should be encouraged in the preparation of Master Plan. Growth of population is the natural trend and at the sametime, expansion of non-agricultural use on agriculture land is also natural tendency of the people. This will be controlled through the Compact Township concept with the encouragement of vertical development. In case of government services, specific building may accommodate different type of offices.

Future landuse have been calculated according to the development control for the masses and the standard supplied by the LGED. In case of public land, existing use and khas land may be emphasized. Willingness and participation of the people in development activities may be the key factor for future landuse demarcation. Slow change of landuse has emphasized rather than rapid change. Let the people do whatever he likes on own land – such concept should not be considered for future projection of landuses. Three parts of the projection are landuse change, landuse control and landuse restriction has been included in the Master Plan. In any case, river front areas should be restricted for human habitation. As a result, river water will safe from contamination.

Projection of landuse depends on the growth of population. After population projection it is found that, population of this Paurashava will be 58997 the year 2031. Projection on landuse also depends on present trend of migration.

In case of landuse change, standard given by the LGED according to the projected population and area for the specific service is being calculated. Minimum use of agriculture land for physical development is emphasized in the plan. The vertical expansion will be emphasized rather than horizontal. In case of road network planning, missing links will get priority rather than new roads. For the development of pisciculture, most of the ponds and ditches may be preserved, in some exceptional cases; small number of ditches may be used for physical development activities. Landuse control and landuse restriction will be imposed by the Paurashava according to the prescribed plan.

The standards presented in the Table-10.13 are fairly generous and considered for the Paurashava (including extended areas). Adjustments have to be made in the core areas and a time line may be set to gradually achieve these standards over a five, ten and fifteen years period.

Commerce

In total, 12.18 acres commercial land is in the Paurashava.

Determination of Standard: According to the standard on Wholesale Market/bazar, 1 acre land is to be provided for every 10,000 populations and 1 acre land for every 1000 population for Retail sale market. Again, 0.25 acre of land is being standardized for per corner shop, 1 acre per neighbourhood market, 1.5 to 2.5 acre per super market and 1 acre per 25,000 populations for bank, hotel, garage and godown. The study team has

considered 58997 populations for the study area up to the year 2031. For this population total number of required wholesale market/bazar stands at (58997/ 10,000), means 5.90 acres land is being needed up to the year 2031 and for retail sale market, 58.98 acres.

Recommendation / Forecast: In the planning area already has retail sale market including wholesale market/bazaar. The study team recommends a new area for whole sale market and super market under this category. Necessary planning permission and design criteria will be provided by the Paurashava. The lands may be allowed to use for other commercial purposes like bank, hotel and godown. No new area has proposed for commercial zone probable areas are earmarked as mixed use area so that they may use this land for residential/commercial purpose according to the demand.

Industry

In the Paurashava, 3.62 acres land is under industrial development.

Determination of Standard: According to the standard, land is being allocated as 1.5 acres for every 1000 populations in case of small-scale industry, 5 acres per 10000 populations for heavy industry and service industry and 1 acre per 1000 population for cottage/agro-based industry. The study team has estimated 58997 populations for the planning area up to the year 2031. For this population total required land for industry stands at 88.48 acres land for small-scale industry, 58.98 acres for cottage / agro-based industry up to the year 2031.

Recommendation / Forecast: The study team observed that in the Paurashava all the industries are developed scatteredly. It is recommended to develop a industrial area of cottage industry along the north side of Dhaka –Tangail highway and another area at opposite site for cottage industries which recommend planned formation including grouping of industries on different locations. Necessary planning permission will be followed by the Paurashava. The lands, however, should not be allowed to use other than industry. The industries which are located dispersely should be accommodated within the prescribed industrial areas. Only agrobased and small industries are proposed for this area.

Primary School

Determination of Standard: According to the standard on primary school, 1 school with 2 acres of land is to be provided for every 5,000 population. The study team has estimated 58997 populations for the planning area up to the year 2031. For this population total number of required primary school stands at (58997/ 5,000), means 11 schools with 22 acres land will be needed up to the year 2031. The planning area already has 17 primary schools including nursery/kindergarten and BRAC School with 5.17 acres of land.

Recommendation / Forecast: According to the standard there is no need for new primary school but the existing area of school has proposed for extension. With increasing of enrollment, existing primary schools may be expanded vertically. Total land demand of land under this category is 23.59 acre.

Secondary School

There are 7 secondary schools in the planning area covering together 3.65 acres land. Average area of a secondary school is 0.46 acre.

Determination of Standard: According to standard, 5 acres of land may be provided for every 20,000 population for one secondary school. The projected population of the planning area is 58997 up to the year 2031. Therefore, as per standard the planning area needs $(58997/20,000)$ 3 secondary school with an area of 15 acres up to the year 2031. Number of schools already exceeds the requirement.

Forecast / Recommendation: As per above standard, no more secondary school is needed but the existing areas of the school may be expanded. Total land demand of land under this category is 14.75 acre.

Map 10.1: Landuse Plan of Mirzapur Paurashava

College / Higher Secondary School

There are three colleges in the planning area. The existing college includes a total of 8.57 acres of land.

Determination of Standard: The standard for college is 10 acres per 20000 populations. So there is a need of 3 with 30 acres of land colleges as per planning standard in 2031.

Recommendation / Forecast: According to the standard there is no need for new college but the existing area of college has proposed for extension.

Vocational Training Centre

An important component for the rural masses is vocational training. Multi-dimensional training may be offered through the centre. People are being benefited directly and prepare him as a technical person enjoying training from vocational centre. At present, there is no vocational training centre in the Paurashava.

Determination of Standard: The prescribed standard for vocational training centre is 5 to 10 acres for Upazila.

Recommendation / Forecast: The study team recommends an area for vocational training centre establishment with an area of 5 acre in Ward 1 at the northern side of Dhaka-Tangail highway. The lands, however, should not be allowed to use other than vocational training centre.

Health Facilities

At present, seven health establishments are in the Paurashava includes 20.76 acres of land of which kumudini hospital consists 19.59 acres of land (including water body 37,7 acres). There is no upazilla helth complex in the Paurashava area peoples are mainly dependent on kumudini hospital.

Determination of Standard: The prescribed standard for health facilities are 10 to 20 acres for Upazila Hospital and 1 acre per 5000 population for Health centre/Maternity clinic. According to the standard, up to the year 2031, (58997 / 5000) means 11.80 acres of land will be needed for Health centre/Maternity clinic.

Recommendation / Forecast: As the area is sufficient but with consultation with the poura authority and local elites the study team recommends an area of 1.94 acre for new health facilities in ward no.4 of the Paurashava area.

Open Space

Open space includes play field/play ground, park, neighborhood park, community/reserve forest, tennis ground and open tourism components. At present there is 5.5 acres of land under this category.

Determination of Standard: The standard recommends 3 acres per 20000 populations for playground, 1 acre per 1000 population for park and 1 acre per 1000 population for

Neighbourhood Park. According to the prescribed standard a total of 145.6 acres of land is needed up to the year 2031.

Recommendation / Forecast: The study team recommended play field, neighborhood park depending on availability of open land. Community forest and tourism development also prescribed without considering any standard. Amount of land for those components have been considered through discussion with the stakeholders.

Community Facilities

Community facilities include Community centre, Graveyard/Burial ground, Electric sub-station, Water supply pump, Post office, T&T office, Public library, Eidgah, Mosque/Church/Temple, Police station, Police box/outpost, Fire service station, Waste disposal site, club, etc. Existing land under community facilities is 5.5 acres.

Determination of Standard: The standard suggests 1 acre per 20000 for the community centre, Graveyard/ Burial ground and Eidgah. Again, 0.5 acre per 20,000 populations prescribed for Mosque/Church/Temple, Post office and T&T, 1 acre per 20,000 populations for Fire service station and 3–5 acres per Upazila Headquarters and police station. Upto 2031 a total of 23.45 acres of land are needed.

Recommendation / Forecast: The existing poura bhaban will shift near upazilla complex and the present area will use as community centre. There is a formal poura graveyard in the Paurashava which has suggested for nessary expansion. A new Waste Dumping Ground, area for water supply activities and a slatter house has suggested witin the Paurashava area.Besides ward center and other necessary community facilities were suggested.

Administration

In the Paurashava, 4.7 acres land is under administrative use.

Determination of Standard: According to the standard for administrative land, 10-15 acres of land is to be provided for every Upazila, 3 to 5 acres per Paurashava office. Total required land for administration stands at15 acres.

Recommendation / Forecast: The planning area already has one Upazila office, one Paurashava office and other govt. offices. Therefore, recommendation for a new administrative area is prescribed.

Residential

In the year 2031, total population of the Paurashava will be 58997. Existing residential areas of the Paurashava is 447.4 acres. All type of residential lands is included with such amount of land.

Determination of Standard: The standard recommends in Table-10.13 is 100-150 persons per acre (gross). Again, it is recommended 200 persons per acre fore real estate or housing areas both for public and private. Considering the standard and scenario of

mirzapur Paurashava it is calculated that around 589.84 acres of land is needed for residential by the year 2031.

Recommendation / Forecast: Additional land is needed up to the year 2031

Conservation and harvesting of rain water in Government Blocks, Commercial Buildings and Institutional Buildings. They should prove required facilities and infrastructure for conservation and harvesting of rain water available to them.

Following requirements are optional and should be provided in residences depending on site conditions and as per case to case basis.

Terrace Water Collection: The terrace shall be connected to a sump or well through filtering tank by PVC pipes. A valve system shall be incorporated to enable the first part of the rain water collected to be discharged to the soil if it is dirty and make arrangements to collect subsequent discharge.

Open Ground: Whenever there is open ground a portion of top soil should be removed and replaced with sand to allow percolation of rain water.

Table 10.13: Existing and proposed landuses including standard

Types of Land Uses	Recommended Standard	Existing (acre)	land requirement upto-2031	Proposed land including existing
Residential		447.4	589.97	561.71
General residential	100 persons/1 acre	-	589.97	459.25
Real Estate – Public/Private	200 population/ 1 acre	-	-	81.30
Rural Settlement	-	-	-	44.41
Roads		113.97	10-15% land	238.55
Paurashava primary roads	150-100 feet	-	0.00	24.79
Paurashava secondary roads	100-60 feet	-	0.00	89.42
Paurashava local roads	40-20 feet	-	0.00	87.38
Education		17.51	98.47	94.05
Nursery	0.5 acre/10,000 population	5.11	5.90	18.39
Primary School/ kindergarten	2.00 acres/5000 population		23.59	
Secondary/High School	5.00 acres /20,000 population	3.46	14.75	15.17
College	10.00 acres/20,000 population	7.91	29.49	21.46
Vocational Training Centre	5 -10 acres / Upazila	-	10.00	5.62
Other	5.00 acres / 20,000 population	1.02	14.75	33.31
Open Space& Recreation		61.68	145.59	120.33
Play field/ground	3.00 acres/20,000 population	-	8.85	11.75
Park	1.00 acre /1000 population	-	58.98	84.58
Neighborhood park	1.00 acre /1000 population	-	58.98	-
Stadium/sports complex	5 -10 acres/Upazila HQ	-	15.83	23.81
Cinema/ Theatre	1.0 acre /20,000 population	-	2.95	0.03

Types of Land Uses	Recommended Standard	Existing (acre)	land requirement upto-2031	Proposed land including existing
Health		19.56	21.80	21.54
Upazila health complex/hospital	10-20 acres/Upazila HQ	19.56	10.00	19.56
health centre/Maternity clinic	1.00 acre/ 5,000 population	-	11.80	1.97
Community Facilities		5.24	23.45	21.13
Mosque/Church/Temple	0.5 acre /20,000 population	-	1.47	0.91
Eidgah/	1.0 acre/20,000 population	-	2.95	5.30
Graveyard	1.00 acre /20,000 population	-	2.95	3.96
Community centre	1.00 acre /20,000 population	-	2.95	1.23
Police Station	3 – 5 acres/Upazila HQ	-	7.91	-
Police Box/outpost	0.5 acre/ per box	-	0.79	-
Fire Station	1.00 acre/ 20,000 population	-	2.95	0.89
Post office	0.5 acre /20,000 population	-	1.47	-
Commerce & Shopping		12.18	64.88	38.72
Wholesale market	1.0 acres/ 10000 population	-	5.90	2.36
Retail sale market	1.0 acres/ 1000 population	-	58.98	-
Corner shops	0.25 acre/per corner shop	-	0.00	-
Neighborhood market	1.00 acre/per neighborhood market	-	0.00	-
Super Market	1.50-2.50 acres/per super market	-	0.00	5.71
Mixed Use Zone				94.24
Industry		3.58	147.46	122.09
Small scale	1.50 acres /1000 population	3.58	88.48	87.94
cottage/agro-based	1.00 acres /1000 population	-	58.98	34.02
Transportation		6.83	14.50	11.90
Bus terminal	1.0 acre /20,000 population	-	2.95	1.89
Truck terminal	0.50 acre /20,000 population	-	1.47	2.87
Launch/steamer terminal	1.00 acre /20,000 population	-	2.95	-
Railway station	4.00 acre / per Station	-	6.33	0.85
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	-	0.40	-
Passenger Shed	0.25 acre /one baby taxi/tempo stand	-	0.40	-
Railway & Others	-	-	-	6.28
Administration		4.68	15.00	22.82
Upazila complex	15.00 acres	1.59	10.00	1.59
Paurashava office	3 – 5 acres	0.38	5.00	0.38

Types of Land Uses	Recommended Standard	Existing (acre)	land requirement upto-2031	Proposed land including existing
Others	-	2.71	-	20.85

10.3 Landuse Proposals

10.3.1 Introduction

Basically, landuse proposal involves with the existing conflicting landuses. Those conflicts may be raised due to different causes. Inhabitants of the Paurashava are not aware about the land level and slope direction of the Paurashava. Without knowing this information they are raising their land up to a mark and constructing permanent structure. As a result, water logging problem during rainy season is all over the residential areas.

Due to the absence of development control, the core area of the Paurashava is already developed as mixed-use area. Commercial, residential, administrative, educational uses are admixture in the core area. Zoning provision, landuse control should not be enforced in such type of the core area.

At present, the Paurashava is a natural developed area. Rearrangement of the existing use is not possible. Land acquisition for expansion of road (to increase the width of road) will create socio-political hazards. As a result, the roads in the core area remain same as today.

For water supply network, construction of sewerage facilities and removal of fire hazards, at least 24 feet width road is necessary. In the Paurashava, except National Highway, such type of road is absent. New road will form new township on agriculture land. These processes will washout agriculture domination from the Paurashava. Compact Township will be effective for new formation, not for the mixed-use areas where most of the roads are 8 to 10 feet width.

10.3.2 Designation of Future Landuse

- Identification and development of sites for government housing. After preparation and implementation of the master plan, different types of government activities will be increased. Residential accommodation will be needed for those government employees. A site for government housing should be reserved. National Housing Authority is appropriate for performing this responsibility.
- Encourage central government to decentralize industrial development from Dhaka. Those facilities may be relevant with specific agro-product such as jute for jute industry, cane and bamboo for handicrafts, poultry and horticulture farming, export-oriented vegetation, etc. Different authorities such as Agriculture Development Corporation, Small and Cottage Industries Corporation, Directorate of Livestock and Poultry may be the responsible authority.

- Provision of sites and services schemes for the low and lowest income groups. The Paurashava authority and Schedule Bank may be appropriate for performing these responsibilities. Housing for low-income group, distribution of khas land among the lowest-income group and loan with low-interest for house construction may be the appropriate schemes.
- Upgrading of slum and squatter settlements. Mostly, the vulnerable groups are affected by river erosion, form slum and squatters on public land. If possible, those formations should be upgraded providing basic utility services. It is better, in Paurashava context, the people are living in the slum and squatters, rehabilitate them with the provisioning of housing for lowest-income group. The Paurashava and NGOs can perform such role.
- Location for new industrial development. The industrial area prescribed in the Landuse Plan will be developed provisioning all utility services. The authorities relevant with those utility services will perform the responsibilities. At first, the polluting industries (water and noise) from their original location should shift to the new location. Imposition of taxes, tax holiday and subsidized taxes may be imposed by the Paurashava for such rearrangement.
- Monitoring the principal aspects of community facility provision in the Paurashava. Wholesale or retail market, specialized clinic, etc. are under this community facility. When any difficulties will be encountered in case of suitable site selection considering demand of the inhabitants, the Paurashava will perform the lead role.

10.3.3 Landuse Zoning

Zoning is a classification of landuses that limits what activities can or cannot take place on a parcel of land by establishing a range of development options. Zoning has been defined as an action through legislation provided to a development authority / Paurashava to control a) heights to which buildings may be erected; b) the area of lots that must be left un-built upon; and c) the uses to which buildings may be constructed.

Area / Use Zoning

The objective of area zoning is to specify which types of landuse are considered appropriate for different areas or 'zones', and it therefore indicates the planning control objectives of the authority or municipality for its administrative area. The authority is obliged under the planning acts to designate in its development plan objectives for the use solely and primarily of particular areas for particular purposes.

According to the landuse table, area zoning is divided as agriculture, residential, commercial, industrial, administration and institutional. The zone has further segmented and detailed in the Ward Action Plan. A detailed scenario as plot-to-plot basis is also presented with the calculation of covered area in the landuse plan.

Density / Bulk Zoning

Aim of the density zoning is to provide an acceptable density which is related to the designed facilities and amenities especially for the residential areas. This will ensure a healthy community and enjoyable community life. In a particular area, how much number of buildings will be permitted and constructed, the decision is under the density zoning. Provisioning of setback rule and percent of land uses for different purposes is the prime consideration of density zoning. The proposed percentage mentioned in the landuse table is the only tool to control building density in the Paurashava.

Height Zoning

This zoning provides height limits for structures and objects of natural growth and standards for use of an area which encourage and promote the proper and sound development of areas. It is also applicable to height restrictions for flight safety around airports or other similar purposes.

For effective development control, in addition landuse zoning individual facility and the structures therein is complied certain regulations imposed to ensure desirable end. Relation between ground cover of buildings and the land parcel that house it, minimum setback of building from the adjoining plot boundaries and the maximum floor area that can be constructed in relation to plot size and the connecting road among many other details, are controlled by Building Construction Rules, 1996. Besides, Bangladesh National Building Code focuses on the appropriate materials, construction method, building safety and associated issues. In absence of Paurashava Master Plan the above rules did not have scope for area specific rules and hence were common for the whole development process.

According to the Building Construction Rule, 1996, minimum permissible road width for obtaining plan permission is to shown, construction is allowed on plots connected by narrow roads provided the plot owner leaves formally half of the addition area needed to make the road 6m for widening the road to the permitted minimum. Perhaps the intension behind this was that gradually the whole road would rise up to 6m in short time and it is true for new areas. But congested unplanned area represents an alarming picture. In commercial area, most of the plots are occupied almost entirely by pucca structures covering the property line connected by the narrow pathways. Those owners did not bother for Paurashava's plan permission and a handful of those who obtained plan permission did not care to follow them. It is suggested that existing rules need to be modified to tackle the environmental problems created by illegal building construction.

10.4 Plan Implementation Strategy

10.4.1 Land Development Regulations to Implement the Landuse Plan

Effective implementation of a plan is the most important part of the planning process. The process of Implementation needs to be carried out with care and efficiency in order to produce best outcomes. This chapter highlights various measures needed to be taken in order to implement the landuse plan proposals.

Implementation of the Landuse Plan depends on successful pursuit of the policies specified in the Structure Plan. Those policies represent a significant challenge face with the responsibility of planning and managing the development of the Paurashava area. However, at present no authority is responsible for planning and managing physical development activities in the Paurashava and no regulation except Local Government (Paurashava) Ordinance, 2009 for controlling physical development. This poses a serious constraint to the implementation of the Landuse Plan and in fact any other form of development plans.

The factors that have been taken into account in deciding the priority include such things as – the importance of the issue that the policy addresses, its potential impact on the lives of the population, the ease with which it can be implemented, its urgency and its interdependence with other policies.

Prior to introduction of the regulations to implement the landuse plan, legislative involvement is recommended here.

- a) To control the air, water, noise and soil pollution, Conservation of Environment and Pollution Control Act, 1995 (Act No. I of 1995) was enacted. In the Paurashava, there is no authority for enforcing the provisions prescribed in the said Act. The pollution related with the implementation of landuse component may be controlled with this Act.
- b) Impose control on all type of buildings in the Paurashava according to the setback rule prescribed in the Building Construction (Amendment) Rules, 1996 (Notification No. S. R. O. No. 112-L/96). Building permission for extended areas shall be according to the landuse provision prescribed in the plan. Any permission for building construction, front road width shall not be less than 16 ft. and the construction must follow the Building Construction (Amendment) Rules, 1996.
- c) Haphazard development of commercial activities is the general scenario of the Paurashava. It is necessary to impose control on commercial activities provisioned in the Shops and Establishments Act, 1965 (Act No. VII of 1965).
- d) In case of man-made canal, regulations prescribed in the Canal and Drainage Act, 1873 (Act No. VIII of 1873) is the best weapon. For the linking of canal with others and river considering drainage facilities the Act may be enforced.
- e) For the conservation of archeological monuments or structures or historical development the Ancient Monuments Preservation Act, 1904 (Act No. VII of 1904) may be enforced. Archeological Department of Bangladesh and Paurashava authority through a partnership process may preserve such type of development.
- f) To control air pollution due to brick burning with the establishment of brick field, Brick Burning Control Ordinance, 1989 (Ordinance No. VIII of 1989) is the appropriate regulation. The Paurashava authority may enforce this Ordinance with the authorization given by the government to him.
- g) To control the medical practitioner, establishment of private clinics and pathological laboratories, the statute named Medical Practice, Private Clinics and Laboratories (Regulation) Ordinance, 1982 (Ordinance No. IV of 1982) was enacted. For efficient enforcement of the Ordinance, the Paurashava authority may execute the Ordinance with the authorization of government.

- h) The Paurashava will have to exercise strictly Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000 (Act No. XXXVI of 2000) to some specially important areas like, riverfront and water bodies, drainage channels, low land below certain level, designated open space, etc. Development restrictions are needed around security and key point installations. The provision of restriction will strengthen the power of the plan to safeguard its development proposals and landuse provisions.
- i) The government is authorized for establishment of hat and bazar with the acquisition of land through the statute named Hat and Bazar (Establishment and Acquisition) Ordinance, 1959 (No. XIX of 1959). In case of private hat and bazar, a management body is being empowered through the Bangladesh Hats and Bazars (Management) Order, 1973 (P.O. 73/72). The Paurashava authority is also empowered establishing hat and bazar in his jurisdiction through the Local Government (Paurashava) Ordinance, 2009. Coordination may be framed among the government (Upazila Parishad), Paurashava and private owner for the establishment, development and management of the hat and bazar located in the Paurashava premises.
- j) In the Paurashava premises, industrial development is controlled by the Bangladesh Cottage Industries Corporation through Bangladesh Cottage Industries Corporation Act, 1973 (Act No. XXVIII of 1973), Industrial Development Corporation through East Pakistan Industrial Development Corporation Rules, 1965 (No. EPIDC / 2A-2/63/354) and Factory Inspector through Factories Act, 1965 (Act No. IV of 1965). Locational aspects and issuing of trade license is controlled by the Paurashava authority. A joint coordination cell among those four authorities may control the establishment of factories and industries in the Paurashava.
- k) In the Paurashava, for rain water harvesting, some specific ponds / tanks will needed to be preserved. A number of derelict tanks may be improved through tank improvement project and in this case Tanks Improvement Act, 1939 (Act No. XV of 1939) will support the Paurashava is regulatory aspects.
- l) Except Khas land, a considerable amount of public land in the Paurashava may be identified as fallow land or unproductive land. In regulatory term those lands are considered as culturable waste land and those lands are being fallow during five consecutive years. Those lands may be utilized under the guidance of Culturable Waste Land (Utilization) Ordinance, 1959 (Ordinance No. E.P. XIII of 1959).
- m) The Paurashava should raise its efforts on the imposition and realization of betterment fees to raise its income. In this case, East Bengal Betterment Fees Act, 1953 may be enforced.

10.4.2 Implementation, Monitoring and Evaluation of the Landuse Plan

Implementation through Multi-Sectoral Investment Programme: 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 Programme (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 Landuse 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: Landuse 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 Landuse Plan. 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 efficiency 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 Landuse Plan would simply be tools for guiding and encouraging the growth and development of the Paurashava in a preferred manner. In a rapidly changing urban environment, the Landuse 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 Landuse Plan be made a legal requirement.

For implementation of the various programme components of the Landuse 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 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 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 winning people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land. Attempts may be made to engage NGOs / CBOs to work as catalysts in negotiation.

CHAPTER-11

TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

11.1 Introduction

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 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.

The current chapter of the report is about Transportation and Traffic Management Plan covering its development plan proposals and traffic management up to the year 2031. Transportation and Traffic Management Plan is a part of the second stage of the current plan package. This planning component is based on the framework of the Structure Plan prepared in the earlier phase. The Plan is intended to address those areas of the Structure Plan that are likely to face urban growth during next 10 years, and obviously that includes the existing Paurashava area and its extension areas. The report also gives the objectives of the purpose and the role of Transportation and Traffic Management Plan and its relation with Structure Plan and Land Use Plan.

11.2 Approach and Methodology

A comprehensive transportation study was undertaken to investigate the existing transportation infrastructure, transportation mode and modal share scenario of Mirzapur Paurashava and to estimate the anticipated transportation needs of the town up to the year 2031. Transportation study was 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 Paurashava authority identified 2 different locations covering two entry/exit links of the Paurashava to conduct transport survey. These 2 locations include 2 intersections with 4 links and 8 directions. Detail description of survey stations are shown in Table-11.1. O-D survey was performed at all 2 entry/exit links simultaneously on different dates.

Table 11-1: Description of the survey stations

Name of Intersection	Station/Link S. I No.	Link name (Survey station)	Traffic Direction	Remark
By-pass Bus Stand Intersection: 01	01	By-pass Bus Stand to Paurashava	2	-
Old Bus Stand Intersection: 02	02	Old Bus Stand to Gazipur/Dhaka	2	Entry/ exit link
	03	Old Bus Stand to Tangail	2	Entry/ exit link
	04	Old Bus Stand to Kumudini Hospital Road	2	-

Source: Field Survey, 2009.

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' associations and the Paurashava/District Administration. Year wise data of non-motorized traffic were collected from the Mirzapur 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 on household mobility 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 town. Information about traffic conflict and accident were collected from the field and from Thana (police station). Mapping of major roads was done using physical feature survey data and by thorough reconnaissance survey of roads. By considering the planning standard and analyzing the demand, Traffic and transportation plan were made.

11.3 Existing Conditions of Transportation Facilities

11.3.1 Roadway Characteristics and Functional Classification

The planning area covers 7.73 sq. km. (1911.36 acres) and road length is 56.07 km. The major roads of Roads and Highway Department (RHD), which passes through Mirzapur Paurashava, are the connecting road of Dhaka, Tangail and North Bengal Road. It provides connection with Mirzapur Paurashava to the north Bengal and Dhaka. Old bus stand intersection is the major intersection of the Paurashava and most of the traffic are generating from this area.

The roads of the Paurashava belonging to number of agencies named Roads and Highways Department (RHD) responsible for National Highway, Local Government Engineering Department (LGED) responsible for construction and maintenance of Upazila and Union roads and Mirzapur Paurashava responsible for construction and maintenance of roads within the Paurashava area. Existing transportation system is dominated by road network catering to the passenger service.

The road network provides access to various places within the study area and connects various parts of the country following bus routes. Major trips of vehicles are generated

from, within the Paurashava, Bazar Road, Mirzapur Dhanara Road, Cinema Hall Road and outside the Mirzapur Paurashava, Dhaka, Gazipur, Tangail, Bogra, Rajshahi and Rangpur. All inter district vehicles towards and from south Bengal runs through the National Highway passes through the Mirzapur Paurashava.

The field survey data reveals that total length of road in the Paurashava area is 56.07 km out of which 27.24 km is Pucca road, 4.01 km is brick soling Semipucca road 22.9 km is Katcha road.

Table 11-2: Road network of Mirzapur Paurashava

Road Type	Road Length (km)	Area (Sq.km)
Pucca Road	27.24	0.13
Semipucca Road	4.63	0.015
Katcha Road	24.20	0.06
Total	56.07	0.22

Source: Physical Feature Survey 2009

Road network has not developed in a planned manner and has not any definite street pattern. All the local roads are of irregular street pattern, which are also narrow and crooked in nature. The secondary/distributor roads are 16-20 feet width and the collector roads are 8-10 feet width. Road side vegetation and street light system were not found in the Paurashava area.

Table 11-3: Hierarchy of roads in Mirzapur Paurashava

Type of road	Width in feet	Surface type
Arterial or major thoroughfare	80	Pucca
Secondary/ distributor road	16 - 20	Pucca
Tertiary /Collector road	12 - 15	HBB & Katcha
Private road	8 - 10	Katcha
Pedestrian road	No	-

Source: Physical Feature Survey 2009

The connecting road of Dhaka and Tangail and Tangail By-pass Road is the major thoroughfare of this Paurashava. The other major roads are Hospital Road, Mirzapur Bazaar Road, College Road, Thana Road, Garail Road, Palpara Road, Paurashava Road etc. which are treated here as distributor roads.

Motorized and non-motorized vehicles are operated in all the nodes of the planning area. The non-motorized vehicles are mainly operated within short distance and meet the local needs. The motorized vehicles are mostly intercity passenger buses and trucks, mainly carry agro product from the Old Bazar towards Tangail and Dhaka. Locally modified motorized transport vehicle named *Nosimon* also uses for short distance passenger and goods transportation.

11.3.2 Mode of Transport

Cycles, rickshaws and motorbikes are the prominent traffic mode of Mirzapur Paurashava. Other transport modes are bus, truck, human hauler, car, bicycle etc. Motorized and non-motorized vehicles are operated in all the nodes of the Paurashava.

Motorized vehicle are motorbike, car, bus and human hauler that are observed in Mirzapur Paurashava. The non-motorized vehicles are mainly operated within short distance and meet the local needs as cycle, rickshaw, bicycle and pushcart that are observed in Mirzapur Paurashava. Paurashava has the power to offer license for the non-motorized vehicles.

1.3.3 Intensity of Traffic Volume

Traffic volume studies are conducted to determine the number, movements, and classifications of roadway vehicles at a given location. These data help to identify critical flow times, determine the influence of large vehicles on vehicular traffic flow, or document traffic volume trends. The traffic data was taken for an intersection as well as for different links at different time. The generated PCU and composition of traffic counts are done based on the peak PCU have been shown in the following tables.

Intersection 01: By-pass Road Bus Stand (Dhaka-Tangail) to Paurashava

The by-pass bus stand is situated at the intersection on Dhaka-Tangail Highway. At that intersection there is no ticket counter on the roadside and buses are available. The bus stand is connected with Paurashava office and main market area by a link road. Traffic volume survey has been conducted on this connected road. It is seen that on Haat day the number of traffic coming to the by-pass bus stand ('In' direction) is as same as the number of traffic going to the market area ('Out' direction) through that particular link road. In the Haat day, average traffic volume per hour in both direction ('In' and 'Out') on the road is 494 of which 409 is NMV (Non-Motorized Vehicle). So the contribution of MV (Motorized Vehicle) is not so much in the Haat day. Among the MVs, the contribution of motorcycle is dominating. On the other hand, there is a high contribution of rickshaw and bicycle in the composition of non-motorized vehicles. Traffic volume is higher from 10 am to 2 pm than any other times of the day. So 10 am to 2 pm is the peak hour for Haat day.

Intersection 02: Old Bus Stand to Paurashava

Presently, 'Old Bus Stand Intersection' is found the most significant intersection in Mirzapur Paurashava from every consideration. This intersection comprises 3 segments where the 'traffic volume survey' has been carried out. These segments are:

- Old Bus Stand to Gazipur
- Old Bus Stand to Tangail
- Old Bus Stand to Kumudini Hospital Road

Most of the traffic flows use the Old bus stand to Gazipur segment has similar traffic flow on both Haat day and non Haat day. Intersection 1(including 3 links or segments) is main entrance to the Mirzapur Paurashava and naturally it accommodates major share of traffic to 'From and To' the Paurashava. Main flow of traffic operates on the 'Old bus stand to Gazipur Road' and 'Old bus stand to Tangail road' by the people who come from the outside of the Paurashava and other side of the Tangail Highway. On the haat day

736.48 PCU vehicles use this road (Old bus stand to Gazipur Road) within the surveyed time 7am to 8pm.

Second important segment is 'Old bus stand to Tangail road' which averagely accommodate 689.04 PCU vehicles on haatday and 662.96 PCU vehicles on non haat day. Rest of the segment is 'Old bus stand to Kumudini Hospital road', which has lowest average traffic volume on both haat day and non-haat day.

Hourly volume of traffic flow (in PCU) is high from 8am to 12 pm on segment 1 that is old bus stand to Gazipur road. The traffic flow for segment 2 that is old bus stand to Tangail road increases between 10 am to 1 pm and 5 pm to 7 pm as it is comparatively more important road in the Paurashava.

For segment 3 which is old bus stand to Kumudini Hospital road, the hourly traffic flow is slightly low than other segments. For this segment, traffic volume is high on non haat-day between 9 am to 3pm. For all the segments, the use of non motorized transport comprised of Cycle rickshaw and bicycle is more prominent than motorized transport and shares about 70-80% of the total PCU values of each segment's hourly traffic volume. Among non motorized vehicles both truck and bus have significant contribution along with car, auto rickshaw and motorcycles.

11.3.4 Level of Service: Degree of Traffic Congestion and Delay

These studies are used to determine speed and delay variations along a route at different times and locations. Narrow road is the main cause of delay of vehicle as it is an obstruction for smooth flow of traffic. This problem is severe in the core area of the Paurashava, especially By-pass bus stand to Old bus stand road, the road running in front of the Paurashava office, the Upazila road and the narrow roads in between the dwellings and commercial structures are mentionable in this respect. Due to insufficient capacity of the roads and absence of sidewalk, even two non-motorized vehicles like rickshaw or van have to pass very carefully to avoid accidents and this result into delay of journey. In the presence of a car or microbus, although they are few in number, the situation goes worse.

Buses directed from Mirzapur Paurashava to Tangail and Gazipur starts after each 20 minutes averagely from Old bus stand. Those buses have 35 to 54 seats available for the passengers but they carry a total 54 to 70 with standing passengers. On the other hand, at By-pass bus stand the buses delay only 30 sec to 2 minutes, as buses are available in the Dhaka-Tangail Highway.

The Origin-Destination (O-D) survey is conducted to collect information on travel and transportation generated between zones of a study area. The study also identifies passenger movements where and when trips are originated and ended, the socio-economic characteristic of the trip maker, the purpose of travel and the mode of travel. The following table-6.5 describes the purposes of trips generated with different modes from the origin of trip to the destination of Hat day and non-Hat day in Mirzapur Paurashava.

Table 11-4: Results of O-D Survey

estinations		Percentage (%)
Within Tangail District (11.73%)	a) Tangail Sadar	10.78
	b) Modhupur	0.95
Outside of Tangail District (9.36%)	a) Dhaka City Corporation	2.10
	b) Joydebpur	0.20
	c) Kaliakair	0.20
	d) Narayanganj Paurashava	0
	e) Savar Paurashava	2.10
	f) Pabna	4.76
Within Paurashava (78.91%)	Various Wards	78.91
Total		100

Source: O-D survey, 2009

The table above shows that the origin and destination survey result based on vehicle type. The table gave result on truck/Bus/car, Microbus as a transport mode. Rows indicate respondent's origin location and Columns indicates their destination. The data shows people of Mirzapur Paurashava have high percentage to travel from their own residence to the surrounding urban areas rather than attract people to come in that area.

Table 11-5:-Purposes of travelers in percentage

Purpose	Origin	Destination
Working/Personal Business	40.9	42.6
School/College/University	7.0	12.2
Shopping	10.4	11.3
Social/Recreational/Sports	13.0	10.4
Home	19.1	13.0
Other	9.6	10.4
Total	100	100

Source: O-D survey, 2009

The above table 11.5 shows the travelers purposes in the study area. In both the cases, travelers going outside of the Paurashava and coming to the Paurashava are mainly for work/personal business, education or shopping and home purposes and they are the travelers who generate the regular trips. Around 40.9% for work/business purposes, 19.1% for home, 7% for education, 10.4% for shopping etc. comes to the Paurashava area. While going outside the Paurashava, around 42.6% travelers are going for their work/ personal business purposes. Around 13% travelers are going outside the Paurashava for home purpose.

In Mirzapur Paurashava, a wide variety of modes have found to use by the people based on their destinations. General people use MVs to move to a distant place for attaining the purpose of work/personal business, social/ recreational/ sports etc. Trips to school/college/university and shopping purposes have found to choose NMVs.

11.3.5 Facilities for Pedestrians

During field survey, it was observed that people move in both directions, going in and out of the both sides of the roads. It is noted that the study area is without any footpath for pedestrian movement. Pedestrian movements take place mostly on carriageway and right of way of the roads.

11.4 Analysis of Existing Deficiencies

11.4.1 Roadway Capacity Deficiencies

Primary Road : The National Highway and by pass road is known as primary road, length is 19.81 km and average width pavement with 3.3 and 2.8 meter respectively with average ROW 100 feet. Road standard (ROW) recommended in the is 100 feet to 150 feet, proves that the standard (ROW) of the existing primary road in the Paurashava is enough. Dhaka-tangail National Highway is the main link of Dhaka to Northern Region.

Secondary Road: Total 41.64 Km of secondary roads are in the Paurashava named Hospital Road, Mirzapur Bazaar Road, College Road and Thana Road. The width of these roads varies from 3.0-5.4 meters. Recommended Road standard (ROW) 60 feet to 100 feet proves that the standard (ROW) of the existing secondary roads in the Paurashava is lower than the standard (ROW) recommended. No deficiencies regarding the capacity of those secondary road exits.

Tertiary Road: In the Paurashava, three tertiary roads consisting 1.86 km length have been identified and they are Garail Road, Palpara Road and Paurashava Road with 3.0-3.40 meter road width. Recommended standard (ROW) for tertiary road is 20 feet to 40 feet, proves that the standard (ROW) of the existing tertiary roads in the Paurashava is lower than the standard (ROW) recommended. No deficiencies regarding the capacity of those tertiary road exits.

Access road: Road standard (ROW) recommended for access road is 20 feet to 40 feet. In the Paurashava, all access roads are less than 12 feet and most of them are using as footway. Non-motorized vehicles named Van sometimes use those walkways. No deficiencies regarding the capacity of those access road exits.

Table 11-6 Hierarchy of road

Sl.No.	Road Name	Length(Km)	Width(Meter)	Category of Road
1.	Dhaka-Tangail Highway	10.67	3.3	Primary
2.	Tangail By-pass Road	9.14	2.78	Primary
3.	Hospital Road	0.445	4.5	Secondary
4.	Mirzapur Bazaar Road	0.65	3.5	Secondary
5.	College Road	0.76	3	Secondary
6.	Thana Road	0.165	3.5	Secondary
7.	Garail Road	0.45	3	Tertiary
8.	Palpara Road	0.6	3	Tertiary
9.	Paurashava Road	0.27	3	Tertiary

11.4.2 Operational, Safety, Signal and other Deficiencies

- Traffic management system is absent in the Paurashava. No operational system yet being imposed on traffic movement.
- Due to the minimum PCU/hr. both in hat and non-hat day, availability of non-motorized vehicles and absent of available built-up area, road safety exists naturally in the Paurashava.

- Traffic signaling system is totally absent in the Paurashava. Generally, traffic signaling system will not be needed up to the limit of the planning period. On some specific point of primary and secondary roads, traffic signaling will be needed.

11.5 Condition of other mode of transport (Rail/Water/Air)

A railway has passed through the North-Eastern part of the Paurashava which length is about 3.26 km within the Paurashava area. No waterway and air way faculties in the Paurashava.

11.6 Future Projections

Road design standards are prescribed in the section 21 of the Public Roads Act, 2004. The regulations of the sections are:

- The Government may declare design standards for roads by publication in the Official Gazette.
- The road design standards shall set out design requirements for roadways and road-related areas including structures located on roadways or road-related areas.
- A road authority shall comply with the road standards when carrying out works on a roadway, road-related area or when installing, modifying or maintaining a structure on a roadway or road-related area.
- Despite sub-section (3), a road authority is not required to comply with the road standards if:
 - the road authority is carrying out maintenance and, in the view of the road authority, it would not be practicable to comply with the road design standards.
 - the Government has, in writing, exempted the road authority from complying with the road design standards in relation to the works or structure.
- The Government may revoke or amend road design standards in the same manner as a declaration.
- The Urban Area Plan for Dhaka City has recommended road standards with the consideration of traffic volumes, which were not undertaken in conjunction with the Dhaka Integrated Transport Study (DITS). A wide range of standards was suggested for various classes of roads, ranging from 4 meters to 24 meters, as mentioned below. The required right of way (ROW) is also indicated:

- Main Road	24.0 meter	(78 ft) ROW
- Arterial Road	14.5 meter	(47.5 ft) ROW
- Collector Road	13.0 meter	(42.6 ft) ROW
- Access Road	9.0 meter	(29.5 ft) ROW
- Access Road	6.0 meter	(19.7 ft) ROW
- Non-motorized Road	4.0 meter	(13.4 ft) ROW
- Footpath	2.5 meter	(8.2 ft) ROW

In order to promote development of all roads in a systematic manner, new road standards were recommended for both built up areas, as well as for less built-up areas. These will replace the old standards, which were included in the Dhaka Metropolitan Development Plan (DMDP). The standards, when adopted will facilitate earmarking the right of way (ROW) for all major roads. The details of these standards used in this plan are indicated below.

Table 11-7: Road standards for future development of the network

Class of Roads	Standards recommended
Paurashava primary roads	150-100 ft.
Paurashava secondary roads	100-60 ft.
Paurashava local roads	40-20 ft.

Source: UTIDP, LGED, 2010.

11.6.1 Travel Demand Forecasting for Next 20 Years

Existing road network is quite enough for accommodating present volume of traffic. The study area is rural in nature. Katcha roads needs to be constructed as pucca or at least semi-pucca. Katcha roads become clayey in the rainy season and bring immense sufferings for the users. As a result, social, cultural and economic activities are disrupted significantly at that time. A very limited uses of small boats are found for transportation of goods within the short distance particularly on hat day. Due to the absence of effective alternatives, passengers and goods movement of the study area is largely dependent on road transportation. This dependency will be calculated according to the increase of accessibility, consideration of the missing links, volume of traffic movement, bulk density of the area and economic importance of the area. Growth direction is also a considerable component for the demand analysis of the road.

11.6.2 Transportation Network Considered

The physical feature survey has identified a number of problems constraining the development of the Paurashava, such as:

- Lack of a hierarchy of roads within the Paurashava with many of the roads unable to fulfill their intended functions adequately;
- Scarcity of reserves of land for future roads; and
- A tradition of encroachment in those areas where road reserves have been made.

To establish a rational hierarchy of roads in the Paurashava, it will be needed to use development control to ensure that reserves of land, once established are maintained.

In the Transportation Plan, north, south, east and west direction links with the Paurashava have been considered. To maintain an effective linkage, the plan proposes one primary road and others are secondary and tertiary roads.

11.6.3 Future Traffic Volume and Level of Service

The roads presented in the Table-11.6 are the important roads of the Mirzapur Paurashava. Present population of the Paurashava is 28602 (2011) and in the year 2021 it

will be 41078. Highest PCU/hr. at hat day is 1093 and non-hat day is 828 at Dhaka-Tangail highway. The scenario proves that traffic congestion is not alarming. At the sametime, highest road width at present is 100 feet (ROW) in Dhaka-Tangailhighway but the senariono is different in inner road like bazaar road,Paurashava road road etc. and it will be saturated with the traffic if the PCU/hr. increases above 800.

About 66.81% people's income of the Paurashava is between Tk. 5000 to Tk. 10000. On the other hand, 14% are involved with small business and 25% with agricultural activities. Housing condition is above ninty percent of structure are katcha structures. The scenario proves that the Paurashava dwellers have no capability to increase traffic volume provisioning motorized vehicles. They will increase non-motorized vehicles and Nosimon.

As this area is close to Dhaka City the demand of housing are increasing day by day with the increase of planned residential area the motorized vehicle will increase.

With the expansion of administrative services, motorized public vehicles will be increased and at the sametime, traffic volume also.

At present, about 99% traffic is under the private sector and 87% enjoying by the non-motorized vehicles. It is expecting that the scenario will change next 20 years and the percentage of motorized vehicle will increase.

11.7 Transportation Development Plan

11.7.1 Plan for Road Network Development

For an efficient road network development, implementation of some of the recommendations made by the Roads and Highways Department in 2008 would be essential. In order to serve the Paurashava, as well as the local traffic around Paurashava, an analysis will present in the proposals. It is found that many of the road links are not recommended by the Roads and Highways Department. Further analysis under the Transportation Plan will be revealed that most of the links suggested by this study are infect required to be developed in a phased manner. Under the Transportation Plan, an attempt is being made to promote existing five major roads in the Paurashava which are Dhaka-tangail Highway, by pass road, bazaar road, college road and hospital road. At present, from west to eastern part and from south to northern part, all vehicles movement is through the link road with Bazar Bus Stand. There is a need of some north-south link road development. Some link road connection with Dhaka-Tangail Highway has proposed for olanned development of this area. The existing road network should be widened accourdingly. One road cum embankment along the river side need to consider for easy traffic and to protect flood.

11.7.2 Road Network Plan

The primary road will act as through-route, taking traffic from Paurashava to other centres in the region or the country and avoiding the need for this through-traffic to enter the internal road network of the Paurashava. The route is intended to be high capacity and fast flowing.

Map 11-1: Important Roads of Mirzapur Paurashava

In the case of existing roads in Paurashava (designated as secondary and tertiary roads), this may require the introduction of side collector roads which restrict entry onto the main carriageways from roadside development. Without this, the road may not be able to fulfill the given function.

Hospital Road

The road connects bypass road in between Ward No. 3, 2 and 8 from north to south. The specific local roads of those Wards may be improved and widening to identify the Link Road. This will be the major road in southern part of the Paurashava. This link road will produce an important intersection on the by pass road. This intersection may be the focal point for the Southern local roads of the Paurashava. All local roads in southern part will connect this link road.

College Road

The road connects Dhaka-Tangail highway road in between Ward No. 3, 2 and 7 from north to south. The specific local roads of those Wards may be improved and widening to identify the Link Road. This will be the major road in southern part of the Paurashava. This link road will produce an important intersection on the Dhaka-Tangail highway. This intersection may be the focal point for the Southern local roads of the Paurashava. A major portion of local roads in southern part will connect this link road.

Bazar Road

The road connects Dhaka tangail highway to college road. It is an important road with the core area of the Paurashava. This link road will produce two important intersection on the Dhaka-Tangail highway and on college road. This intersections may be the focal point for all local roads of the Paurashava. A major portion of local roads in southern part will connect this link

New Link Roads

Some major link roads, service road both side of national highway and a Ring Road along the river has proposed for future circulation network.

Improvement of other local roads

Improvement of other local roads which deserve priority attention and could contribute a lot in reducing pressure on the existing focal points of the Paurashava all tertiary road is essential.

Three tertiary roads consisting 1.32 km length have been identified and they are Garail Road, Palpara Road and Paurashava Road with 3.0 meter road width which needs to widening.

An initiative should be taken to develop an effective and efficient arterial road network, which could provide a gridiron system with lots of alternative links for movement in different directions.

11.7.3 Proposal for Improvement of the Existing Road Networks

Use of road reserve is the initial stage for improvement of existing **primary road**. The maximum recommended reserve width for a primary road that will be adopted and maintained is 48 meters; with an initial basis the extremities of the reserve being 24 meters on either side of the road centre line. This may vary, especially on existing roads, due to localized circumstances.

Alternative cross-sections for the primary road is –

- a primary road with no collector roads (22 meters);
- a primary road with a collector road on one side only (32 or 35 meter);
- a primary road with collector roads on both sides (42, 45 or 48 meters).

Regardless of which option is required, initially the full 48 meter reserve will be applied, although not necessarily purchased in the first instance, until such time as more detailed site investigations have been undertaken.

For new road, the 48 meter reserve will be adopted in the short-term to prevent development encroaching in to it before construction of the road.

Within the established reserve, no further non-road related development will be permitted, with the exception of utility networks. The utilities should not fall under the main carriageways due to the disruption to traffic flows when the system requires repair or maintenance. Localized drainage channels should, where possible, also fall within the road reserve, preferably under the footpath or hard shoulder to reduce land requirements. If, however, this is not possible an additional reserve to cover the drainage channel will be required, increasing the overall width of the reserve.

Permanent structures that currently fall within the reserve should be permitted to remain until such time as they are redeveloped. Redevelopment of existing properties should fall wholly outside the reserve. Temporary structures should not be permitted even on a short-term basis. Existing structures should be removed as and when feasible.

For new roads, where reserves have been identified but implementation is unlikely to commence for a number of years, agricultural use of the land within the reserve should be permitted until such time as the land is required for construction. No structures, of whatever materials, will be permitted within the road reserve.

No direct access should be allowed onto the main carriageways (of primary road). Access should be gained only at controlled junctions—roundabouts or traffic-lights. The number of junctions or intersections should be minimized with desired spacing being not less than 500 meters.

Primary road with secondary roads should be provided in areas where there is considerable roadside development. These should generally be two-way service roads and will be used by non-motorized vehicles like rickshaw, van, pushcart and bullock carts including pedestrians. Controlled parking will be permitted where necessary.

Where secondary roads will not be required either immediately or in the long-term, the full reserve should be maintained (for utilities, etc.) unless there is clear reason why these reserves should be decreased.

Functions of the **secondary roads** is to act as –

- links between the Paurashava and primary roads;
- links between various important nodes of activity within the Paurashava.

The secondary roads are also intended to be high capacity routes, although their design speed will be significantly less than primary roads due to their being a far higher percentage local, inter-Paurashava traffic movements rather than intra-Paurashava. On many occasions within the Paurashava, existing routes will require the provision of tertiary roads to provide access to shop frontages and on-street parking for those shops. The tertiary roads also serve to collect traffic which currently enters at random from side streets.

The maximum recommended reserve that will be adopted and maintained for secondary road is 48 meters, preferably with the extremities of the reserve being 24 meters either side of the road centre line, although this may vary especially on existing roads due to localized circumstances.

Regardless of which option is required ultimately, initially the full 48 meter reserve should be applied until such time as a more detailed site investigation has been undertaken and the actual reserve required has been defined.

No non-road related development will be permitted within the road reserve. For new roads which will not be constructed in the foreseeable future, agricultural use of the reserve will be permitted until such times as the road is constructed. No permanent or temporary structure will be permitted.

In general, no direct access will be permitted onto the main carriageways (of secondary roads) with access gained only at controlled junctions. Occasionally, due to existing situations, access from a side road may be entertained. The number of junctions should be minimized with desired spacing being at 200 meter intervals. Again, this may vary according to necessity but where deviation from this desired spacing is necessary, the deviation should be small. Junctions will be in the form of roundabouts or traffic lights.

Limited direct access will be allowed from major traffic generators such as Paurashava Office complexes, factories and shopping centres where no other alternative access arrangement is feasible. Car parking arrangements for those large landuses must be provided on off-street.

Functions of the **tertiary road** are:

- collect and distribute traffic to and from access roads from predominantly residential areas to other parts of the hierarchy;
- provide direct access to roadside landuses.

The recommended reserve for tertiary road is 18 meters, 9 meters either side of the centre line. On-street parking may be permitted.

No development will be permitted within the 18 meter reserve.

Direct access will be permitted although major generators should be required to have off-street parking areas. Junctions should be a minimum of 150 meters apart.

Access roads provide access to residential areas and properties therein. On-street parking is permitted providing that this will not block the access road.

Recommended reserve for access is 10 meter, although in existing situations, a minimum reserve of 6 meter will be entertained.

Junctions and access roads should be a minimum of 50 meters apart, although deviation to this will need to be accommodated in existing areas.

Direct access from residential properties will be permitted.

11.8 List of Proposed Roads

A number of new roads including improvement of existing roads are presented in the following table. All the roads may be constructed under the road development scheme approved by the government for the authorities named RHD, LGED and Paurashava. In total, 52.01 roads existing in the Paurashava and 59006.06 meter (59.01 Km) roads have been proposed for efficient accessibility of the Paurashava of which some are fully new road and others are road widening. Details of roads proposal and phasing are given in **Annexure-2**.

The process that the Paurashava/RHD can undertake to establish new road reserves for each of the proposed roads shown on the Transportation and Traffic Management Plan is described below:

- Initial step will be to determine two points between which the new road will be required. In certain instances, the precise intersection or connection point will be obvious, whilst in other cases only a generalized location is identifiable in the first instance. Determination of the exact connection points can only be made once further steps in the process have been undertaken.
- Having identified two connection points (either known or vague), next step will be to conduct a search of a wide area to identify a number of alternative routes. Width of the area subjected to this search will vary according to individual circumstances, with the area being relatively narrow in dense Paurashava locations (say 80 to 100 meters), but wider in more rural settings (say 200 to 300 meters).
- The number of alternative alignments to be identified will also vary, but as a general rule, a maximum of five alignments will be chosen. When identifying each of the different alignments, care will be taken to ensure that they are realistic and capable of accommodating the width of reserve required for the standard of road envisaged.

Table 11-8: List of proposed roads

Sl No	Road Width (Feet)	Length Meter	Percentage	Type
1	100	3961.16	6.71	Primary road
2	80	7339.15	12.44	
3	60	11351.74	19.24	Secondary road
4	40	16614.91	28.16	
5	30	16200.33	27.46	Tertiary road
6	20	3538.77	6.00	
Total		59006.06	100.00	

During this stage of the process, number of buildings, other structures or natural environment affected by the proposal should be seen as a constraint, but not yet as a major constraint. That being said, following the rule for realism stated above, the alignments will need to respect as much existing permanent development as possible, aiming instead, in dense situations, to target gaps between developments rather than through them. Only where the avoidance of specific buildings or groups of buildings is unavoidable, to produce a worthwhile alignment, should their removal be seen as part of that alternative's cost.

Similarly, in rural locations or in areas of high natural environmental quality, extreme care should be exercised when choosing the alternatives to respect the natural environment and choose options that are going to minimize the visual impact of a new road or avoid destruction of areas of the highest environmental quality.

Having established the alternative alignments, these will now be assessed, against set criteria to enable the Paurashava to choose a preferred option. The criteria that must be taken into account during this exercise include:

The impact of the alternative on existing properties: whether these are permanent or temporary and the type of development that is being affected. This, in part, will identify the general scale of compensation that will accrue with each of the alignments and therefore the viability of a route to be chosen as the preferred option.

The impact that each alignment will have on the general and natural environment: routes which have a high visual impact in an area of natural beauty will, for example, score badly on this criteria.

Amount of vacant public land available along each route: more land the government owns, the easier the project will be to implement and equally the lower the cost of an option, as the need to compensate landowners will be reduced.

The ease of construction: each alignment will need to be considered with again easier solutions not requiring major development items – bridges – for example, being preferred to more difficult proposals which will increase the cost of construction.

The severance of landuses and communities: need to be assessed, with preference been given to those routes that minimize severance.

Other more localized criteria may be included at the time of assessment.

The result of this assessment exercise will identify for the Paurashava the route that should be considered as its preferred alignment. The reserve for this alignment will then become the area within which no development, other than for agricultural use, will be permitted.

11.9 Plan for Transportation Facilities

11.9.1 Transportation Facilities Plan

Transportation facilities and services include Bus Terminal, Bus Stoppage with Shade, Ticket Counter, Waiting Place for Travelers, Parking Space for Motorized and Non-motorized Vehicles, Service Centre and Washing / Toilet Facilities. At present, no formal transportation facilities and services are available in the Paurashava.

A bus terminal, a truck terminal including loading unloading facilities, two tempo stand has proposed in the plan transportation facilities which are shown in table 11.9. Detailed mouza schedule are shown in chapter-10.

Table 11. 9: proposed new transportation facilities.

Proposed facilities	Location (Ward No.)	Area in Acre
Bus Terminal	1	0.21
	3	1.68
Track Terminal	5	2.87
Tampo Stand-1	2	0.30
Tampo Stand-2	9	0.55

11.9.2 Parking and Terminal Facilities

Bus stand and intersections are using as bus stops including loading and unloading of man and materials. Those intersections are also using for parking both motorized and non-motorized vehicles. Informal economic activities also often encroaches road space. All those factors are together resulted in traffic congestions and also for a cause of accident. The proposed bus terminal will include the parking area and loading and unloading facilities.

11.9.3 Development of Facilities for Pedestrian, Bicycle and Rickshaw

People of the Paurashava move using both sides of the roads. It is noted that the Paurashava is without any footpath for pedestrian movement. Pedestrian movements take place mostly on carriageway and right of way of the roads.

According to the standard for provisioning of footpath, 2.5 meter is necessary and it will be demarcated on both the sides of the road. Development of facilities for pedestrians, bicycles and rickshaws is relevant with the design criteria of the road.

Cross-section of the Roads: There are several numbers of major roads in the Mirzapur Paurashava. Dhaka-Tangali Road which is the primary road and other three are Paschim

Map 11-2: Proposed Circulation Network for Mirzapur Paurashava

Minajdi Sarak, Uttar Rajdi Sarak and Gopalpur to Ramnagar Sarak. The cross-section of these major roads are given below.

Figure 11-1: Cross-section of Dhaka-Tangail Highway

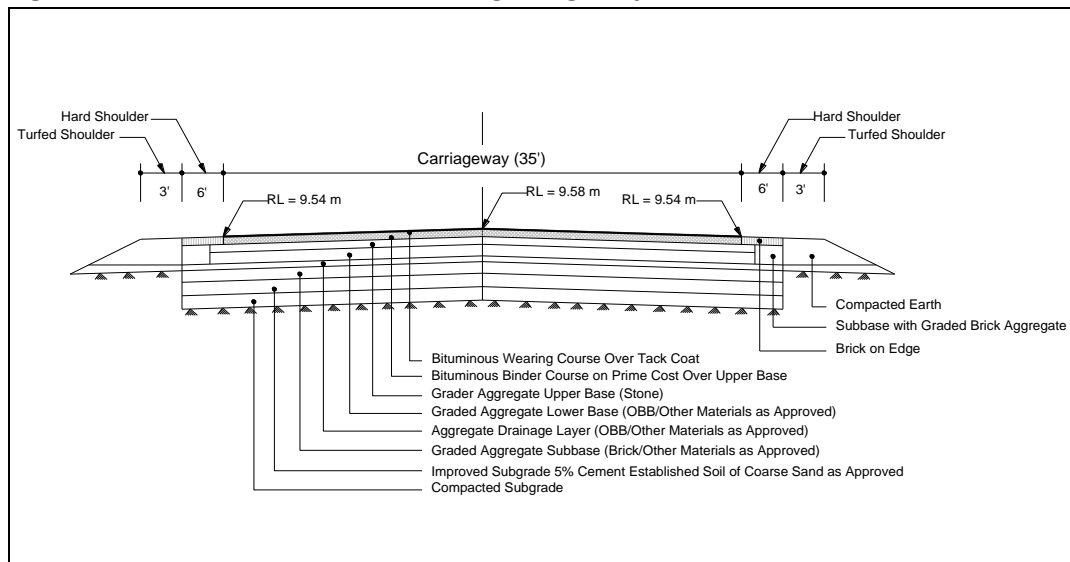
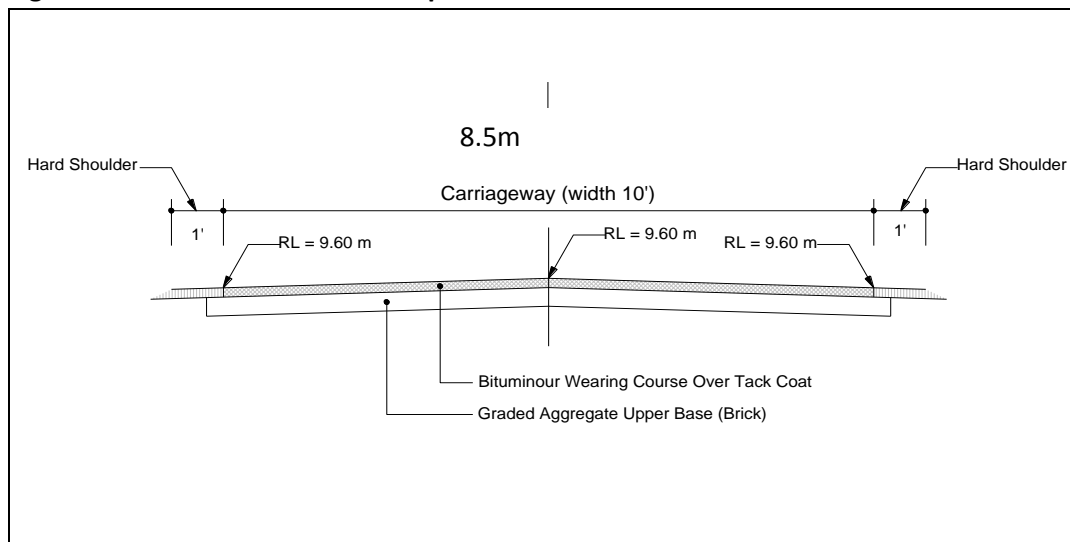


Figure 11-2: Cross-section of Mirzapur bazaar road



Long-section of the Roads: Long-section of the two major roads has been taken of the Mirzapur Paurashava. The graph of Dhaka-Tangail Highway represents that the average height of this road is about 9.6 meter and level vary within 1 meter. The long-Section of Mirzapur Bazar raod represents that its average height is also 9.6 meter and its level more or less equal.

Figure 11-3: Long-section of Dhaka-Tangail Highway

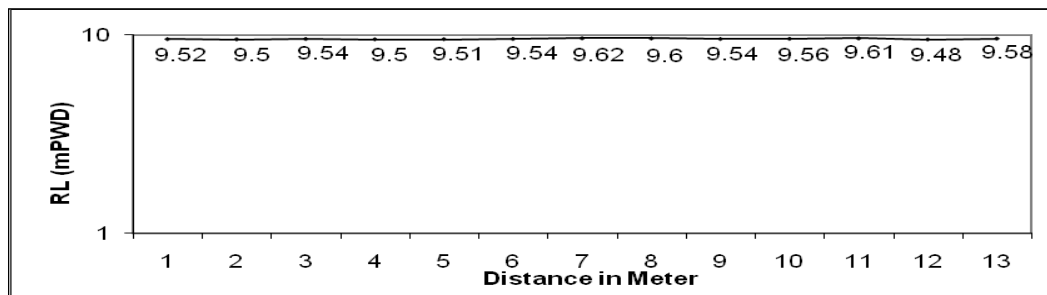
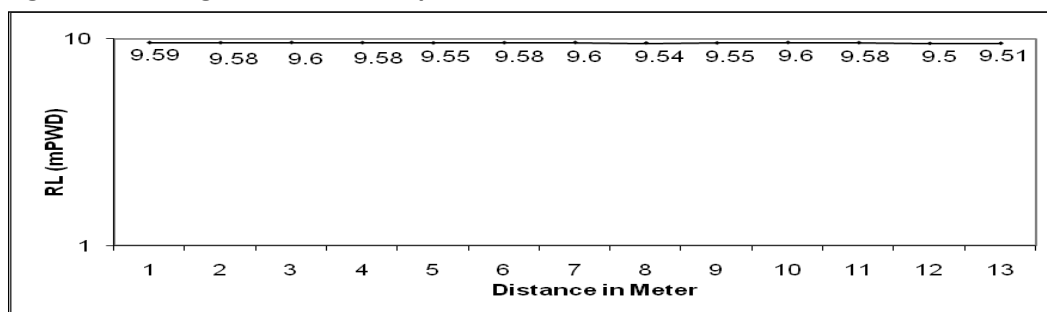


Figure 11-4: Long-section of Mirzapur Bazar Road



From the above cross section and long setion study it is observed that there is enough scope for facilities for pedestrian, bicycle and rickshaw.

11.9.4 Other Transportation Facilities

Other transportation facilities includes launch/boat ghat. If water ways will be provisioned in the River, 1 boat ghats should be constructed. This ghat may be designed considering water-based tourism.

11.10 Waterway Development / Improvement Options

One boat ghat is found in the Paurashava. The boat ghat is under the jurisdiction of Paurashava authority. Construction materials such as sand brick and timber are carrying by boat from small growth centres adjacent to the Mirzapur Paurashava to the Paurashava.

11.11 Proposal for Improvement of the Existing Waterway

Existing waterway including existing Bangshi River Ghat in the Paurashava should developed as River port by the Paurashava authority or by BIWTA with proper study and planning. Because this river is connected with Dhamrai, Savar and even Dhaka.

11.12 Proposal for New Waterway Development

- Encourage private sector to involve with the construction of water ways. BOT (Build Operate and Transfer to the Government) system for private sector will appropriate.
- The Paurashava may, in collaboration with the Inland Water Transport Authority (IWTA), develop the water ways using the existing River.

11.13 Railway Development Options

Existing railway station should be developed in a planned way so that both passenger and goods movement can easily handled.

11.14 Transportation System Management Strategy (TSMS)

11.14.1 Strategies for Facility Operations

Following strategies will be adopted to operate the facilities related with the provisioning of suitable transportation system.

- An improved traffic management system should be imposed. All facilities involved with this system should be provisioned.
- The land uses at the intersections should be controlled with the provisioning of passenger shade, public toilet, ticket counter, tea stall and other necessary facilities.
- Parking facilities for motorized and non-motorized vehicles should be provisioned during construction of roads.

11.14.2 Strategies for Traffic Flow and Safety

Following strategies will be adopted to implement circulation network in the planning area:

- A comprehensive road network plan has been prepared for the Paurashava using a hierarchy of road network. Implementation will also be followed following this hierarchy.
- In case of local roads a participatory approach will be developed to realize at least a part of the development cost bears by the beneficiaries. This will also help to reduce delay and cost involved in land acquisition for road construction.
- Proposed roads in those areas will be chosen for immediate construction that is needed to promote growth in that area.
- Incremental Road Construction Approach will be adopted to get rid of unnecessary construction costs, where roads remain underutilized.
- Service roads will be constructed along with the major roads to allow free flow of long distance traffic.
- A restricted buffer zone will be created along primary roads passing through agriculture to discourage roadside development.

11.14.3 Strategies for Traffic Management

- Linking the missing links of primary, secondary and tertiary roads on priority, and widen some tertiary roads to make networks for efficient circulation.
- Provide adequate pedestrian facilities and off-street parking wherever needed.
- Not to allow any development within the right of way (ROW).

- Separate lane for non-motorized vehicles should be provisioned on the primary and secondary roads.

11.15 Plan Implementation Strategies

11.15.1 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 defenses 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:
 - a) a national road; (b) a regional road; (c) a Zila road; (d) an urban road; (e) an Upazila road; (f) a union road; (g) 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.

Map 11-3: Proposed Transport Infrastructure of Mirzapur Paurashava

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.

(2 a) 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.

11.15.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

Implementation through Multi-Sectoral Investment Programme: 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) 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 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: Landuse 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 efficiency 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 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 winning 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.

CHAPTER-12

DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

12.1 Introduction

The consultant has made an extensive drainage network study in Mirzapur Paurashava to improve the living standard of urban dwellers. Major activities of drainage study include:

- Survey for the alignment of Khal, drains/drainage channels by using DGPS, Data Logger and Path Finder software;
- Survey for the cross sections of drains by using optical level;
- Survey for the bottom level and area of local depressions;
- Identification of outfalls and drainage structures with their conditions;
- Development of Maps showing drains (with drainage direction).

The study has conducted with the concern of Paurashava Mayor, Councilors and other Paurashava representatives as well as PMO, LGED as per ToR in concentrating on following major issues:

- Information regarding type of man-made drains.
- Alignment and crest level of embankments, dykes and other drainage divides.
- Identification of missing links.
- Direction, depth of flow, maximum and minimum tidal level of river, flooding condition, condition of river side settlements during high tide and flood.
- Location, number and condition of pump station, sluice gates, drainage structures.
- Location and area of outfalls, ponds, tanks, ditches; condition in dry and wet season.

12.1.1 Goals and Objectives

The objective of Drainage Plan is to find out the present functions of main and secondary drains and natural streams within the Mirzapur Paurashava. Secondly, to find out level of encroachment over drainage reservations responsible for flooding, water logging of neighborhoods during heavy rains. Thirdly, to find out, the existing roadside drainage pattern including capacities and collected gradients. Since planned development of Paurashava is very much desirable, Drainage Master Plan is necessary to ensure operation and maintenance of the present facilities including new proposal for future. For this, both short and long term project improvement plan involving area based drainage master plan is necessary to ensure proper drainage of the Paurashava.

12.1.2 Methodology and Approach to Planning

In implementing various infrastructural developments, drainage is generally given less priority and is normally considered to be the last or final steps for development. Such scenario is particularly true for Bangladesh; although different types of drainage

infrastructures are among others by far the heaviest impact on physical infrastructure network. As a result, physical environment, health, hygiene and standard of living suffer seriously. In development projects, Government, Semi-government and Public sector allocated funds are mostly spend on buildings, roads and other more visible infrastructures and drainage comes as the last item of development. By the time, drainage development begins to start, there appears shortage of fund, consequently as a matter of policy-do little or do-nothing situation appears and as eyewash very little is done for drainage development. In case of urban development, if drainage is not given priority, sufferings of the inhabitants will continuously increase with the passage of time.

Drainage development for urbanization should start with drains. Drains can be classified as Plot drains, Block drains, Tertiary drains, Secondary drains and Primary drains. Other natural drainage infrastructure is 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 has given on road network in terms of conflict of drainage and waterways with roads. Drainage and environmental survey was followed the proto-type questionnaire supplied and suggested by the LGED.

Method Used

Storm and used water: The drains are designed to collect excess rainfall that comes as surface runoff from urban area, convey the runoff and finally discharge them to outfalls. The design of drains involves hydrological computations of rainfall intensity, its frequency of occurrence, duration etc., and the total run off of a particular area. The modified rational method shall be used for calculation of peak runoff for a definite frequency and duration from particular drainage basin. One limitation of this method is that it cannot be used for catchment area greater than 320 acres. The Natural Resources Conservation Service (NRCS) method formerly the US Soil Conservation Service (SCS) method shall be used.

In Modified Rational Method, the overall watershed is divided into zones that contribute to hydraulically significant points of concentration. The boundary of the zones is established based upon local topographic boundaries such as streets, existing drainage systems, etc., using good engineering practice. The design flow rate by Modified Rational Formula is –

$$Q = C_s C_r I A$$

Where:

- Q = Design runoff flow rate (cfs)
- I = Rainfall intensity (in/hr)
- C_s = Storage coefficient
- C_r = Runoff coefficient
- A = Drainage area (acres)

Rainfall Intensity (I): The rainfall intensity is the average rainfall rate for a particular drainage basin or sub-basin. The intensity is selected on the basis of the design rainfall duration and return period. The return period is established by design standards as a design parameter. Rainfall intensity with 5 years return period is generally employed for design of primary drains and canal improvement. Rainfall intensity with 3 years return period is employed for design of secondary drains. The design duration is equal to the time of concentration for the drainage area under consideration. Time of concentration is a critical parameter both for the Modified Rational Equation and SCS method. Time of concentration is generally defined as the longest runoff travel time for contributing flow to reach the outlet or design point, or other point of interest. It is frequently calculated along the longest flow path physically.

Estimating the time of concentration involves identification of an appropriate flow path or paths and estimating runoff travel times along the flow paths. Where post-development conditions include significant pervious surfaces, the time of concentration for just impervious portions of the basin may be required to calculate and compare peak flow response for the basin as a whole against that of the more rapidly-draining impervious surfaces alone. The Time of Concentration composed of the Initial Time of Concentration, sometimes referred to as the Inlet Time or Time of Entry and the Travel Time. Initial Time of Concentration is that time required for runoff to travel from the most remote point in the drainage area to the first point of concentration. This can be determined using the Kirpitch equation. The Initial Time of Concentration must be five minutes or longer. In instances where Initial Times of Concentration are estimated to be shorter than five minutes, five minutes shall be applied.

The second part of the Time of Concentration is the Travel Time that takes the flow to travel along the drain. Channel flow occurs in channels carrying integrated flows, pipes (flowing partially full), and streams. Where storage is not significant, Travel Times can be estimated by applying Manning's Equation, and using estimates of channel characteristics and appropriate roughness values for pipe, channel, or stream features as tabulated in Table-12.1

$$V = [1.49/n] [R^{2/3}] [S^{1/2}]$$

Where

V = Velocity of flow, feet/second

N = Manning's roughness coefficient for channel flow

S = Slope, feet/foot

R = Hydraulic radius, feet

And

$$T_t = V / (60L)$$

Where

T_t = Travel time, minutes

V = Velocity, feet/second

L = Length, feet

Manning's roughness coefficient for channel flow is listed in Table-12.1.

Table 12-1: Manning's "N" Values for Channel Flow

Conduit Material	Manning's "n"	Conduit Material	Manning's "n"
Closed conduits		Pipes	0.011-0.015
Asbestos-cement pipe	0.011-0.015	Liner plates	0.013-0.017
Brick	0.013-0.017	Open Channels	
Cement-lined & seal coated	0.011-0.015	Lined channels	
Concrete pipe	0.011-0.015	a. Asphalt	0.013-0.017
Helically corrugated metal pipe (12" – 48")	0.013-0.023	b. Brick	0.012-0.018
Plain annular	0.022-0.027	c. Concrete	0.011-0.020
Plan helical	0.011-0.023	d. Rubble or riprap	0.020-0.035
Paved invert	0.018-0.022	e. Vegetation	0.030-0.400
Spun asphalt lined	0.011-0.015	Earth, straight and uniform	0.020-0.030
Spiral metal pipe (smooth)	0.012-0.015	Earth, winding, fairly uniform	0.025-0.040
3 – 8 in. diameter	0.014-0.016	Rock	0.030-0.045
10 – 12 in. diameter	0.016-0.018	Un maintained	0.050-0.140
Larger than 12 in. diameter	0.019-0.021	Fairly regular section	0.030-0.070
Plastic pipe (smooth interior)	0.01-0.015	Irregular section with pools	0.040-0.100

Source: Municipality of Anchorage. Drainage Design Guideline, March 2007 ver.4.08 pp-62.

Storage Coefficient (Cs): Due to very flat topography of Bangladesh, the runoff is significantly slow. The rainfall after evaporation and infiltration accumulates first in the depressions, until these have been reached their capacity and then runoff. To take these effects a storage coefficient is used. The value of the storage coefficient is based on average ground slope and the nature of the ground surface. Some of the storage coefficients are listed in Table-12.2.

Table 12-2: Storage Coefficients for flat land

Characteristics of surface	Storage Coefficient		
	Slope < 1: 1000	Slope < 1: 500	Slope < 1: 500
Residential urban	0.70	0.80	0.90
Commercial	0.80	0.90	1.00
Industrial	0.70	0.80	0.90
Residential Rural nature	0.60	0.70	0.80
Agricultural	0.50	0.60	0.70
Forest/woodland	0.30	0.40	0.50
Aquatic land	0.30	0.40	0.50
Paved area/road	0.80	0.90	1.00

Source: Countywide Comprehensive Plan (Master Drainage Plan) Exhibit-VIII.

Runoff Coefficient (Cr): The runoff coefficient (Cr) values shall be assigned to the various land use zoning classifications. The runoff coefficient values are based on the slope of the land surface, degree of imperviousness and the infiltration capacity of the land surface. The type of land use can greatly affect the amount of runoff. The quantity of runoff and peak flow rates are increased when the land is developed because the impervious surface

area increases with the addition of roads, driveways, roofs, etc. The values of the runoff coefficient (C_r) for each land use classification are listed in Table-12.3.

Table 12-3: Modified Rational Method Runoff Coefficients

Land use designation	Runoff Coefficient C_r
Residential rural	0.30
Residential semi urban	0.40
Residential urban	0.50~0.60
Apartment professional	0.70
Neighborhood Commercial	0.85
Community Commercial	0.85
Industrial	0.70~0.75
Slum area	0.50~0.55
Agricultural exclusive	0.25
Forest and watershed	0.20~0.25
Public facilities	0.3~0.60
Forest/ woodland	0.25
Paved area/road	0.99

Source: Countywide Comprehensive Plan (Master Drainage Plan) Exhibit-VIII.

Catchment Area: The size and shape of the catchment or sub-catchment for each drain shall be determined by plan metering topographic maps and by field survey. In determining the total runoff of a catchment area the following assumptions to be made:

- The peak rate of runoff at any point is a direct function of the average rainfall for the time of concentration to that point.
- The recurrence interval of the peak discharge is same as the recurrence interval of the average rainfall intensity.
- The Time of Concentration is the time required for the runoff to become established and flow from the most distant point of the drainage area to the point of discharge.

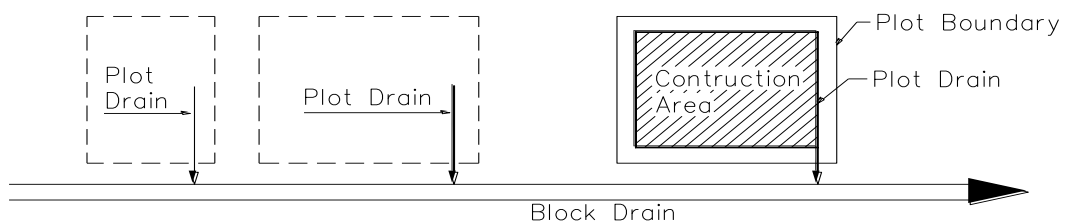
Projection

In implementing various infrastructures for development, drainage is generally given less priority and is normally considered to be the last or final steps for development. Such scenario is particularly true for Bangladesh; although different types of drainage infrastructures are among others by far the heaviest impact on physical infrastructure network. As a result, physical environment, health, hygiene and standard of living suffer seriously. In development projects, Government, Semi-government and Public sector allocated funds are mostly spent on buildings, roads and other more visible infrastructures and drainage comes as the last item of development. By the time, drainage development begins to start, there appears shortage of fund, consequently as a matter of policy-do little or do-nothing situation appears and as eyewash very little is done for drainage development. In case of urban development, if drainage is not given priority, sufferings of the inhabitants will continuously increase with the passage of time.

Drainage development for urbanization should start with drains. Drains can be classified as Plot drains, Block drains, Tertiary drains, Secondary drains and Primary drains. Other natural drainage infrastructure is 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 will be given on 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 of drainage infrastructures are discussed and presented in lower to higher order which will be considered as a method for drainage plan.

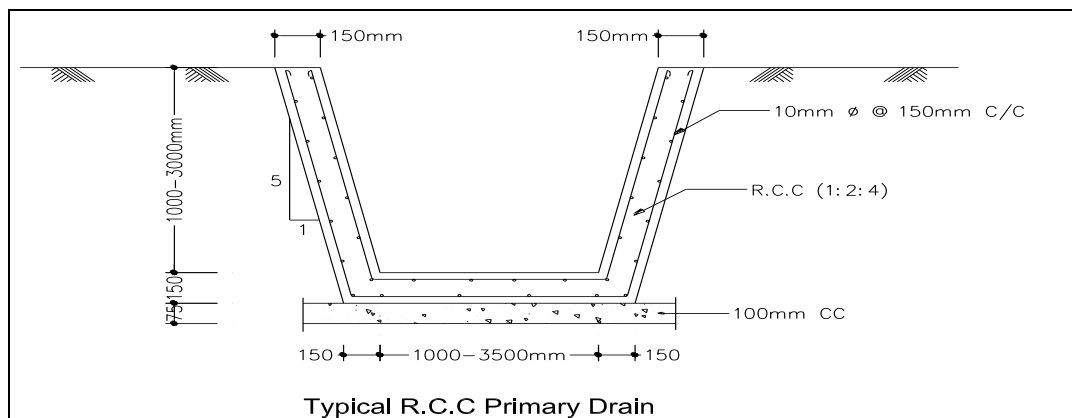
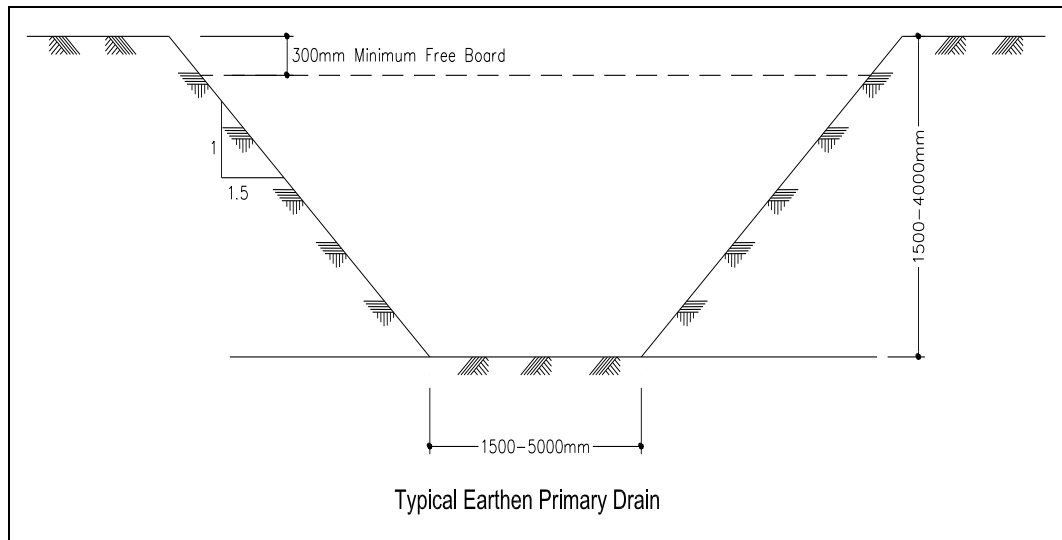
Plot Drains: Plot drains are provided around a building on a plot. In most cases, the drain is made of bricks and is rectangular in shape that can carry storm water generated in the plot and from the building. Plot drain is connected to the Block or Mohallah drain. The sketch below gives an impression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



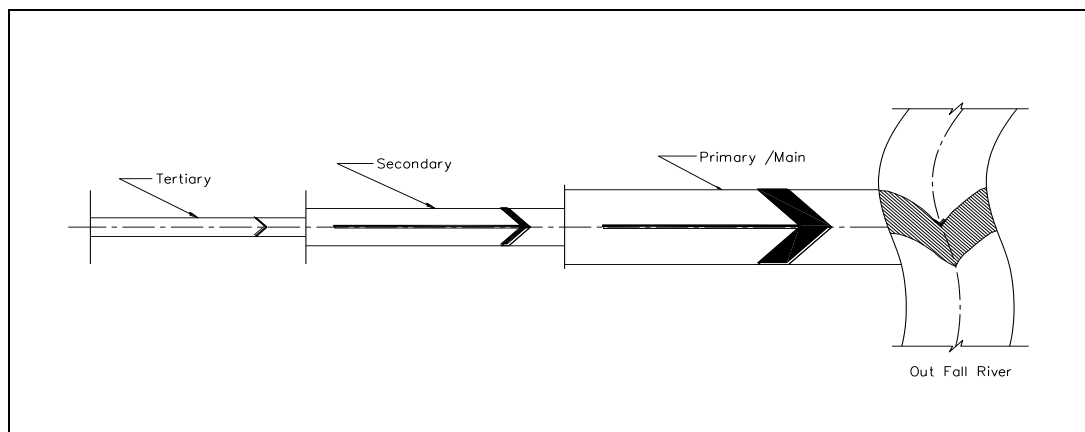
A Sketch Showing Plot Drain and Block Drain

Block Drain: 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 plot 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. Shape of the block drain is also rectangular, bigger than plot drains and its bottom is lower than plot drain. Sketch of the plot drain also shows the block or Mohallah drain under plot drain.

Primary Drain: Primary drains are also called main drains. Primary drains cover larger storm drainage area than tertiary and secondary drains. Sometimes primary drain bears local name. 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. Sketch below shows the typical cross-section of the primary drain.

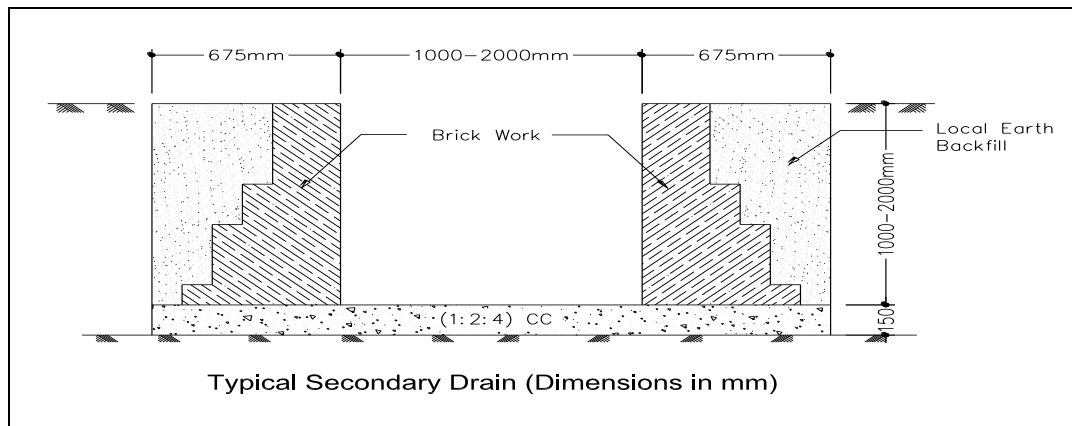


A schematic diagram showing the origin of Tertiary, Secondary and Primary drains and their destinations to the outfall river, presented above, are also presented here.

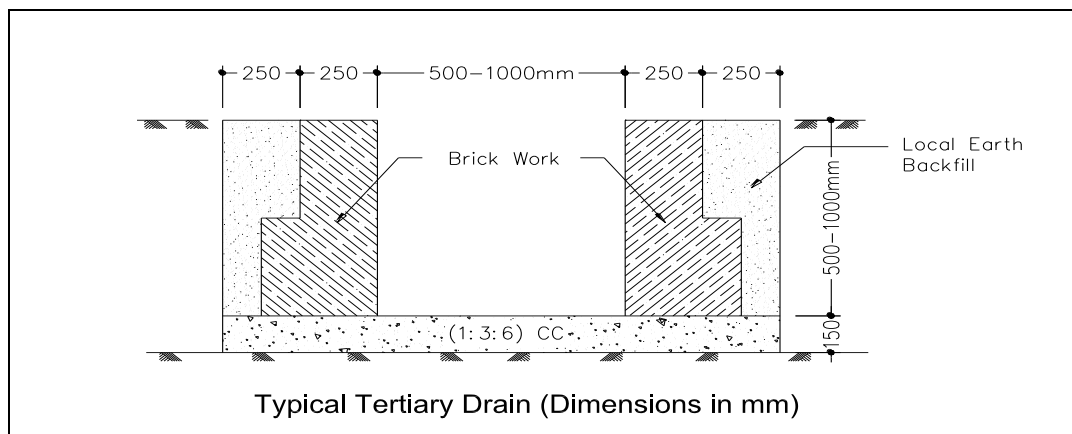


Schematic diagram of Tertiary, Secondary and Primary drains

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 much bigger than tertiary drain. Like tertiary drain, 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.

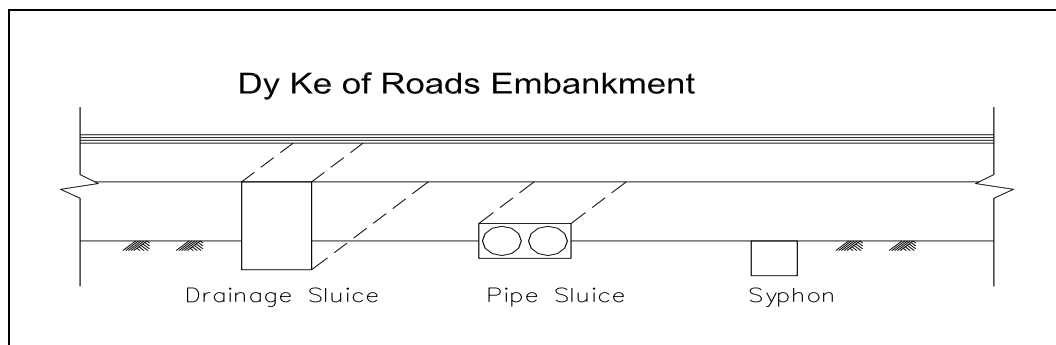


Tertiary Drain: Tertiary drain carry run-off or storm water received from the above mentioned plot drains and block or Mohallah drains. Their catchment area or storm water contributing area is bigger than Mohallah drains. In most Paurashava areas it is difficult to find such naming or classifications. However, such classifications can be seen in references. Tertiary drains generally are the under jurisdiction of Paurashava. Those drains or drainage networks are constructed and maintained directly by the Paurashava. These drains are constructed by bricks, cement concrete and sometimes by excavating earth in their alignments. These drains may run parallel to road or across the catchments 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 lined or channeled by brick works. Tertiary drains deliver its discharge usually to secondary drains. A typical tertiary drain is shown below.



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 study area free from flood.

However, storm water from rainfall-runoff within the area causes localized flood, drainage congestion and submergence. Sketch below shows a few of such structures. A schematic view of drainage sluice, pipe sluice and siphon on embankment, which relieve drainage congestion presents below.



Rainfall is the source of storm drainage water irrespective of urban or rural catchments. Average annual rainfall in Mirzapur is about 2000mm. After infiltration, deep percolation and evaporation is about 50% of this rainfall water takes the form of drainage water for semi-urban and urban areas.

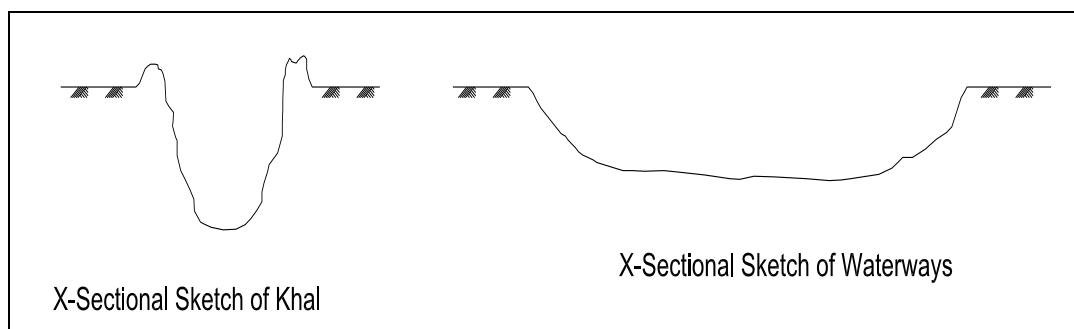
Sluice gates, Regulators and Navigation locks: These types of structures are provided on the flood control embankments. Sluice gates are functioning to vent out water from the countryside to the river. Flap gates are generally installed in the riverside so that river water cannot enter into the main land. On the other hand whenever the river water level becomes low and countryside water level is high, countryside water drains out through sluice.

Regulators also serve the similar purpose as sluice gates; however the size of regulators is much bigger than sluice gates. Regulators may have control gates in the countryside and in the riverside. Drainage of water to the river or flashing of water into countryside are possible by operating simultaneously countryside and riverside mechanical gates. Navigation lock sometimes is provided on the flood embankment to allow boat and ferry passages from the river and from the countryside. It is a simple structure with bigger chamber and large lift gates both at riverside and countryside. By operating these gates, boats and river crafts can be transferred from the river to countryside and vice versa.

Reservoirs: Large tanks, ponds, Dighis, lakes, etc. serve as immediate detention areas for storm water. Those structures are man-made and also natural; may be privately owned or government-owned or khas land. These structures function as drainage relief and source of water for emergency use, fisheries, duckeries, environment and nature preservation. For every mouza such reservoir is available. Physical feature survey maps and field survey maps (tank, pond and reservoir) show the existence of reservoirs and database shows their dimensions. Those structures should not be disturbed or removed by physical interventions by fillings or other means rather should be properly maintained and preserved.

Drainage Khals and Waterways: Khals and waterways are natural channels and act as drainage elements. In every mouza more or less such natural channel, khals and waterways carry the excess storm water to the connecting river lying further in the down stream. Sometimes old and silted-up khals are re-excavated to improve drainage efficiency. Most of the natural khals carry the local storm water particularly runoff from

the Mouza / Mouzas those it passes through. Khals are narrow and deep in cross-sections; on the other hand waterways are shallow and wider. Physical feature survey maps, field survey maps (river, khal / drainage) show the drainage khals and waterways and their database shows the dimensions. The sketches below show the sectional view of khals and waterways.



12.2 Existing Drainage Network

12.2.1 Introduction

Existing drains in the Paurashava have not formed any network; only household centered construction to drain out waste water. Existing canal, pond and ditches are trying to manage the drainage requirements. Lack of drainage network is causing water logging in the Paurashava area when it rains. All drainage networks require to be developed with primary, secondary and tertiary drains to mitigate the current water logging problem.

Further development of drain should follow the bulk density and construction is being proposed in the Drainage Plan. Length, width and depth of the drain have considered according to the density of population, road width and out falls. Slope of the drain should be maintained according to the slope of the area and the level of river water according to the seasons.

12.2.2 Existing Drainage System / Network

Natural Drainage System: There are 167 ponds, 63 ditches, six canals and a river (Bangshi River) covering 176.3 acres area of Mirzapur Paurashava. The river Bangshi flows through the north-east part of the Paurashava. The canals are trying to serve the drainage requirements of the Paurashava and falls into the river. Among the drains, only at five Wards drains have been found to be connected to these canals; whereas ponds/ ditches have been found to be connected with existing drains/ canals. The entire drainage network is required to be developed with primary, secondary and tertiary drains to mitigate the water logging problem. All pucca drains are linked with the natural water bodies like canal and river as an outfall. As a result, waters of the river and canals are polluting through those discharging elements. This is the natural scenario of the country.

There are linkages between natural and man-made drainage system. But how much effective and active the linkage is with the poorly maintained man-made drains is a question. Almost half of the depth of the man-made drain is filled with solid garbage; as a

result, the channel is not properly functioning. Water bodies are abundant in numbers in the Paurashava. Water retention during flood and rainy season is being a source for bathing, washing, fishery and cultivation.

Table 12-4: Existing natural drainage network of Mirzapur Paurashava

Water Bodies	Nos.	Area in Acre
Pond	167	176.3
Ditch	63	
Canal	6	
River	1	
Total	237	

Source: Topographic Survey, 2009

Man-made Drains:

The existing man made drainage network condition in the Paurashava has been highlighted in Table-7.1. These man-made drains are both katcha and pucca. Out of these nine Wards, Ward No 03, 05, 07, 08 and 09 has pucca drains. The quality of these drains are very poor and without cover. It is mostly open drains. The total length is 1.13 km and 1.04 km of pucca drain and around 0.09 km of katcha drain comprise the man-made drainage network of Paurashava. Mirzapur Paurashava has also 29 bridges, 25 culverts and R.C.C pipe culverts for maintaining the flow of natural flow of rain water.

Table 12-5: Existing man-made drains of the Mirzapur Paurashava

Sl. No.	Types of Drain	Length (km)
1.	Pucca Drain	1.04
2.	Katcha Drain	0.09
Total		1.13

Source: Drainage and Environment Survey, 2009

Survey study demonstrates due to lack of proper planning of drainage central part, especially the bazaar road area, has the inundation problem. The average width of drain is 0.3 meter.

The drainage condition, the serviceability, structural conditions, obstruction, situation, blockage are all found in the man-made drain network. The bad or poor drains usually had damaged side walls, surfaces with obstruction, debris, solid waste, irregular water way etc.

Uncovered drains are common feature and the result of uncovering is ultimately filling and losing the drain. Necessity of covering the drains are not only from environmental and safety perspective but also it is a local need. Adjacent rivers are using as a part of natural drainage system.

12.2.3 Analysis on Land Level Topographic Contour

The study area is located entirely on the floodplains of the Bangshi River and comprising mostly recent alluvium. The topography is very gentle undulating, with major ridges and associated lower basins in most cases. The basins are moderately to deeply flooded and often remain wet during monsoons. The Mirzapur Township is on higher ground above

the annual flood level. Numbers of smaller channels are connected with the Bangshi River to drain the rain water from the Paurashava.

The study area of Mirzapur Paurashava has been surveyed with RTK-GPS/DGPS and Total Station as per specification for spot interval given in the ToR. For this 1440 spot values were collected for the study area. A contour line/contour joins points of equal elevation (height) above mean sea level. A contour map is a map illustrated with contour lines which shows valleys and hills, and the steepness of slopes. The contour interval of a contour map is the difference in elevation between successive contour lines. The lowest spot height is 0.716 m PWD and the highest spot height is 16.919 m PWD. Around 32.4% of the spot heights are between 8.001 m to 10.000 m and average height of land of the surveyed area is 6.713 m PWD. Details of Land Levels and spot value are shown in the Table-12.6 and Table-12.7 below:

Table 12-6: Spot Value and their Unit (Number of Spot (Z) Value and their Statistics)

Sl. No.	Spot Unit	Value
1	Total Spot Number	1440
2	Mean (Meter)	6.84
3	Maximum Height (Meter)	16.919
4	Minimum (Meter)	0.716
7	Standard Deviation	3.079977

Source: Topographic Survey, 2009

Table 12-7: Spot Interval and Frequency

Sl. No.	Spot Interval	Spot Number (Frequency)	%
1	0.716-2.000	165	11.5
2	2.001-3.000	58	4.0
3	3.001-4.000	19	1.3
4	4.001-6.000	303	21.0
5	6.001-8.000	333	23.1
6	8.001-10.000	467	32.4
7	10.001-12.000	47	3.3
8	12.001-14.000	40	2.8
9	14.001-16.919	8	0.6
	Total	1440	100

Source: Topographic Survey, 2009

From the spot level values having the x, y and z values being determined for the surveyed area, a contour map of the surveyed area has been prepared. The dense contour areas were generally high lands, which are shown in Map 12.1. Medium dense contour areas were medium high land and low land area generally less dense contour value lands.

It is quite true that there would be some similarity between contour description and appearance with land level. Wherever, the contour map showed very few contours, its appearance was then white or blank and these were flat land areas. The flat lands may be medium high, medium low and lowland. The medium high lands exist with medium

Map 12.1: Existing Drainage Network of Mirzapur Paurashava

Map 12.2: Land Level of Mirzapur Paurashava

spacing of contours in all over the surveyed area. From the map 12.1 it is shown that Topography of different wards of Mirzapur Paurashava is almost same to mean elevation. In this connection, ward 03, 05 and 09 are of medium elevation (between 9.93m to 2.00m). On the other hand, a major portion of ward 07 has high elevation (11.02m). Summary result of contours generated is presented in table 12.8.

Table 12-8: Contour derived from the spot elevation

Sl. No.	Contour Unit	Value
1	Total Contour Number	1100
2	Mean (Meter)	6.33
3	Maximum Height (Meter)	16
4	Minimum (Meter)	0
5	Standard Deviation	3.12253

Source: Topographic Survey, 2009

12.2.4 Analysis of Peak Hour Run off Discharge and Identification of Drainage Outfalls

Mirzapur Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Tangail district. The rainy season occurs mainly from June to October. The dry season extends from November to March and is cool and almost rainless, receiving less than an average of 120 mm for the total 5 months period. April to May is the pre-monsoon season, with high temperatures and periodic thunderstorms. The maximum temperature recorded in April is 33.9 degree Celsius and the minimum temperature is 11.4 degree Celsius in January. In 2009, the Paurashava had experienced 1875 mm rain of which about 72% occurred during the monsoon. The duration of maximum rainfall was 16 days in July and the duration of minimum rainfall was 2 days in the months of November, December and January. So it had rained in all the months of that year.

No peak hour run off storm water discharge is found. During rainy season, rain water is being drained through the canals and drains. All pucca drains are linked with the canals and natural water bodies as an outfall. As a result, waters of the river and other water bodies are polluting through those discharging elements. The Bangshi Rivers is the outfall of all natural and man-made drained water.

12.3 Plan for Drainage Management and Flood Control

12.3.1 Plan for Drain Network Development

Drainage network in the Paurashava is mostly under govt. initiative. There is no well organized, well constructed drainage pattern / network encompassing all the Wards of the Paurashava. Whatever drainage network that exists is mostly constructed by the Paurashava authority. Drainage aspects plays a vital role in clearing waste water but the survey finds most of the drainage network unable to function due to poor maintenance, design, debris accumulations and faulty gradients. Drainage must receive image priority in Ward Action Plan as water logging within selected places of Paurashava is saver, therefore, planning options for drainage of the future Paurashava area including Water Development and Flood Control Projects, should be seriously pursued. The present

inefficient drainage needs to be well designed encompassing all the Wards right from household level to main road. There is no drain for household storm waste. Existing open drains are being obstructed with rubbish and reduce the discharge facilities, creating health hazards.

12.3.1.1 Drain Network Plan

There is a need to develop a planned drainage network. The activity for the relevant authority will be assisted by the preparation of the drainage master plan for the Paurashava which details the necessary corridors, sizes and generalized locations for:

- Primary Drain
- Secondary and tertiary drain
- Storage ponds
- Silt traps
- River embankment

Initially, the Paurashava will encourage implementation of the first phase recommendation of the drainage master plan. A brief summary of the proposals to be undertaken in Phase-1 is given below. Reference should be made to the Map for identification of the drainage areas referred in the text.

Phase-1 (Storm water drainage)

- Improvements and the removal of obstacles from existing canals, drainage areas and link up of the missing link of existing drainage. Conservation of all ditches and ponds above 0.25 acres for retaining the storm water.
- Construction of new secondary and tertiary canals in drainage areas and provision of flood control regulators in drainage areas marked as in the map.

Phase-2 (Rain water and household drainage)

- Construction of surface drain linked with the residences, may be covered or uncovered.
- Provide linkages with secondary and tertiary drains.
- Out-fall of such drains may be nearby low-lands and river.
- For discharging of rainwater from commercial areas, covered surface drain may be constructed and they will be linked with the secondary and tertiary canals.

12.3.1.2 Proposal for Improvement of the Existing Drain Networks

A wider scope for construction of a drainage system may be provisioned in the Paurashava. At least central areas are open for such development immediately and other areas may be followed for projected period as designed in the plan. Except the core area the Paurashava has wide scope for imposing drainage system. The principles required for drainage plan are available in the area. Land slope, nearness of the natural drainage, sparse population density and soil condition are in favour of drainage construction.

Map 12.3: Proposed Drainage and Flood Control Components

Drainage corridors: If a drainage network has to be installed, the drainage originating throughout the Paurashava would be carried by means of surface drains and culverts. These should be accommodated within road reserves.

General location required: For sewerage treatment plant, large plot will be needed, preferably on outskirts of the Paurashava. For sewerage pumping station, small plots throughout the Paurashava will be needed and a system should be introduced.

Maintaining of land slope: Important component of the drainage network is land slope, which was not maintained during the construction of existing drains. The slope of the Paurashava is found towards north-west to south-east. Slope of all drains should maintain this direction.

12.3.1.3 List of Proposed New Drains

For the removal of existing drainage congestion and provisioning of effective drainage system, a planned drainage network has been proposed. Which are shown in the map 12.3 shows. A number of new primary and secondary drains have been prescribed. In the Paurashava, existing length of the drain is 1.13 km. and about 44.45 km drain is being added as a proposal of which 9.34 km are primary drain and 19.17 km are secondary drain and rest 15.93 km are tertiary drain. To develop a network, all Wards have been considered and in some places emphasize has given providing on missing links rather than new. The details of drainage proposal with phasing of development are shown in Annexure-3.

Table 12-9: List of proposed new drains

Sl.No	Type	Length (m)	Length (km)	Length (%)
1.	Primary	9,342.84	9.34	21.01
2.	Secondary	19,170.00	19.17	43.13
3.	Tertiary	15,933.00	15.93	35.84
Total		44,445.84	44.45	100.00

12.3.1.4 List of Infrastructure Measures for Drainage and Flood Control Network

There are altogether 8 bridges (RCC) and 34 culverts (RCC) in the Paurashava. Those bridges and culverts are located on the canals and drainage channels. The study area is flood prone area. Water logging is common, dyke is an important issue for this Paurashava, but there is no dyke or embankment in the Paurashava.

Except the above infrastructure, more 4 Bridge and 21 culvert will be needed on different proposed roads as presented in the map.

Table 12-10: List of existing and proposed infrastructures for drainage and flood control

Name of infrastructure	Existing (No.)	Proposed (No.)
Bridge	8	4
Culvert	34	21
Sluice Gate	4	0
Flood Wall	0	0
Road cum Embankment	0	0
Flood Embankment	0	1

12.4 Plan Implementation Strategies

12.4.1 Regulations to Implement the Drainage and Flood Plan

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.

12.4.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

Implementation through Multi-Sectoral Investment Programme: 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 Programme (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: Landuse 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 efficiency 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 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 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 winning people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land. Attempts may be made to engage NGOs / CBOs to work as catalysts in negotiation.

12.5 Environmental Management Plan

12.5.1 Introduction

The plan has documented Mirzapur Paurashava area's environmental conditions, determines potentiality for present and past site contamination (e.g., hazardous substances, petroleum products and derivatives) and identifies potential vulnerabilities (to include occupational and environmental health risks).

12.5.2 Goals and Objectives

Based on the information and data on the air, water, noise, soil, drainage congestion, river erosion, garbage disposal and industrial and clinical wastes an effective and action oriented plan is required as prescribed in the ToR. Preparation of environmental management plan is the ultimate goal of this study.

12.5.3 Methodology and Approach to Planning

Environmental survey has conducted following the standard methods and procedures to determine environmental pollutions. Elements of pollutions of environment are air, water, land and noise for the development of urban areas. The Consultants have taken necessary assistance and information from the Paurashava Mayor, Councilors, Engineers and other concerned officials as well as the general inhabitants to determine pollution in air, water, land and noise. Based on the information and data collected from the field and secondary sources, detailed report has been prepared. Data collection format and questionnaire was approved by the PD of UTIDP, LGED. The data collection procedure incorporates discussion meeting with the Paurashava Mayor, Councilors and other Paurashava representatives. Discussions were also made with other GOs like DPHE, BADC, etc. and NGOs representatives working in the Paurashava.

12.6 Existing Environmental Condition

12.6.1 Introduction

The Paurashava is a part of greater Faridpur district. Some information has collected from secondary materials and they are on geology, soil and sub-soil condition, climate, temperature, humidity, rainfall, wind direction and hydrology. Other relevant information is being collected from field survey and they are mostly on the environment pollution. Those information presents sequentially in the following paragraphs.

12.6.2 Geo-morphology

Geology, Soil and Sub-soil Conditions: Mirzapur Paurashava is located entirely on the floodplains of the Bangshi River and comprising mostly recent alluvium. The topography is very gentle undulating, with major ridges and associated lower basins in most cases. The basins are moderately to deeply flooded and often remain wet during monsoons. The Mirzapur Township is on higher ground above the annual flood level. Numbers of smaller channels are connected with the Bangshi River to drain the rain water of the Paurashava.

On the other hand, Geosynclinals Basin in the southeast is characterized by the huge thickness (maximum of about 20 km near the basin centre) of elastic sedimentary rocks, mostly sandstone and shale of Tertiary age. It occupies the greater Dhaka-Faridpur-Noakhali-Sylhet-Comilla-Chittagong areas. The huge thickness of sediments in the basin is a result of tectonic mobility or instability of the areas causing rapid subsidence and sedimentation in a relatively short span of geologic time. The geosynclinals basin is subdivided into two parts i.e. fold belt in the east and a fore deep to the west.

In the Paurashava, sub-soils are being eroded naturally and the soil varies from place to place and composed of clay to fine sand from 0-40 ft depth, fine sand to very fine sand 40-160 ft, fine sand to medium sand 160-260 ft. Medium sand to coarse sand is available from 260 ft to 380 ft depth and in rest of the depth are hard clay, fine sand and coarse sand formed entirely by the deltaic action of the Ganges, which brought mud and limestone from Himalayas.

To a great extent, soil of the Paurashava is uniform in character. Only variation observed is in greater or smaller admixture of sand, silt and clay in grayish and dark gray colours. Along the riversides, it is found that the percentage of sand is higher and in the areas where deltaic action has ceased is lower. The load bearing capacity of this soil is very poor.

Soil types, strength and density characteristics based on Standard Penetration Test Values (N) have been mentioned for the different types of deposits at various depths.

Cohesive silt and clay layers having N-values less than 4 are very soft to soft and are not considered suitable to support any civil engineering structures without ground improvement. There are only a few areas near the waterfronts (of Bangshi Rivers) with such low N-values in the surface underlain by comparatively strong clay and sand soil

strata. Sand layers with variable quantities of silt/clay having N-values less than 10 are considered very loose to loose. In a few locations such weak sandy layers occurred. They occurred usually in the surface layers.

The natural clay soils of investigated area can be divided into two major groups distinguished by their colours as under:

- Red clay : Light brown to brick red and massive, containing ferruginous and calcareous nodules.
- Mottled clay : Earthy grey with patches of orange, brown colour, massive and contains ferruginous and calcareous nodules.

Again, in the filled up areas (along the National Highway, from Dhaka to Barisal via Mirzapur) there are mixtures of many coloured soils carried from different borrowing areas. Consistency of cohesive soil deposits (plastic silts and clays) and relative density of cohesion less soil deposits (non-plastic silts and sands) have been described in accordance with internationally accepted terms, which give approximate indication of strengths of the soil strata encountered at different depths.

Table 12-11: SPT N-Values

Consistency	SPT N-value	Allowable bearing Capacity (kPa)
Very soft	0–2	< 25
Soft	2–4	25–50
Medium	4–8	50–100
Stiff	4–15	100–200
Very stiff	15–30	200–400
Hard	> 30	> 400

For plastic silts and clays consistency terms like very soft, soft, medium stiff, stiff, very stiff and hard indicate the following approximate allowable bearing capacity of the different soil strata estimated on the basis of SPT N-values.

For cohesion less soil deposits (non-plastic silts and sands) relative density has been described with terms like very loose, loose, medium dense, dense and very dense on the basis of SPT N-values measured in the different cohesion less soils strata encountered within the explored depth of 15m. These relative density terms give the following approximate strength characteristics based on SPT N-values.

Table 12-12: Strength Characteristics

Relative Density	SPT N-Value	Estimated Shearing Angles	Strength Characteristics
Very loose	> 4	28°	Very poor
Loose	4–10	30°	Poor to fair
Medium dense	10–30	32°	Fair to good
Dense and Very dense	> 30	34°	Good to excellent

Climate: The Paurashava of Mirzapur has a pronounced tropical monsoon climate. The mean temperature ranges from about 33.9°C in April to about 11.4°C in January. Mean

annual temperature is about 25.6°C. Average annual rainfall is about 2148 mm of which occurs in seven months from April to October. Physically the Paurashava is characterized by alluvial formations caused by Bangshi River. The maximum temperature recorded in April is 33.9 degree Celsius and minimum temperature recorded in January is 11.4 degree Celsius.

The data has been taken from the Tangail Station as it is the nearest meteorological station and as there is a similarity of climatic condition between Tangail and Mirzapur to some extent.

Temperature: In 2009, Mirzapur Paurashava had three distinct seasons: winter (November-March), dry with temperature 11.4° to 18.7°C; the pre-monsoon season (April-May), gradually increasing rain and hot with temperature reaching up to 33.9°C; and the monsoon (June-October), very wet with temperature around 32°C.

Humidity: Mirzapur Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Dhaka district. Average annual rainfall is about 2148 mm mm of which occurs in seven months from April to October. The dry season extends from November to March and is cool and almost rainless, receiving less than an average of 120 mm for the total 5 months period. March to May is the pre-monsoon season, with high temperatures and periodic thunderstorms and the monsoon (June-October) is very wet season with heavy rains in regular interval.

Rainfall: Mirzapur Paurashava lies in the tropical monsoon climatic region and more specially, represents the climate of Tangail district. The rainy season occurs mainly from June to October. The dry season extends from November to March and is cool and almost rainless, receiving less than an average of 120 mm for the total 5 months period. April to May is the pre-monsoon season, with high temperatures and periodic thunderstorms. The maximum temperature recorded in April is 33.9 degree Celsius and the minimum temperature is 11.4 degree Celsius in January.

In 2009, the Paurashava had experienced 1875 mm rain of which about 72% occurred during the monsoon. The duration of maximum rainfall was 16 days in July and the duration of minimum rainfall was 2 days in the months of November, December and January. So it had rained in all the months of that year.

Wind Directions: In Tangail district, general direction of the wind is same as Jamuna Basin, south-west changing to east towards the head of the valley for the greater part of the year, with a north and north-west direction during the month of April and May. It is observed that winds are stronger in summer in the months of April and May (3 to 6.5 knots) than in winter in the month of November and December (1.5 to 3.0 knots).

Hydrology: River, Canal/ Khal and pond are the hydrological components of the Paurashava. Those components are occupying 176.3 acres land of the Paurashava. The canals are linked with the rivers Paurashava surrounded by. In dry season, most of those canals are using as agriculture land and in the rainy season they submerges lowlands of the Paurashava. The ponds are spottedly located around the Paurashava. Small numbers

of them are larger than one acre. In dry season, ponds water are using for bathing and washing purposes. Canal water generally uses for irrigation purposes.

12.6.3 Solid Waste and Garbage disposal

12.6.3.1 Household Waste

Condition of solid waste management system is not satisfactory. In fact, there is no waste management system exist in the municipality. People are found to dispose their waste into the nearby low land, ditches, drains or in the vacant land. There are only 4-5 dustbins spread over the whole municipality but no proper system for the collection and disposal of the wastes. The Paurashava do not have a planned Waste Dumping Ground. Therefore, there is risk of land and water pollution. There are 7 private hospitals and clinics and one big hospital (Kumudini Hospital and Medical College) located within the Paurashava that generate huge amount of hazardous wastes but they are not well managed in the absence of treatment plant.

12.6.3.2 Industrial Waste

No industrial waste available in the Paurashava.

12.6.3.3 Kitchen Market Waste

Kitchen market waste is being dumped on the low lands available around the market.

12.6.3.4 Clinical / Hospital Waste

Existing health facilities are poor in number. There are 7 numbers of health centers in the Paurashava of which Kumudini hospital is the main actor and clinical waste are well organized by this hospital. There is no arrangement for clinical waste management in the Paurashava. The clinics and hospital 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.

12.6.3.5 Waste Management System

Solid waste collection and disposal in Mirzapur Paurashava is the responsibility of Paurashava authority. The logistics for collection and disposal of solid wastes include 15 sweepers for collection and 1 garbage truck for transportation. Solid waste from the point of generation to the final disposal can be grouped into three functioned elements -

- Waste generation and storage
- Collection
- Final disposal

Waste Generation and storage: Households within the area are producing 3 tons of domestic solid wastes per day.

Collection: The waste collection is done in the following three stages:

- The residents themselves take domestic refuses from households to the intermediate dumping points.

- Street and drain wastes are collected and dumped at intermediate disposal points by the municipal sweepers and cleaners.
- Final collection from the intermediate points and its disposal to the dumping yard by the conservancy worker.

Final disposal: The authority used to dump in low lands on the basis of land owner's interest or nearest ditches.

12.6.3.6 Latrine

Toilet system of the study area is mostly categorized as pucca and katcha. In spite of this, Paurashava has a modest development of pucca toilets in government zones. Sewerage system has not been introduced on a trial basis as to their popularity and acceptance. Ownership of toilets varies widely in most of the Wards. Most of the households have their own toilets and at the same time there is joint toilets found in slum areas. Sanitary toilets or pucca toilets are comparatively good in all the Wards. Only 11% katcha toilet is found in the Paurashava and owner of those toilets are poor people.

12.6.3.7 Industry

There are no big industries in the planning area. Small number of light industrial agglomeration is found in the study area. Industries are located in nine Wards and those are of different types like Brickfield, Saw mill, Husking mill and Oil mill. All of those are light industries. The percentage of industrial area is the highest in Ward No. 06 and it covers an area of 2.62 acres out of 4.62 acres.

It is found that those establishments have problems and potentialities. Careful consideration will help to resolve those problems and adoption of necessary policy initiatives will help to flourish the existing units and draw more investors and entrepreneurs to set up new manufacturing industries, which will be based mainly on local agro-products.

12.6.4 Brick Field

There is a brickfield located souther side in the Paurashava.

12.6.5 Fertilizer and Other Chemical Use

The fertilizer and chemical uses in the agriculture field for increasing agriculture production are Urea, Potash, Gypsum and Nitrogen Sulphate, Bashudin, Diazinon, Sumithion and Padan. Those chemicals are being contaminated with the surface water and create water pollution. Those chemicals and insecticides are creating water pollution of the Arialkhan and Palardi Rivers. For more details Chapter-8 of the Structure Plan (Environmental Issues in Agriculture Practice).

12.6.6 Pollutions

12.6.6.1 Water

Water is considered polluted when it altered from the natural state in its physical condition or 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 is the result. Water pollution also occurs when rain water runoff from urban and industrial areas and from agricultural land and mining operations makes its way back to receiving waters (river, lake or ocean) and into the ground.

The only source of drinking water in this Paurashava is ground water, which is extracted at the household level by tube-well. According to the report of Ground Water Task Force under Ministry of LGRDC (July, 2002) only the Northeast corner of Mirzapur Paurashava is covered by Modhupur Clay Deposits and this part is still Arsenic Safe. Presently, there are 2820 tube wells in the Paurashava. The report of CDIP under DPH (30 September, 2002) say that 42% tube wells are arsenic free, 49% are slightly arsenic free, 5% tub wells are arsenic contaminated and 4% tube wells are out of order. Iron is also a source of ground water pollution. About 20-30% tube wells are found with iron contamination. Survey found no salinity problem in its ground water. According to environmental study 2009 and collected data from Department of Public Health and Engineering (DPHE), water table fluctuates in the wet and dry season. In the wet season ground water table found within 15-20 ft and in the dry season it goes down to 35-50ft. The Paurashava also have drainage problem which create water logging as well as water pollution. Mirzapur Paurashava has no sufficient number of waste bins and dumping place for garbage management so this creates severe air and water pollution.

As Mirzapur Paurashava has no industry that could contribute to surface water pollution, there is no significant event of surface water pollution. Only run-off rainwater from built up area and some toilets directly opened to water bodies are the main cause of surface water pollution but the extent of pollution is trivial. In ward no. 3, mixed line of toilet and water channel is the main reason for surface water pollution.

12.6.6.2 Air

Sources of air pollution in Mirzapur Paurashava are not much. Survey result reveals that there are only two brickfields in the Paurashava but no other noxious air polluting industries. Only source of air pollution is heavy movement of vehicles on the Dhaka-Tangail Highway and the roads in and around the Market area. Paurashava has no medium to large Industry except small manufacturing developments e.g. saw mill, rice husking mill and poultry firms which creates huge column of smoke and hot gases. Air pollution depends on the level of concentration of pollutants in the air. In that consideration smoke of the vehicles cause little difference in the ambient air quality of Mirzapur Paurashava.

12.6.6.3 Sound

Sound/Noise pollution is basically consists of unpleasant displeasing human, animal or machine created sound that disrupts the activity or balance of human or animal life. A common form of noise pollution is from transportation, principally motor vehicles. Other sources are car alarms, factory machinery, construction work, audio entertainment systems, loudspeakers and noisy people.

Sound pollution is occurred during day time specially three specific areas of this Paurashava. At Thana *mour*, in front of market area mass people with different transport modes make more noise than other times. Buses from Kapasia Road are putting down passengers in the front of Chandan Bari S. A. Pilot Girls High School (Upazila Intersection). That's why some commercial establishments are developing here gradually and the intersections are also turning in to a crowded area. Highway Bus Stand is also a crowded area for stopping of buses and establishment of Hat area besides the intersection.

12.6.6.4 Land Pollution

Soil pollution is basically about contaminating the land surface of the earth through dumping urban wastages indiscriminately, dumping of industrial waste, mineral exploitation and misusing the soil by harmful agricultural practices.

Soil 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 losing their productivity day by day. At 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.

12.6.6.5 Arsenic

The only source of drinking water in this Paurashava is ground water, which is extracted at the household level by tube-well. According to the report of Ground Water Task Force under Ministry of LGRDC (July, 2002) only the Northeast corner of Mirzapur Paurashava is covered by Modhupur Clay Deposits and this part is still Arsenic Safe. Presently, there are 2820 tube wells in the Paurashava. The report of CDIP under Department of Public Health and Engineering (30 September, 2002) say that 42% tube wells are arsenic free, 49% are slightly arsenic free, 5% tub wells are arsenic contaminated and 4% tube wells are out of order.

12.6.6.6 Other Pollution

From the field survey it is found that there is no arrangement for waste management. The people are 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.

12.6.7 Natural Calamities and Localized Hazards

12.6.7.1 Cyclone

A disaster is the tragedy of 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) that affects the environment and leads to financial, environmental or human losses. Man-made disasters are disasters resulting

from an element of human intent, negligence, or error, or involving a failure of a man-made system.

The Paurashava area including the Mirzapur Upazila has affected by the several major natural disasters ranging from Cyclone, Flood to Water-logging and Draughts, etc. The periods of those disasters are 1998, 2000, 2004 and 2008. Very scanty attempt has been made by government to rehabilitate people after the natural disaster.

Urbanization is taking the lands of other uses to residential use. For this purpose agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In Mirzapur Paurashava, wet lands are filled up and agricultural lands are converted. This has been identified as the major man-made disaster accelerating the degree of conversion year to year. Use of poisonous insecticides on the agricultural land is another man made disaster which will affect in the long run.

12.6.7.2 River Erosion

Paurashava has slight problem of riverbank erosion on the bank of Bangshi River, especially during the rainy season. The occurrence of erosion is mentionable from Trimohon Shallowghat through Postokamuri Purbopara to Baoarkumarjani. Land loss by erosion and river siltation are the two unusual geological conditions that exist in the Paurashava area.

12.6.7.3 Flood

Remarkable flood is not occurring during over the years at Mirzapur Paurashava. During heavy rain there happening some water logging in specific low laying areas for a short time. The river and riverside area turns to run of full water all through the monsoon season.

12.6.7.4 Earth Quake

The Paurashava is not in earth quake zone.

12.6.7.5 Water-Logging

This municipality has 167 ponds, 63 ditches, 6 khals and a river. There is an opportunity to use these for draining out the rainwater. According to the environmental survey 2009, Mirzapur Paurashava does not suffer water logging so much in the rainy season. Water Most of the time water discharges to these water bodies.

12.6.7.6 Fire Hazard

In Mirzapur Paurashava there was not any mentionable fire hazard occurred. With the increase of population, chances of fire incidence may increase for offices, institutions, market places and industries. Electric short-circuit is mainly responsible for fire hazards in urban area. Human error may also cause incidence of fire hazard sometimes.

12.6.7.7 Other Hazards

Urbanization is taking the lands of other uses to residential use. For this purpose agricultural lands and water bodies are being chosen most frequently and the lands are being converted into urban settlement. In Mirzapur Paurashava, wet lands are filled up

and agricultural lands are converted. This has been identified as the major man-made disaster accelerating the degree of conversion year to year. Use of poisonous insecticides on the agricultural land is another man made disaster which will affect in the long run.

12.7 Plan for Environmental Management and Pollution Control

12.7.1 Proposals for Environmental Issues

In Mirzapur Paurashava, noise pollution is occurring from saw mills and rice husking mills.. Air pollution is caused by dust emitted from saw mill, rice hushing mills and furniture shops. Also flood water and water-logging are creating health hazards. Dysentery, diarrhea, etc. diseases occurs due to Water logging. These above varies are extremely important uses of concern for the Paurashava. Pragmatic planning / solution and proper Drainage Master Plan are very pertinent issues which will be of utmost importance in planning the Mirzapur Paurashava.

However, implementation of activities like roads, drainage, bridge / culverts, housing and industrial establishments and bazars will radically change the natural topography and landuse pattern. The agricultural land will be converted into urban and semi-urban area. Existing scenic beauty will disappear; water bodies will lost and general slope will be diminished for earth filling due to urbanization. Therefore, in the process of preparation of Master Plan, Structure Plan and Ward Action Plan, consideration of those factors will be made for keeping the natural environment.

For a better living environment above environmental phenomenon should be considered with the systematic planning principles and regulatory measures. With these views, people's awareness should be increased about the fair living environment through different public activities. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

12.7.1.1 Solid Waste Management Plan

Solid waste management is a crucial problem for the Paurashava. The Mirzapur Paurashava does not have the sufficient capability to handle the huge waste generated by the residents due to narrowness of roads, lack of local collection sites stand as impediments to waste management. Particularly in informal/spontaneous areas due to existence of narrow roads the garbage trucks can not enter for removal and transshipment of the garbage. In most places there is no road side open space for locating garbage bins. Garbage is often found to be disposed off on low lands. As a result rotten garbage spoils the local environment of the area posing health hazard of the local residents. No dustbin is in the Paurashava whereas the daily waste produced is about 3 tons and most of those garbages throw to the nearby low lands. A 3.86 acre Waste Dumping Ground was at ward no-4 of the Paurashava.

For an efficient solid waste management system, it is recommended to engage, CBOs, NGOs and micro enterprises on contract basis for collection and disposal of solid waste and street sweeping.

12.7.1.2 Open space, Wet-land and Relevant Features Protection Plan

A total of 120.30 acres of land has proposed for open space and recreational facilities development. It includes Community Park, stadium, central park, shisupark and playgrounds.

- The authority named Bangladesh Sports Council in collaboration with the Paurashava authority may construct the stadium. The stadium should use regularly with various programs.
- The land prescribed for tourism development, Bangladesh Parjatan Corporation should be the responsible authority to implement those tourism components. Domestic tourists should be emphasized rather than international in considering establishment of tourism components. Rainwater harvesting will be the major component of this tourism site. This sector can improve economic capability of the Paurashava dwellers rapidly.

12.7.1.3 Pollution Protection Proposals

12.7.1.3.1 Industrial / Brickfield

Small number of light industrial agglomeration is found in the study area. Industries are located in nine Wards and those are of different types like Brickfield, Saw mill, Husking mill and Oil mill. It is found that those establishments have problems and potentialities. Careful consideration will help to resolve those problems and adoption of necessary policy initiatives will help to flourish the existing units and draw more investors and entrepreneurs to set up new manufacturing industries, which will be based mainly on local agro-products.

- All the industries are in mixed-use areas. Some of them will be re-arranged and shifted to the proposed industrial site.
- A green buffer will create around the proposed industrial site; it will separate the area from adjacent landuses and at the same time, environment will be livable.
- In future, the proposed industrial site will also be identified as a site for polluting industry (as identified by the Directorate of Environment). In that, provision of recycling plant should be attached with the individual industry.
- Any brickfield should not be allowed in the Paurashava jurisdiction.

12.7.1.3.2 Air / Water / Land / Sound

For a better living environment above environmental phenomenon should be considered with the systematic planning principles and regulatory measures. With these views, people's awareness should be increased about the fair living environment through different public activities. Arrangement of landuses should be provisioned for all the public and private organizations as their necessities.

The Paurashava is rural based urban area. River and ponds and other water bodies still below the danger level of pollution. Let it should not be increased. Still people awareness

is possible for reducing contamination of ground water. People may aware about the use of pesticides in agriculture field, solid waste disposal in a systematic manner and improved sanitation facilities.

12.7.1.3.3 Other Pollution

At present, control of urbanization and dumping of clinical wastes are the major concern of environment pollution of the Paurashava. Controlled urbanization according to this plan may remove the pollution through urbanization. Control on area / use density, height density and bulk density are the means of pollution protection through urbanization. A specific site within the compound of health services should be provisioned, thus pollution through clinical wastes will be controlled.

12.8 Natural Calamities and Regular Hazard Mitigation Proposals

12.8.1 Protection Plans Addressing Natural Calamities

Change in Topography and Mitigation: The main ground slope of the study area is northeast to southwest direction. Natural topography of the Paurashava has already been changed for urbanization. Implementation of Master Plan activities like roads, drainage, bridge/ culvert, housing and industrial estates, bazars and growth centers will radically change the natural topography and landuse pattern of the study area. Agricultural area will be converted into urban and semi-urban area. Present green scenic beauty will disappear, water bodies will be lost and general slope will be diminished for earth filling due to urbanization.

1. Careful planning will be needed to minimize the change of topography.
2. Avoid water bodies during planning 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 Paurashava.
5. Preserve the Beels with demarking buffer distance.

Landuse Change and Mitigation: Major portion of the study area is rural setup, with predominance of agricultural landuse. However, urban and semi-urban landuses are observed in the Paurashava and its surrounding areas. With implementation of the Master Plan, rural setup and agricultural landuse pattern will be changed radically into urban landuse type.

1. Keep water bodies and productive agricultural land free from urban development as long as possible. Vertical development may be encouraged rather than horizontal.
2. Careful planning is necessary to reduce change of agricultural landuse and rural setup.
3. Economic use of land should be emphasized.

Drainage Congestion and Mitigation: Drainage congestion may increase further with urban sprawl development. Faulty design, solid waste and rubbish dumping, encroachment and un-authorized structures, siltation, lack of renovation and re-

excavation are the main causes of drainage congestion. Drainage system that exists in the study area is not well enough to carry the surface run-off properly. The outlets of these drainage networks are mostly connected with nearest water body. These water body is filling up, as a result, drainage congestion generates. And thus many areas are subjected to water logging during the heavy rainfall causing inconvenience to the people of the area.

1. Make proper drainage network in new area considering the slope and local topographical condition.
2. Remove all unauthorized structures, which developed on drainage structures.
3. Prohibit the people in dumping of rubbish and solid waste in drain.
4. Regular cleaning and maintenance by the concerned authorities.
5. Demarcation of water bodies, which can act as retention pond to avoid water logging from heavy rainfall.

Groundwater Table Declination and Mitigation: Fall of groundwater table is a common phenomenon in the study area during dry period (February-May). With expansion of urbanization and industrialization through the Ward Action Plan, the groundwater table may further fall if present tradition of using groundwater is continued.

1. Introduce rainwater harvesting system and use in the study area.
2. Stop land filling of ponds and water bodies to maintain the groundwater level through recharge and leaching process.

Groundwater Pollution and Mitigation: Groundwater pollution due to manganese, iron and hardness is a major problem of the study area. With expansion of urban area, more dependency on groundwater sources may increase the pollution level of sub-surface water.

1. Use surface water of Arialkha and Palardi Rivers for supply water.
2. Introduce rainwater-harvesting system.
3. Reduce dependency on groundwater.
4. Preserve surface water in ponds, khals, Beels, ditches and rivers for irrigation.

Noise Pollution and Mitigation: Although there is no data available on noise pollution of the study area, however, it seems that present noise level does not exceed the Bangladesh Standard. More noisy area may be the Bus Terminal area and Industrial and Market area. Hydraulic horn of buses and rickshaw bells are the main noise sources in the study area. However, some noises also generate during piling and construction works. Besides, welding workshops, saw mills, musical instruments and blacksmiths are also common sources of noise pollution in urban areas. With expansion of urban area, the noise pollution will be increased for increasing number of motor vehicles, market places, industries, etc.

1. Stop using hydraulic horn in buses, trucks and other motor vehicles.

2. Declare some areas like hospitals, schools, parks, etc. as silent zone.
3. Control abnormally high noise from saw mill, old machines should be repaired or replaced.
4. Foundation of machines should be specially prepared to reduce noise.
5. Special type of silencer may be attached with the machines to reduce noise.
6. Welding and blacksmith workshops can be fenced with glasses to protect the passersby from possible pollution effects.
7. People constantly working in welding and blacksmith workshops should wear earplugs and glasses. Regular medical checkups can be carried out to identify possible health problems.

Air Pollution and Mitigation: Present climatic condition of the study area is sub-tropical monsoon. With the implementation of Master Plan this climatic condition is expected to continue if further global climatic change does not occur. However, rainfall may slightly decrease in the study area for cutting of trees and diminishing of green vegetation for urban development. Trees and green vegetation keep environment cool and enhance precipitation and rainfall. Temperature may remain same as present. Urban development keeping vegetation, plants, water bodies and new social forestation in homesteads, educational organizations, roads, embankment and parks will help maintain the climatic condition same as present.

Air-pollution is not a serious problem in the study area. Vehicular emission is also insignificant in the area. Industries are the main sources of air pollution. However, the air pollution will be increased in near future with increase of motor vehicles and industries. With the implementation of Master Plan more industrial zones will be developed which will also induce air pollution in the study area.

1. Use catalytic converter in buses, trucks, taxis and tempos.
2. Use CNG instead of petrol and diesel.
3. Impose ban on movement of sand carrying trucks and conservancy vehicles during office period.

Loss of Biodiversity and Mitigation: Urbanization like roads, infrastructure development, housing, commercial places, industrialization, etc. will replace the existing natural green environment to man made environment. Trees will be cut down, water bodies will be filled up and polluted; sugarcane, paddy, banana, papaya and vegetable production will be reduced and mango garden and bush will disappear for urban expansion in new area. Wild animals, birds and fishes will lose their habitats and as a result a big loss of biodiversity will happen for urban expansion.

1. Avoid critical ecological area and refugee sites from development activities.
2. Aware people for keeping some trees and bushes around the homesteads.
3. Increase tree plantation in roadsides and homesteads.
4. Preserve the Beels for aquatic birds and fishes and some bush areas as wildlife preservation sites.

Parasitic Diseases and Mitigation: Parasitic diseases like dengue, malaria and filaria are not common in the project area. However, with the expansion of urban area, the prevalence of these diseases may increase in the project area. During last 3 to 4 years, the country faces dengue problem although this problem was negligible. This problem may happen also in the Paurashava for increasing urbanization and industrialization.

1. Regular mosquito eradication program in the project area.
2. Dengue carrying mosquitoes live in fresh water of tire, cans, bottles and flower tubs. Segregation of old tires; cans and bottles are required before dumping.
3. Remove additional water of flower-tubs and refrigerator cans regularly.
4. Improve drainage system and remove waterlogged areas in the project.
5. Regular cleaning of drain and removal of water hyacinth and other aquatic plants are required from ponds, ditches, khals and Beels.
6. Use mosquito net during sleeping at both night and daytime.
7. Increase people's awareness on parasitic diseases and mosquito control.

12.8.2 Protection Plan Addressing Regular Hazards

- Most of the natural canals and water courses will be preserved and maintained. The ponds larger than 0.3 acres should be preserved as a water reservoir.
- To protect northern and southern part from annual flood, a road cum embankment including two sluice gates will be needed and these will be controlled by the Water Development Board.
- For the removal of drainage congestion, sufficient number of bridges and culverts should be provisioned during construction of roads.
- Indiscriminate land filling for expansion and construction of residential areas and buildings should be controlled with the imposition of agriculture policy.

12.8.3 Protection Plan Addressing Encroachment and Other relevant issues

- As a measure of protection from encroachment restrictive buffer zone will be created on both sides of natural canals, rivers and other watercourses (if necessary). Walkways and plantation will be needed for the protection of those buffer zones.
- Formation of appropriate legislation on solid waste management will be necessary. People encroaches canal and river through dumping of solid wastes. Encroachment on road, canal and river should be removed as early as possible with the formation of joined collaboration committee. This committee may be formed with the members from Paurashava, LGED, RHD and WDB.
- Using of waste as an unutilized resource and assisting in recycling of waste for conservation of resources and protection of environment.
- Introduces environmental education especially sanitary habits in school curriculum.

12.9 Plan Implementation Strategies

12.9.1 Regulations to Implement the Drainage and Flood Plan

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 environmental components. The authority, according to the demand, will apply to the Deputy Commissioner for such acquisition.
2. Section 4 of the **Conservation of Environment Act, 1995** have prescribed duties and responsibilities of the Director. Most of those responsibilities are on the control of pollution.
3. Section 5 of the **Playfield, Open space, Garden and Natural Tank in Urban Areas Preservation Act, 2000** will be needed for the preservation of playfield, garden, open space and natural tank of the Paurashava.
4. Section 28 (1, 2 and 3) of the **Forest Act, 1927** has prescribed regulations on village forest, which is necessary for the formation of village / Paurashava forest.
5. **Water Hyacinth Act, 1936** was enacted for preventing the spread of water hyacinth in Bangladesh and for its destruction. It is said in the section 5 that, no person shall grow or cultivate water hyacinth in any garden or in any ornamental water or receptacle. Again, according to the section 8(1) said, with a view to facilitating the discovery or destruction of water hyacinth, an Authorized Officer may, subject to any rules made under this Act, by a notice served in the prescribed manner, direct an occupier of any land, premises or water within a notified area to cause-
 - a) any branches of trees or shrubs on any such land or premises which overhang the edge of any river, stream, waterway, ditch, marsh, bil, lake, tank, pond, pool or pit to be cut back and any undergrowth or jungle thereon to be removed from such edge, within a distance specified in the notice, or
 - b) any vegetation appearing above the surface of any such water to be removed from the water, within such period as may be specified in the notice.
6. Section 7 of the **Water Resources Planning Ordinance, 1992** will be needed for the development of water resources available in the Paurashava.

12.9.2 Implementation, Monitoring, Evaluation and Coordination of the 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).

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: Landuse 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 efficiency 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 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 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 winning people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land. Attempts may be made to engage NGOs / CBOs to work as catalysts in negotiation.

CHAPTER-13

PLAN FOR URBAN SERVICES

13.1 Introduction

13.1.1 Introduction

Sensible urban planning is critical to the healthy growth of cities. Unplanned growth leads a number of problems, creating misery for urban dwellers and making remedying of those difficulties. Yet flawed urban planning is little better, or perhaps worse, than no urban planning at all. It is thus important, when taking on such an enormous task as the drafting of an Urban Area Plan for a Paurashava, to ensure that the plan is well considered and likely to be conducive to good health and well-being of the urban dwellers.

During the year 1984 to 2003, Urban Development Directorate (UDD) was prepared a series of Landuse / Master Plans for Upazila and Zila Shahars of Bangladesh as a part of decentralization effort of the government. Under that project, the Mirzapur Upazila Shahar was planned but the project area considered in the plan was far away from the planning area considered in the Paurashava Town Infrastructure Development Project.

No strategies were included in that plan. Objectives of the Landuse / Master Plan was -

- To support local and sectoral agencies plan making effort.
- To rearrange existing population within the Upazila premises.
- To provide basic urban services to the Upazila Shahar.
- To provide administrative services to the doorsteps of the Upazila people.

Components of the plan were –

- Preparation of Landuse / Master Plan for the Upazila Shahar based on certain approaches, concepts and principles.
- Preparation of road and urban services development plan
- Preparation of a drainage plan.
- Proposal for future educational, social and other service facilities.
- Reservation of land as urban deferred for future requirements.
- Phasing and implementation procedure of the plan.

However, none of the plans prepared by the UDD was implemented. This is because UDD was responsible only for preparation of the plan. Absence of Gazette Notification in favour of those plans and no understanding of the concerned Upazila about the plan were the major problems of non-implementation of those plans.

The UDD was undertaken the tasks without well thought pre-project thinking about how and who will implement the plan prepared by the UDD. Quality of the plan was not

pragmatic and directly implementable. In most Upazilas, no local government authorities to become the custodian of the plan and take care of the implementation and follow-up actions. There was no resource mobilization effort for implementation. The funding proposal made in the plan was not practical in nature.

After completion of the Urban Area Plan under Paurashava Town Infrastructure Development Project, development of the Paurashava will be enhanced following some guiding principles.

13.1.2 Range and Content of the Urban Services

The Plan for Urban Services covers planning area of Mirzapur Paurashava for a ten years time-frame (from 2011 to 2021). It also comprises a report and maps.

The Plan concern where services will be located (expected development). It also indicates how the Structure Plan policies will govern the areas and the standard for services calculated (based on the population forecast).

Outline of the Plan gives guidance to the Paurashava how the urban services will be developed and be promoted, maintained with a coordinated manner.

The Plan has been divided into five main parts i.e. existing condition and demand of the services, implementation strategies, proposal, regulations needed for establishment and management of the services, monitoring and evaluation of the plan. Water supply, sewerage facility, electricity, telephone and gas supply are the major concern of this plan.

13.2 Analysis of Existing Condition and Demand of the Services

13.2.1 Introduction

The Paurashava is too poor in development of urban services. With the development of physical condition of the Paurashava, substantial development will be needed for those services. Drinking water supply, sewerage and sanitation facilities and dumping of solid wastes should be emphasized as primary consideration. All the people (except 0.3%) are dependent on hand tubewell for drinking water. Absence of solid waste dumping ground creates health hazards. Absence of covered drain and sewerage system creates sanitation problem in the Paurashava. Those problems should be removed through the proper planning and design.

13.2.2 Analysis and Projection on Existing and Proposed Urban Services

Water Supply: Water supply network is not available in the Paurashava area. The only source of drinking water in this Paurashava is ground water, which is extracted at the household level by tube-well. According to the report of Ground Water Task Force under Ministry of LGRDC (July, 2002) only the Northeast corner of Mirzapur Paurashava is covered by Modhupur Clay Deposits and this part is still Arsenic Safe. Presently, there are 2820 tube wells in the Paurashava. The report of CDIP under Department of Public Health and Engineering (30 September, 2002) say that 42% tube wells are arsenic free, 49% are slightly arsenic free, 5% tub wells are arsenic contaminated and 4% tube wells are out of order.

Electricity: The Rural Electrification Board (REB) at present is providing electricity facility within Paurashava area. The power is being distributed from *Palli Bidyut Samiti* sub-station through transmission line to the Paurashava area.

Electricity poles of different sizes exist in the study area to carry HT and LT line and the total number of poles is 503. High voltage towers are distributed evenly and transformers are used to transform the high voltage to low voltage for distributing to the clients. High voltage electric poles (11 KV) containing transformers are 6 in number.

Telecommunication: There is a telephone exchange having a capacity of 500 lines maintained by Bangladesh Telecommunication Company Limited (BTCL) in the Paurashava area. At present, there are 280 land telephone users and 35 telephone poles in the area. There are also mobile phone networks of Grameen Phone, Robi, Citycell, Banglalink and Teletalk, which cover the entire study area. About seven mobile towers and 1 Tower Tele are existed in this Paurashava.

Gas supply: Gas supply is not available in limited the Paurashava area.

Other urban services: Existing all kinds of urban services and facilities like educational institution, health care, park, play ground, graveyard should considered as urban services. The existing condition of community facilities, healthcare, educational institution are described in landuse plan chapter-10.

Projection

The projection of utility service depends on the population growth and need assessment of the Paurashava inhabitants. After completion of population projection it is found that, population of the planning area will be 43433 in the year 2021. Projection on utility services also depends on present condition of urban services and future demand of those services.

Demand analysis: Existing utility facilities of the Paurashava are not sufficient and established without following any standard. Therefore, Team Leaders of all packages and urban planners from Project Management Office (PMO) have worked out and prepared different standards for projection of future facilities as per the requirement of Paurashava. Following of those standards have considered for the future demand with ensuring the quality and quantity of utility facilities.

Table 13-1: Standard of utility facilities and future need

Facility	Standard	Existing Facility (acre)	Existing & Proposed Facility (acre) (2031)
Drainage	1.00 acre /20,000 population	0.38	5.29
Water supply	1.00 acre /20,000 population	0	5.29
Gas	1.00 acre /20,000 population	0	5.29
Solid waste disposal site	4 –10 acres/Upazila HQ	0	10.00
Waste transfer station	0.25 acres/per waste transfer station	0	0.00
Electric sub-station	1.00 acre/20,000 population	0.05	5.29

Facility	Standard	Existing Facility (acre)	Existing & Proposed Facility (acre) (2031)
Telephone exchange	0.5 acre/20,000 population	0.75	2.65
Fuel Station	0.5 acre/20,000 population	0.75	2.65

Source: Project Management Office 2010

13.3 Proposals for Addressing Urban Services and Implementation Strategies

13.3.1 Introduction

Following strategies will be followed for implementation urban services in the planning area:

- Cost for service development will be promoted in phases, based on comprehensive plan for the demarcated entire Paurashava areas. This process will reduce cost.
- Some areas will be targeted as new urban areas where urbanization is likely to be rapid and imminent.
- Except waste disposal all other services (Water Supply, Sewerage, Electricity, telephone and Gas) will be provided by the concerned service giving agencies.

Water supply: Location of **water treatment plant** may be on a large plot (on 0.30 acres of land) with good access, close to source of water. It should be located upstream of any polluting development. **Desalination plant** may be located on large plot close to the river, upstream from any polluting activities. **Water reservation tanks** may be constructed on medium size plot in key locations throughout the Paurashava, preferably in an elevated positioning relation to the area it is intended to serve, so as to maintain / increase pressure.

Sewerage facilities: Location of **sewerage treatment plant** may be on large plot (on 0.30 acres of land), preferably on outskirts of the Paurashava. Sewerage pumping station may be located on small plots throughout the Paurashava and a system should be introduced.

Electricity: Existing Electricity power station may be developed into 132/33KV switching station. These can be accommodated on the plots they serve (industries) or in road corridors.

Telephone: There is no telephone exchange with an area a telephone exchange may establish for the Paurashava. If required, it will need a medium size plot (on 0.19 acres of land), unless it also has to accommodate a transmission / reception tower, in which case it will require a fairly large plot. Medium sized plot will be needed for local exchange, central to its catchment area. Street exchange may be located on small plot in road corridor.

Gas supply: The standard for gas manifold station, may be located on small to medium sized plot (on 0.30 acres of land) on the main ring. Upazila regulator station may be located on small plots throughout the Paurashava. These will be located at the break-off point on the main line, where smaller diameter spurs extend into the area that the gas will serve.

Map 13-1: Existing Urban Services

13.3.2 Proposals for Urban Services

For existing urban services, the Paurashava will need to establish a communication with each of the appropriate implementing agencies the following:

- Which of the existing services run, not currently in road corridors, could or should be relocated into road corridors to facilitate planned development bearing in mind the cost implications of doing this?
- The corridor reservations that should be applied to the service networks that cannot be moved.
- The means of establishing and maintaining these reservations, free from other development.
- For future expansions of the networks (in case of sewerage, possibly a new network), the Paurashava will need to establish with the appropriate implementing agency what the future requirements are, so that reservations can be applied and maintained. The Paurashava will need as part of this process:
- Try to ensure that secondary, tertiary and where possible primary networks are located within existing or proposed road corridors to minimize the requirement for separate land reservations. In most cases, it is known that this can be achieved. The likely exception will be primary electricity networks. The scale of this will demand separate land reservations.
- Where this cannot be achieved, agree with the relevant agency about the size of the reservation required, its alignment and approximate time-scale of implementation.
- To adopt the agreed reservation and ensure that it is maintained. When development applications are received which impinge upon this reservation, the Paurashava should not permit the development within the reservation, but ensure that it will be made to setback to the limit of the reservation.

Types of urban services that will need to be considered within the Paurashava are indicated below:

Electricity: Primary networks; principally 132KV, pylon supported power lines from the existing power stations which will enter the Paurashava at purpose built switching stations. The switching stations will usually be located at the fringe of the Paurashava.

Secondary networks; 33KV or 11KV pole mounted power lines, although in cases the 33KV lines can also be pylon mounted. The 33KV lines will originate at the above mentioned switching station and supply power around the Paurashava to smaller switching stations at key locations around the Paurashava where they will be down-sized to 11KV. These, in turn, will supply power to more localized electricity sub-stations. The pole mounted lines can be located within principle road corridors (primary and district distributors). Pylon mounted lines should be allocated their own reserve. **Tertiary networks;** at the localized sub-stations, the 11KV power will be down-sized for

distribution to individual premises. Power leaving these sub-stations is usually carried by 415V pole mounted lines. These can be accommodated within road corridors.

Water supply: Within all road area there should be provision of installation of water supply network and about 0.30 acres of land has earmarked for office or relevant activity.

Sewerage facilities: If a sewerage network were to be installed, the sewerage originating throughout the Paurashava would be carried by means of underground pipes and culverts. These should be accommodated within road reserves.

Telephone: Telephone exchange lines can be either overhead, pole mounted or underground using newer Optical Fiber Cables. Both of these are carried to localized exchanges and then onto small roadside exchanges. From these connections are carried on poles to individual premises. All networks can be accommodated within road reserves.

Gas supply: All gas line will be supplied by varying diameter underground pipes. These can be accommodated in road reserves.

Other urban services: Proposal for all kinds of urban services and facilities like educational institution, health care, park, play ground, graveyard should considered as urban services which are described in landuse paln chapter-10.

13.3.3 Regulations to Address the Proposals

Local Government (Paurashava) Act, 2009 was enacted in 6th October 2009. According to the 2nd Schedule, Sl. No. 10, the Paurashava may provide supply of wholesome water sufficient for public and private purposes. Frame and execute water supply scheme for the construction and maintenance of such works for storage and distribution of water. In case of private sources of water supply, it is said that, all private sources of water supply within the Paurashava shall be subject to control, regulation and inspection by the Paurashava. No new well, water pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Paurashava.

The regulations, as discussed above, will be needed for provisioning of drinking water supply both Paurashava and private sources in the Paurashava.

The sewerage facilities may be provided by the Paurashava and Directorate of Public Health Engineering (DPHE). According to the 2nd Schedule, Sl. No. 12, of the Local Government (Paurashava) Act, 2009, Paurashava may provide an adequate system of public drains and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the heal and convenience of the public. All private drains shall be subject to control, regulation and inspection by the Paurashava.

Map 13-2: Proposed Urban Services

Public Health (Emergency Provisions) Ordinance, 1944 (Ordinance No. XXI of 1944) was enacted in 20th May 1944. According to the section 2(e) “public health services” and “public health establishment” include respectively sanitary, water-supply, vaccination, sewage disposal, drainage and conservancy services and establishment maintained for the purposes of such services, and any other service or establishment of a local authority which the Government may by notification in the Official Gazette declare to be a public health service or public health establishment for any purpose of this Ordinance.

Based on the regulation, the Directorate of Public Health Engineering (DPHE) is performing activities for drinking water supply. If DPHE likes to render their service according to the water supply network as presented in this plan, the regulation will be the safeguard for them.

East Pakistan Water and Power Development Authority Rules, 1965 (No. 4-1(E) was prepared and notified in 12th July 1965. The Power Development Board (PDB) is empowered for power generation under the guidance of Electricity Act, 1910. At present, PDB and Rural Electrification Board (under the Rural Electrification Board Ordinance, 1977) is performing the role relevant with the electrification of the Paurashava. The existing authorities will be needed for electrification of the Paurashava according to the guidelines presented in the plan.

Telegraph and Telephone Board Ordinance, 1975 (Ordinance No. XLVII of 1975) was enacted in 30th August 1975. A Telegraph and Telephone Board (T&T Board) was composed through this Ordinance. Section 6(1) of the Ordinance has prescribed the functions of the Board and said, it shall be the function of the Board to provide efficient telegraph and telephone services and to do all acts and things necessary for the development of telegraphs and telephones. In the Paurashava, at present, a T & T Board is performing the functions prescribed in the section 6(1). T & T Board is the sole authority for performing the same and it will be continued in future also. But, the Mobile telephone system generates a revolution in the society. Most of the people are depended on the Mobile phone system. The plan does not consider this system.

13.3.4 Implementation, Monitoring and Evaluation of the Urban Services Plan

Implementation through Multi-Sectoral Investment Programme: 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 Programme (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 Services 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: Landuse 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 Services 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 efficiency 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 Services 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 Services 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 Services Plan be made a legal requirement.

For implementation of the various programme components of the Urban Services 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, representatives of the service giving agencies 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.

CHAPTER-14

WARD ACTION PLAN

14.1 Introduction

This chapter presents Part-C of the report which contains Ward Action Plan of each individual Ward. First, the issues prevailing in different Wards have been briefly described followed by description of Development Proposals in first ward action plan (1st to 5th year of planning period) for each Ward. The Ward Action Plans are prepared under the framework of Structure Plan and Urban Area Plan. The Ward Action Plans contain details of development proposals at Ward level including the problems and opportunities existing therein and also include the proposals made in the upper level plan that is in the Urban Area Plan. The Ward Action Plans have been formulated for execution within a period of 5 years. Ward Action Plan is a vital part of the current plan package as far as spatial development and development control is concerned. Absence of Ward Action Plan not only hampers undertaking of development projects by planning authority, but also leads to uncontrolled and unwanted spatial development in the private sector. Land use zoning is also provided in the Ward Action Plan to enable detailed view of proposed land use and development.

14.1.2 Overview of Ward Action Plan

The Ward Action Plan is detailed area plan based on the policy framework, guideline indication of

Structure Plan and more detailed guideline of Urban Area Plan. The provision of Ward Action Plan is inherent in the Structure Plan with some specific purposes.

The Ward Action Plan is to:

- Provide basic micro level infrastructure and services in the study area through systematic
- planning, under the framework of Structure Plan and proposals of the Urban Area Plan;
- Create congenial environment to promote economic activities;
- Improve drainage system and protect natural water channels from encroachment; and
- Create service centers to promote urban growth.

14.1.3 Linkage with the Structure and Urban Area Plan

The Ward Action Plan for the Paurashava has been prepared on the basis of following principles relevant with the Structure Plan and Urban Area Plan:

- Environment friendly sustainable development of the area.

- Town functions to develop as per major landuse zones.
- Effective drainage system through minimum hindrance to Flood Flow zones.
- Safe residential areas at proximity to place of work or major communication routes.
- Smooth and effective functioning of industries, specially agro-based industries.
- Safe yet faster connectivity.
- Develop to serve the surrounding hinterlands.

14.1.4 Approach and Methodology

For the preparation of Ward Action Plan the planning area has been sub-divided into Nine Planning Zones according to the individual Ward. Immediate necessary action will be required for Ward Action Plan and this is the key outcome of Ward Action Plan. Where, what type of action will be required and how the action will be performed prescribed in the plan.

Pro-people Urban Planning

The Ward Action Planning approach utilizes in the Paurashava Master Plan concentrating mainly on the building of infrastructure and roads to facilitate the movements of vehicles. In this scenario, Paurashava society would become steadily more privatized with private homes, offices and commercial activities, while all-important public component of urban life is likely to slowly disappear.

The landuse and transport interaction for a modern city should be directed toward “Planning for people, not for vehicles, roads or buildings”. Given the problems of alienation, crime, fear of strangers and the breakdown of civic life, it is increasingly important to make cities inviting so that people can meet their fellow citizens face-to-face and experience human contact with those unknown to and different from them directly through their senses. Public life in high quality public spaces is an important part of a democratic society and full life.

Evidence-based vs. Arbitrary Planning Approach

In the era of globalization, where information on any number of issues and about any number of places is readily accessible, there is no need for localities to continue making the same mistakes as they did when operating in an information and experience vacuum. While urban planning is of course a complicated process, it is also true that some universals exist in terms of what works and what does not. The experiences of urban areas adopting commercial-based and people-based approaches make clear the effects of either method, and many guides are now available on implementing planning approaches that are good for the natural environment and for urban dwellers.

Given the widespread availability of such information, it is highly regrettable that important landuse and transport policy-decisions should adopt either any knowledge-based or scientific analysis. Instead, arbitrary or so-called “common sense” approaches

should not be utilized which may favour the rich, including bureaucrats and developers with little concern for the betterment of society overall.

Although, it is a demanding task to represent the complex dynamics of urban landuse changes that are consistent with observable data, significant progress has been made in recent years in the country in forecasting and evaluating landuse change on the basis of dynamic and causal relationships between such factors as transport and landuse, and built environment and socio-economic processes.

With the advance of the knowledge-base and technology-base, detailed and extensive urban form and function data is becoming increasingly available, with great potential to provide new insights for sustainable urban planning which preserves the eco-system and maintains or even increases social equity.

Yet no attempt was made in the preparation of Upazila Master Plan / Landuse Plan (in 1980s) to conduct any analytical or empirical analysis using data related to interactions between the built environment, transport, landuse and other socio-economic processes.

Again, in Paurashava Master Plan, the Geographic Information System (GIS)-based technology is mainly used for mapping and visual displays, which are limited to static displays of past and current data sets. That is, the displays only portray the current state of the system, with neither the reasons given for its condition nor possible alternate futures provided. As a result, policymakers and planners are now facing tremendous difficulties, lacking as they do any insight into future urban growth and the potential impacts of various models.

Hypothetical Planning Approach under Upazila Master Plan / Landuse Plan, no comprehensive data collection exercise was undertaken to estimate landuse requirements for the Paurashava. As a result, all the landuse proposals of that plan were hypothetical in nature, providing no insight into how the actual landuse demand for various purposes will meet in future.

Yet it is not logical to develop a Ward Action Plan, which represents the lowest tier of the planning hierarchy, without providing precise landuse allocations for different functional purposes.

Furthermore, in the Paurashava Plan, a significant portion of existing open space and agriculture land have been allocated for private developers required as per the 2031 population projection. This excess land for property developers is likely not only to create landuse speculation but also indiscipline in future landuse development. More importantly, the preservation of land for open space and agriculture is vital for the health and viability of the Paurashava and its inhabitants.

14.2 Prioritization

Immediate action is being needed for the development of Wards. Those actions are presented here according to the priority:

1st Priority: Traffic Management and Engineering

- Improvement of intersections on the regional road, including a ranked program of roundabout construction and a reduced role and operation of Zebra Crossing.
- Removal of bus and non-motorized vehicles stops from junctions, restrictions.
- Better traffic police enforcement and additional resources.
- Adoption of design guidelines for road improvement and for parking and access arrangements in new developments.
- Priority for footpath reinstatement, signing of national standards and corrections to serious local road surface irregularities such as pole-bases.
- Enforcement of development control on the National Highway.

2nd Priority: Improvement of transport services

- Encouragement of higher quality bus services by allowing higher fares for such services at least from Mirzapur to Dhaka.
- Designation of separate service road both side of Dhaka-Tangail road.

3rd Priority: Improvement of drainage congestion

- Improvement of drainage congestion as specified in the drainage plan especially in the areas where the drainage congestion is high.
- Control indiscriminate earth filling which may hamper natural drainage system of the Paurashava.
- Construction of box culverts before road construction/expansion as specified in the drainage plan.
- Remove encroachment from the natural drainage like ponds and rivers.
- Control earth filling activities on natural canals outside the Paurashava boundary.

4th Priority: Rainwater harvesting

- The ponds indiscriminately located in the Paurashava and their size is not less than 0.25 acre is proposed for rainwater harvesting. At the sametime, solar energy may be produced using those proposed lands.
- Implementation of the above mentioned components will be selected as priority project. The priority project comprises all those works identified for implementation during the plan period. These are urgently needed to alleviate existing monsoon flooding and to prevent the risk of inundation. As a result of questionnaire survey to locate areas of flooding and discussions with Paurashava.
- The storm water drainage priority project includes the provision of adequately – sized silt traps, removal of obstructions. The major component of work is

construction of missing-links to carry water from Paurashava Town Centre to the River.

14.3 Ward-wise Action Plan for Next Five Years

The priority mentioned in the Clause 14.2 follows according to the Ward for next five years. Those priorities are the primary steps of development considering the year from 2014 to 2019.

Possible ways of financing the Master Plan assumes that:

- Funds for construction of regional road and undertaking flood defence works will be obtained from GoB in the usual way and these will not be directly recovered from the beneficiaries in Paurashava.
- Funds for providing storm water drainage and construction of local road will be provided by loans for capital expenditure. These will be recovered from the Paurashava dwellers, primarily from taxes on property. Various loan conditions have been considered, the most onerous of which is GoB's standard on lending rate is 12.5% per annum interest, repayable over 20 years, including a 5-year grace period. It has been assumed that maintenance costs are directly recovered through local taxation.
- The implementation of Master Plan component will require funding either from grant or from increased local taxes.

14.3.1 Action Plan for Ward No. 1

Existing Situation:

It is situated on the north-west part of the Paurashava and Ward No. 2 on the south and Ward No.3 on the east. This area is characterized by agriculture development. Development pressure is comparatively low but the eastern of this ward is high dense and consists a major portion of core area of the Paurashava.

Total planning area of the Ward is 179.55 acres. Among the total planning area, 98.94 acres land is under agriculture use 49.47 acres residential, only 0.30 acres commercial industrial and others are in different category.

There is 4.75 km of road of which 3.11km is pucca 0.44 km is semi pucca and 1.20 km is katcha. There is no man made drains within this ward.

There is no educational institution within this ward but within walking distance of the settlement of this ward there is 3 primary school a two high school.

Development proposals:

At total population of this area is 2848 person and in 2016 itn will be 3320 person. Considering the population and present demand development proposal were made.

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 32.15% land

proposed for residential use, only 1.09% are commercial use, 3.16 % mixed use, 4.33% are education & research, 31.08% are industrial, only 4.52% agricultural and others are in different category which are shown in the following table.

Table 14.1: Proposed landuse for Ward no-1

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	8.12	4.52
Circulation Network	23.76	13.23
Commercial Zone	1.95	1.09
Community Facilities	1.07	0.60
Education and Research	7.77	4.33
General Industrial Zone	55.82	31.08
Governmental Services	0.72	0.40
Health Services	0.03	0.02
Mixed Use Zone	5.68	3.16
Open Space	3.96	2.21
Residential Zone	57.73	32.15
Service Activity	0.97	0.54
Transport & Communication	0.26	0.14
Water Body	11.72	6.53
Total	179.55	100.00

The proposed facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.2: Proposed facilities for ward no -1

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Transportation				
Bus Terminal	1 st	Postkamuri_102_00	626 part	0.21
Transportation				
Vocational Training Institution	2 nd	Postkamuri_102_00	114 part, 115 part, 116 part, 626 part	5.62
Primary School-1	2 nd	Postkamuri_102_00	164-166, 173-176	2.19
Open Spce				
Playground-1	2 nd	Postkamuri_102_00	97 part, 121 part, 154 part, 155-156, 157 part, 158 part, 161	3.29
Utility & service facility				
Public Toilet-1	1 st	Postkamuri_102_00	122 part, 153 part	0.03
Waste Transfer Station-1	1 st	Postkamuri_102_00	122 paer, 124 part	0.67
Water Station-1	1 st	Postkamuri_102_00	617 part	0.06
Industrial				
Cottege Industrial Zone	2 nd	Postkamuri_102_00	50-52, 53 part, 54-55, 60-65, 67-95, 99-107,	34.02

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
			108 part, 109 part	
Small scale Industrial Zone	2 nd	Postkamuri_102_00	180-204, 230-249	25.38
Community Facilities				
Fire Service	2 nd	Postkamuri_102_00	47-49, 53 part	0.89
Ward Center	1 st	Postkamuri_102_00	606 part	0.16

2) Proposal for road development:

A total of 5.07 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 3.01km road will construct within 1st phase. Recommended road network are shown in the following table.

Table 14.3: Proposed road for ward no-1

Road ID	Width (feet)	Length (m)	Phase	Type
R01	100	905.12	2nd	W
R06	80	389.93	1st	W
R06	80	70.23	1st	W
R06	80	202.98	1st	W
R12	60	267.25	3rd	W
R11	60	173.01	1st	W
R12	60	225.64	3rd	N
R11	60	163.00	1st	N
R37	40	662.87	2nd	W
R41	40	403.28	1st	W
R31	40	175.29	1st	N
R40	40	127.52	1st	W
R31	40	174.27	1st	W
R97	30	312.01	1st	W
R98	30	314.52	1st	W
R96	30	69.94	1st	W
R106	20	158.45	1st	W
R114	20	189.24	1st	W
R106	20	89.66	1st	N
Total		5,074.21		

*Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 4.95 km drain has proposed for drainage network development of this ward of which almost all are new. Within all drains 2.37 km drain will construct within 1st phase. Recommended drains are shown in the following table.

Table 14.4: Proposed drainage for ward no-1

Drain ID	Type	Length (m)	Phase
D11	Primary	285.67	1st
D01	Primary	694.31	2nd
D06	Primary	372.7	1st
D06	Primary	73.19	1st

Drain ID	Type	Length (m)	Phase
D06	Primary	203.57	1st
D01	Primary	178.41	2nd
D12	Secondary	489.3	3rd
D37	Tertiary	661.4	2nd
D41	Tertiary	403.28	1st
D31	Tertiary	340	1st
D40	Tertiary	110.89	1st
D97	Tertiary	77.08	1st
D98	Tertiary	549.45	1st
D106	Tertiary	248.11	1st
D114	Tertiary	189.24	1st
D95	Tertiary	70.36	1st
Total		4946.96	

Map 14.1: Landuse Proposal for Ward No. 01

Map 14.2: Proposed Road, Drainage and Utility Services Plan for Ward No. 01

14.3.2 Action Plan for Ward No. 2

Existing Situation:

It is situated at western part of the area, Ward No. 1 at the north, Ward 06 at the east and Ward No.8&9 at the southern part of the Ward. This area is characterized as vast agricultural area with new urban development potentiality of the Paurashava.

Total planning area of the Ward is 190.88 acres. Among the total area, agriculture use is 71.89 acres, only commercial 0.42 acres, residential 48.18 acres and 27.97 acres waterbody and other are in different category.

Total population of this area is 5698 person and in 2016 itn will be 6641 person.

There is 7.60 km of road of which 4.16 km is pucca, 0.66 km is semi-pucca and 2.78 km is katcha. A total of 0.22 km drains exist in this ward.

Within educational institutions there is 4 primary school in this area.

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 26.49% land proposed for residential use, 1.22% are commercial use, only 0.40% are community facilities, 8.60% health facilities, 13.72% general industrial zone and others are in different category which are shown in the following table.

Table 14.5: Proposed landuse for Ward no-2

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	1.01	0.53
Circulation Network	24.76	12.97
Commercial Zone	2.33	1.22
Community Facilities	0.77	0.40
Education and Research	5.33	2.79
General Industrial Zone	26.19	13.72
Health Services	16.42	8.60
Mixed Use Zone	1.39	0.73
Open Space	16.81	8.80
Residential Zone	50.57	26.49
Service Activity	0.86	0.45
Transport & Communication	0.30	0.16
Urban Defferd	13.61	7.13
Water Body	30.52	15.99
Total	190.88	100.00

The proposed facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.6: proposed facilities for ward no -2

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Transportation				
Tampo Stand-1	1 st	Baimhati_103_00	106 part	0.30
Open Spce				
Central Park	2 nd	Baimhati_103_00	52 part, 53-63, 64 part, 65-67, 79-81	12.17
Utility & service facility				
Public Toilet-2	1 st	Baimhati_103_00	103 paer	0.10
Waste Transfer Station-2	1 st	Baimhati_103_00	103 paer	0.27
Water Station-2	1 st	Baimhati_103_00	54 part, 55 part	0.51
Industrial				
General Industrial Zone	2 nd	Postkamuri_102_00	261-295, 299-312	26.02
Community Facilities				
Ward Center	1 st	Postkamuri_102_00	554 part	0.16

2) Proposal of road development:

A total of 7.02 km road has proposed for road network development of this ward of which some are new and some are widening. Wihin all roads only 3.72 km road will construct within 1st phase. Recommanded road network are shown in the following table.

Table 14.7: Proposed road for ward no-2

Road ID	Width (feet)	Length (m)	Phase	Type
R05	80	588.73	2nd	W
R04	80	185.49	2nd	N
R06	80	73.42	1st	W
R06	80	142.62	1st	W
R06	80	247.86	1st	W
R06	80	217.43	1st	W
R04	80	199.32	2nd	W
R12	60	235.10	3rd	W
R25	40	357.05	2nd	W
R48	40	441.94	1st	W
R24	40	514.73	1st	W
R49	40	420.79	1st	W
R50	40	175.29	3rd	N
R44	40	199.74	1at	N
R49	40	251.72	2nd	N
R50	40	64.76	3rd	N
R63	30	284.92	3rd	N
R62	30	316.70	3rd	N
R68	30	420.07	3rd	N
R65	30	116.73	2nd	N
R62	30	50.04	3rd	N
R110	20	81.20	1st	N
R103	20	170.95	1st	W
R111	20	229.65	1st	W
R113	20	279.83	1st	W
R105	20	458.05	1st	W

Road ID	Width (feet)	Length (m)	Phase	Type
R109	20	66.11	2nd	W
R112	20	172.65	1st	W
R110	20	65.90	1st	W
Total		7,028.79		

Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 5.29 km drain has proposed for drainage network development of this ward of which almost all are new. Wihin all drains 3.48 km drain will construct within 1st phase. Recommanded drains are shown in the following table.

Table 14.8: Proposed drainage for ward no-2

Drain ID	Type	Length (m)	Phase
D05	Primary	587.27	2nd
D06	Primary	70.19	1st
D06	Primary	146.72	1st
D06	Primary	168.66	1st
D06	Primary	218.95	1st
D25	Secondary	357.05	2nd
D48	Secondary	491.05	1st
D24	Secondary	500.73	1st
D45	Secondary	222.57	2nd
D04	Secondary	342.92	2nd
D12	Secondary	241.11	3rd
D49	Tertiary	422.35	1st
D110	Tertiary	147.1	1st
D103	Tertiary	170.95	1st
D111	Tertiary	229.65	1st
D113	Tertiary	279.83	1st
D105	Tertiary	458.05	1st
D109	Tertiary	66.11	2nd
D112	Tertiary	172.65	1st
Total		5293.91	

Map 14.3: Landuse Proposal for Ward No. 02

Map 14. 4: Proposed Road, Drainage and Utility Services Plan for Ward No. 02

14.3.3 Action Plan for Ward No. 3

Existing Situation:

This is the core area of the Paurashava and situated on the southern side of Dhaka-Tangail Highway, Ward No.1 at the east and Ward No. 5&6 at the western part of this Ward.

Total area of the Ward is 149.95 acres. Among the total area, mixed use is 14.39 acres, residential 42.7 acres; commercial 6.2 acres and 22.62 acres are water body.

There is 7.89 km of road of which 5.15 km are pucca 1.05 km are semi-pucca and 1.68 km road are katcha. A total of 0.51 km drains exist in this ward.

At total population of this area is 8348 person and in 2016 itn will be 9730 person.

Within educational institutions there is 2 primary school, 4 secondary school, 1 Madrasa and a college.

Proposals and Plans for Ward No. 3

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 12.27% land proposed for residential use, 13.92% is commercial use, 21.07% mixed use, only 5.04 % agricultural and others are in different category which is shown in the following table.

Table 14.9: Poposed landuse for Ward no-3

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	7.55	5.04
Circulation Network	29.76	19.84
Commercial Zone	20.87	13.92
Community Facilities	3.00	2.00
Education and Research	9.15	6.10
General Industrial Zone	0.40	0.27
Governmental Services	3.65	2.44
Health Services	0.72	0.48
Mixed Use Zone	31.60	21.07
Open Space	8.70	5.80
Recreational Facilities	0.03	0.02
Residential Zone	18.40	12.27
Transport & Communication	2.04	1.36
Water Body	14.08	9.39
Total	149.95	100.00

The proposed facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.10: proposed facilities for ward no -3

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Commercial Facility				
Super Market	2 nd	Baorkumarjani_167_01	377 paer, 382 part, 383 part, 384 part	3.59
Transportation				
Bus Terminal	2 nd	Postkamuri_102_00	637 part	1.68
		Baimhati_103_00	657 part	
Utility & service facility				
Slughter House	1 st	Baimhati_103_00	155	0.08
Community Facilities				
Poura Graveyard	1 st	Baorkumarjani_167_01	393 part, 438 part	1.07
Cremation	1 st	Baorkumarjani_167_01	438 part	0.64
Community Center-1	1 st	Baorkumarjani_167_01	387 part, 388 part	0.09
Ward Center	1 st	Postkamuri_102_00	637 part	0.17

2) Proposal for road development:

A total of 7.21 km road has proposed for road network development of this ward of which some are new and some are widening. Wihin all roads only 4.70 km road will construct within 1st phase. Recommended road network are shown in the following table.

Table 14.11: Proposed road for ward no-3

Road ID	Width (feet)	Length (m)	Phase	Type
R01	100	1,004.14	2nd	W
R06	80	403.28	1st	W
R03	80	116.71	3rd	W
R11	60	66.87	1st	N
R14	60	180.56	2nd	W
R30	40	618.55	1st	W
R48	40	41.94	2nd	W
R57	30	452.40	1st	W
R76	30	259.63	1st	W
R71	30	530.03	3rd	N
R91	30	329.11	1st	W
R92	30	128.81	1st	W
R96	30	559.18	1st	W
R93	30	109.98	1st	W
R73	30	48.00	1st	W
R94	30	263.13	1st	W
R95	30	259.16	1st	W
R74	30	611.78	2nd	N
R90	30	275.55	2nd	N
R90	30	231.32	1st	W
R89	30	40.11	3rd	N
R87	30	46.57	2nd	W
R86	30	107.41	3rd	N
R86	30	292.55	3rd	N
R107	20	74.40	1st	N
R108	20	79.22	1st	N
R107	20	76.18	1st	W
Total		7,206.57		

*Note: W= widening, N= New Road

Map 14.5: Landuse Proposal for Ward No. 03

Map 14.6: Proposed Road, Drainage and Utility Services Plan for Ward No. 03

3) Proposal for drianage development:

A total of 5.19 km drain has proposed for drainage network development of this ward of which almost all are new. Wihin all roads 3.48 km drain will construct within 1st phase. Recommanded drains are shown in the following table.

Table 14.12: Proposed drainage for ward no-3

Drain ID	Type	Length (m)	Phase
D06	Primary	486.3	1st
D11	Primary	51.36	1st
D11	Primary	49.79	1st
D01	Primary	994.09	2nd
D03	Primary	56.69	3rd
D73	Secondary	48	1st
D48	Secondary	43.09	1st
D14	Secondary	179.15	2nd
D57	Tertiary	452.4	1st
D76	Tertiary	259.63	1st
D30	Tertiary	603.68	1st
D95	Tertiary	554.15	1st
D91	Tertiary	329.11	1st
D92	Tertiary	128.81	1st
D94	Tertiary	510.32	1st
D93	Tertiary	93.98	1st
D74	Tertiary	76.28	2nd
D107	Tertiary	149.21	1st
D108	Tertiary	73.56	1st
D33	Tertiary	46.13	1st
Total		5185.73	

14.3.4 Action Plan for Ward No. 4

Existing Situation:

It is situated on the north-west part of the Paurashava and northern side of ward no-5. Railway has passes over this ward and railway station situated on this ward. This area is characterized by agriculture land, fish farming and rural homesteads.

Total planning area of the Ward is 371.95 acres. Among the total area, agriculture use is 254.1 acres, only commercial 0.21 acres, residential 75.05 acres and 30.83 acres waterbody.

There is 5.61 km of road of which 5.15 km are pucca 0.33 km are semi-pucca and 3.34 km are katcha. There is no man made drain exists in this ward.

At total population of this area is 2025 person and in 2016 itn will be 2360 person.

Within educational institutions there is 3 primary school, 1 secondary school and a Madrasa.

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 40.29% land

proposed for residential use, only 0.22 % is commercial use, only 5.30% agricultural and others are in different categories which are shown in the following table.

Table 14.13: Proposed land use for Ward no-4

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	19.71	5.30
Circulation Network	43.31	11.64
Commercial Zone	0.80	0.22
Community Facilities	2.73	0.73
Education and Research	36.77	9.89
General Industrial Zone	0.37	0.10
Governmental Services	13.80	3.71
Health Services	1.94	0.52
Mixed Use Zone	13.25	3.56
Open Space	5.56	1.50
Residential Zone	149.87	40.29
Rural Settlement	44.41	11.94
Transport & Communication	5.13	1.38
Water Body	34.29	9.22
Total	371.95	100.00

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.14: proposed facilities for ward no -4

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Administration				
Administration Area	3 rd	Baorkumarjani_167_01	284-307, 309, 321-322, 325 part, 331-337, 338 part, 339	13.80
Residential				
Planned Residential Area	3 rd	Baorkumarjani_167_01	174-232	63.00
		Baorkumarjani_167_02	765 paer, 766, 768 part, 770-842, 897-898, 1061-1118	
Low Income Houseing Area	2 nd	Baorkumarjani_167_02	920 part, 921 part, 922-923, 924 part, 938 part, 944 part, 945-951, 952 part, 988, 989 part, 990 part, 992-1002, 1006 part, 1007-1008, 1009 part, 1010-1013	17.87
Re-Settlement Residential Zone	2 nd	Baorkumarjani_167_02	952 part, 953-957, 961-987, 989 part, 990 part, 991	18.45
Educational Institution				

University	3 rd	Baorkumarjani_167_02	902-903, 904 part, 905 part, 906 part, 907-914, 915 part, 916 part, 918-919, 920 part, 921 part, 925 part, 1004-1005, 1006 part, 1009f part, 1014-1057, 1058 part, 1059 part, 1060 part, 1413 part	29.77
Primary School-2	2 nd	Baorkumarjani_167_02	851-852, 859, 893 part, 894-896	3.10
Open Spce				
Stadium/Sports Complex	3 rd	Baorkumarjani_167_02	1120-1163	23.81
Community Park-1	1 st	Baorkumarjani_167_01	93 part, 94 part, 98 part, 99-101	2.14
Helath Facilities				
Hospital Zone	3 rd	Baorkumarjani_167_01	49 part, 50-51, 102 part, 103-107	1.94
Community Facilities				
Poura Eidgah	1 st	Baorkumarjani_167_01	29-30, 279-283	2.46
Ward Center	1 st	Postkamuri_102_00	751 part	0.18

2) Proposal for road development:

A total of 7.85 km road has proposed for road network development of this ward of which some are new and some are widening. Wihin all roads only 1.00 km road will construct within 1st phase. Recommanded road network are shown in the following table.

Table 14.15: Proposed road for ward no-4

Road ID	Width (feet)	Length (m)	Phase	Type
R01	100	64.68	2nd	W
R02	80	822.95	3rd	W
R14	60	2,186.23	3rd	N
R16	60	660.63	3rd	N
R15	60	1,225.47	2nd	W
R14	60	791.32	2nd	W
R39	40	307.37	2nd	W
R35	40	255.59	2nd	W
R38	40	277.73	2nd	W
R55	40	258.63	2nd	W
R33	40	230.22	1st	W
R36	40	197.22	1st	W
R34	40	104.72	1st	W
R56	40	265.13	1st	W
R108	20	108.20	1st	N
R107	20	93.60	1st	W
Total		7,849.69		

*Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 7.89 km drain has proposed for drainage network development of this ward of which almost all are new. Wihin all roads 0.72 km drain will construct within 1st phase. Recommanded drains are shown in the following table.

Table 14.16: Proposed drainage for ward no-4

Drain ID	Type	Length (m)	Phase
D02	Primary	937.21	3rd
D16	Secondary	660.63	3rd
D14	Secondary	2978.95	2nd
D15	Secondary	1225.47	2nd
D39	Tertiary	307.37	2nd
D35	Tertiary	255.59	2nd
D38	Tertiary	277.73	2nd
D55	Tertiary	258.63	2nd
D33	Tertiary	201.76	1st
D36	Tertiary	199.52	1st
D34	Tertiary	104.72	1st
D56	Tertiary	277.01	1st
D108	Tertiary	113.86	1st
D107	Tertiary	94.98	1st
Total		7893.43	

Map 14. 7: Landuse Proposal for Ward No. 04

Map 14.8: Proposed Road, Drainage and Utility Services Plan for Ward No. 04

14.3.5 Action Plan for Ward No. 5

Existing Situation:

It is situated on the western part of the Paurashava and northern side of Dhaka-Tangail highway. Railway has passes over this ward. This area is characterized by agriculture land, fish farming and rural homesteads.

Total area of the Ward is 316.5 acres. Among the total area, agriculture use is 250.9 acres, waterbody 25.6 acres and residential 46.61 acres.

At total population of this area is 2344 person and in 2016 itn will be 2732 person.

There is 9.48 km of road of which 3.25 and rest are katcha. No man made drain exists in this ward.

Within educational institutions there is 1 primary schoo and a secondary school.

Development Proposal of ward-5

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 45.64 land proposed for residential use, 15.97% commercial use, 1.49% mixed use, 18.59% are open space, only 25.42 % agricultural and others are in different category which is shown in the following table.

Table 14.17: Proposed land use for Ward no-5

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	84.58	25.42
Circulation Network	46.59	14.00
Commercial Zone	4.95	1.49
Community Facilities	0.68	0.20
Education and Research	17.96	5.40
General Industrial Zone	0.04	0.01
Governmental Services	0.02	0.00
Mixed Use Zone	10.19	3.06
Open Space	61.85	18.59
Residential Zone	53.12	15.97
Service Activity	3.91	1.18
Transport & Communication	3.61	1.09
Urban Defferd	15.91	4.78
Urban Residential Zone	0.01	0.00
Water Body	29.29	8.80
Total	332.71	100.00

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.18: proposed facilities for ward no -5

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Commercial Facility				
Poura Super Market	2 nd	Baorkumarjani _167_02	615 fpart, 616, 617 fpart, 618 part, 1274 part, 1276 part, 1277-1278, 1280 part, 1411 part	2.12
Wholesale Market	2 nd	Baorkumarjani _167_01	450, 451 part, 464 part, 465 part, 466 part, 467f part, 468-469	2.36
Transportation				
Track Terminal	2 nd	Baorkumarjani _167_01	482 part, 483 part, 489, 490 part, 491-492, 493 part, 539 part, 540 part, 541 part	2.87
Educational Institution				
High School	2 nd	Baorkumarjani _167_02	1302, 1303 part, 1304-1306, 1307 part, 1310 part, 1311-1313, 1314 part, 1316	5.34
Open Spce				
Poura Shisu Park	2 nd	Baorkumarjani _167_02	693 part, 694-711, 712 part, 714 fpart, 715 part, 717 part, 718 , 1243, 1245-1254, 1255 part, 1256-1260, 1310 part, 1314 part, 1315 part, 1320-1321	23.63
Park & Play Ground	2 nd	Baorkumarjani _167_02	686 part, 1262 part, 1363-1266, 1267 part, 1268 part, 1269-1271, 1275, 1303 part	4.38
Community Park-2	1 st	Baorkumarjani _167_01	517, 520-522, 523 part, 524 part	2.24
Playground-2	2 nd	Baorkumarjani _167_01	503-511, 512 part, 513, 514 part, 515 part, 516	4.73
Utility & service facility				
Waste Dumping Ground	1 st	Baorkumarjani _167_02	1171 part, 1173, 1174 part, 1175 part, 1183, 1184	3.85
Community Facilities				
Ward Center	1 st	Baorkumarjani _167_01	414 part, 424 part	0.16

2) Proposal for road development:

A total of 6.97 km road has proposed for road network development of this ward of which some are new and some are widening. Wihin all roads 2.89 km road will construct within 1st phase. Recommended road network are shown in the following table.

Table 14.19: Proposed road for ward no-5

Road ID	Width (feet)	Length (m)	Phase	Type
R01	100	1,286.20	2nd	W
R02	80	823.18	3rd	W
R03	80	113.45	3rd	W
R02	80	248.71	3rd	W
R10	60	228.69	1st	W
R13	60	966.28	2nd	W
R13	60	237.74	2nd	N
R13	60	44.10	2nd	W
R29	40	455.37	1st	W

R21	40	290.23	1st	W
R22	40	291.28	1st	N
R32	40	582.47	1st	W
R26	40	519.86	1st	W
R75	30	318.99	1st	W
R72	30	198.32	1st	W
R71	30	365.74	2nd	W
Total		6,970.61		

*Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 6.51 km drain has proposed for drianage network development of this ward of which almost all are new. Wihin all roads 2.82 km drain will construct within 1st phase. Recommanded drains are shown in the following table.

Table 14.20: Proposed drainage for ward no-5

Drain ID	Type	Length (m)	Phase
D01	Primary	1363.57	2nd
D03	Primary	106.57	3rd
D02	Primary	140.81	3rd
D02	Primary	816.82	3rd
D10	Secondary	245.2	1st
D13	Secondary	1266.18	2nd
D29	Tertiary	438.18	1st
D26	Tertiary	522.49	1st
D22	Tertiary	291.27	1st
D32	Tertiary	609.29	1st
D75	Tertiary	318.99	1st
D21	Tertiary	190.91	1st
D72	Tertiary	198.32	1st
Total		6508.6	

Map 14.9: Landuse Proposal for Ward No. 05

Map 14.10: Proposed Road, Drainage and Utility Services Plan for Ward No. 05

14.3.6 Action Plan for Ward No. 6

Existing Situation:

It is mainly builtup area consisting upazila complex and proposed Paurashava bhaban. Ward No. 8 is on the east, Ward no-5 on the northern part of this Paurashava.

Total area of the Ward is 190.50 acres. Among the total area, agriculture use is 99.67 acres, govt. services 2.52 acres, mixed use 8.36 acres and residential 41.32 acres.

At total population of this area is 2685 person and in 2016 itn will be 3130 person.

There is 6.04 km of road of which 3.33km is pucca 0.99 km is semi pucca and 1.72 km is katcha. A total of 0.40 km drains exist in this ward.

Within educational institutions there is 1 primary school and a high school.

Proposals and Plans for Ward No. 6

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 24.35% land proposed for residential use, 11.54% mixed use, 2.11% are community facility, 30.52% agricultural and others are in different category.

Table 14.21: Proposed land use for Ward no-6

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	58.13	30.52
Circulation Network	21.50	11.28
Commercial Zone	2.22	1.16
Community Facilities	4.01	2.11
Education and Research	5.59	2.94
General Industrial Zone	2.42	1.27
Governmental Services	4.54	2.38
Mixed Use Zone	21.98	11.54
Open Space	4.66	2.45
Residential Zone	46.38	24.35
Service Activity	0.32	0.17
Water Body	18.75	9.84
Total	190.50	100.00

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.22: proposed facilities for ward no -6

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in acre
Administration				
Paurashava Office	1 st	Baimhati_103_00	267, 268 part	0.38
Open Spce				
Community Park-3	1 st	Baimhati_103_00	356 part, 357-358, 359 part	1.45
Utility & service facility				
Public Toilet-3	1 st	Baimhati_103_00	456 paer	0.10
Waste Transfer Station-3	1 st	Baimhati_103_00	456 paer	0.19

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in acre
Community Facilities				
Poura Graveyard	1 st	Baimhati_103_00	252 part, 253-257	2.89
Central Mosque	2 nd	Baimhati_103_00	321, 322 part	0.91
Ward Center	1 st	Baimhati_103_00	534 part, 585 part	0.16

2) Proposal for road development:

A total of 5.59 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 2.65 km road will construct within 1st phase. Recommended road network are shown in the following table.

Table 14.23: Proposed road for ward no-6

Road ID	Width (feet)	Length (m)	Phase	Type
R06	80	1,181.11	1st	W
R03	80	155.86	3rd	W
R07	60	698.38	2nd	W
R27	40	177.81	2nd	W
R28	40	540.00	1st	W
R23	40	583.93	1st	W
R44	40	49.77	3rd	N
R86	30	306.11	3rd	N
R65	30	202.66	3rd	N
R88	30	132.79	1st	W
R69	30	208.75	1st	N
R87	30	47.35	2nd	W
R83	30	106.02	2nd	W
R84	30	379.35	2nd	W
R85	30	35.32	2nd	W
R89	30	202.77	2nd	N
R70	30	232.89	2nd	N
R65	30	148.38	2nd	N
R62	30	59.50	2nd	N
R65	30	144.15	2nd	W
Total		5,592.90		

*Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 3.40 km drain has proposed for drainage network development of this ward of which almost all are new. Within all drains 2.26 km drain will construct within 1st phase. Recommended drains are shown in the following table.

Table 14.24: Proposed drainage for ward no-6

Drain ID	Type	Length (m)	Phase
D03	Primary	154.89	3rd
D06	Primary	1137.95	1st
D07	Secondary	696.89	2nd
D45	Secondary	56.87	2nd
D27	Tertiary	177.81	2nd
D28	Tertiary	540	1st
D23	Tertiary	583.93	1st
D65	Tertiary	49.02	2nd
Total		3397.36	

Map 14. 11: Landuse Proposal for Ward No. 06

Map 14.12: Proposed Road, Drainage and Utility Services Plan for Ward No. 06

14.3.7 Action Plan for Ward No. 7

Existing Situation:

It is mainly rural character with vast agricultural land and situated on the southern part of the Paurashava. Ward No. 8 is on the west, Bongsai River on the northern part of this Paurashava.

Total area of the Ward is 167.68 acres. Among the total area, agriculture use is 95.5 acres, waterbody 9.53 acres and residential 50.91 acres.

Total population of this area is 2479 person and in 2016 it will be 2889 person.

There is 4.76 km of road of which 1.90 km is pucca, 0.24 km is semi-pucca and 2.63 km is katcha. No man made drain exists in this ward.

Within educational institutions there is 3 primary school and a Madrasa.

Proposals and Plans for Ward No. 7

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 47.01% land proposed for residential use, only 0.74% is commercial use, 2.99% education and research, 30.50% agricultural and others are in different category which are shown in the following table.

Table 14.25: Proposed land use for Ward no-7

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	51.15	30.50
Circulation Network	16.45	9.81
Commercial Zone	1.25	0.74
Community Facilities	0.85	0.50
Education and Research	5.02	2.99
Health Services	0.06	0.04
Open Space	5.43	3.24
Residential Zone	78.82	47.01
Water Body	8.66	5.16
Total	167.68	100.00

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.26: proposed facilities for ward no -7

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Community Facilities				
Ward Center	1 st	Mirzapur_104_00	150 part	0.17

2) Proposal for road development:

A total of 5.63 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 1.53 km road will construct within 1st phase. Recommended road network are shown in the following table.

Table 14.27: Proposed road for ward no-7

Road ID	Width (feet)	Length (m)	Phase	Type
R08	60	488.73	2nd	W
R08	60	261.51	2nd	W
R45	40	1,679.54	2nd	W
R46	40	580.89	2nd	W
R43	40	609.46	2nd	W
R44	40	229.51	3rd	N
R50	40	116.46	3rd	N
R50	40	98.42	2nd	N
R44	40	26.89	3rd	N
R53	40	257.86	1st	W
R82	30	544.20	1st	W
R81	30	234.93	1st	W
R05	80	45.69	2nd	W
R09	60	254.46	2nd	W
R08	60	198.07	2nd	W
Total		5,626.62		

*Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 4.60 km drain has proposed for drainage network development of this ward of which almost all are new. Within all drains 1.07 km drain will construct within 1st phase. Recommended drains are shown in the following table.

Table 14.28: Proposed drainage for ward no-7

Drain ID	Type	Length (m)	Phase
D46	Secondary	910.87	2nd
D08	Secondary	719.67	2nd
D45	Secondary	1906.01	2nd
D53	Secondary	286.56	1st
D82	Tertiary	544.2	1st
D81	Tertiary	234.93	1st
Total		4602.24	

Map 14.13: Landuse Proposal for Ward No. 07

Map 14.14: Proposed Road, Drainage and Utility Services Plan for Ward No. 07

14.3.8 Action Plan for Ward No. 8

Existing Situation:

It is mainly rural character with vast residential land and situated on the southern part of the Paurashava. Ward No. 7 is on the north, Ward No. 9 is on the southern part of this Paurashava.

Total population of this area is 3013 person (population census 2011).

Total area of the Ward is 143.14 acres. Among the total area, agriculture use is 47.54 acres, residential 70.42 acres, 16.00 acres are water body and other are different purposes.

There is 6.20 km of road of which 4.51 km is pucca, 0.62 km is semi-pucca and 1.07 km is katcha. Around 2.47 km man made drain exists in this ward.

Proposals and Plans for Ward No. 8

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 42.19% land proposed for residential use, 1.77% are commercial use, 0.87% mixed use, 26.96% agricultural and others are in different category which are shown in the following table.

Table 14.29: Proposed land use for Ward no-8

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	38.60	26.96
Circulation Network	13.76	9.61
Commercial Zone	2.53	1.77
Community Facilities	6.36	4.45
Education and Research	3.18	2.22
Governmental Services	0.09	0.06
Health Services	2.36	1.65
Mixed Use Zone	1.25	0.87
Open Space	4.30	3.00
Residential Zone	60.40	42.19
Water Body	10.31	7.20
Total	143.14	100.00

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14. 30 proposed facilities for ward no -8

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Community Facilities				
Eidgah	1 st	Andhora_105_00	205-208	2.84
Community Center-2	1 st	Andhora_105_00	137-139	1.14
Ward Center	1 st	Andhora_105_00	130 part	0.16

2) Proposal for road development:

A total of 3.91 km road has proposed for road network development of this ward of which some are new and some are widening. Within all roads 2.09 km road will construct within 1st phase. Recommended road network are shown in the following table.

Table 14.31: Proposed road for ward no-8

Road ID	Width (feet)	Length (m)	Phase	Type
R52	40	571.00	2nd	W
R42	40	231.10	1st	W
R47	40	264.11	1st	W
R53	40	216.32	1st	N
R48	40	50.27	1st	W
R53	40	51.62	1st	W
R24	40	171.66	1st	W
R53	40	125.26	1st	W
R50	40	24.31	3rd	N
R61	30	265.62	3rd	N
R78	30	321.52	1st	W
R79	30	156.76	1st	W
R77	30	193.53	1st	W
R60	30	139.54	3rd	N
R80	30	381.13	2nd	N
R80	30	93.30	1st	W
R63	30	211.91	1st	W
R68	30	65.05	3rd	N
R63	30	85.51	3rd	N
R101	20	176.11	2nd	W
R102	20	115.67	2nd	W
Total		3,911.30		

*Note: W= widening, N= New Road

3) Proposal for drianage development:

A total of 2.32 km drain has proposed for drainage network development in this ward of which almost all are new. Within all roads 0.60 km drain will construct within 1st phase. Recommended drains are shown in the following table.

Table 14. 32: Proposed drainage for ward no-8

Drain ID	Type	Length (m)	Phase
D05	Primary	47.15	2nd
D52	Secondary	553.49	2nd
D09	Secondary	254.45	2nd
D42	Secondary	231.1	1st
D53	Secondary	106.59	2nd
D08	Secondary	231.38	2nd
D53	Secondary	148.18	1st
D51	Secondary	154.87	2nd
D53	Secondary	216.32	1st
D80	Tertiary	123.72	2nd
D102	Tertiary	115.67	2nd
D101	Tertiary	138.43	2nd
Total		2321.35	

Map 14.15: Landuse Proposal for Ward No. 08

Map 14.16: Proposed Road, Drainage and Utility Services Plan for Ward No. 08

14.3.9 Action Plan for Ward No. 9

Existing Situation:

It is mainly rural character with a major portion of residential area and situated on the southern part of the Paurashava. Ward No. 7 is on the east, Bongsai River on the northern part of this Paurashava.

Total area of the Ward is 185.23 acres. Among the total area, agriculture use is 60.18 acres, residential 52.25 acres, 11.68 acres are water body and other are different purposes.

There is 4.89 km of road of which 2.30 km is pucca, 0.50 km is semi-pucca and 2.07 km is katcha. No man made drain exists in this ward.

At total population of this area is 3528 person and in 2016 itn will be 4111 person.

Within educational institutions there is 1 primary school, 1 secondary school, and a college.

Proposals and Plans for Ward No. 9

1) Landuse Development: For planned development considering the existing landuse and future demand landuse proposal has made. Within the total area 43.27% land proposed for residential use, 43.27% are Industrial use, 24.22% agricultural and others are in different category which are shown in the following table.

Table 14.33: Proposed land use for Ward no-9

Landuse Type	Area (Acre)	Percentage (%)
Agriculture Zone	44.86	24.22
Circulation Network	22.18	11.98
Commercial Zone	1.70	0.92
Community Facilities	2.57	1.39
Education and Research	3.17	1.71
General Industrial Zone	36.73	19.83
Mixed Use Zone	8.31	4.49
Open Space	8.86	4.79
Residential Zone	43.27	23.36
Service Activity	0.95	0.51
Transport & Communication	0.55	0.30
Water Body	12.07	6.52
Total	185.23	100.00

The facilities considering the demand of the ward were shown in the following table including phasing. The proposed facilities under different category of land uses are also shown in the following table.

Table 14.34: proposed facilities for ward no -9

Proposed facilities	Phase	CS Mouza Name	Plot No.	Area in Acre
Transportation				
Tampo Stand-2	1 st	Kantalia_107_00	70 part, 71 part, 72 part, 73 part, 74 part	0.55
Open Spce				
Community Park-4	1 st	Kantalia_107_00	135, 136 part, 137-139, 140 part	2.75
Playground-3	2 nd	Kantalia_107_00	185, 186 part, 197 part, 199-207, 209-210	3.73
Utility & service facility				
Public Toilet-4	1 st	Kantalia_107_00	64, 66-67	0.38
Waste Transfer Station-4	1 st	Kantalia_107_00	70 part, 72 part	0.57
Industrial				
General Industrial Zone	3 rd	Kantalia_107_00	1-63, 72 part, 73 part, 74 part, 76-84, 87-91, 310, 314, 321	36.55
Community Facilities				
Ward Center	1 st	Kantalia_107_00	260 part	0.19

2) Proposal for road development:

A total of 7.48 km road has proposed for road network development of this ward of which some are new and some are widening. Wihin all roads 0.68 km road will construct within 1st phase. Recommanded road network are shown in the following table.

Table 14.35: Proposed road for ward no-9

Road ID	Width (feet)	Length (m)	Phase	Type
R04	80	325.30	2nd	W
R04	80	41.40	2nd	N
R17	60	230.01	2nd	W
R18	60	379.39	3rd	N
R20	60	886.01	2nd	W
R19	60	207.89	3rd	W
R12	60	95.40	3rd	W
R51	40	819.15	2nd	W
R54	40	381.07	2nd	W
R66	30	731.74	3rd	N
R64	30	614.22	3rd	N
R58	30	349.14	2nd	W
R59	30	328.76	2nd	W
R99	30	271.79	2nd	W
R100	30	187.21	2nd	W
R67	30	548.22	3rd	N
R68	30	233.94	3rd	N
R104	20	184.78	1st	W
R116	20	144.85	1st	W
R115	20	112.54	1st	W
R117	20	239.35	1st	W
R101	20	172.18	2nd	W
Total		7,484.34		

*Note: W= widening, N= New Road

Map 14.17: Landuse Proposal for Ward No. 09

Map 14.18: Proposed Road, Drainage and Utility Services Plan for Ward No. 09

3) Proposal for drianage development:

A total of 4.30 km drain has proposed for drainage network development of this ward of which almost all are new. Wihin all drains 0.68 km drain will construct within 1st phase. Recommanded drains are shown in the following table.

Table 14.36: Proposed drainage for ward no-9

Drain ID	Type	Length (m)	Phase
D17	Secondary	230.01	2nd
D04	Secondary	408.59	2nd
D51	Secondary	821.68	2nd
D54	Secondary	381.06	2nd
D18	Secondary	379.39	3rd
D20	Secondary	770.45	2nd
D19	Secondary	205.71	3rd
D20	Secondary	115.56	2nd
D12	Secondary	92.97	3rd
D101	Tertiary	209.86	2nd
D104	Tertiary	184.78	1st
D116	Tertiary	144.85	1st
D115	Tertiary	112.54	1st
D117	Tertiary	239.35	1st
Total		4296.8	

14.4 Implementation Guidelines

Implementation of the Ward Action Plan should follow the development control procedures for determining planning applications by use of the simple and standard planning application procedures. A simple application will be assessed quickly against a given set of criteria, essentially consisting of the following:

1. The proposed development confirms all respects mentioned in the policies of the Structure Plan and Urban Area Plan.
2. he usage identified in the application is being considered appropriate for inclusion in an area demarcated in the Ward Action Plan. An indicative list of uses considered appropriate is below:
 - 3. buildings are a maximum of four-storied;
 - 4. o single building or related group of buildings is 1000 sq. m. of gross floor area; and
 - 5. access and utility corridors are not impinged.

Provided that the planning application meets above criteria and the application will be approved and planning permission is given.

Planning applications that do not meet the above criteria or are considered marginal cases (to be known as an invalid simple application) will be subjected to a more detailed examination in considering standard procedure.

Following development and landuses are indicative of those appropriate in the Ward Action Plan:

1. Residential development up to four-storied.
2. Small-scale shops.
3. Primary schools/kindergartens.
4. Mosques (or other religious facilities) servicing a local area plus small graveyard if required.
5. Recreational development.
6. Local health facilities (clinics rather than hospital).
7. Small-scale office (may be public or private) development.
8. Workshops (small-scale workshops with operations only) in daylight hours and low traffic generators.
9. Open space (playgrounds, parks, etc.)
10. Access roads.
11. Utilities; and
12. Drainage channels.

When considering a standard planning application within areas zoned for Ward Action Plan, the Paurashava will need to undertake a two-stage process. First, before considering site specific issues, the Paurashava will need, on receipt of the planning application, to consider the wider context and determine issues relating to the overall area into which the application falls. The Paurashava will need to:

1. Determine the boundaries of the wider area. These will usually be formed by some distinctive natural or man-made feature, for example a khal, river or road which provides access into the area. Such areas will vary in shape and size.
2. Identify the existing landuses within these boundaries. In Ward Action Plan, the predominant use will be residential but other uses will present in the vicinity of the application.
3. Identify and assess the existing access and circulation arrangements of the area. Preferably, the area should be served by 10 meter access roads which run through the entire area providing access to all Wards. These access roads should be linked to local roads. If this is not the case and access roads of sufficient width, are not available, the Paurashava shall consider whether or not further development is appropriate. New development may result in increased vehicular congestion and increased demand for utility services, where this could be difficult to supply.

In these instances, the Paurashava will consider refusal of application or at least a delay until access and utility provision can be made. This may require acquisition of land.

4. Identify the need for community facilities (schools, clinics, religious facilities, open spaces, etc.) or plots for utility services. Do sufficient already exist or should more land be sought for increased provision to the existing population? In this latter instance, the Paurashava will again need to consider acquisition of land including the land, either in part or in full, under consideration for development.
5. Consider areas of high landscape quality in the locality which should be preserved and the potential impact of the proposed development on those areas.

If there is doubt in the mind of the Paurashava as to the answers to the above questions, the planning application will require a more detailed assessment.

Secondly, the Paurashava will need to consider issues relating to the individual site and application. These can only be determined once the overall context of the area has been established. The questions the Paurashava will need to ask are:

1. Can the proposed use of land be considered a “good neighbour”, defined in this situation as a use which can be carried out in any residential area without detriment to the amenities of the area by reason of noise, vibration, smell, fumes, smoke, soot, ash, dust or grit?
 - Is the use likely to generate excessive volumes of traffic which either cannot be accommodated on the existing road system or which are likely to disturb its neighbours?
 - Will the working hours of the use (if non-residential) cause a disturbance to residential neighbours (with working late in to the evening or night or 24-hours operations likely to cause a nuisance and therefore not being permitted)?
 - If yes to any of the above, the application should be rejected and directed to a more suitable location.
2. Is the use in conformity with the surrounding uses or with those that are compatible with a site in a predominantly residential area?
3. Does the proposed boundary of the application impinge upon a road corridor, utility reserve or drainage channel reserve? If it does, it should be relocated outside such a reserve, even if this constitutes a reduction in the overall size of the plot. If excessive land will be lost as a result, implying that the development can no longer proceed, the application will need to be rejected.
4. Does the application provide for adequate site access from, preferably as minimum, a 6 meter access road? Does it have sufficient on-site or off-site parking facilities to cater for the potential demand? If it does not, the plans should be amended or the application refused.
5. Will the development destroy landscape unique to the location? If it does, its design will need to be altered to protect the landscape, or the application will need to be refused.
6. Is the scale of development proposed in keeping with its neighbours? If too large, it should be reduced. Does it impinge upon the privacy of others? If it does, the design / layout / size should be changed. If it can not be appropriately modified, it should be refused.
7. Will the proposed development negatively impact upon utility provision in the area i.e. will it overload the system for some reason (like high electricity demand or high water consumption)? Will pollution from the proposed activities cause a problem in the neighbourhood? If this is likely to occur, the application should be refused.

If the application is for a major development, have the utility authorities been contacted to give their assessment and approval for the infrastructure works that will be required?

Given the existing situation in some of the Ward Action Plan, where for example, access is already poor or there is insufficient space available to provide adequate infrastructure, the Paurashava will aim to ensure that its decision will not make the situation worse.

The Paurashava will need to process each application within one month, at the end of which time they will either need to:

- approve the application unconditionally;
- approve the application subject to a number of conditions; or
- refuse the application.

14.5 Concluding Remarks

The Master Plan is prepared for managing and promoting development over medium terms following the broad guidelines set by the longer term Structure Plan. It shows the structure of sub-system in space over the medium term and identifies broad programs of direct action especially related to infrastructural development, institutional issues as well as broad financing strategies. The plan also outlines more specific Ward-wise development policies to guide development over the medium terms. One major objective of preparing Master Plan is the consolidation of development activities by various agencies in areas that have strongest potential for growth in the medium term and can accommodate anticipated volume of growth. Other purpose of preparing Master Plan is to facilitate the development control function. It shows the broad landuse zones on a more detailed scale of maps as derived from Structure Plan. The plan provides details of landuse zoning and building controls, the development control function becomes easier to implement with a Master Plan. It also shows land reservations required for essential uses and major infrastructure development.

Comparative Advantage of Master Plan

Comparative advantages of Master Plan rather than Ward Action Plan are:

- The term Master Plan deserves wider sense than the term Ward Action Plan. Policies and strategies are being prescribed in the Master Plan based on the existing trend of development and growth potentiality. The Ward Action Plan only emphasizes on those components immediate action is being necessary.
- The Master Plan is for the Paurashava as a whole but the Ward Action Plan is only for individual Ward. All studies relevant and guided by the ToR is being followed for the preparation of Master Plan at first and based on those studies and findings the Ward Action Plan is being designed.
- The Ward Action Plan is mostly relevant with the implementation criteria; it is called the implementation of Master Plan. The micro-component which is going to be implemented according to the Ward Action Plan is guided by the Master Plan. Therefore, any problem arises during the implementation phase of Ward Action Plan will be resolved through the guideline prescribed in the Master Plan.

Addressing Proposals for Mitigation of Identified Issues

- For improvement, construction and re-construction of local roads, bridge and culvert and box culvert, a close coordination among the authorities named Paurashava,

LGED, PDB, REB and WDB will be maintained. This coordination is necessary from the preparation of budget to implementation of the component.

- In plan implementation phase, people's participation will be encouraged. The process as prescribed in the Structure Plan will be initiated for this purpose.
- A buffer will be needed for every important development especially for housing area, stadium and Bus terminal.

In preparing the proposed construction program priorities have been assigned to the works mostly in the various drainage areas taking the following factors into account:

- The severity of flooding in terms of depth, duration and frequency;
- The views of Paurashava officials on the relative needs of different areas;
- The engineering relationship of the proposed phase of construction to the preceding and subsequent phases;
- The estimated time required to execute the proposed works having regard to the capacity and capability of contractors and the availability of materials;
- The estimated amount of the capital investment required.

In general, aim should be to implement the Master Plan at a continuous steady rate throughout the 20 years period and based upon the above considerations, the works have been grouped broadly into four main stages:

- The first stage accords priority to improve the Traffic Management and alleviation of flooding in the central area of the Paurashava.
- The second stage in general covers less densely developed areas with the improvement of transport services.
- The third stage covers drainage congestion areas for improvement.
- The fourth stage will be the rain water harvesting for supplying drinking water to the Paurashava dwellers when scarcity will be generated.

To ensure that the procedures are being followed, the Paurashava will need to monitor the situation. This monitoring is required to ensure that:

- No illegal development is taking place i.e. no-one is attempting to develop without submitting an application; and
- Approved developments are built in accordance with the approved plans.
- A development will take places according to the Master Plan.

ANNEXURE-A

Paurashava Gazette

ANNEXURE-B

Proposed Land Use Categories and permitted use

Urban Residential Landuse

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.1: Landuse Permitted

Permitted
Artisan's Shop
Assisted Living or Elderly Home
Confectionery Shop
Barber Shop
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Communication Service Facilities
Communication Tower Within Permitted Height
Condominium or Apartment
Cottage
Cyber Café
Daycare Center (Commercial or Nonprofit)
Drug Store or Pharmacy
Employee Housing (Guards \ Drivers) \ Ancillary Use
General Store
Grocery Store
High School
Household Appliance and Furniture Repair Service (No Outside Storage)
Housing For Seasonal Firm Labor
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Orphanage
Eidgah
Photocopying and Duplicating Services (No Outside Storage)
Pipelines and Utility Lines
Playing Field
Primary School
Private Garages (Ancillary Use)
Project Identification Signs
Property Management Signs
Public Transport Facility
Satellite Dish Antenna

Permitted
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
CBO Office
Special Dwelling
Temporary Tent
Temporary Pandle for Permitted Function
Newspaper Stand
Specialized School: Dance, Art, Music, Physically Challenged & Others
Transmission Lines
Urban-Nature Reserve
Utility Lines
Woodlot
Children's Park (Must Have Parking)
ATM Booth
Water Pump \ Reservoir
Monument (Neighborhood Scale)
Bill Payment Booth
Boarding and Rooming House
Dormitory
Memorial Structure (Ancillary)
Neighborhood Center* (Where Neighborhood Center exists)
Permitted
Community Center
Doctor \ Dentist Chamber
Cultural Exhibits and Libraries
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Fitness Centre
Gaming Clubs
Departmental Stores
Retail Shops \ Facilities

Permission of Neighborhood Center Facilities in absence of formal neighborhood should be subject to Landuse Permit CommitteeSource: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table No. A.2: Landuse Conditionally Permitted

Conditional
Addiction Treatment Center
Amusement and Recreation (Indoors)
Funeral Services
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Beauty and Body Service
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Maintenance \ Cleaning Services, No Outside Storage
Bus Passenger Shelter
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Correctional Institution
Courier Service
Crematorium
Plantation (Except Narcotic Plant)
Furniture & Variety Stores
Emergency Shelter
Energy Installation
Garages
Garden Center or Retail Nursery
Fire Brigade Station
Police Station
Temporary Rescue Shed
Guest House
Slaughter House
Static Transformer Stations
Tourist Home or Resort
Market (Bazar)
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Community Hall
Neighborhood Co-Operative Office
Overhead Water Storage Tanks
Row House
Paints and Varnishes Store
Parking Lot
Patio Homes
Photofinishing Laboratory

Conditional
Post Office
Postal Facilities
Sports and Recreation Club
Tennis Club
Flood Management Structure
Telephone Sub Station
Electrical Sub Station

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

General Industrial Zone

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.3: Landuse Permitted

Permitted
Confectionery Shop
Bank & Financial Institution
Bicycle Assembly, Parts and Accessories
Blacksmith
Bus Passenger Shelter
Communication Tower Within Permitted Height
Freight Transport Facility
Police Box \ Barrack
Fire \ Rescue Station
Grocery Store
Household Appliance and Furniture Repair Service
Machine Sheds
Meat and Poultry (Packing & Processing)
Mosque, Place Of Worship
Newspaper Stand
Photocopying and Duplicating Services
Pipelines and Utility Lines
Printing, Publishing and Distributing
Public Transport Facility
Restaurant
Retail Shops \ Facilities
Salvage Processing
Salvage Yards
Satellite Dish Antenna

Permitted
Sawmill, Chipping and Pallet Mill
Shelter (Passers By)
Television, Radio or Electronics Repair (No Outside Storage)
Transmission Lines
Truck Stop & Washing or Freight Terminal
Utility Lines
Wood Products
Woodlot
ATM Booth
Water Pump \ Reservoir
Effluent Treatment Plant
Social Forestry

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee following appropriate procedure.

Table No. A.4: Landuse Conditionally Permitted

Conditional
Amusement and Recreation (Indoors)
Appliance Store
Plantation (Except Narcotic Plant)
Cyber Café
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Electrical and Electronic Equipment and Instruments Sales
Employee Housing
Energy Installation
Fast Food Establishment \ Food Kiosk
Garages
Grain & Feed Mills
Incineration Facility
Super Store
Lithographic or Print Shop
Motor Vehicle Fuelling Station \ Gas Station
Motorcycle Sales Outlet
Outdoor Fruit and Vegetable Markets
Outside Bulk Storage
Overhead Water Storage Tanks
Painting and Wallpaper Sales
Paints and Varnishes

Conditional
Parking Lot
Parking Lot (Commercial)
Private Garages
Retail Shops Ancillary To Studio \ Workshop
Jute Mill

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses.

Commercial Zone (Business)

Landuse Permitted

Commercial office zone is mainly intended for supporting the official works. There are several functions that are permitted in this zone.

Table No. A.5: Landuse Permitted

Permitted
Accounting, Auditing or Bookkeeping Services
Billboards, Advertisements & Advertising Structure
Agri-Business
Agricultural Sales and Services
Ambulance Service
Antique Shop
Appliance Store
Auction Market
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Auto Paint Shop
Auto Parts and Accessory Sales (Indoors)
Auto Repair Shop (With Garage)
Automobile Wash
Automobile Sales
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Bar (Licensed)
Barber Shop
Beauty and Body Service
Bicycle Shop
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand

Permitted
Building Material Sales or Storage (Indoors)
Bulk Mail and Packaging
Bus Passenger Shelter
Cinema Hall
Communication Service Facilities
Communication Tower Within Permitted Height
Computer Maintenance and Repair
Computer Sales & Services
Conference Center
Construction Company
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)
Department Stores, Furniture & Variety Stores
Doctor \ Dentist Chamber
Drug Store or Pharmacy
Electrical and Electronic Equipment and Instruments Sales
Fast Food Establishment \ Food Kiosk
Freight Handling, Storage & Distribution
Freight Transport Facility
Freight Yard
General Store
Grocery Store
Guest House
Hotel or Motel
Inter-City Bus Terminal
Jewelry and Silverware Sales
Junk \ Salvage Yard
Super Store
Market (Bazar)
Mosque, Place Of Worship
Motorcycle Sales Outlet
Multi-Storey Car Park
Newspaper Stand
Outdoor Fruit and Vegetable Markets
Outdoor Recreation, Commercial
Parking Lot (Commercial)
Pet Store
Photocopying and Duplicating Services
Photofinishing Laboratory & Studio
Pipelines and Utility Lines

Permitted
Post Office
Preserved Fruits and Vegetables Facility \ Cold Storage
Printing, Publishing and Distributing
Project Identification Signs
Property Management Signs
Public Transport Facility
Refrigerator or Large Appliance Repair
Resort
Restaurant
Retail Shops \ Facilities
Salvage Processing
Salvage Yards
Satellite Dish Antenna
Sawmill, Chipping and Pallet Mill
Shelter (Passers By)
Shopping Mall \ Plaza
Slaughter House
Software Development
Sporting Goods and Toys Sales
Taxi Stand
Telephone Exchanges
Television, Radio or Electronics Repair (No Outside Storage)
Theater (Indoor)
Transmission Lines
Utility Lines
Vehicle Sales & Service, Leasing or Rental
Veterinarian Clinics, Animal Hospitals, Kennels and Boarding Facilities
Warehousing
Wood Products
Woodlot
ATM Booth
Water Pump \ Reservoir
Agro-Based Industry (Rice Mill, Saw Mill, Cold Storage)
Social Forestry

Source: Compiled by the Consultants

Landuse Conditionally Permitted

Some functions are permitted with some condition in this zone.

Table No. A.6: Landuse Conditionally Permitted

Conditional
Amusement and Recreation (Indoors)
Bicycle Assembly, Parts and Accessories
Broadcast Studio \ Recording Studio (No Audience)
Coffee Shop \ Tea Stall
Concert Hall, Stage Shows
Construction, Survey, Soil Testing Firms
Trade Shows
Craft Workshop
Plantation (Except Narcotic Plant)
Energy Installation
Firm Equipment Sales & Service
Agricultural Chemicals, Pesticides or Fertilizers Shop
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Forest Products Sales
Fuel and Ice Dealers
Garages
Garden Center or Retail Nursery
Police Box \ Barrack
Fire \ Rescue Station
Grain & Feed Mills
Household Appliance and Furniture Repair Service
Incineration Facility
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Motor Vehicle Fuelling Station \ Gas Station
Musical Instrument Sales or Repair
Optical Goods Sales
Painting and Wallpaper Sales
Paints and Varnishes
Parking Lot
Patio Homes
Postal Facilities
Poultry
Private Garages
Professional Office
Retail Shops Ancillary To Studio \ Workshop
Stone \ Cut Stone Products Sales

Restricted Uses

All uses except permitted and conditionally permitted uses.

Rural Settlement Zone

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.7: Landuse Permitted

Permitted
Agricultural Dwellings
Animal Husbandry
Animal Shelter
Graveyard \ Cemetery
Child Daycare \ Preschool
Primary School
Communication Tower Within Permitted Height
Cottage
Crematorium
Dairy Farming
General Store
Grocery Store
Handloom (Cottage Industry)
Housing For Seasonal Firm Labor
Mosque, Place Of Worship
Newspaper Stand
Nursery School
orphanage
Outdoor Religious Events (Eidgah)
Playing Field
Satellite Dish Antenna
NGO \ CBO Facilities
Special Dwelling (E.G. Dorm For Physically Challenged Etc.)
Temporary Shed \ Tent
Specialized School: Dance, Art, Music, Physically Challenged & Others
Static Electrical Sub Stations
Transmission Lines
Utility Lines
Woodlot
Plantation (Except Narcotic Plant)
Social Forestry
Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table No. A.8: Landuse Conditionally Permitted

Conditional
Artisan's Shop (Potter, Blacksmith, and Goldsmith Etc.)
Research organization (Agriculture \ Fisheries)
Energy Installation
Fish Hatchery
Garden Center or Retail Nursery
Emergency Shelter
Sports and Recreation Club, Firing Range: Indoor

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

Mixed use zone

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.11: Landuse Permitted

Permitted
Accounting, Auditing or Bookkeeping Services
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Agricultural Sales and Services
Antique Store
Appliance Store
Art Gallery, Art Studio \ Workshop
Artisan's Shop
Assisted Living or Elderly Home
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Automobile Wash
Automobile Driving Academy
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Barber Shop

Permitted
Bicycle Shop
Billiard Parlor \ Pool Hall
Blacksmith
Boarding and Rooming House
Book or Stationery Store or Newsstand
Bus Passenger Shelter
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Commercial Recreational Buildings
Communication Service Facilities
Communication Tower Within Permitted Height
Community Center
Condominium or Apartment
Correctional Institution
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Employee Housing
Fabric Store
Fast Food Establishment \ Food Kiosk
Funeral Services
General Store
Grocery Store
Guest House
Hospital
Jewelry and Silverware Sales
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Photocopying and Duplicating Services
Pipelines and Utility Lines
Primary School
Project Identification Signs
Property Management Signs
Public Transport Facility
Resort
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)

Permitted
Slaughter House
Social organization
Software Development
Special Dwelling
Toys and Hobby Goods Processing and Supplies
Training Centre
Transmission Lines
Utility Lines
Vehicle Sales & Service, Leasing or Rental
Warehousing
Woodlot
Children's Park
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Rickshaw \ Auto Rickshaw Stand

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee.

Table No. A.12: Landuse Conditionally Permitted

Conditional
Agricultural Chemicals, Pesticides or Fertilizers Shop
Amusement and Recreation (Indoors)
Beauty and Body Service
Broadcast Studio \ Recording Studio (No Audience)
Building Maintenance \ Cleaning Services, No Outside Storage
Building Material Sales or Storage (Indoors)
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Computer Maintenance and Repair
Computer Sales & Services
Concert Hall, Stage Shows
Conference Center
Construction Company
Construction, Survey, Soil Testing Firms
Cottage
Counseling Services
Craft Workshop

Conditional
Crematorium
Plantation (Except Narcotic Plant)
Cultural Exhibits and Libraries
Department Stores, Furniture & Variety Stores
Drug Store or Pharmacy
Energy Installation
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Transport Facility
Gaming Clubs
Garages
Garden Center or Retail Nursery
Commercial Office
Project Office
Government Office
Hotel or Motel
Household Appliance and Furniture Repair Service
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Market (Bazar)
Health Office, Dental Laboratory, Clinic or Lab
Musical Instrument Sales or Repair
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Painting and Wallpaper Sales
Paints and Varnishes
Patio Homes
Photofinishing Laboratory & Studio
Poultry
Printing, Publishing and Distributing
Psychiatric Hospital
Retail Shops Ancillary To Studio \ Workshop
Radio \ Television or T&T Station With Transmitter Tower
Refrigerator or Large Appliance Repair
Restaurant
Retail Shops \ Facilities
Sporting Goods and Toys Sales
Sports and Recreation Club, Firing Range: Indoor

Conditional
Telephone Exchanges
Television, Radio or Electronics Repair (No Outside Storage)

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

Institutional Zone

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.13: Landuse Permitted

Permitted
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Confectionery Shop
Bus Passenger Shelter
Child Daycare \ Preschool
College, University, Technical Institute
Communication Service Facilities
Communication Tower Within Permitted Height
Conference Center
Correctional Institution
Cultural Exhibits and Libraries
Cyber Café
Freight Transport Facility
General Store
Grocery Store
High School
Hospital
Lithographic or Print Shop
Mosque, Place Of Worship
Multi-Storey Car Park
Newspaper Stand
Nursery School
Outdoor Religious Events
Photocopying and Duplicating Services
Post Office
Primary School
Professional Office

Permitted
Project Identification Signs
Property Management Signs
Public Transport Facility
Satellite Dish Antenna
School (Retarded)
Scientific Research Establishment
Shelter (Passers By)
Specialized School: Dance, Art, Music & Others
Training Centre
Transmission Lines
Utility Lines
Vocational, Business, Secretarial School
Woodlot
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Veterinary School \ College and Hospital

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table No. A.14: Landuse Conditionally Permitted

Conditional
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Bank & Financial Institution
Barber Shop
Boarding and Rooming House
Book or Stationery Store or Newsstand
Coffee Shop \ Tea Stall
Counseling Services
Courier Service
Plantation (Except Narcotic Plant)
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Drug Store or Pharmacy
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Gallery \ Museum

Conditional
Garages
Indoor Theatre
orphanage
Outdoor Café
Parking Lot
Pipelines and Utility Lines
Postal Facilities
Psychiatric Hospital

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

Administrative Zone

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.15: Landuse Permitted

Permitted
Accounting, Auditing or Bookkeeping Services
Billboards, Advertisements & Advertising Structure
Confectionery Shop
Bus Passenger Shelter
Civic Administration
Communication Service Facilities
Communication Tower Within Permitted Height
Construction, Survey, Soil Testing Firms
Cultural Exhibits and Libraries
Cyber Café
Emergency Shelter
Freight Transport Facility
General Store
Project Office
Government Office
Grocery Store
Guest House
Multi-Storey Car Park
Newspaper Stand
Outdoor Religious Events
Photocopying and Duplicating Services
Post Office
Professional Office

Permitted
Public Transport Facility
Satellite Dish Antenna
Scientific Research Establishment
Shelter (Passers By)
Training Centre
Transmission Lines
Utility Lines
Woodlot
ATM Booth
Water Pump \ Reservoir
Social Forestry

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table No. A.16: Landuse Conditionally Permitted

Conditional
Amusement and Recreation (Indoors)
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Bank & Financial Institution
Boarding and Rooming House
Book or Stationery Store or Newsstand
Coffee Shop \ Tea Stall
Conference Center
Courier Service
Plantation (Except Narcotic Plant)
Daycare Center (Commercial or Nonprofit)
Detention Facilities
Doctor \ Dentist Chamber
Energy Installation
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Yard
Gallery \ Museum
Garages
Police Box \ Barrack
Fire \ Rescue Station
Lithographic or Print Shop

Conditional
Mosque, Place Of Worship
Outdoor Café
Parking Lot
Parking Lot (Commercial)
Pipelines and Utility Lines
Postal Facilities

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

Agricultural Zone

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.17: Landuse Permitted

Permitted
Food Grain Cultivation
Vegetable Cultivation
Cash Crop Cultivation
Horticulture
Arboriculture
Dairy Farming
Deep Tube Well
Shallow Tube Well
Irrigation Facilities (Irrigation Canal, Culvert, Flood Wall etc)
Temporary Structure (Agricultural)
Animal Shelter
Duckery
Aquatic Recreation Facility (Without Structure)
Tree Plantation (Except Narcotic Plant)
Aquaculture
Static Transformer Stations
Transmission Lines
Utility Lines
Woodlot
Social Forestry

Source: Compiled by the Consultants

Landuse Conditionally Permitted

Table No. A.18: Landuse Conditionally Permitted

Conditional
Graveyard \ Cemetery
Communication Tower Within Permitted Height
Crematorium
Fish Hatchery
Garden Center or Retail Nursery
Poultry

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

Open Space

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.19: Landuse Permitted

Permitted
Botanical Garden & Arboretum
Bus Passenger Shelter
Caravan Park \ Camping Ground
Carnivals and Fairs
Circus
Plantation (Except Narcotic Plant)
Landscape and Horticultural Services
Open Theater
Park and Recreation Facilities (General)
Pipelines and Utility Lines
Playing Field
Special Function Tent
Tennis Club
Transmission Lines
Urban-Nature Reserve
Utility Lines
Woodlot
Zoo
Roadside Parking
Social Forestry
Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

Table No. A.20: Landuse Conditionally Permitted

Conditional
Communication Tower Within Permitted Height
Trade Shows
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Golf Course
Motorized Recreation
Outdoor Recreation Facilities
Outdoor Recreation, Commercial
Outdoor Sports and Recreation
Park Maintenance Facility
Retreat Center
Sports and Recreation Club, Firing Range: Indoor

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.

Water Retention Area

Retaining water is the main purpose of this type of Landuse.

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.21: Landuse Permitted

Permitted
Aquatic Recreation Facility (Without Structure)
Fishing Club
Utility Lines
Water Parks
Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table No. A.22: Landuse Conditionally Permitted

Conditional
Plantation (Except Narcotic Plant)
Marina \ Boating Facility
Motorized Recreation

Source: Compiled by the Consultants

Water body

Landuse Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table No. A.23: Landuse Permitted

Permitted
Aquatic Recreation Facility (Without Structure)
Fishing Club
Utility Lines
Water Parks
Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table No. A.24: Landuse Conditionally Permitted

Conditional
Plantation (Except Narcotic Plant)
Marina \ Boating Facility
Motorized Recreation

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.

ANNEXURE-C

Resolution of Final Consultation Meeting and Attendance List.

ANNEXURE-D

Details of Road Network Proposal

Road ID	Road Width	Length Meter	Ward No	Phase	Type
R01	100	1286.20	Ward-05	2nd	Widening
R01	100	701.02	Outsite	2nd	Widening
R01	100	905.12	Ward-01	2nd	Widening
R01	100	64.68	Ward-04	2nd	Widening
R01	100	1004.14	Ward-03	2nd	Widening
R06	80	1181.11	Ward-06	1st	Widening
R05	80	588.73	Ward-02	2nd	Widening
R04	80	185.49	Ward-02	2nd	New
R03	80	155.86	Ward-06	3rd	Widening
R02	80	823.18	Ward-05	3rd	Widening
R06	80	403.28	Ward-03	1st	Widening
R06	80	743.50	Ward-03	1st	Widening
R04	80	325.30	Ward-09	2nd	Widening
R06	80	389.93	Ward-01	1st	Widening
R06	80	70.23	Ward-01	1st	Widening
R06	80	202.98	Ward-01	1st	Widening
R03	80	113.45	Ward-05	3rd	Widening
R04	80	41.40	Ward-09	2nd	New
R05	80	45.69	Ward-08	2nd	Widening
R06	80	73.42	Ward-02	1st	Widening
R06	80	142.62	Ward-02	1st	Widening
R06	80	247.86	Ward-02	1st	Widening
R06	80	217.43	Ward-02	1st	Widening
R04	80	199.32	Ward-02	2nd	Widening
R03	80	116.71	Ward-03	3rd	Widening
R02	80	822.95	Ward-04	3rd	Widening
R02	80	248.71	Ward-05	3rd	Widening
R14	60	2186.23	Ward-04	3rd	New
R16	60	660.63	Ward-04	3rd	New
R12	60	267.25	Ward-01	3rd	Widening
R17	60	230.01	Ward-09	2nd	Widening
R10	60	228.69	Ward-05	1st	Widening
R18	60	379.39	Ward-09	3rd	New
R07	60	698.38	Ward-06	2nd	Widening
R09	60	254.46	Ward-08	2nd	Widening
R11	60	173.01	Ward-01	1st	Widening
R08	60	488.73	Ward-07	2nd	Widening
R15	60	1225.47	Ward-04	2nd	Widening
R13	60	966.28	Ward-05	2nd	Widening
R20	60	886.01	Ward-09	2nd	Widening
R19	60	207.89	Ward-09	3rd	Widening
R11	60	66.87	Ward-03	1st	New
R13	60	237.74	Ward-05	2nd	New
R13	60	44.10	Ward-05	2nd	Widening
R14	60	791.32	Ward-04	2nd	Widening
R12	60	225.64	Ward-01	3rd	New
R11	60	163.00	Ward-01	1st	New
R12	60	95.40	Ward-09	3rd	Widening
R12	60	235.10	Ward-02	3rd	Widening
R08	60	198.07	Ward-08	2nd	Widening
R08	60	261.51	Ward-07	2nd	Widening

Road ID	Road Width	Length Meter	Ward No	Phase	Type
R14	60	180.56	Ward-03	2nd	Widening
R37	40	662.87	Ward-01	2nd	Widening
R29	40	455.37	Ward-05	1st	Widening
R21	40	290.23	Ward-05	1st	Widening
R22	40	291.28	Ward-05	1st	New
R39	40	307.37	Ward-04	2nd	Widening
R35	40	255.59	Ward-04	2nd	Widening
R38	40	277.73	Ward-04	2nd	Widening
R55	40	258.63	Ward-04	2nd	Widening
R33	40	230.22	Ward-04	1st	Widening
R36	40	197.22	Ward-04	1st	Widening
R34	40	104.72	Ward-04	1st	Widening
R25	40	357.05	Ward-02	2nd	Widening
R41	40	403.28	Ward-01	1st	Widening
R51	40	819.15	Ward-09	2nd	Widening
R54	40	381.07	Ward-09	2nd	Widening
R48	40	441.94	Ward-02	1st	Widening
R27	40	177.81	Ward-06	2nd	Widening
R28	40	540.00	Ward-06	1st	Widening
R45	40	1679.54	Ward-07	2nd	Widening
R24	40	514.73	Ward-02	1st	Widening
R31	40	175.29	Ward-01	1st	New
R30	40	618.55	Ward-03	1st	Widening
R40	40	127.52	Ward-01	1st	Widening
R49	40	420.79	Ward-02	1st	Widening
R23	40	583.93	Ward-06	1st	Widening
R50	40	175.29	Ward-02	3rd	New
R32	40	582.47	Ward-05	1st	Widening
R26	40	519.86	Ward-05	1st	Widening
R56	40	265.13	Ward-04	1st	Widening
R46	40	580.89	Ward-07	2nd	Widening
R52	40	571.00	Ward-08	2nd	Widening
R43	40	609.46	Ward-07	2nd	Widening
R42	40	231.10	Ward-08	1st	Widening
R44	40	229.51	Ward-07	3rd	New
R47	40	264.11	Ward-08	1st	Widening
R53	40	216.32	Ward-08	1st	New
R21	40	92.94	Ward-08	3rd	New
R48	40	41.94	Ward-03	2nd	Widening
R48	40	50.27	Ward-08	1st	Widening
R53	40	51.62	Ward-08	1st	Widening
R31	40	174.27	Ward-01	1st	Widening
R50	40	116.46	Ward-07	3rd	New
R50	40	98.42	Ward-07	2nd	New
R44	40	26.89	Ward-07	3rd	New
R44	40	199.74	Ward-02	1st	New
R44	40	49.77	Ward-06	3rd	New
R24	40	171.66	Ward-08	1st	Widening
R49	40	251.72	Ward-02	2nd	New
R50	40	64.76	Ward-02	3rd	New
R53	40	125.26	Ward-08	1st	Widening
R53	40	257.86	Ward-07	1st	Widening
R50	40	24.31	Ward-08	3rd	New
R57	30	452.40	Ward-03	1st	Widening
R76	30	259.63	Ward-03	1st	Widening

Road ID	Road Width	Length Meter	Ward No	Phase	Type
R66	30	731.74	Ward-09	3rd	New
R97	30	312.01	Ward-01	1st	Widening
R98	30	314.52	Ward-01	1st	Widening
R82	30	544.20	Ward-07	1st	Widening
R81	30	234.93	Ward-07	1st	Widening
R63	30	284.92	Ward-02	3rd	New
R62	30	316.70	Ward-02	3rd	New
R86	30	306.11	Ward-06	3rd	New
R71	30	530.03	Ward-03	3rd	New
R75	30	318.99	Ward-05	1st	Widening
R61	30	265.62	Ward-08	3rd	New
R68	30	420.07	Ward-02	3rd	New
R64	30	614.22	Ward-09	3rd	New
R65	30	202.66	Ward-06	3rd	N
R91	30	329.11	Ward-03	1st	Widening
R92	30	128.81	Ward-03	1st	Widening
R96	30	559.18	Ward-03	1st	Widening
R93	30	109.98	Ward-03	1st	Widening
R72	30	198.32	Ward-05	1st	Widening
R73	30	48.00	Ward-03	1st	Widening
R88	30	132.79	Ward-06	1st	Widening
R69	30	208.75	Ward-06	1st	New
R87	30	47.35	Ward-06	2nd	Widening
R83	30	106.02	Ward-06	2nd	Widening
R84	30	379.35	Ward-06	2nd	Widening
R85	30	35.32	Ward-06	2nd	Widening
R78	30	321.52	Ward-08	1st	Widening
R79	30	156.76	Ward-08	1st	Widening
R77	30	193.53	Ward-08	1st	Widening
R60	30	139.54	Ward-08	3rd	New
R58	30	349.14	Ward-09	2nd	Widening
R59	30	328.76	Ward-09	2nd	Widening
R99	30	271.79	Ward-09	2nd	Widening
R100	30	187.21	Ward-09	2nd	Widening
R80	30	381.13	Ward-08	2nd	New
R94	30	263.13	Ward-03	1st	Widening
R95	30	259.16	Ward-03	1st	Widening
R67	30	548.22	Ward-09	3rd	New
R89	30	202.77	Ward-06	2nd	New
R70	30	232.89	Ward-06	2nd	New
R74	30	611.78	Ward-03	2nd	New
R90	30	275.55	Ward-03	2nd	New
R65	30	116.73	Ward-02	2nd	New
R65	30	148.38	Ward-06	2nd	New
R62	30	59.50	Ward-06	2nd	New
R71	30	182.09	Ward-06	2nd	New
R86	30	541.48	Ward-06	3rd	Widening
R80	30	93.30	Ward-08	1st	Widening
R63	30	211.91	Ward-08	1st	Widening
R65	30	144.15	Ward-06	2nd	Widening
R90	30	231.32	Ward-03	1st	Widening
R71	30	365.74	Ward-05	2nd	Widening
R96	30	69.94	Ward-01	1st	Widening
R89	30	40.11	Ward-03	3rd	New
R87	30	46.57	Ward-03	2nd	Widening

Road ID	Road Width	Length Meter	Ward No	Phase	Type
R86	30	107.41	Ward-03	3rd	New
R86	30	292.55	Ward-03	3rd	New
R68	30	233.94	Ward-09	3rd	New
R68	30	65.05	Ward-08	3rd	New
R63	30	85.51	Ward-08	3rd	New
R62	30	50.04	Ward-02	3rd	New
R108	20	108.20	Ward-04	1st	New
R107	20	93.60	Ward-04	1st	Widening
R106	20	158.45	Ward-01	1st	Widening
R114	20	189.24	Ward-01	1st	Widening
R110	20	81.20	Ward-02	1st	New
R103	20	170.95	Ward-02	1st	Widening
R111	20	229.65	Ward-02	1st	Widening
R113	20	279.83	Ward-02	1st	Widening
R105	20	458.05	Ward-02	1st	Widening
R101	20	176.11	Ward-08	2nd	Widening
R109	20	66.11	Ward-02	2nd	Widening
R104	20	184.78	Ward-09	1st	Widening
R116	20	144.85	Ward-09	1st	Widening
R115	20	112.54	Ward-09	1st	Widening
R117	20	239.35	Ward-09	1st	Widening
R102	20	115.67	Ward-08	2nd	Widening
R112	20	172.65	Ward-02	1st	Widening
R107	20	74.40	Ward-03	1st	New
R106	20	89.66	Ward-01	1st	New
R110	20	65.90	Ward-02	1st	Widening
R101	20	172.18	Ward-09	2nd	Widening
R108	20	79.22	Ward-03	1st	New
R107	20	76.18	Ward-03	1st	Widening
Total Length= 59006.06meter (59.01 KM)					

*Note: W= widening, N= New Road

ANNEXURE-E

Details of Drainage Network Proposal

ID No.	Type	Length(M)	Ward No	Phase
D01	Primary	1,363.57	Ward-05	2nd
D01	Primary	694.31	Watd-01	2nd
D01	Primary	178.41	Watd-01	2nd
D01	Primary	994.09	Ward-03	2nd
D02	Primary	937.21	Ward-04	3rd
D02	Primary	140.81	Ward-05	3rd
D02	Primary	816.82	Ward-05	3rd
D03	Primary	154.89	Ward-06	3rd
D03	Primary	106.57	Ward-05	3rd
D03	Primary	56.69	Ward-03	3rd
D04	Secondary	408.59	Ward-09	2nd
D04	Secondary	342.92	Ward-02	2nd
D05	Primary	587.27	Ward-02	2nd
D05	Primary	47.15	Ward-08	2nd
D06	Primary	486.30	Ward-03	1st
D06	Primary	1,137.95	Ward-06	1st
D06	Primary	372.70	Watd-01	1st
D06	Primary	70.19	Ward-02	1st
D06	Primary	73.19	Watd-01	1st
D06	Primary	146.72	Ward-02	1st
D06	Primary	203.57	Watd-01	1st
D06	Primary	168.66	Ward-02	1st
D06	Primary	218.95	Ward-02	1st
D07	Secondary	696.89	Ward-06	2nd
D08	Secondary	719.67	Ward-07	2nd
D08	Secondary	231.38	Ward-08	2nd
D09	Secondary	254.45	Ward-08	2nd
D10	Secondary	245.20	Ward-05	1st
D12	Secondary	489.30	Watd-01	3rd
D12	Secondary	92.97	Ward-09	3rd
D12	Secondary	241.11	Ward-02	3rd
D13	Secondary	1,266.18	Ward-05	2nd
D14	Secondary	2,978.95	Ward-04	2nd
D14	Secondary	179.15	Ward-03	2nd
D15	Secondary	1,225.47	Ward-04	2nd
D16	Secondary	660.63	Ward-04	3rd
D17	Secondary	230.01	Ward-09	2nd
D18	Secondary	379.39	Ward-09	3rd
D19	Secondary	205.71	Ward-09	3rd
D20	Secondary	770.45	Ward-09	2nd
D20	Secondary	115.56	Ward-09	2nd
D21	Tertiary	190.91	Ward-05	1st
D22	Tertiary	291.27	Ward-05	1st
D23	Tertiary	583.93	Ward-06	1st
D24	Secondary	500.73	Ward-02	1st
D25	Secondary	357.05	Ward-02	2nd
D26	Tertiary	522.49	Ward-05	1st
D27	Tertiary	177.81	Ward-06	2nd
D28	Tertiary	540.00	Ward-06	1st
D29	Tertiary	438.18	Ward-05	1st
D30	Tertiary	603.68	Ward-03	1st

ID No.	Type	Length(M)	Ward No	Phase
D31	Tertiary	340.00	Watd-01	1st
D32	Tertiary	609.29	Ward-05	1st
D33	Tertiary	201.76	Ward-04	1st
D33	Tertiary	46.13	Ward-03	1st
D34	Tertiary	104.72	Ward-04	1st
D35	Tertiary	255.59	Ward-04	2nd
D36	Tertiary	199.52	Ward-04	1st
D37	Tertiary	661.40	Watd-01	2nd
D38	Tertiary	277.73	Ward-04	2nd
D39	Tertiary	307.37	Ward-04	2nd
D40	Tertiary	110.89	Watd-01	1st
D41	Tertiary	403.28	Watd-01	1st
D42	Secondary	231.10	Ward-08	1st
D45	Secondary	1,906.01	Ward-07	2nd
D45	Secondary	222.57	Ward-02	2nd
D45	Secondary	56.87	Ward-06	2nd
D46	Secondary	910.87	Ward-07	2nd
D48	Secondary	491.05	Ward-02	1st
D48	Secondary	43.09	Ward-03	1st
D49	Tertiary	422.35	Ward-02	1st
D51	Secondary	821.68	Ward-09	2nd
D51	Secondary	154.87	Ward-08	2nd
D52	Secondary	553.49	Ward-08	2nd
D53	Secondary	106.59	Ward-08	2nd
D53	Secondary	148.18	Ward-08	1st
D53	Secondary	286.56	Ward-07	1st
D53	Secondary	216.32	Ward-08	1st
D54	Secondary	381.06	Ward-09	2nd
D55	Tertiary	258.63	Ward-04	2nd
D56	Tertiary	277.01	Ward-04	1st
D57	Tertiary	452.40	Ward-03	1st
D65	Tertiary	49.02	Ward-06	2nd
D72	Tertiary	198.32	Ward-05	1st
D73	Secondary	48.00	Ward-03	1st
D74	Tertiary	76.28	Ward-03	2nd
D75	Tertiary	318.99	Ward-05	1st
D76	Tertiary	259.63	Ward-03	1st
D80	Tertiary	123.72	Ward-08	2nd
D81	Tertiary	234.93	Ward-07	1st
D82	Tertiary	544.20	Ward-07	1st
D91	Tertiary	329.11	Ward-03	1st
D92	Tertiary	128.81	Ward-03	1st
D93	Tertiary	93.98	Ward-03	1st
D94	Tertiary	510.32	Ward-03	1st
D95	Tertiary	554.15	Ward-03	1st
D95	Tertiary	70.36	Watd-01	1st
D97	Tertiary	77.08	Watd-01	1st
D98	Tertiary	549.45	Watd-01	1st
D101	Tertiary	209.86	Ward-09	2nd
D101	Tertiary	138.43	Ward-08	2nd
D102	Tertiary	115.67	Ward-08	2nd
D103	Tertiary	170.95	Ward-02	1st
D104	Tertiary	184.78	Ward-09	1st
D105	Tertiary	458.05	Ward-02	1st
D106	Tertiary	248.11	Watd-01	1st

ID No.	Type	Length(M)	Ward No	Phase
D107	Tertiary	149.21	Ward-03	1st
D107	Tertiary	94.98	Ward-04	1st
D108	Tertiary	113.86	Ward-04	1st
D108	Tertiary	73.56	Ward-03	1st
D109	Tertiary	66.11	Ward-02	2nd
D11	Primary	285.67	Ward-01	1st
D11	Primary	51.36	Ward-03	1st
D11	Primary	49.79	Ward-03	1st
D110	Tertiary	147.10	Ward-02	1st
D111	Tertiary	229.65	Ward-02	1st
D112	Tertiary	172.65	Ward-02	1st
D113	Tertiary	279.83	Ward-02	1st
D114	Tertiary	189.24	Ward-01	1st
D115	Tertiary	112.54	Ward-09	1st
D116	Tertiary	144.85	Ward-09	1st
D117	Tertiary	239.35	Ward-09	1st
Total		44,446.38 Meter (44.45 Km)		

ANNEXURE-F

Mouza Schedule of Development Proposals

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Administration				
Administration Area	4	Baorkumarjani_167_01	284-307, 309, 321-322, 325 part, 331-337, 338 part, 339	13.80
Paurashava Office	6	Baimhati_103_00	267, 268 part	0.38
Residential				
Planned Residential Area	4	Baorkumarjani_167_01	174-232	63.00
		Baorkumarjani_167_02	765 part, 766, 768 part, 770-842, 897-898, 1061-1118	
Low Income Houseing Area	4	Baorkumarjani_167_02	920 part, 921 part, 922-923, 924 part, 938 part, 944 part, 945-951, 952 part, 988, 989 part, 990 part, 992-1002, 1006 part, 1007-1008, 1009 part, 1010-1013	17.87
Re-Settlement Residential Zone	4	Baorkumarjani_167_02	952 part, 953-957, 961-987, 989 part, 990 part, 991	18.45
Commercial Facility				
Paura Super Market	5	Baorkumarjani_167_02	615 part, 616, 617 part, 618 part, 1274 part, 1276 part, 1277-1278, 1280 part, 1411 part	2.12
Super Market	3	Baorkumarjani_167_01	377 part, 382 part, 383 part, 384 part	3.59
Wholesale Market	5	Baorkumarjani_167_01	450, 451 part, 464 part, 465 part, 466 part, 467f part, 468-469	2.36
Transportation				
Bus Terminal	1	Postkamuri_102_00	626 part	0.21
	3	Postkamuri_102_00	637 part	1.68
		Baimhati_103_00	657 part	
Track Terminal	5	Baorkumarjani_167_01	482 part, 483 part, 489, 490 part, 491-492, 493 part, 539 part, 540 part, 541 part	2.87
Tampo Stand-1	2	Baimhati_103_00	106 part	0.30
Tampo Stand-2	9	Kantalia_107_00	70 part, 71 part, 72 part, 73 part, 74 part	0.55
Educational Institution				
University	4	Baorkumarjani_167_02	902-903, 904 part, 905 part, 906 part, 907-914, 915 part, 916 part, 918-919, 920 part, 921 part, 925 part, 1004-1005, 1006 part, 1009f part, 1014-1057, 1058 part, 1059 part, 1060 part, 1413 part	29.77
Vocational Training Institution	1	Postkamuri_102_00	114 part, 115 part, 116 part, 626 part	5.62
High School	5	Baorkumarjani_167_02	1302, 1303 part, 1304-1306, 1307 part, 1310 part, 1311-1313, 1314 part, 1316	5.34

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Primary School-1	1	Postkamuri_102_00	164-166, 173-176	2.19
Primary School-2	4	Baorkumarjani_167_02	851-852, 859, 893 part, 894-896	3.10
Open Space				
Stadium/Sports Complex	4	Baorkumarjani_167_02	1120-1163	23.81
Central Park	2	Baimhati_103_00	52 part, 53-63, 64 part, 65-67, 79-81	12.17
Poura Shisu Park	5	Baorkumarjani_167_02	693 part, 694-711, 712 part, 714 fpart, 715 part, 717 part, 718 , 1243, 1245-1254, 1255 part, 1256-1260, 1310 part, 1314 part, 1315 part, 1320-1321	23.63
Park & Play Ground	5	Baorkumarjani_167_02	686 part, 1262 part, 1363-1266, 1267 part, 1268 part, 1269-1271, 1275, 1303 part	4.38
Community Park-1	4	Baorkumarjani_167_01	93 part, 94 part, 98 part, 99-101	2.14
Community Park-2	5	Baorkumarjani_167_01	517, 520-522, 523 part, 524 part	2.24
Community Park-3	6	Baimhati_103_00	356 part, 357-358, 359 part	1.45
Community Park-4	9	Kantalia_107_00	135, 136 part, 137-139, 140 part	2.75
Community Park-5	5	Baorkumarjani_167_02	686 part, 1260 part, 1270, 1272, 1275, 1303 part	3.01
Playground-1	1	Postkamuri_102_00	97 part, 121 part, 154 part, 155-156, 157 part, 158 part, 161	3.29
Playground-2	5	Baorkumarjani_167_01	503-511, 512 part, 513, 514 part, 515 part, 516	4.73
Playground-3	9	Kantalia_107_00	185, 186 part, 197 part, 199-207, 209-210	3.73
Playground-4	5	Baorkumarjani_167_02	1262 part, 1363-1266, 1267 part, 1268 part, 1269	1.39
Utility & service facility				
Waste Dumping Ground	5	Baorkumarjani_167_02	1171 part, 1173, 1174 part, 1175 part, 1183, 1184	3.85
Slughter House	3	Baimhati_103_00	155	0.08
Public Toilet-1	1	Postkamuri_102_00	122 part, 153 part	0.03
Public Toilet-2	2	Baimhati_103_00	103 paer	0.10
Public Toilet-3	6	Baimhati_103_00	456 paer	0.10
Public Toilet-4	9	Kantalia_107_00	64, 66-67	0.38
Waste Transfer Station-1	1	Postkamuri_102_00	122 paer, 124 part	0.67
Waste Transfer Station-2	2	Baimhati_103_00	103 paer	0.27
Waste Transfer Station-3	6	Baimhati_103_00	456 paer	0.19
Waste Transfer Station-4	9	Kantalia_107_00	70 part, 72 part	0.57
Water Station-1	1	Postkamuri_102_00	617 part	0.06

Proposed facilities	Ward No.	CS Mouza Name	Plot No.	Area in Acre
Water Station-2	2	Baimhati_103_00	54 part, 55 part	0.51
Industrial				
Heavy Industrial Zone	1	Postkamuri_102_00	50-52, 53 part, 54-55, 60-65, 67-95, 99-107, 108 part, 109 part	34.02
General Industrial Zone	1	Postkamuri_102_00	180-204, 230-249	25.38
	2	Postkamuri_102_00	261-295, 299-312	26.02
	9	Kantalia_107_00	1-63, 72 part, 73 part, 74 part, 76-84, 87-91, 310, 314, 321	36.55
Helath Facilities				
Hospital Zone	4	Baorkumarjani_167_01	49 part, 50-51, 102 part, 103-107	1.94
Urban Deffard				
Urban Defferd-1	2	Postkamuri_102_00	370-387, 390-392, 473-467, 478-491	13.61
Urban Defferd-2	5	Baorkumarjani_167_01	427 part, 429f part, 430-431, 432 part, 448 part, 451 part, 452, 454, 464 part, 465 part, 466, 495-500, 501 part, 530-538, 439 part, 540 part, 541-545, 673-645	15.91
Community Facilities				
Fire Service	1	Postkamuri_102_00	47-49, 53 part	0.89
Poura Graveyard	3	Baorkumarjani_167_01	393 part, 438 part	1.07
	6	Baimhati_103_00	252 part, 253-257	2.89
Central Mosque	6	Baimhati_103_00	321, 322 part	0.91
Community Center-1	3	Baorkumarjani_167_01	387 part, 388 part	0.09
Community Center-2	8	Andhora_105_00	137-139	1.14
Poura Eidgah	4	Baorkumarjani_167_01	29-30, 279-283	2.46
Eidgah	8	Andhora_105_00	205-208	2.84
Cremation	3	Baorkumarjani_167_01	438 part	0.64
Ward Center	1	Postkamuri_102_00	606 part	0.16
	2	Postkamuri_102_00	554 part	0.16
	3	Postkamuri_102_00	637 part	0.17
	4	Postkamuri_102_00	751 part	0.18
	5	Baorkumarjani_167_01	414 part, 424 part	0.16
	6	Baimhati_103_00	534 part, 585 part	0.16
	7	Mirzapur_104_00	150 part	0.17
	8	Andhora_105_00	130 part	0.16
	9	Kantalia_107_00	260 part	0.19

ANNEXURE-G

Mouza Schedule of Proposed Water Retention Pond

Ward No	CS Mouza Name	Plot No.	Area in Acres
Ward No 01	Kahatpara 282_01	96, 113, 119, 154-155, 163-164, 170-175, 182, 184-188, 190-195, 217-219	5.20
	Kahatpara 282_02	826-827, 840-841, 843-844, 865-867, 873-874, 879, 975, 1118, 1123, 1229	2.34
Ward No 02	Mirzapur 281_00	234, 324, 336, 1117	3.84
	Kahatpara 282_02	323-325, 336, 1117-1118, 1125-1126, 1147-1148, 1154, 1165, 1175-1176, 1202, 1220	7.32
Ward No 03	Mirzapur 281_00	108-110, 550, 553	3.4
	Lakriapara 183_01	211, 550, 557-562	1.97
	Lakriapara 183_02	1092, 1122-1124	1.39
	Dhakhin Para 284_00	2-14	10.4
Ward No 04	Kazipu 280_00	38, 89, 100	1.87
	Mirzapur 281_00	277, 410, 412, 615-616, 618, 1117	2.95
	Shealtara_276_00	20-27, 58	4.42
Ward No 05	Kazipur 280_00	332, 343-348, 371, 373-374	2.54
	Dhakhin Para 284_00	38, 48, 54, 80, 84, 151-154, 188, 247-249, 254-257, 312-313, 317-326, 333-337, 340-343, 931	18.48
Ward No 06	Kumrail 277_00	63, 70-72, 76, 82, 103-104, 106-109, 112-113, 149, 151-152, 174, 178-179, 183, 225, 227	8.10
Ward No 07	Islampur 278_00	34-35	1.12
Ward No 08	Islampur 278_00	134, 141-142, 144-145, 151, 154-155, 161-162, 213	4.04
	Purba Panchas 279_00	112-115, 130-133	1.28
	Dhakhin Para 284_00	352, 353, 367-368, 369-370, 410, 459-460, 462, 488, 610, 635	2.46
Ward No 09	Lakriapara 283_02	979	1.86
	Dhakhin Para 284_00	492, 489, 501, 526, 529, 531, 536	2.54
	Choto Chandrail 285_00	7-17, 25, 27-42, 48-64, 70-73, 76, 78, 124, 128-130, 201-206, 172, 176, 278, 223, 225, 228, 245, 263	19.69
	Chhaibaria 287_00	244-247, 258-286, 291, 426, 428-429, 461-473, 475-484, 498, 512, 554, 855	6.07

ANNEXURE-H

List of Photographs

Mirzapur Paurashava Final Consultation Meeting (31/07/2013)



