



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

MATHBARIA PAURASHAVA
MASTER PLAN: 2011-2031

March, 2015

Technical Assistance: Local Government Engineering Department (LGED)



Government of the People's Republic of Bangladesh

Local Government Division

Ministry of Local Government, Rural Development & Cooperatives

MATHBARIA PAURASHAVA MASTER PLAN: 2011-2031

STRUCTURE PLAN

URBAN AREA PLAN:

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

WARD ACTION PLAN

March, 2015



MATHBARIA PAURASHAVA

MATHBARIA, PIROJPUR

MATHBARIA PAURASHAVA MASTER PLAN: 2011-2031

Published by:

MATHBARIA PAURASHAVA

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

Consultant :

Sheltech Consultants (Pvt.) Ltd.

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in association with

Design Planning and Management Consultants Ltd.

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Local Government Division (LGD),

Ministry of Local Government, Rural Development & Cooperatives

First Edition: March, 2015

Price: BDT 1500.00

USD 20.00

Preface

Bangladesh has been experiencing rapid urbanization in the last four decades where level of urbanization has reached from 7.6% 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, Mathbaria 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 Mathbaria Paurashava.

Master Plan of Mathbaria Paurashva has been prepared following the pre-requisite of the Local Government (Paurashva) Act, 2009. To prepare the Master Plan, LGED engaged consulting firm named Sheltech Consultants (Pvt.) Ltd in association with Design Planning and Management Consultants 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 & 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 Mathbaria 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 Mathbaria Paurashava will be necessary to implement this Master Plan successfully and make this Paurashava developed and livable. I hope Mathbaria Paurashava will be a model Paurashava in Bangladesh through building itself green and sustainable by successful implementation of this Master Plan.

(Md. Rafiuddin Ahmed)
Mayor
Mathbaria Paurahsava.

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. Further, in support of the Master Plan there are separate plans named Landuse Plan, Drainage and Environmental Plan, Traffic Management Plan, Community Services 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 Mathbaria Paurashava, guided by the LGED under Package-11 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.

Mathbaria upazila of Pirojpur zila was declared as Mathbaria Paurashava on 1st June, 1993. Mathbaria Paurashava is a **A-Class** Paurashava and covers 4 partial mouzas. The Paurashava is bounded on the north by Bhandaria and Zia Nagar upazila, on the east by Kathalia upazila of Jhalokati zila and Bamna upazila of Barguna zila, on the south by Patharghata upazila of Barguna zila and on the west by Sarankhola upazila of Bagerhat zila. The determined Structure Plan Area is 13.87 sq. km or 3422.26 acres of land that includes existing Paurashava area (1124.92 acres or 4.56 sq. km) and recently extended and gazetted (May 20, 2013) area at Mathbaria, Uttar Mithakhali, Andhr Manik, Dakkhin Mithakhali and Bakshir Ghotichora mouza and additional possible extended area at the south of present Paurashava area (total 2297.34 acres or 9.31 sq. km.). The Paurashava is located at southern part of Bangladesh.

Mathbaria Paurashava Master Plan: 2011-2031
Executive Summary

According to the Census Year 2011, 18375 populations are living in the planning area with gross density 15 persons per acre and it will be 31798 (according to the medium growth rate of 2.78%) in 2031 with gross density 28 persons per acre.

In the Paurashava, agriculture occupies 405.93 acres and residential and circulation network occupy 488.03 acres and 36.60 acres of land respectively. An area of 124.54 acres is covered with water bodies.

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 8 to 10 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.

Mathbaria Paurashava bears rural influences and agriculture is the major source of income. Average monthly income per household is in between Tk.6000 - 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 Mathbaria 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 Community Services.

To improve existing transportation system a total of 28.59 km new road and 54.64 km widening of different width has been proposed within the entire Paurashava area in the transport development plan. Paurashava has only 5.61 km drainage network. Of these 4.85 km is katcha drain and 0.76 km pucca drain. The total length of newly proposed tertiary and secondary drain is 27.71 km and 63.35 km respectively.

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.

_Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

Preface	i
Executive Summary	ii
Table of Contents	iv
List of Tables	xii
List of Figures	xiv
List of Maps	xv
List of Abbreviations and Acronyms	xvi
List of Local Term	xvii
List of Technical Terms	xvii
Part A: Structure Plan	
Chapter One: Introduction	
1.1 Introduction	1
1.2 Objectives	2
1.3 Approach & Methodology	2
1.4 Activities Undertaken	3
Chapter Two: Conceptual Issues	
2.1 Background of the Paurashava	7
2.2 Philosophy of the Master Plan	7
2.3 Vision & Objectives	7
2.3.1 Vision	7
2.3.2 Objectives	7
2.4 Content and form of the Structure Plan	7
2.4.1 Concept	7
2.4.2 Content and form of the Report	8
2.4.3 Duration and Amendment of the Structure Plan	8
2.4.4 The Style and Format of Structure Plan	8
Chapter Three: Review of Present Status and the Development Problems	
3.0 Introduction	11
3.1 Sectoral Review of Present Status	11
3.1.1 Societal	11
3.1.2 Economy	12
3.1.3 Industry	13
3.1.4 Commerce	13
3.1.5 Agriculture	13
3.1.6 Occupation and Employment	14
3.1.7 Informal Sector Economic Activities	14
3.1.8 Physical Infrastructure	15
3.1.8.1 Existing Road Network	15
3.1.8.2 Traffic and Transport Infrastructure	16
3.1.8.3 Parking	18
3.1.8.4 Footpath	18
3.1.8.5 Waterway	18
3.1.8.6 Drainage System	18
3.1.8.7 Waste Management Logistics	19
3.1.9 Environmental Issues	19
3.1.10 Population	20
3.1.11 Paurashava Institutional Capacity	23
3.1.11.1 Human Resource Management: Allocated Manpower	23
3.1.11.2 Annual Income	26
3.1.11.3 Paurashava Own Property	27
3.1.11.4 Paurashava Town Planning Capacity	27

Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

3.1.12	Urban Growth Area	28
3.1.13	Catchments Area	28
3.1.14	Existing Land Use	28
3.1.15	Paurashava's Functional Linkage with the Regional and National Network	30
3.1.16	Role of Agencies for Different Sectoral Activities	30
3.2	Development Problems of the Paurashava	31
3.2.1	Physical Infrastructure Problems	31
3.2.2	Socio-economic Problems	32
3.2.3	Environment	33
Chapter Four: Projection of Future Growth by 2031		
4.1	Introduction	34
4.2	Projection of Population	34
4.3	Identification of future economic Opportunities	37
4.4	Projection of Land use	38
4.4.1	Estimation of Residential Land Requirement	38
4.4.2	Estimation of Land for Business	38
4.4.3	Estimation of Land for General Industry	38
4.4.4	Estimation of Land for Commercial Use	40
4.4.5	Education & Research	41
4.4.6	Health Services	41
4.4.7	Open Space	42
4.4.8	Transportation Facilities	42
4.4.9	Government Offices	43
4.4.10	Community Facilities	43
4.4.11	Utility Services	44
Chapter Five: Review of Policy, Law and Regulation		
5.1	Introduction	45
5.2	Review of Relevant National Policies	45
5.2.1	National Land Use Policy 2001	45
5.2.2	National Housing Policy, 1993	46
5.2.3	Population Policy 2004	49
5.2.4	Transportation Policy	51
5.2.5	National Environment Policy 1992	54
5.2.6	Industrial Policy 2005	56
5.2.7	National Tourism Policy	58
5.2.8	Agriculture Policy	58
5.2.9	Urban Forest Policy	59
5.2.10	Urban Land Management Policy	60
5.2.11	Health Policy	62
5.2.12	National Urbanization Policy	62
5.2.13	Rural Development Policy	63
5.2.14	Strength and Weakness of Existing Policies	64
5.3	Plan and Programmes	64
5.3.1	National Plan for Disaster Management	64
5.3.2	National Plan of Action for Persons with Disabilities (PWDs) as well as Autism	65
5.4	Act and Ordinance	65
5.4.1	Local Government (Paurashava) Act 2009	65
5.4.2	Act for Preservation of Natural Water Reservoir, Open Space, 2000	70
5.4.3	Acquisition and Requisition of Immovable Property Ordinance, 1982	70
5.4.4	Brick Burning (Control) Ordinance, 1989	70
5.4.5	Rural Electrification Board Ordinance, 1977	70
5.4.6	Public Health (Emergency Provisions) Ordinance, 1944	70
5.4.7	Conservation of Environment Act, 1995	71
5.4.8	Land Development for Private Housing Project Act, 2004	71
5.5	Review of Relevant Laws and Regulations	71

Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

5.5.1	The Act (36 of 2000) for Conservation of Playfield, Open Sapace, Park and Natural Water Reservoir in Mega City, Divisional Town and Paurashavas of Bangladesh	71
5.5.2	Bangladesh National Building Code (BNBC) 1993	71
5.5.3	The Building Construction Act 1952	72
Chapter Six: Critical Planning Issues		
6.0	Introduction	73
6.1	Transport	73
6.1.1	Traffic Conflict	73
6.1.2	Unplanned and Narrow Roads	73
6.2	Environment	74
6.2.1	Drainage Problem	74
6.2.2	Waste Management	74
6.2.3	Water Supply	74
6.3	Land Use Control	74
6.4	Disaster	74
Chapter Seven: Landuse Zoning Policies and Development Strategies		
7.1	Background Study	75
7.2	Structure Plan Zones	75
7.3	Strategy to achieve the targets of Optimum and Organised Use and Creation of Congenial Urban Habitable Environment	76
7.4	Policies for Socio-economic Sector	79
7.4.1	Population	79
7.4.2	Economic Development and Employment Generation	79
7.4.3	Housing and Slum Improvement	81
7.4.4	Social Amenities and Community Facilities	81
7.5	Physical Infrastructure Sector	82
7.5.1	Transport	82
7.5.2	Utility Services	83
7.6	Environmental Issues	84
7.6.1	Natural Resources	84
Chapter Eight: Implementation Issue		
8.0	Introduction	85
8.1	Institutional Capacity Building of the Paurashava	85
8.1.1	Human Resource Management	85
8.1.1.1	Staff Training	85
8.1.1.2	Lack of Automation	85
8.1.1.3	Short of Paurashava Town Planning Capacity	85
8.1.2	Legal Aspects	91
8.1.3	Good Governance in Legal Provisions	91
8.1.4	Financial Issues	92
8.1.4.1	Governance in Mathbaria Paurashava	92
8.1.4.2	Revenue Management	92
8.1.4.3	Paurashava's Financial Capacity and Plan Execution	92
8.1.5	Plan Execution Monitoring and Evaluation	92
8.1.6	Updating of Plans	93
8.2	Resource Mobilization	93
Part B: Urban Area Plan		
Chapter Nine: Urban Area Plan		
9.1	Introduction	95
9.1.1	Goal and Objectives	95
9.1.2	Methodology and Approach to Planning	95
9.1.3	Area Delineation of Urban Area Plan	96

9.1.4	Content and Form of Urban Area Plan	97
Chapter Ten: Land Use Plan		
10.1	Introduction	100
10.2	Existing and Estimated Future Land Use	100
10.2.1	Existing Land Use Types and Patterns	100
10.2.2	Estimated Future Land Use	102
10.3	Land Use Zoning and Development Control	106
10.3.1	Land Use Zoning	106
10.3.2	Land Use Zone Classification	107
10.4	Plan Implementation Strategy	120
10.4.1	Land Development Regulations to Implement the Land Use Plan	120
10.4.2	Implementation, Monitoring and Evaluation of the Land Use Plan	122
10.5	Land Use Permit	124
Chapter Eleven: Transportation and Traffic Management Plan		
11.0	Introduction	125
11.1	Approach and Methodology	125
11.2	Assessment of Existing Conditions of Transportation Facilities	126
11.2.1	Existing Road Network	126
11.2.2	Mode of Transport	128
11.2.3	Intensity of Traffic Volume	128
11.2.4	Level of Service: Degree of Traffic Congestion and Delay	128
11.2.5	Facilities for Pedestrians	129
11.2.6	Analysis of Existing Deficiencies	129
11.2.6.1	Roadway Capacity Deficiencies	129
11.2.6.2	Operational Safety, Signal and other Deficiencies	130
11.2.7	Condition of Rail/Water/Air Transport	130
11.3	Future Projections	130
11.3.1	Travel Demand Forecasting for Next 20 Years	130
11.3.2	Transportation Network	130
11.3.3	Future Traffic Volume and Level of Service	130
11.4	Transportation Development Plan	130
11.4.1	Plan for Road Network Development	132
11.4.1.1	Road Network Plan	132
11.4.1.2	Proposal for Improvement of the Existing Road Networks	135
11.4.1.3	Proposals for new roads	137
11.4.2	Plan for Transportation Facilities	137
11.4.2.1	Proposals for Transportation Facilities	137
11.4.2.2	Parking and Terminal Facilities	138
11.4.2.3	Development of Facilities for Pedestrians, Bicycles and Rickshaws	143
11.4.2.4	Other Transportation Facilities	144
11.5	Transportation System Management Strategy (TSM)	146
11.5.1	Strategies for Facility Operations	146
11.5.2	Strategies for Traffic Flow and Safety	146
11.5.3	Strategies for Traffic Management	148
11.6	Plan Implementation	148
11.6.1	Regulations to Implement the Transportation Plan	148
11.6.2	Implementation, Monitoring, Evaluation and Coordination of the Plan	150
Chapter Twelve: Drainage and Environmental Management Plan		
A. DRAINAGE PLAN		
12.0	Introduction	153
12.1	Objectives	153
12.1.2	Methodology and Approach to Planning	153
12.2	Existing of Drainage Network	154

Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

12.2.1	Existing Drainage System/Network	154
12.2.1.1	Man Made Drainage System in Mathbaria Paurashava	154
12.2.1.2	Natural Drainage System in Mathbaria Paurashava	154
12.2.1.3	Problems of Drainage	154
12.2.1.4	Opportunities of Resolving Drainage Problems	155
12.2.2	Appraisal for local Topography	155
12.2.3	Demands for Drains	157
12.3	Plans for Drainage Management and Flood Control	157
12.3.1	Plan for Drain Network Development	157
12.3.1.1	Drainage Network Plan	157
12.3.1.2	Proposal for Improvement of the Existing Drain Networks	161
12.3.1.3	Proposals for New Drains	161
12.3.1.4	List of Infrastructure measures for Drainage and Flood Control Network	168
12.4	Plan Implementation Strategies	170
12.4.1	Regulations to implement the Drainage and Flood Plan	170
12.4.2	Implementation, Monitoring, Evaluation and Coordination of the Plan	170

B. ENVIRONMENTAL MANAGEMENT PLAN

12.5	Introduction	173
12.5.1	Objectives	173
12.5.2	Methodology and Approach to Environmental Study	173
12.6	Existing Environmental Conditions	173
12.6.1	Geology, Soil and Sub-soil Conditions	173
12.6.2	Climate	173
12.6.3	Temperature	173
12.6.4	Humidity	174
12.6.5	Rainfall	174
12.6.6	Wind Directions	176
12.6.7	Hydrology	176
12.6.8	Solid Waste and Garbage Disposal	178
12.6.9	Pollutions	178
12.6.10	Natural Calamities and Localized Hazards	179
12.6.11	Identifying Major Areas of Threat and Risk	180
12.7	Plans for Environmental Management and Pollution Control	180
12.7.1	Proposals for Environmental Issues	180
12.7.1.1	Solid Waste Management	180
12.7.1.2	Ground Water Pollution	181
12.7.1.3	Surface Water Pollution	181
12.7.1.4	Prevention of Encroachment if Natural Khals	182
12.7.1.5	Open Space Promotion	182
12.7.1.6	Fire hazard	182
12.7.1.7	Pollution Protection Proposals	182
12.7.2	Natural Calamities and Hazard Mitigation Proposals	183
12.7.2.1	Protection Plan Addressing Natural Calamities	183
12.7.2.2	Protection Plan Addressing Regular Hazards	183
12.7.2.3	Protection Plan Addressing Encroachment & Other Relevant Issues	183
12.7.3	Plan Implementation Strategies	184
12.7.3.1	Regulations to Implement the Drainage and Flood Plan	184
12.7.3.2	Implementation, Monitoring, Evaluation and Coordination of the Plan	184

Chapter Thirteen: Urban Basic Service Development Plan

13.0	Introduction	187
------	--------------	-----

Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

13.1	Basic Urban Services Development Plan	187
13.1.1	Water Supply	187
13.1.2	Gas Supply	189
13.1.3	Sanitation	190
13.1.4	Solid Waste Management	190
13.1.5	Electricity	192
13.1.6	Telecommunication	193
13.1.7	Community Facilities	193
13.1.7.1	Open Space Recreation	193
13.1.7.2	Market Facilities	193
13.1.7.3	Mosque, Eidgah and Graveyard	194
13.1.7.4	Community Centre	194
13.1.7.5	Police Outpost	194
13.1.7.6	Post Office	194
13.1.7.7	Fire Station	194
13.1.8	Education	194
13.1.9	Health	195

Part C: Ward Action Plan

Chapter Fourteen: Ward action Plan

14.1	Introduction	196
14.1.1	Background	196
14.1.2	Content	196
14.1.3	Linkage with Structure Plan and Urban Area Plan	196
14.1.4	Approach and Methodology	197
14.1.5	Derivation of Ward Action Plan	197
14.1.6	Revisiting of Structure Plan and Urban Area Plan	197
14.1.7	Prioritization and Ward Wise Action Plan	198
14.2	Ward Action Plan for Ward No. 01	199
14.2.1	Demography	199
14.2.2	Critical Issues and Opportunities of the Ward	199
14.2.3	Ward Action Plan Proposals	200
14.2.3.1	Review of Existing Land Use	200
14.2.3.2	Proposed Land Use Zoning	200
14.2.3.3	Proposed Circulation Network Development	205
14.2.3.4	Drainage Development Plan	205
14.2.3.5	Urban Services	205
14.3	Ward Action Plan for Ward No. 02	209
14.3.1	Demography	209
14.3.2	Critical Issues and Opportunities of the Ward	209
14.3.3	Ward Action Plan Proposals	210
14.3.3.1	Review of Existing Land Use	210
14.3.3.2	Proposed Land Use Zoning	211
14.3.3.3	Proposed Circulation Network Development	215
14.3.3.4	Drainage Development Plan	215
14.3.3.5	Urban Services	215
14.4	Ward Action Plan for Ward No. 03	218
14.4.1	Demography	218
14.4.2	Critical Issues and Opportunities of the Ward	218
14.4.3	Ward Action Plan Proposals	219
14.4.3.1	Review of Existing Land Use	219
14.4.3.2	Proposed Land Use Zoning	219
14.4.3.3	Proposed Circulation Network Development	224
14.4.3.4	Drainage Development Plan	224
14.4.3.5	Urban Services	224
14.5	Ward Action Plan for Ward No. 04	227

Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

14.5.1	Demography	227
14.5.2	Critical Issues and Opportunities of the Ward	227
14.5.3	Ward Action Plan Proposals	228
14.5.3.1	Review of Existing Land Use	228
14.5.3.2	Proposed Land Use Zoning	229
14.5.3.3	Proposed Circulation Network Development	233
14.5.3.4	Drainage Development Plan	234
14.5.3.5	Urban Services	234
14.6	Ward Action Plan for Ward No. 05	237
14.6.1	Demography	237
14.6.2	Critical Issues and Opportunities of the Ward	237
14.6.3	Ward Action Plan Proposals	238
14.6.3.1	Review of Existing Land Use	238
14.6.3.2	Proposed Land Use Zoning	239
14.6.3.3	Proposed Circulation Network Development	243
14.6.3.4	Drainage Development Plan	244
14.6.3.5	Urban Services	244
14.7	Ward Action Plan for Ward No. 06	247
14.7.1	Demography	247
14.7.2	Critical Issues and Opportunities of the Ward	247
14.7.3	Ward Action Plan Proposals	248
14.7.3.1	Review of Existing Land Use	248
14.7.3.2	Proposed Land Use Zoning	249
14.7.3.3	Proposed Circulation Network Development	253
14.7.3.4	Drainage Development Plan	254
14.7.3.5	Urban Services	254
14.8	Ward Action Plan for Ward No. 07	257
14.8.1	Demography	257
14.8.2	Critical Issues and Opportunities of the Ward	257
14.8.3	Ward Action Plan Proposals	258
14.8.3.1	Review of Existing Land Use	258
14.8.3.2	Proposed Land Use Zoning	258
14.8.3.3	Proposed Circulation Network Development	263
14.8.3.4	Drainage Development Plan	263
14.8.3.5	Urban Services	264
14.9	Ward Action Plan for Ward No. 08	267
14.9.1	Demography	267
14.9.2	Critical Issues and Opportunities of the Ward	267
14.9.3	Ward Action Plan Proposals	268
14.9.3.1	Review of Existing Land Use	268
14.9.3.2	Proposed Land Use Zoning	269
14.9.3.3	Proposed Circulation Network Development	273
14.9.3.4	Drainage Development Plan	273
14.9.3.5	Urban Services	273
14.10	Ward Action Plan for Ward No. 09	276
14.10.1	Demography	276
14.10.2	Critical Issues and Opportunities of the Ward	276
14.10.3	Ward Action Plan Proposals	277
14.10.3.1	Review of Existing Land Use	277
14.10.3.2	Proposed Land Use Zoning	277
14.10.3.3	Proposed Circulation Network Development	282
14.10.3.4	Drainage Development Plan	282
14.10.3.5	Urban Services	282
Chapter Fifteen: Conclusion		
15.1	Conclusion	285

Mathbaria Paurashava Master Plan: 2011-2031
Table of Contents

ANNEXURE

Annexure A	Team Composition
Annexure B	Paurashava Gazette: Mathbaria
Annexure C	Landuse Permission
Annexure D	Meeting Minutes with Attendance Sheet
Annexure E	Proposed Road Inventory
Annexure F	Proposed Drainage Network
Annexure G	Mouza Schedule of Waterbody (Retention Area)

LIST OF TABLES

Table	Table Title	Page
Table-3.1	Occupation of the Family Members	14
Table-3.2	Population Distribution	21
Table-3.3	Existing Manpower of Matbaria Paurashava	24
Table-3.4	Agencies Responsible for Sectoral Activities	30
Table-4.1	Population Projection with Low Growth Rate for Mathbaria Up to 2031	35
Table-4.2	Population Projection with Medium Growth Rate for Mathbaria Up to 2031	35
Table-4.3	Population Projection with High Growth Rate for Mathbaria Up to 2031	35
Table-4.4	Gross population density of some areas	36
Table-4.5	Estimation of Housing Land Requirement	38
Table-4.6	Estimation of Land Requirement for General Industries	39
Table-4.7	Gross land requirement by 2031	39
Table-4.8	Estimation of Land Requirement for Commerce and Shopping	41
Table-4.9	Estimation of Land Requirement for Education Facilities	41
Table-4.10	Estimation of Land Requirement for Health Services	42
Table-4.11	Estimation of Land Requirement for Open Space	42
Table-4.12	Estimation of Land Requirement for Transportation Facilities	42
Table-4.13	Estimation of Land Requirement for Administration	43
Table-4.14	Estimation of Land Requirement for Community Facilities	43
Table-4.15	Estimation of Land Requirement for Utilities	44
Table-5.1	Passenger Car Unit (pcu) Conversion factors for non-urban roads	52
Table-5.2	Design applications	52
Table-5.3	Existing and Recommended design lives	53
Table-5.4	Functions in brief prescribed in the Local Govt. (Paurashava) Act, 2009	66
Table-7.1	Structure Plan zone wise area distribution	76
Table 9.1	Urban Area Plan Coverage	96
Table 9.2	Mouza Sheduling for Urban Area Plan (Existing Paurashava)	97
Table 9.3	Mouza Sheduling for Urban Area Plan (Extended at May 20,. 2013)	97
Table10.1	Existing Land Use of the Existing Parashava Area	100
Table10.2	Existing and Proposed Landuse within Mathbaria Paurashava	106
Table10.3	Land Use Plan of Mathbaria Paurashava (Whole Planning Area)	108
Table10.4	New Development proposal for Urban Residential	110
Table10.5	New Development proposal for Commercial Activities	110
Table10.6	New Development proposal for Industry	111
Table10.7	Proposed location of the Ward Center Complex in the project area	112
Table10.8	New Development proposal for Education & Research	112
Table10.9	New Development Proposal for Open Space	113
Table10.10	New Development proposal for Transportation Facilities	114
Table10.11	New Development proposal for Utility Services	115
Table10.12	New Development Proposal as Restricted Area	115
Table10.13	New Development proposal for Community Facilities	116
Table11.1	Proposal for Road Standard in the Project area	131
Table11.2	Major Road Proposal for Mathbaria Paurashava	132
Table11.3	Summary of new road proposal in Mathbaria Paurashava	137
Table11.4	Estimation of Land Requirement for Transportation Facilities	137
Table12.1	Proposals of New Tertiary Drains in Mathbaria Paurashava	161
Table12.2	Proposals of New Secondary Drains in Mathbaria Paurashava	165
Table13.1	Proposed water supply network in Mathbaria	188
Table13.2	Proposed gas supply network in Mathbaria	189
Table13.3	Estimation of Land Requirement for Market facilities	193
Table14.1	Population Statistics of Ward No. 01	199
Table14.2	Existing and Proposed Land Uses	202
Table14.3	Road Proposals for Phase 01	205
Table14.4	Proposed Drainage Development Plan Proposals for phase 01	205
Table14.5	Utility Services Development Proposals for Ward 01 (Phase 01)	206
Table14.6	Proposed Urban Services for Ward No. 01	207
Table14.7	Population Statistics of Ward No. 02	209
Table14.8	Existing and Proposed Land Uses	212

Mathbaria Paurashava Master Plan: 2011-2031

Table of Contents

Table	Table Title	Page
Table14.9	Road Proposals for Phase 01	215
Table14.10	Proposed Drainage Development Plan Proposals for phase 01	215
Table14.11	Proposed Urban Services for Ward No. 02	216
Table14.12	Population Statistics of Ward No. 03	218
Table14.13	Existing and Proposed Land Uses	221
Table14.14	Road Proposals for Phase 01	224
Table14.15	Proposed Urban Services for Ward No. 03	225
Table14.16	Population Statistics of Ward No. 04	227
Table14.17	Existing and Proposed Land Uses	230
Table14.18	Road Proposals for Phase 01	233
Table14.19	Proposed Drainage Development Plan Proposals	234
Table14.20	Proposal of Urban Services for Ward No. 04	235
Table14.21	Population Statistics of Ward No. 05	237
Table14.22	Existing and Proposed Land Uses	240
Table14.23	Road Proposals for Phase 01	243
Table14.24	Proposed Drainage Development Plan Proposals	244
Table14.25	Proposal of Urban Services for Ward No. 05	245
Table14.26	Population Statistics of Ward No. 06	247
Table14.27	Existing and Proposed Land Uses	250
Table14.28	Road Proposals for Phase 01	253
Table14.29	Proposed Drainage Development Plan Proposals	254
Table14.30	Proposal of Urban Services for Ward No. 06	255
Table14.31	Population Statistics of Ward No. 07	257
Table14.32	Existing and Proposed Land Uses	260
Table14.33	Road Proposals for Phase 01	263
Table14.34	Proposed Drainage Development Plan Proposals	264
Table14.35	Proposal of Urban Facilities for Ward No. 07	265
Table14.36	Population Statistics of Ward No. 08	267
Table14.37	Existing and Proposed Land Uses	270
Table14.38	Road Proposals for Phase 01	273
Table14.39	Proposed Urban Facilities of Ward No. 08	274
Table14.40	Population Statistics of Ward No. 09	276
Table14.41	Existing and Proposed Land Uses	279
Table14.42	Road Proposals for Phase 01	282
Table14.43	Proposed Urban Facilities of Ward No. 09	283

LIST OF FIGURES

Figure	Figure Title	Page
Figure- 8.1	Scope of Work for Planning Division	87
Figure-11.1	Primary Road with 80 ft RoW	134
Figure-11.2	Primary Road with 60 ft RoW	134
Figure-11.3	Secondary Road with 40 ft RoW	134
Figure-11.4	Access/Local Road with 20 ft RoW	135
Figure-11.5	Typical Layout of a Bus & Turck Terminal	139
Figure-11.6	Parking Angle and Minimum Aisle Width	142
Figure-11.7	On-Street Space Used for Various Parking Positions	143
Figure-12.1	Earthen Primary Drain	157
Figure-12.2	Typical RCC Primary Drain	158
Figure-12.3	A Typical Secondary Drain	158
Figure-12.4	A Typical Tertiary Drain	159
Figure-12.5	Plot and Block Drain	159
Figure-12.6	A Schematic Diagram showing flow directions from Tertiary drains to Outfall	160
Figure-12.7	Bridge and Culvert	160
Figure-12.8	A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion	160
Figure-12.9	Monthly Average Temperature (2000-2010)	174
Figure12.10	Year wise Average Temperature (2000-2010)	174
Figure12.11	Monthly Average Humidity (%) for the year 2000-2010	174
Figure12.12	Rain Fall Data of Several Years	174
Figure12.13	Wind Speed Data of Several Years in Pirojpur	176
Figure12.14	Cyclone Hit in different years over Mathbaria Paurashava	179

LIST OF MAPS

Map	Map Title	Page
Map-1.1	Location of Mathbaria Paurashava	6
Map-2.1	Structure Plan Landuse policy map of Mathbaria Paurashava	10
Map-3.1	Circulation Network of Mathbaria Paurashava	17
Map-3.2	Location of water bodies including drainage network	22
Map-9.1	Urban Area Map	99
Map-10.1	Urban area map with existing landuse pattern of Mathbaria Paurashava	101
Map-10.2	Location of proposed Ward Centre Complexes in Mathbaria Paurashava	118
Map-10.3	Urban area map with proposed landuse pattern of Mathbaria Paurashava	119
Map-11.1	Proposed and existing Circulation network of Mathbaria Paurashava	127
Map-11.2	Proposed and existing and proposed terminals and stands / stoppages of Mathbaria Paurashava	145
Map-12.1	Topographic map of Mathbaria Paurashava	156
Map-12.2	Detailed drainage network plan of Mathbaria Paurashava	169
Map-12.3	Mean Annual Rainfall (mm) of Bangladesh	175
Map-12.4	General wind speed throughout Bangladesh	177
Map-13.1	Proposed linear service network in Mathbaria Paurashava	191
Map-14.1	Existing land use of Ward No.01	203
Map-14.2	Proposed landuse zoning of ward no. 01	204
Map-14.3	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 1	208
Map-14.4	Existing land use of Ward No.2	213
Map-14.5	Proposed landuse zoning of ward no. 02	214
Map-14.6	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 2	217
Map-14.7	Existing land use of Ward No.03	222
Map-14.8	Proposed landuse zoning of ward no. 03	223
Map-14.9	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 3	226
Map14.10	Existing land use of Ward No.04	231
Map14.11	Proposed landuse zoning of ward no. 04	232
Map14.12	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 4	236
Map14.13	Existing land use of Ward No.05	241
Map14.14	Proposed landuse zoning of ward no. 05	242
Map14.15	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 5	246
Map14.16	Existing land use of Ward No.06	251
Map14.17	Proposed landuse zoning of ward no. 06	252
Map14.18	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 6	256
Map14.19	Existing land use of Ward No.07	261
Map14.20	Proposed landuse zoning of ward no. 07	262
Map14.21	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 7	266
Map14.22	Existing land use of Ward No.08	271
Map14.23	Proposed landuse zoning of ward no. 08	272
Map14.24	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 8	275
Map14.25	Existing land use of Ward No.09	280
Map14.26	Proposed landuse zoning of ward no. 09	281
Map14.27	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 9	284

LIST OF ABBREVIATIONS AND ACRONYMS

ASA	Association for Social Advancement
BADC	Bangladesh Agriculture Development Corporation
BM	Bench Mark
BRDB	Bangladesh Rural Development Board
BTM	Bangladesh Transverse Mercator
CBD	Central Business District
CNG	Compressed Natural Gas
CP	Control Point
CS	Cadastral survey
dBase	Data Base
DEM	Digital Elevation Model
DGPS	Differential Global Positioning System
DLRS	Directorate of Land Records and Survey
DPA	Demarcation of Planning Area
DPHE	Department of Public Health and Engineering
GCP	Ground Control Point
GIS	Geographic Information System
GPS	Global positioning system
HQ	Head Quarter
K.P.H	Kilometers Per Hour
K.M.	Kilometer
LGED	Local Government Engineering Department
mPWD	Meter PWD
MSL	Mean Sea Level
O-D	Origin and destination Survey
PCU	Passenger Car Unit
PRSP	Poverty Reduction Strategy Paper
PWD	Public Works Department
RCC	Reinforced Cement Concrete
RDMS	Relational Data Management System
REB	Rural Electrification Board
RHD	Roads and Highway Department
RTK-GPS	Real Time Kinematics Global Positioning System
SOB	Survey of Bangladesh
SQL	Structural Query Language
TCP	Temporary Control Points
TIC	Tentative points)
TIN	Triangular Irregular Network
TS	Total Station
TVS	Traffic Volume Survey
UP	Union Parishad
UTIDP	Upazila Towns Infrastructure Development Project

LIST OF LOCAL TERMS

Baro	Big
Bazar	Market
Char	piece of land rising from the river and sea
Chota	Small
Dighi	Tank
Ghat	Boat Terminal
Goru	Cow
Hat	Weekly and Occasional Market
Jame	Offer Prayer Five Times Daily except Jumma for Muslims
Kancha Bazar	Kitchen Market
Katcha	Fresh/earthen
Khal	Canal
Matshaya	Fish
Mondir	Temple
More	Intersection
Mouza	Land Measurement Unit
Murgi	Poultry
Nouka	Boat
Pan	Beetle Leaf
Panjegana	Offer Prayer Five Times Daily except Jumma for Muslims
Pool	Traditional Culvert/bridge
Potti	Community/Locality
Paurashava	Municipality
Pucca	Permanent Structure
Shahar	Town
Shahid Minar	Memorandum for Martyrs
Tempo	Human hawler
Thela	Push Cart

LIST OF TECHNICAL TERMS

Acre	1 ² km = 247.1044 acre
Bigha	1 Bigha = 14400 sq. ft.
Katha	1 Katha = 720 sq. ft.
Lakh	1 Lakh = 100 Thousand

Chapter- One

INTRODUCTION

1.1 Introduction

In Bangladesh the average urban growth rate between 1961 to 1981 was 8%, which has currently rose to 4.5%. According to the population census of 2001 the share of urban population was about 23.29%, presently; it would be 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 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 earnings 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 also marked by creation of Paurashava, whose number presently stands at about 309. Paurashava are created not only to provide urban services to its citizens but also to create a livable environment through development of planned and environmentally sound living space.

It is very likely, as can be seen from the past trend; urban centers are going to be the focus of future employment and economic regeneration. The population and economic growth, particularly, in large urban centers is likely to boost in next few decades creating increased burden on them. The smaller urban centers imbued with opportunities for investment and livable environment can help release pressure on big cities at the same time serve as growth poles for development of undeveloped hinter lands. Without adequate infrastructure and services provision to support the increasing population and activities the small urban centers would not be able make themselves as the focal points to attract investment. Planned development of infrastructure and services and development control through land use plan and execution of BC rules is essential to develop smaller urban centers environmentally and render them congenial places to live and work.

The present infrastructure provisions in Paurashava are in a precarious state. Drains are mostly clogged that cannot drain out excess water during heavy rains, natural drainage systems have either been filled up or occupied by land grabbers creating water logging during monsoon. Traffic in Paurashava is increasing day by day with the increase of population and consequent increase in mobility. But the sub-standard road network can hardly keep pace with the growing demand for movement. 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 Paurashava is unorganized and unplanned, which is a major source of environment degradation. Building Construction Rules are not effectively enforced mainly for want of a well formulated master plan and qualified planning professional and additionally, due to poor governance.

Under the above circumstances it is high time to think about the criticality of the problems that might emerge in future if they are not addressed now. To overcome all the likely problems to come in future, the Paurashava should go for planned development through preparation of a master plan and move the development forward accordingly side by side strengthening its planning department. The master plan can be prepared exercising the power conferred to them by the Local Government (Paurashava) Act 2009. The Upazila Town Infrastructure Development Project aims to prepare master plan for 218 Paurashavas / Upazilas and develop infrastructure

during next 20 years. The project keeps provision for a separate plan for land use control, drainage and environment, traffic and transportation management and improvement. The project aims to prepare a Ward Action Plan to ensure systematic execution of future infrastructure development projects. There is also aim to prepare proposals to enhance Paurashava's revenue earning so that it becomes more capable to meet its own capital needs. The master plan of Mathbaria Paurashava suggests development of new roads, drainage facilities, street lights, markets, bus stands, solid waste management, sanitation, water supply and other such infrastructure facilities in order to equip the Paurashava to face future challenges of urbanization and economic regeneration.

1.2 Objectives

According to the Terms of Reference the objectives of Mathbaria Paurashava Master Plan are:

- a. Find out development issues and potentials of the Mathbaria Paurashava and make a 20 years development vision and prepare a Master Plan for development in line with the vision;
- b. Prepare a plan for the people of the Mathbaria town to develop and update the provisions for transport network, housing, infrastructures for roads, markets, bus terminals, sanitation, water supply, drainage, solid waste management, electricity, education, leisure and such other infrastructure facilities for meeting the social and community needs for all sorts of group of community to improve quality of life;
- c. Prepare multi-sector short and long term investment plans through participatory approach to improve living standards by identifying area based priority development projects in accordance with the principle of sustainability;
- d. Provide controls for private sector development and clarity and security with regard to future development;
- e. Provide guide line for development considering the opportunity and constraints of future development of Mathbaria Paurashava as the Upazila Town; and
- f. Prepare a 20-year Master Plan to be used as a tool to ensure and promote growth of the town and control any unplanned growth by any private and public organization.

1.3 Approach and Methodology

1.3.1 Survey and Data Collection

Extensive Topographic and Physical Feature survey (for details please see Chapter 3 of Survey report), Landuse survey (for details, please see chapter 4 of Survey report), Drainage and Environmental Management survey (for details, please see chapter 6 of Survey report), Transportation and Traffic Management survey (for details, please see chapter 5 of Survey report) were carried out by the consultant under the close supervision of PMO and Mathbaria Paurashava Officials using sophisticated modern technology (i.e. RTK-GPS, Total Station etc.). Special care was taken for generalized landuse survey to collect physical information and for indication of existing land use and development pattern. Questionnaire survey (for details, please see chapter 7 of Survey report) was administered for collection of socio-economic information of the local citizens. Data and information were also collected from Paurashava officials, local elites/leaders, to serve the purpose for preparation of a landuse plan. Master plan maps for Mathbaria Paurashava has been prepared using different scales (i.e. 1:1980, 1:3960) as per ToR to indicate possible intensive development zone and development pattern thereof during successive stages of development within the project area.

1.3.2 Review of Existing Conditions and Plan Preparation

After survey and analysis of existing conditions the planning phase began. Review of the planning area revealed the problems and opportunities. This was followed by a Draft Paurashava Plan with such components as Structure Plan, Urban Area Plan and Ward Action Plans. Structure Plan provided the long term planning principles, while the Urban Area Plan set down

the mid level development proposals covering major infrastructure and services. The ward Action Plan made detailed local level development proposals in minor detail. The major issues covered in the Paurashava Master included the following,

- future land use;
- road infrastructure;
- drainage;
- utility and community services;
- education and health facilities.

Thematic maps on above issues were prepared and narrative description was prepared for development proposals.

1.3.3 Plan Consultation and Plan Revision

The draft plan was presented in the Paurashava in presence of Mayor and Councilors and other permanent personalities and representatives of professional groups for their comment and suggestion. Threadbare discussions followed after presentation, where issues and problems were raised. Comments were recorded for incorporation in the plan. A copy of the plan was sent to LGED for their comments as well.

The comments received from the Paurashava and LGED were studied. The comments that were found feasible for accommodation were accepted and necessary corrections made in the plan and report and the final Master Plan was prepared.

The report/plan is, therefore, a detailed one to indicate the possible location of major landuse zones and the organization of internal structure of the project area in line with the existing character, depicted on the base map. It will help to guide the growth of the area in harmony with social, economic and political needs to achieve maximum practicable degree of economy, convenience and amenities. Proposals for location and layout plan for specific activities/functions, a small and cottage industry, for example, needs feasibility study and contour information for site development.

The plan has been prepared on the basis of Participatory Process where the project area will develop around existing social services facilities using available physical infrastructures. The plan further attempts to guide the growth of the internal structure of the service centre by judicious selection/location of committed/ anticipated social services/facilities in such a way that each of the proposed zones/projects will reap the benefit of others, keep the plan flexible; help minimize extra expense during successive stages of development and keep the centre functional. Due care has also been taken on such factors as economy, convenience and amenities for the Upazila populace by using existing/added advantages and adopting such policy as optimum utilization of space and available resources.

Land use proposal, in the plan, has been reflected using planning standard, legend and colour scheme supplied by Project Management Office over Mouza sheets where in location and property line of the existing use have been depicted using different shades. This helped to identify the scheme to be developed for specific project, assess the degree of change of use and the quantum of existing use to be affected for implementation of the plan.

1.4 Activities Undertaken

The consultant has been deployed a team of consultants and support stuffs due to plan preparation as well as project completion. The team composition has been attached later in **Annexure- A**. The consultant has been undertaken the following major activities for preparation of the Mathbaria Paurashava Master Plan.

a. Visit to the Paurashava

The consultant team leader and or other team members of the project visited to the Paurashava on several occasions. The visits were mainly for two purposes, **first**, to acquaint themselves with the town- its problems and opportunities and **second**, to make aware the Paura people and the local stakeholders about the plan making and seeking their opinion and cooperation in this respect.

b. Inception Seminar/Meeting and Plan Consultation with the Stakeholders in the Paurashava

The consultant has arranged an Inception Seminar/Meeting at the Paurashava level at the project inception level in cooperation with the Mathbaria Paura Authority and disseminated the stakeholders including the Paurashava about the scope and Terms of Reference for the preparation of Master Plan. Views were exchanged with the stakeholders regarding the problems and opportunities of the Paurashava to develop a 20 year development vision for the Paurashava linking the ideas and views received. On completion of the draft final plan a consultation meeting was arranged at Paurashava Office where the plan proposals were disseminated and opinions from the stakeholders sought. Meeting minutes of the final consultation meeting with Paurashava and other stakeholders including Project Management Office (PMO) has been attached later in **Annexure- D**.

c. Determination of Study Area

The consultant has determined the study area or the area to be covered under the current planning exercise based on existing condition, demand of the Paurashava and potential scope for future expansion. The determined Structure Plan Area is 13.87 sq. km or 3422.26 acres of land that includes existing Paurashava area (1124.92 acres or 4.56 sq. km) and recently extended and gazetted (May 20, 2013) area at Mathbaria, Uttar Mithakhali, Andhr Manik, Dakkhin Mithakhali and Bakshir Ghotichora mouza and additional possible extended area at the south of present Paurashava area (total 2299.62 acres or 9.31 sq. km.). A Paurashava gazette notification of Mathbaria Paurashava has been attached later in **Annexure- B. Map- 1.1** shows the location of Mathbaria Paurashava.

d. Assessment of Drainage System and Preparation of Drainage Master Plan

One of the important tasks of the consultant was to Identify and investigate the existing natural and man-made drains, natural river system, assess the extent and frequency of flood, determine area of intervention. The consultant has also studied the contour and topographic maps produced by the relevant agencies and also review any previous drainage Master Plan available for the Paurashava.

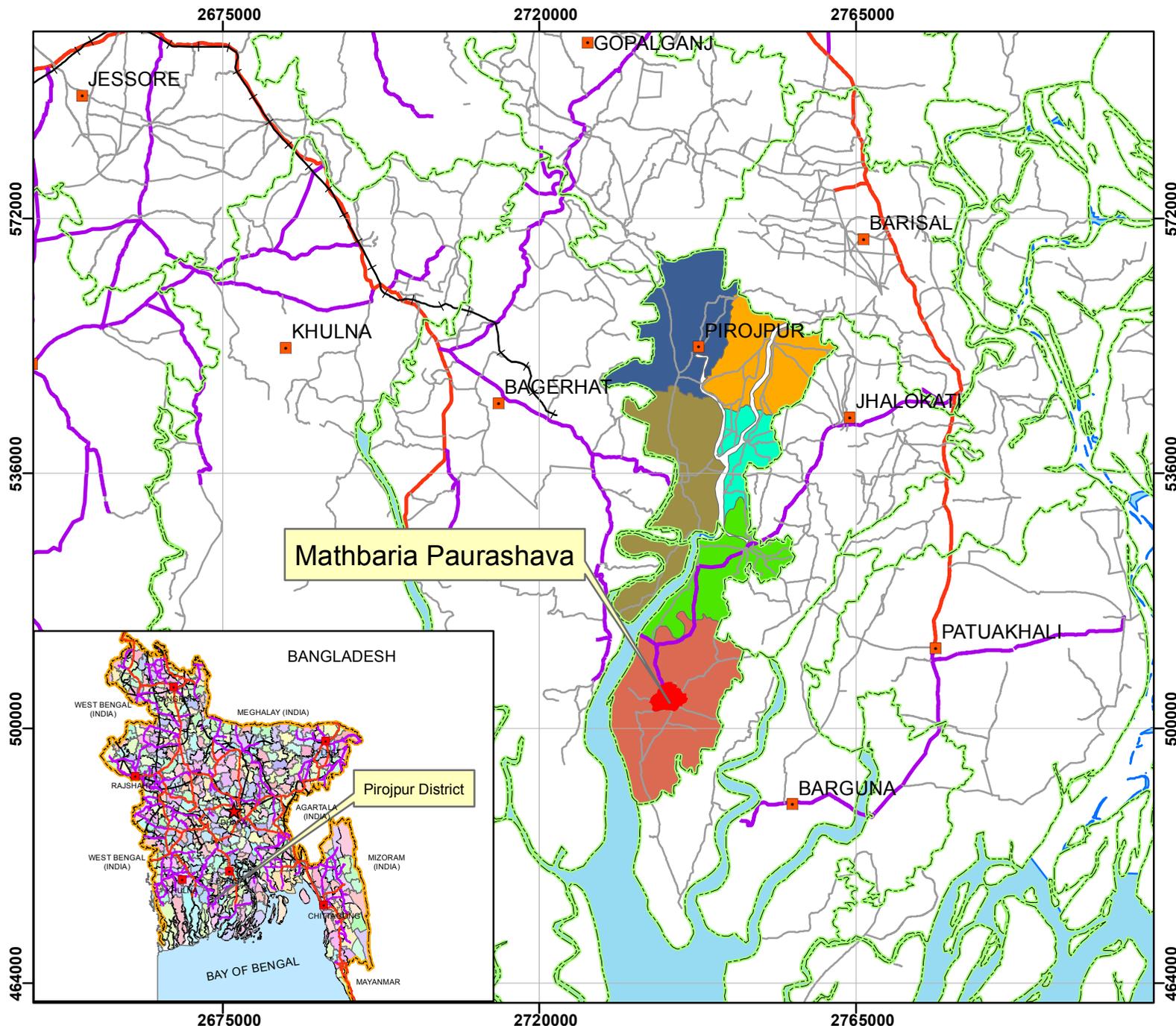
After assessment of current situation the consultant prepared a comprehensive (storm water) Drainage Master Plan for the Paurashava for a plan period of 20 years. In such exercise it considered all relevant issues including discharge calculation, catchment areas; design of main and secondary drains along with their size, type and gradients and retention area with preliminary cost estimates for the proposed drainage system.

e. Transportation Planning

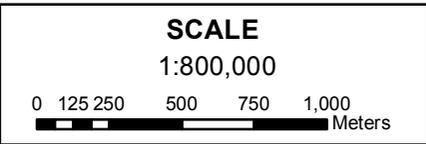
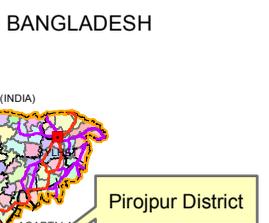
For making a comprehensive transportation plan for Mathbaria Paurashava the consultant carried out the following tasks:

- i. Collected and assessed the essential data relating to existing transport network, relevant regional and national highway development plans, accident statistics, number and type of vehicles registered for Mathbaria Paurashava.

- ii. Assessed requirements of critical data and collected data through reconnaissance and traffic surveys to estimate present traffic volume, forecast the future traffic growth, and identify travel patterns, areas of traffic conflicts and their underlying causes.
- iii. Studied the viability of different solutions for traffic management and developed a practical short term traffic management plan, including one way system, 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.
- IV. Assessed the non-motorised traffic movement dominated by cycle rickshaws. Special recommendations were made to utilize these transports in best possible way, without causing unnecessary delays to other vehicles. Proposals were also made about pedestrians and their safety, with special attention for the children.
- V. Assessed the current land use with respect to road transportation, bus and truck stations, railway stations etc. and recommend actions to optimize this land use.
- VI. Prepared a road network plan based on topographic and base map prepared under the Mathbaria Paurashava Master Plan Project. Recommended road development standards, which will serve as a guide for the long and short-term implementation of roads. Also suggested traffic and transportation management plan and the traffic enforcement measure to control traffic movement in a more effective way.



Mathbaria Paurashava



LEGEND

- District Headquarter
- District Boundary
- International Boundary
- railway network
- National Highways
- Regional Highways
- Feeder Roads
- Bay of Bengal

UPAZILA NAME

- Bhandaria
- Kawkhali
- Mathbaria
- Nazirpur
- Pirojpur
- Sarupkati

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District


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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
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Chapter- Two

CONCEPTUAL ISSUES

2.1 Background of the Paurashava

As per the Local Government (Paurashava) Act 2009, the Paurashava 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).

Mathbaria upazila of Pirojpur zila was declared as Mathbaria Paurashava on 1st June, 1993. Mathbaria Paurashava is a **A-Class** Paurashava and covers 4 partial mouzas. The Paurashava is bounded on the north by Bhandaria and Zia Nagar upazila, on the east by Kathalia upazila of Jhalokati zila and Bamna upazila of Barguna zila, on the south by Patharghata upazila of Barguna zila and on the west by Sarankhola upazila of Bagerhat zila.

2.2 Philosophy of the Master Plan

The philosophy behind Mathbaria Paurashava master plan is to bring about positive change in the life of the local community through a process of spatial organization, environmental improvement and provision of amenities to the future generations and control of unwanted development.

2.3 Vision & Objectives

2.3.1 Vision

The vision of the current planning exercise is,
‘to create a sustainable livable environment where all amenities will be there to promote healthy and comfortable living, together will promote local economy to bring prosperity to the urban centre under the condition of good governance.’

2.3.2 Objectives

Following objectives have been considered as the basis of the plans for Mathbaria Paurashava:

- a. To encourage planned physical growth of the Paurashava
- b. To guide accommodation of future growth of population and economic activity
- c. To extend the provision of services and facilities to create livability
- d. To improve decision-making related to funding of services and facilities
- e. To keep the role of Government as a facilitator, rather than provider
- f. To prioritise need of the underprivileged
- g. To give priority to environmental considerations in making decisions related to physical development

2.4 Content and form of the Structure Plan

2.4.1 Concept

Structure Plan is a strategic plan, or a framework plan, or an indicative plan that is presented in maps and explanatory text that are more ‘broad brushed’. Structure Plan indicates the broad magnitudes and directions of urban growth, including infrastructure networks, the placement of major facilities and infrastructure such as hospitals and primary road. A Structure Plan identifies the areas where growth and change are such that more detailed local and action plans are needed. The present Structure Plan is an overall long term strategic plan for Upazila shahars

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. The Urban Area Plan and the Ward Action Plans detail out development proposals under the framework of Structure Plan.

2.4.2 Content and form of the Report

The Structure Plan is set out in eight chapters.

Chapter-1 introduces the master plan project with general objectives, approach and methodology and scope of the works.

Chapter-2 presents the conceptual issues explains background of the Paurashava, philosophy of the Master Plan and vision and objectives of the Structure Plan.

Chapter-3 evaluates the present status and the development problems. It serves Paurashava's existing trend of growth which includes social and economic development, physical infrastructure development, environmental issue, population study, institutional capacity of the Paurashava, urban growth area, catchment area, landuse and urban services, functional linkage of the Paurashava with the Regional and national network and role of agencies for different sectoral activities.

Chapter-4 Profile of the landuse of the Paurashava. It deals with the projection of Future Growth by 2031. Population projection for the year 2031, identification of future economic opportunities and projection of landuse are the major discussions of this chapter.

Chapter-5 presents the Paurashava development related policies, laws and regulations. The chapter highlights, landuse policy, housing policy, population policy, agricultural policy, transportation policy, environmental policy, industrial policy, health policy and national urban policy. Laws and regulations related to – national reservoir protection act, Bangladesh National Building Code, Building Construction act also indicates in this chapter. Strength and weaknesses of the existing policies also includes here.

Chapter-6 discusses the critical planning issues. Issues related with the transport, environment, landuse control and disaster have been emphasized. Issues relevant with the laws and regulations in case of policy formulation are also presented.

Landuse zoning policies and development strategies are the key elements of the **Chapter-7**. Policies for socio-economic sector, physical infrastructure sector and environmental issues are discussed here.

Implementation Issues are presented in the **Chapter-8**. Emphasize has given on institutional capacity building of the Paurashava and resource mobilization.

2.4.3 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 upto the year 2031. Structure Plan can be amended on the tenth year to cope with changing circumstances. So there will be only one amendment during 2021. The amendment shall be approved by the Paurashava Council.

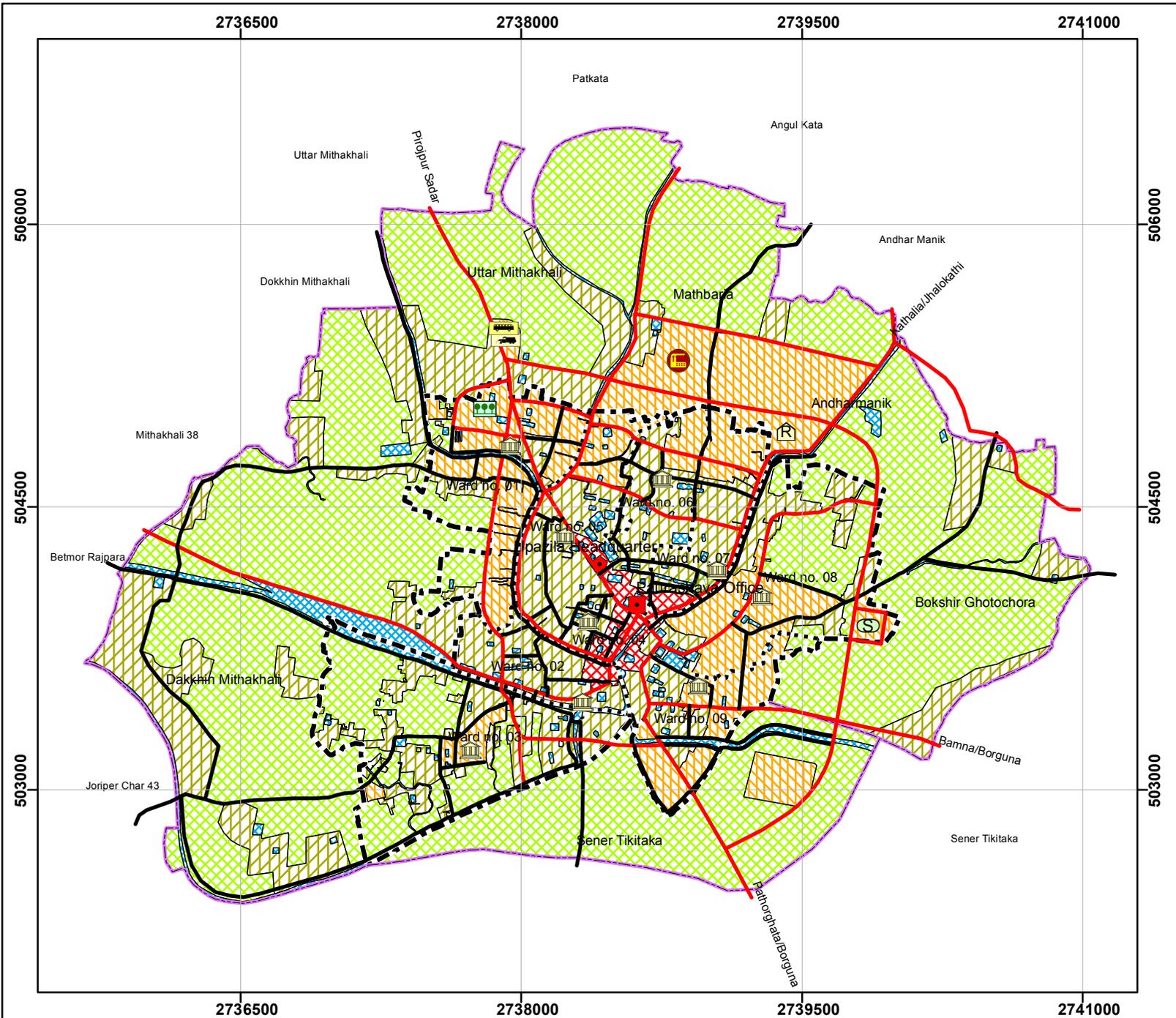
2.4.4 The Style and Format of Structure Plan

The format of a Structure Plan comprises written document and indicative or symbolic major development locations presented in maps and diagrams as parts of the report. It is supported by

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

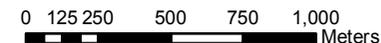
maps and diagrams as parts of the text and large scale working maps to help project implementation and development control.

The total area of Mathbaria Structure Plan is 13.87 sq. km or 3422.26 acres of land that includes existing Paurashava area (1124.92 acres or 4.56 sq. km) and recently extended and gazetted area at Mathbaria, Uttar Mithakhali, Andhr Manik, Dakkhin Mithakhali and Bakshir Ghotichora mouza and additional possible extended area at the south of present Paurashava area (total 2299.62 acres or 9.31 sq. km.). **Map- 2.1** shows the Structure Plan policy map of Mathbaria Paurashava and all the 9 wards of the Paurashava including other extended area covered by the Structure Plan area. A large map with Structure Plan area policy map will be attached in annexure later.



SCALE

1:29,500



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary
- Paurashava Office
- Upazila Headquarter
- Bus Terminal
- Central Graveyard
- Central Park
- Industrial Estate
- Neighbourhood Center
- Paurashava Office
- Resettlement Zone
- Truck Terminal
- Upazila Hospital
- Upazila Stadium

Major Services

Structure Plan Zones

- Core Area
- Fringe Area
- Peripheral Urban Area
- New Urban Area
- Agriculture
- Waterbody
- Major Circulation

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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Chapter Three

REVIEW OF PRESENT STATUS AND THE DEVELOPMENT PROBLEMS

3.0 Introduction

The current chapter of the report makes a review of the various issues of the Paurashava and unveils its problems. Intention if this chapter to introduce the readers with the Paurashava issues and the problems it is being encountered. This chapter will help identify critical problems in order to make planning recommendations.

3.1 Sectoral Review of Present Status

This section of the report focuses light on the present condition of various sectoral issues of Mathbaria Paurashava.

3.1.1 Societal

Following societal characteristic features have been identified in Mathbaria town.

Small Number of Migrated Families

In the town 86% households were found to be the permanent living there since birth, while 14% migrated to the town from various places, mostly from by greater Barisal.

Population Growth Higher Than national Average

The annual urban population growth rate of Mathbaria Paurashava is 1.78% (BBS 2011) and by this time the population was 18375. In the year 2031, the population of Mathbaria Paurashava will be 31798 with the growth rate of 2.78%.

High Income Level

Income ranges basically support this concept which is evident by the ranges of income earned by households. In Ward No. 9, 46% household earns Tk.9001-12000 compared to 36% within Tk.6001-9000 per month. There are good numbers of households who earn Tk.12000+ per month. Tk.9001-12000 income group is dominant income group in the Paurashava (34%) followed by the Tk. 6001-9000 (30%). On the other hand, average monthly income per household is highest (Tk.15667) in Ward No. 6 and lowest (Tk.7800) in Ward No. 5.

Higher Education Rate but Low level of Education

A small percent (5.7%) of household heads are illiterate (20% in Ward No. 3, 40% in Ward No. 5 and 33.3% in Ward No. 6). No illiterate people in all the Wards except Ward No. 3, 5 and 6. Reading between Classes-VI to X is the highest educational achievement in the Paurashava (28.3%). SSC level (15.1%), HSC (13.2%) and Graduate (15.1%) is quite higher than other Paurashavas in Pirojpur. There are few masters degree holders (1.9%) in the study area and they are found in the Ward No. 1.

It has been observed that the literacy rate (61.7%) of Mathbaria Paurashava is not satisfactory with compared to Pirojpur Zila but satisfactory with compared to National level for both male and female.

High Dependency Rate

Mathbaria Paurashava has a high level of dependency rate. Socio-economic survey reveals that only about 36% of the people are engaged in formal earning activities. These activities are likely, Government/Autonomous, Private Company, Self employed, Business, NGO Person, Skilled Labor, Labor, Driver, Rickshaw/Van Pullar, Household worker, Day Labor (Agri), Farmer (Land Lord), Farmer (Land Less), Day Labor (Non-agri) and Others. Fully unemployed persons are about 5%. Though housewives are not unemployed, but they are actually dependent with our

socio-cultural perspective and it is a significant. Students are also more or less dependent. As a whole, there is about 64% of people who are directly or indirectly dependent.

Working Force

There is about 60% of total population who are belongs to working group as per working force between 16 to 55 age at Mathbaria Paurashava and remaining about 40% of population lies under nonworking group. The situation of Mathbaria Paurashava is that most of the female population belongs to unemployed. This is about 50% of total populations who are female and lies between non working groups. As a result the actual percentage of working people is about 36% of the total existing population. This means that, there is a very low level of working force in Mathbaria and it is alarming.

Household Size smaller than National Average

The survey found that the average household size in the Paurashava is 4.23, which is smaller than the national average of 4.5. The range of household size varies from 1 to 11, but the household size 4 (19.84%) is the largest group followed by the size 5 (17.82%)

Large Number of Nuclear/single Families

More than three-quarter of the households are nuclear/single families followed by 12% combined and joint families. Of the total population, female population outnumbers male population, but in certain age group, female outnumbers the male population. These aspects will require careful analysis in the estimation of population for the Master Plan

3.1.2 Economy

Economy is the lifeblood of any urban centre. Higher the economic activity, higher will be the level of employment and consequent physical growth. So, before going for a development plan, it is necessary assess the current level, constraint and prospects of economic activities of the Paurashava. The principle criteria to judge the economy of an urban centre is to learn about its main sources of employment. Besides, the number of productive enterprises and tertiary level activities are also the indicators of the pattern and level of economic activities in any area.

The main source of household income in the Paurashava was Business (36.54%) which was followed by Service (26.56%), agriculture labor (10.31%) etc.

It is evident from the sample survey that, around 48% of the respondents are engaged in business activities (large business 6% and small business 42%). The scenario reveals that 21% as office workers both government and semi-government including employees in private offices. Agriculture with allied farming seems to be the second major occupation (13%).

From the sample survey, it can be surmised that, small business is the dominant occupation in three Wards (Ward No. 1, 3, 5, 7 and 9). Farming / agricultural domination is found in four Wards (Ward No. 3, 4 and 6). Paurashava has numerous occupational groups who are helping the economic base to sustain. Being predominantly in an agricultural region, the inhabitants of Paurashava are changing their major occupational involvement from agriculture to business. One of the most important income sources is foreign remittance though it was not revealed from the formal household survey. That's why many of the people have higher purchasing capacity.

So, the current economic picture of the Paurashava is not very bright in respect of economy. Virtually no manufacturing establishment has been found in the town that can contribute either employment or cause production leading to expansion of the non-basic sector of the economy. Poverty haunts over one third of its population and service sector activities have not yet gained momentum. There is extremely low level of investment, no basic industry that could boost

economy and employment. Investment is pulled by nearby larger growth centres like, Vandaria and Pirojpur sadar depriving Mathbaria. However, non-availability of infrastructure and urban amenities also discourage investment in this small town.

3.1.3. Industry

There is no such mentionable industry within the Paurashava. Industrial area occupies only 2.57 acres of land consisting 0.23% of the total Paurashava area. In total, 16 industrial establishments are found in the Paurashava. All are light industries. Industries are one kind of dominating land use. This category includes husking mill, brickfield, oil mill and Hatcheries. The industrial land use is absent in the Ward No. 2.

3.1.4 Commerce

The commercial activities in the town are dominated by retail business. The retailers mostly collect their goods from Bhandaria and Pirojpur Sadar, which are the largest wholesale markets in the region. Because of higher level of affordability of the local people, the general shop retailers keep almost all kinds of consumer's goods in their shops.

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 traded. The market / bazar performs significant role in 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 everyday from morning to evening. Along with the daily business transactions, one market place is 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.

One location has been identified with agglomeration of commercial activities at hat / bazar area in the Paurashava. That hat / bazar is taking place in the core part of the Paurashava along with the road; tin-shed semi-pucca structures with parcels of open lands. The hat / bazar are prominent due to its availability of agro-products and fishes. People from different unions and Upazilas accumulate in those hat / bazars as buyers.

The Paurashava is composed of about 1800 numbers of permitted shops (Mathbaria Paurashava, 2013). The scenario proves the area as a agriculture-based urban commercial centre and dominating the surrounding Upazila and Districts with its traded goods. Daily gross economic turnover is estimated to be between taka 10 lakh to 20 lakh.

3.1.5 Agriculture

In Mathbaria Paurashava 10.31% of the male income earners are engaged in farming (farmers and farm laborers) occupation, though 36.01% of the Paurashava area is under agriculture. It indicates that the Paurashava is yet to be adequately urbanized. The farmers collect their farm inputs like, fertilizer, pesticides, and irrigation appliances from stores within the Paurashava. For additional purchase they move to Bhandaria and Pirojpur Sadar, which are higher level market. The farmers mostly produce rice of Boro and Aman and vegetables. Other farm outputs are livestock, forestry and fisheries. There are about 25 numbers of small scale poultry farms that produce poultry and meat to meet the local demand. Vegetables are mostly consumed by the

local consumers, while surplus is sold to the Beparies (large businessmen) who sell them to the whole sellers and Chatal owners.

3.1.6 Occupation and Employment

In primary occupation the unemployment rate among the males is only 7.87% in Mathbaria Paurashava whereas only about 5% of the females have been found engaged in income earning activities. Among the male income earners, over 43% are engaged in trading, 12.50% are day laborer of agricultural activities, about 6.48% work in government or autonomous institutions, 8.33% are in private services (**Table-3.1**). In case of female members, the scenario of income earning activities is so poor. About 57.28% of the female members are housewives.

Table-3.1: Occupation of the Family Members

Main Occupation	Paurashava As a whole	%
Govt. Officer	8	3.70
Other Govt. employee	14	6.48
Teaching	16	7.41
Farming/Agriculture	27	12.50
Large Business	12	5.56
Small Business	82	37.96
Private Service	18	8.33
Skilled Labour	6	2.78
Unskilled Labour	16	7.41
Unemployed/Retired	17	7.87

Source: Socio-economic Survey, 2012

It is evident from the socio-economic survey that most business people are concentrated in Ward No. 4. In Ward No. 3, most of the male members are involved as agricultural day laborer.

The existing employment pattern shows no biasness in income source though business and agriculture play vital role. Since secondary sector employment is highly lacking in the town, people move to self employment like trading. Trading has been found feasible as employment in the town, mainly, because higher level of affordability of the people. Remittance is the source of income of a large segment of the town families who have their relations working abroad. The employment scenario of the Paurashava is unlikely to change shortly unless there is any major investment in the industrial sector that can pool a large number of workers and bring vibrancy to the local economy.

3.1.7 Informal Sector Economic Activities

Informal sector characteristics are very similar all over Bangladesh. It is more prominent where there is concentration of people is more. Informal sector is a part and parcel of urban economy of all developing countries. The most important feature of informal sector is, the sellers carry their goods and services to the buyers and their concentration is more where agglomeration of buyers is more.

Informal sector covers a lot of activities which may be broadly classified as Trading and Services. In various type of mobile or fixed shops they sale 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. These income earning activities are considered as informal economic activities.

In the Paurashava, informal entrepreneurs mainly perform their business in the market / bazars and areas where there agglomeration of people. In informal sector males are playing the dominating role. 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. It is revealed that, major occupation is small business adopted by about 50% of the total employment. Then the business is followed by service, agriculture and food processing. They have very small capital and are usually self-employed.

It has been found that, 5% (including loan from NGO) of total entrepreneurs borrow money to form capital for their business. Rest of the respondents does not get any loan to start their business. Survey reveals that loan of the informal sector vary in amount. Of the total loan recipients, 70% took loan ranging between Tk. 8000.00 to Tk. 10000.00, followed by 20% received between Tk. 10001.00 to Tk. 12000.00 and 10% between Tk. 12001.00 to Tk. 15000.00.

About 34% of the households fall within the income range between Tk.9001-12000. Of the surveyed households 7.41% have monthly income of below Tk. 5000 that means these households are living below poverty level. Only 18.52% households have monthly income more than Tk. 12,000. 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.

In Mathbaria the concentration of informal entrepreneurs is found more around the Mathbaria Uttar and Moddhya bazar area and around major shopping centres.

3.1.8 Physical Infrastructure

Mathbaria Paurashava is a small Paurashava (only 4.56 sq. km. according to the physical feature survey). There is a unique opportunity of growth of the Mathbaria Paurashava. Obviously the physical growth will be occurred towards north-west and north of the Paurashava. As it is rural based Paurashava, its development mainly depends 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.

Physical growth of Mathbaria Paurashava town generally depends on the road pattern of the Paurashava. Mathbaria Paurashava is connected with Sadar road. So, linear development is the common feature of the Paurashava. The Sadar road (main road) influences the dwellers to shift towards north-west. So, there is great scope of physical growth through the road system of the Paurashava.

Inter-regional linkages include regional highway, primary road, secondary road, tertiary road, local road, access road, feeder road, walk way, etc. This landuse also includes establishments to accommodate all transport and communication facilities such as bus terminal / stoppage, truck terminal, CNG/Rickshaw stand, Passenger Shed, etc. This category of use covers an area of 37.10 acres of land (circulation network and transportation facilities combinedly). The highest amount of road coverage is found in the Ward No. 3 (6.69 acres of the network).

3.1.8.1 Existing Road Network

According to the Paurashava sources, the length of total roads in the Paurashava is 63.28 km. The physical feature survey of Mathbaria of 2011 and 2012 has identified a total of 63.28 km of

road within the Paurashava, among them, ward 3 has highest road length (11.87 k m) whereas ward 4 has lowest length of road (3.98 k.m.). Besides, the Paurashava has 54 bridge/culverts including wooden or bamboo built pools.

Mathbaria is a small newly growing urban centre that has grown out of almost nothing. There only one major road leading to Mathbaria town. A number of other roads pass through the town to different growth centres including district headquarters. Major roads that pass through the heart of the town form an intersection at the centre of the town known as zero point or Mathbaria bazaar. The five roads coming from three different directions meet together at the zero point near the Mathbaria bazar. The routes coming from different places are,

- Sadar Pirojpur
- Soronkhola
- Patharghata
- Bamna and
- Kathali.

The five roads coming from five different directions cross Machua khal. The Pirojpur Sadar road comes from north-west direction, Soronkhola road from the west, Patharghata road from south, Bamna road from east and Kathali road comes from north-east direction. All the roads meet together at zero point as well as the Mathbaria bazaar of the town. Apart from these roads, large number of local roads having width varying from 8 ft. to 12 ft. width, give access to individual houses and establishments and connect them to major roads.

3.1.8.2 Traffic and Transport Infrastructure

Bus Terminal

There are no formal bus and tempo terminal at Mathbaria from which the buses start for different destinations rather it has two well known bus stand. Generally buses start from these two stands of the paurashava. Bhandaria is the nearest busiest paurashava from Mathbaria. Total number of traffic generation is not mentionable. That's why without the Mathbaria Bazar area, in the whole Paurashava the traffic congestion problem is not severe. Buses generally go to Mathbaria and Pirojpur Sadar,

Truck Terminal

As a small town, the economic activity is slight low in Mathbaria Paurashava. There are only a handful of small scale processing factories including a few rice mills and limited trading activities in the town. So, movement of trucks is extremely low here. As a result no truck terminal is developed in the town.

Auto rickshaw Service

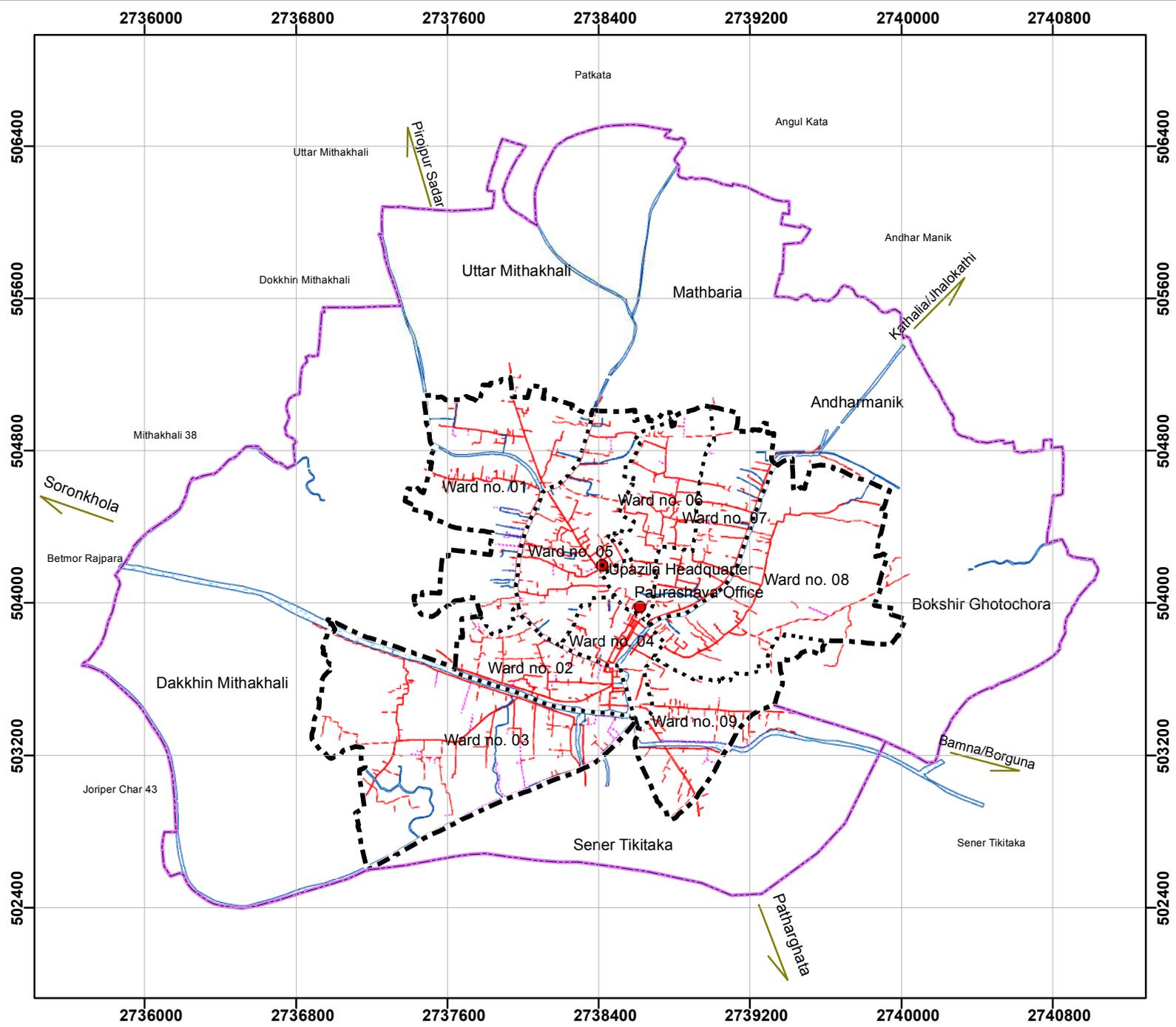
Apart from auto tempo about 30 CNG driven auto-rickshaws operate daily from Mathbaria on five routes from Mathbaria. Trips generate, when these require. The auto rickshaws operate from 0' point of Mathbaria.

Non-motorized Traffic

The non-motorised traffic operating in the town are, bicycle, rickshaw, push cart, van and school van. Paurashava offers license for the non-motorised transports. The current number of non-motorised traffic in the town is about 400 that include rickshaw, rickshaw van, bicycle and push cart. These include both registered and unregistered non-motorised vehicles in the town. It is clear that, the numbers of the registered NMT is to low. It is observed that a few push and pull carts are playing in the town mainly to carry wooden goods. There is no provision of registering bicycle though it is a favorite transport mode for shorter distance and a significant number of bicycles are playing in the town.

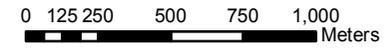
Map 3.1

Circulation Network (Existing) of Mathbaria Paurashava



SCALE

1:29,500



LEGEND

- Paurashava Office
- Upazila Office
- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary
- Khal
- Existing Road**
- Katcha
- Pucca
- Semipucca

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
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3.1.8.3 Parking

As the town does not have large number of traffic so the local government did not feel it necessary to reserve parking space. There is no formal parking reserves for non-motorised transports a well. However, tempo and baby taxis are informally parked in particular areas.

3.1.8.4 Footpath

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

3.1.8.5 Waterway

Kachar is the nearer river from Mathbaria. Mathbaria is also connected by waterway. It is hearsay that once upon a time Machua khal was the main trading route of the locality which carried the goods and passengers to surrounding important trading points. Now a day, a part of these khals have been encroached by the influential persons of the locality and the rest of the canals have been blocked by regular and irresponsible waste dumping.

3.1.8.6 Drainage System

While taking schemes for infrastructure development by the Paurashava, drainage is receives least priority. This scenario is particularly true for the country's Paurashava, though among all the infrastructure types, drainage has by far, the heaviest impact on any urban centre. In absence of good drainage, physical environment, health, hygiene and standard of living suffer seriously. In development projects in Government, Semi-government and Public sectors funds are allocated for the projects that are mostly spent on buildings, roads and other tangible infrastructures and drainage comes as the lowest priority item.

The drainage system in the study area can be classified into two types. One is the **Natural Drainage** system that has emerged as a natural process following the natural slope of the ground, for the movement of storm run-off mainly without human intervention. The flow moves from high to low lying areas. The other is the **Man-made Drainage** system that is provided by the municipal authority or any other local government to drain out the domestic waste water or storm water from the urban area.

Natural Drainage Network

The existing natural canal network is remaining under haphazard condition in the total Paurashava area. The total length of the existing natural canals is about 10 km. In some portion of the area the condition of the khal and irrigation canal is being encroached by the local people and the situation is deteriorating day by day. So, it should be given much concern to sustain the natural canal.

Man-made Drainage System

Provision of this type of drainage is a part of the activities of municipal authority or any other local government and also donor agencies. As a local government body, Mathbaria Paurashava is responsible to provide drainage system to carry out the domestic as well as storm water. Mathbaria Paurashava has a total of 5.61 km drainage system. The municipality is also responsible for its operation and maintenance within its jurisdiction.

Tertiary Drain

Tertiary drains are local drains. Tertiary drains cover smaller storm drainage area than primary and secondary drains. In ascending order its position is third. Its cross-section is larger than other types; carrying capacity is high and is constructed of brick, cement concrete and sometimes reinforced concrete. Primary drains may be of earthen structure provided sufficient

land is available and land value is low. Contributing drainage water comes from households. Tertiary drains discharge this drainage water to secondary drains and natural khals.

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 bigger than tertiary drains, its catchment area is smaller than primary drains, bigger than tertiary drains. It may run parallel to bigger roads. Secondary drains may run along and through the middle of its storm water contributing area.

Primary Drain

Primary drains carry run-off or storm water to the destination. Their catchment area or storm water contributing area is bigger than Mohallah drains. In most municipal areas or even in Dhaka City Corporation it is difficult to find such naming or classifications. However such classifications can be seen in reference books. Primary drains generally are the under jurisdiction of municipality and city corporation. These drains or drainage networks are constructed and maintained directly by municipalities and City Corporation. These drains are constructed by brick, cement concrete and sometimes by excavating earth in their alignments. Sometimes borrow pits of the road serves as drains provided borrow pits are uniformly and continuously excavated. Primary drains deliver its discharge usually to secondary drains.

Outfall of Drains

There is no formal outfall of drains in the study area. The primary drains mainly discharge storm water to the nearby khals and boro pits and these outfalls are not formally designed. Through the physical infrastructure survey and extensive field observation the consultant has identified outlets to the Machua and other khals that pass as spider web through the Paurashava. Most of the katcha drains are close ended without any outlet causes overflows in the road.

Capacity and Gravity

Capacity and gravity of these drainage channels are not sufficient to carry the excessive rainwater that usually accumulates in this locality during monsoon. Besides, inadequate drainage sections, in conventional drainage system, absence of inlets and outlets, indefinite drainage outlets, lack of proper maintenance of existing drainage system, hampers the natural flow of water. Therefore, water remains stagnant in roads and built-up areas creating water logging. Through the physical infrastructure survey and extensive field observation the consultant has identified outlets that pass as spider web through the Paurashava. Most of the katcha drains are close ended without any outlet causes overflows in the road.

3.1.8.7 Waste Management Logistics

The entire Mathbaria town has only a few dustbins to collect solid waste. The garbage is carried by two garbage trucks and the waste is dumped in ditches and waterbodies within and outside the city. The town does not have any formal dumping ground.

3.1.9 Environmental Issues

In environmental study, a multi-disciplinary approach is used for any development project. The present environmental survey has initiated data collection and sharing with drainage and geology, transport engineering, socio-economic, and topographical survey components. A structured questionnaire prepared by LGED for environmental survey has been followed.

Air Pollution

As Mathbaria Paurashava is a small town with rural environment as a result it is almost free from air pollution. Sometimes, abandoned and broken public toilets causes misery for the Mathbaria bazaar going and return people.

Water Pollution

There is large number of ponds in the area, numbering about 945. They serve as important sources of water supply for the local inhabitants and pure drinking water source is the main problem for Mathbaria Paurashava. **Map- 3.2** shows the location of water bodies including drainage network in the Paurashava. Ground water contains Iron and Arsenic (Source: DPHE, Mathbaria, 2012). One of Paurashava sources reported that, nearly 60% of the tube wells are iron contaminated and the provision of deep tube well is not possible because of the presence of salinity in the ground water. The sources of surface water (ponds and ditches only) are polluted by domestic waste, unhealthy sanitation and extensive use of fertilizer in the agriculture production.

Water Logging

Mathbaria is more or less free from water logging problem though a limited extensive water logging problem occurs at low laying areas with duration of 5-7 days and it mainly occurring between June to November every year when there is heavy rains.

Land Pollution

Main reasons for land pollution in Mathbaria are extensive use of fertilizer in the agriculture, waste water discharge on the land, water logging and market and domestic waste disposal on the land. Many latrines of households are connected to drains which create a severe environmental problem.

Noise Pollution

There is no factory, extremely little vehicular traffic and a very small number of populations. So it is free from noise pollution.

Fire Hazard

Mathbaria Paurashava is almost free from fire hazard. Sometimes a minor scale fire accident is occurred. Setting up of a fire station in the town is already under consideration.

Diseases

The common diseases of the inhabitants in this Paurashava are usually the seasonal diseases. From the over all survey findings it has been revealed that the inhabitants of the Paurashava do not face any severe environmental problem.

3.1.10 Population

This section of the Report contains the analysis of demographic elements of the Paurashava. The study is based on household based socio-economic survey and population collected from census reports and other sources. **Table- 3.2** Gives the ward-wise population distribution of the study area with data from the last population censuses.

Table- 3.2: Population Distribution

Ward No.	Area (acre)	Households	Population		
			Male	Female	Total
1	169.56	334	838	727	1565
2	69.60	587	1115	1166	2281
3	262.55	695	1355	1489	2844
4	40.63	277	582	465	1047
5	116.28	600	1275	1232	2507
6	82.06	401	786	925	1711
7	85.19	523	1142	1126	2268
8	205.97	506	1065	1142	2207
9	93.08	407	966	979	1945
Total	1124.92	4330	9124	9251	18375

Source: BBS 2011, Community Series, Zila: Pirojpur, 2011, BBS 2011 and Field Survey, 2012

Age and Sex Structure

From the field survey it is found that about 27.70% of all the households' members irrespective of sexes of Mathbaria Paurashava are within the age group of 18-34 years which is followed by 22.99% within the age group of 35 – 59 years and 13.39% within the age group of 10 – 14 years. It is noticed that economically active population that is within the age group of 18 – 59 years are prominent and they are in need of having job opportunities at the Paurashava level.

Again, 50.69 % of the male households' members of Mathbaria Paurashava are within the age group of 18-59 years which is followed by 43.14% within the age group of below 18 and 6.17% above 59 years. It signifies that the economically active population that is within the age group of 18-59 years is in need of having job opportunities at Mathbaria town.

Household Size

Average size of households of Mathbaria Paurashava is 4 and plus. This indicates the culture of having small nuclear families which shows urban life characteristics.

Marital Status

In the Paurashava 48.40% of male and 35.44% of female population of age 10 years and over was never married. In the same age group percentage of currently married males and females were 51.04% and 56.67% respectively and percentages of widowed and divorced mail were 0.26% and 0.02%.

Population Growth Rate and Density

Mathbaria is one of the largest Upazila of Pirojpur Zila. Growth rate is parallel compared to other Paurashava of Pirojpur. Growth Rate of Mathbaria Paurashava is calculated on the basis of total urban population of the upazila over the year 2001-2011. On the basis of urban population 2001-2011 of Mathbaria Upazila, annual population growth rate of Mathbaria Paurashava is 1.78%.

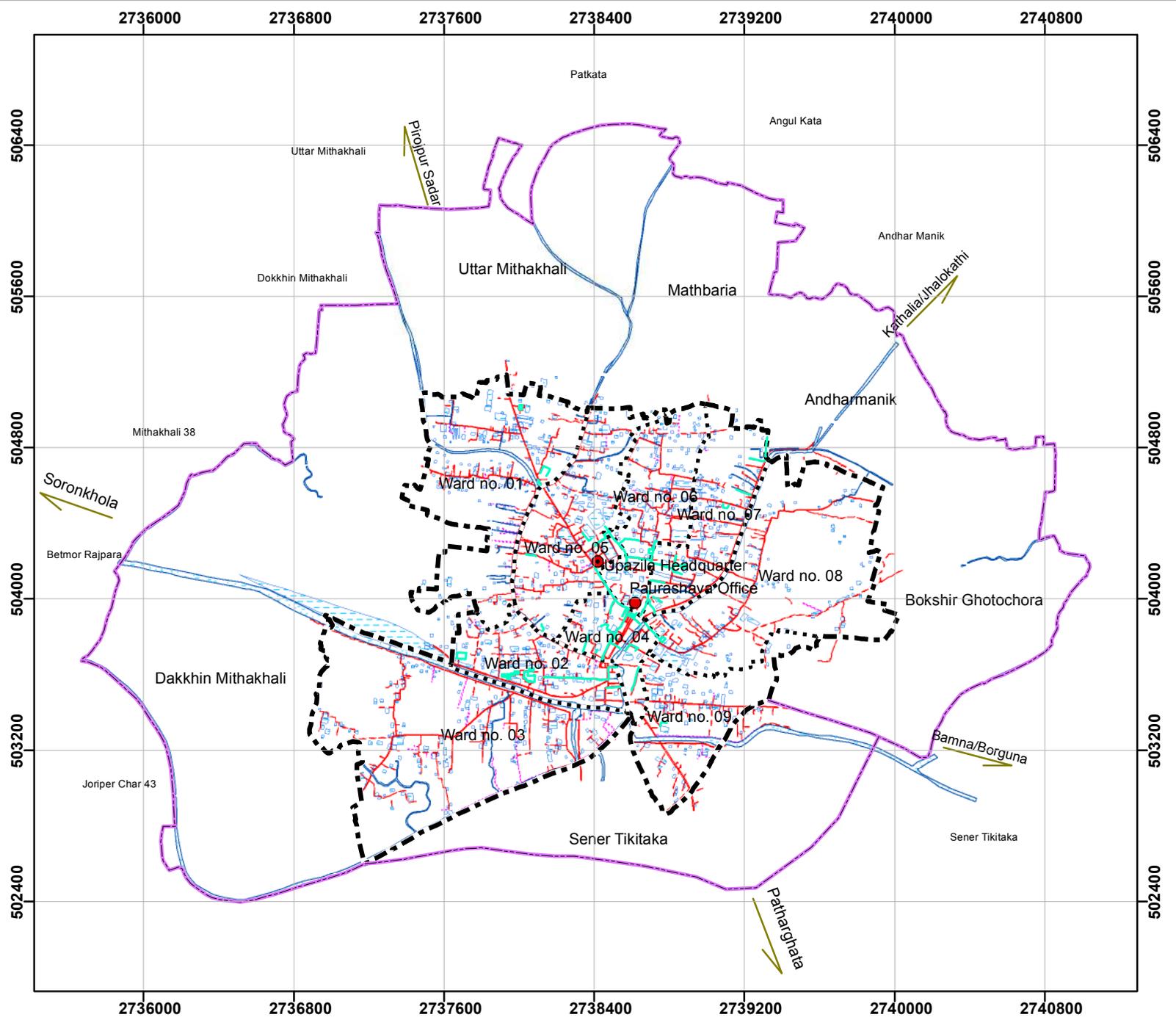
Migration Pattern: Duration of Stay in the Town

Survey report depict at Mathbaria Paurashava about 14% of the total households come from other places.

As far as the duration of migration of the households is concerned, all the migrated households have come after 2000 to Mathbaria Paurashava area. Notably, in Ward no. 1, 3, 4, 5 and 9 of Mathbaria Paurashava migratory households are mainly concentrated.

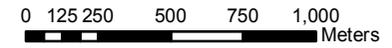
Map 3.2

Location of Waterbodies Including Drainage Network



SCALE

1:29,500



LEGEND

- Paurashava Office
- Upazila Office
- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary
- Pond
- Khal
- Ditch
- Existing Drain
- Existing Road**
- Katcha
- Pucca
- Semipucca

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No. 11 (Barisal Region)

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In Association with



The most common reason of the in-migration of the households to Mathbaria Paurashava is the service. Moreover, better education facilities and business have also significant contribution behind migration.

Education

A small percent (5.7%) of household heads are illiterate (20% in Ward No. 3, 40% in Ward No. 5 and 33.3% in Ward No. 6). No illiterate people in all the Wards except Ward No. 3, 5 and 6. Reading between Classes-VI to X is the highest educational achievement in the Paurashava (28.3%). SSC level (15.1%), HSC (13.2%) and Graduate (15.1%) is quite higher than other Paurashavas in Pirojpur. There are few masters degree holders (1.9%) in the study area and they are found in the Ward No. 1.

It has been observed that the literacy rate (61.7%) of Mathbaria Paurashava is not satisfactory with compared to Pirojpur Zila but satisfactory with compared to National level for both male and female.

Religion

In the Paurashava, Muslims are major religious group (90%) followed by Hindus (10%). During the field survey, no Buddhist and Christian households are identified.

Income and Expenditure

Present population distribution and growth including migration shows that the area is developing significantly in terms of trade and large business and trying to get out of agriculture based activity. Income ranges basically support this concept which is evident by the ranges of income earned by households. In Ward No. 9, 46% household earns Tk.9001-12000 compared to 36% within Tk.6001-9000 per month. There are good numbers of households who earn Tk.12000+ per month. Tk.9001-12000 income group is dominant income group in the Paurashava (34%) followed by the Tk. 6001-9000 (30%). On the other hand, average monthly income per household is highest (Tk.15667) in Ward No. 6 and lowest (Tk.7800) in Ward No. 5.

Since Mathbaria Paurashava still has rural influences and agriculture is the second source of income and average monthly income remain small; food relatively stands higher in expenditure list; Tk.4086 per month in the Paurashava as a whole. Important finding is that, there is lowest expenditure for water and recreation in all the Wards of the Paurashava. The residents of the Paurashava save a little money which is clear from the comparison between average household monthly income and expenditure. People of the Ward No. 6 save highest amount of money (Tk.7050). Lowest savings is found in the Ward No. 2 and 3.

3.1.11 Paurashava Institutional Capacity

3.1.11.1 Human Resource Management: Allocated Manpower/Organogram

Mathbaria is a “A” class Paurashava. According to Paurashava manual as a “A” class Paurashava, there should have been 162 official/staffs with other pump operator/guard, teachers-staffs and librarian and contractual sweepers in Paurashava to manage the engineering, administrative, health, family planning; conservancy works. In this organogram Mayor is in top position. Chief Executive Officer (CEO) will coordinate the three major divisions. These divisions are Engineering Division (Headed by Executive Engineer), Administrative Division (Headed by Secretary), Health, Family Planning and Conservancy Division (Headed by Medical Officer). In this organogram both full time and contractual official will be engaged. After analyzing the existing organogram of Mathbaria Paurashava it is found that there is a gap between the standard manpower and existing manpower.

Existing Manpower of the Paurashava

Existing Manpower of Mathbaria Paurashava is comprised with 1 elected Mayor and 3 Major Departments. These are:

1. Engineering Department
2. Administrative Department
3. Health, Family Planning & Conservancy Department

On the basis of organogram, these three departments should comprise of 68, 54 and 33 persons respectively and total 162 official/staffs with other pump operator/guard, teachers-staffs and librarian and contractual sweepers should have but at present there are total 74 officials/staffs with other 5 contractual teachers, 1 moulvi and 43 contractual sweepers in Mathbaria Paurashava. It has been observed that, there are shortage of Sub-Assistat Engineers and other technical staffs in Engineering Department and there is no town planner. Administration Department and Health, Family Planning and Conservancy Department also have shortage in manpower. There is at least 54% shortage of manpower comparing with the standard organogram. Existing Manpower of Mathbaria Paurashava has presented in **Table 3.3**.

Table-3.3: Existing Manpower of Mathbaria Paurashava

Departments	Branches under individual Departments	Existing Manpower	No. of Post				
			Designated	Existing	Vacant		
Engineering Department	Head of the Department	Excutive Engineer	1	1	-		
	Assistant Head	Assistant Engineer	1	1	-		
	Town Plan	Town planner	1	-	1		
	Slum	Slum Improvement Officer	1	1	-		
	Water Supply & Sewerage	Sub-Assistant Engineer/Water Super	1	-	1		
		Bill Clerk	1	-	1		
		Mechanic /Pump Driver/Valve Operator	2xPump, 1xPump	-	2xPump, 1xPump		
		Pipe line Mechanic	5	-	5		
		Tub well Mechanic	3	1	2		
	Public works, Electricity & Mechanical	MLSS		1	1	-	
			Sub-Assistant Engineer	Civil	1	-	1
				Mechanical	1	-	1
		Electrical		1	-	1	
		Cartographer/Draftsman	1	1	-		
		Community Worker	2	-	2		
		Store Keeper	1	1	-		
		Typist	1	-	1		
		Store Keeper	1	-	1		
		Surveyor/Sub-over shier	2	1	1		
		Lower Division Assistant/Typist	1	1	-		
Work Assistant		4	4	-			
Street Light Investigator		2	1	1			
Electricians	4	1	3				

**Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan**

Departments	Branches under individual Departments	Existing Manpower	No. of Post		
			Designated	Existing	Vacant
		Lineman	5	2	3
		Electricity Helper	3	2	1
		Jeep Driver	1	1	-
		Road Roller Driver	2	1	1
		Mixer Machine Operator	1	-	1
		Photocopy/Duplication Machine Operator	1	-	1
		Truck/Tractor Driver	5	1	4
		Truck Helper	5	1	4
		MLSS	3	3	-
Administration Department	Head of the Department	Secretary	1	1	-
	General	Administrative Officer	1	1	-
		Head Assistant	1	1	-
		Upper Division Assistant	2	1	1
		Shut Typist/ PA	1	-	1
		Shut Typist	1	-	1
		Store Keeper	1	-	1
		Lower Division Assistant/Typist	2	-	2
		Jeep Driver	1	-	1
		Photocopy/Dpli. Machine Operator	1	-	1
		MLSS	3	3	-
		Guard	2	-	2
		Gardener	2	1	1
		Night Guard	2	1	1
		Accounts	Accounts Officer	1	-
	Accountant		1	1	-
	Accounts Assistant		2	1	1
	Cashier		1	1	-
	MLSS		1	1	-
	Assessment	Tax Assessor	1	1	-
		Assistant Assessor	4	2	2
		MLSS	1	-	1
	Tax Collection/ License	Tax Collector	1	1	-
		License Inspector	1	1	-
		Assistant License Inspector	3	2	1
		Assistant Tax Collector	10	8	2
		MLSS	1	-	1
	Paura Market	Market Inspector	1	1	-
		Collector	4	2	2
	Education/ Culture/ Library	Education and culture officer	1	-	1
		Librarian (if required)	1	1	-
		Teacher	5	-	5
Other Staffs (per		3	-	3	

**Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan**

Departments	Branches under individual Departments	Existing Manpower	No. of Post		
			Designated	Existing	Vacant
		secondary school)			
		Teacher	5	-	5
		Other Staffs (per higher secondary school)	3	-	3
		Teacher	8	5	3
		Other Staffs	4	-	4
Health & Family Planning Department	Head of the Department	Medical Officer	1	-	1
	Conservancy Department	Conservancy Inspector	1	1	-
		Supervisor	4	2	2
		Sweeper	Contractual	43	
	Health services	Sanitary Inspector	1	1	-
		Slaughterhouse Inspector	1	1	-
		Moulvi	1	1	-
		Health Assistant	4	1	3
		Lower Division Assistant/Typist	1	-	1
		Vaccine Supervisor	2	1	1
		Vaccinator	10	9	1
		Health Visitor	5	-	5
		MLSS	2	1	1
Total			162+	74	88

Source: Mathbaria Paurashava, 2013

As a traditional system of the Paurashava, engineers 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.

3.1.11.2 Annual Income Revenue Management

Governance of Bangladesh Paurashavas' is relatively weak, lacking effective citizen participation, accountability and financial management. Another important problem is centralization of power practice over the Paurashavas. The Paura Authorities are very much dependent on Central Government to make major financial decision because of malpractice of state power by other line government institutions and lack of Paurashava financial capability. Paurashava's are governed by elected Mayor and Councilors. The Mayor tends to dominate decision making on different aspects of Paurashava management, with little responsiveness and accountability to the public. It is required to ensure the financial management of Paurashava which will ensure the financial sustainability and governance of Paurashava. For this, generation of sufficient revenues from different sectors and also the proper utilization of generated revenues are necessary rather than dependency on budgetary transfers from the Central Government. In Mathbaria Paurashava there are three sections of income generation and expenditure. They are:

1. Revenue
2. Development
3. Project

The analyses of Mathbaria Paurashava Budget of different years have been conducted considering different sections.

Revenue Receipts

In most of the Paurashavas of Bangladesh the main income source is revenues from different sources. In Mathbaria Paurashava, on an average in each financial year about a significant percentage of income comes from this source.

It has been observed that income from the revenue of Paurashava was highest in financial year 2011-2012 and it is increasing by years. In respect of total income, the amount of total revenue income of the Paurashava from revenue in 2007-2008 was 10462405, in 2008-2009 was 12352990, in 2009-2010 was 15794059, in 2010-2011 was 17991059 and 2011-2012 was 30752900.

Holding Tax Collection

Holding Tax Collection is one of the important sources of revenue of Mathbaria Paurashava which contributes about 10-25% on an average in different financial years.

Holding tax collection is in a fluctuating condition with respect to percentage of total revenue income but it is growing with respect to amount and has sharply increased in the year 2011-2012 (about 25% of the total revenue). From this it can be realized that people are becoming more aware to give tax regularly. People have realized that the regular payment will ensure the -good service of government including road development, street lighting, provision of footpath, other social infrastructure etc.

3.1.11.3 Paurashava's Own Property

The total land under Paurashava includes the Paurashava office complex; Paurashava land includes bazar, market, etc.

3.1.11.4 Paurashava Town Planning Capacity

At present, the Paurashava has a town planning section but no appropriate manpower to prepare or implement town plan. It is recommended to create a Town Planning Section in the organogram directly under the Mayor. The section will be equipped with necessary computer and other logistics.

The responsibility of the Town Planning Section will be to oversee and monitor development control, environment, monitor development, identify Paurashava problems and opportunities for development and solve problems, monitor master plan implementation. Prepare new development projects and conduct research on issues and problems.

Paurashava Master Plan Implementation Capacity

The existing capacity of the Paurashava is not capable enough to implement the Paurashava Master Plan. The Paurashava must strengthen its capacity to implement its master plan when it will be completed. In the previous section a Town Planning Section has been suggested for the Paurashava. Its prime responsibility will be to monitor regularly implementation of the master plan recommendations. It will prepare monthly progress report on master plan implementation and keep aware the Mayor of the latest situation. The section will also explore ideas to implement master plan provision with the participation of the stakeholders.

3.1.12 Urban Growth Area

Paurashava is expanding along the big khal on north to south direction. There is a major road network which is connecting north and south part of Paurashava that also links the Paurashava with other areas of Mathbaria Upazila. Commercial development is already expanding along with the major roads.

3.1.13 Catchment Area

Catchment area of any urban centre is the area over which its influence extends. Study of catchment area requires extra efforts of survey. But since studying catchment area was not a part of the terms of reference, the consultant did not conduct any survey to ascertain the catchment area of the Mathbaria town. From observation, it is learnt that the zone of influence of such towns do not extend beyond a few kilometers wherefrom people commute to the town to purchase their daily necessities and for administrative, legal and other businesses. The zone of influence of Mathbaria is very likely to be overlapped because of the proximity of other small towns nearby.

3.1.14 Existing Land Use

The land use of the project area has been categorized into 12 classes as prescribed by the client. The data has been analyzed ward wise. For determination of generalized land use pattern of the entire project area, all the land uses were surveyed. The existing land use reveals that agricultural land use type dominates the total project area land uses.

In respect of Paurashava area, it has been found that the highest land use goes to residential (488.03 acres) which is 43.30% of the total Paurashava land. The second major land use is agricultural occupying about 36.01% (405.93 acres). Besides, there is about 11.05% water body, about 3.25% circulation network, about 1.61% commercial activities and otherwise about 4.78% of lands are being used for education, community service, government services, manufacturing or industry, NGO activities, service activity.

Khas Land

Mathbaria Paurashava has total 87 acres of Khas land (Mathbaria Paurashava, 2013) accordingly at Uttar Mithakhali mouza (22.27 acres), Dakkhin Mithakhali mouza (36.93 acres), Mathbaria mouza (14.70 acres) and Bakshir Ghotichora mouza (13.10 acres). But the authority of Mathbaria Paurashava was not able to provide mouza dag (plot number) specific information about khas land. However, the Consultants proposes to utilize the existing available khas land of Mathbaria Paurashava.

Residential

Residential use includes urban housing, rural homestead/settlement, flats, Government Quarters, mess/boarder houses, detached and semi-detached houses and informal housing (comprising thatch, katcha and semi-pucca structures) areas. Most residential areas are of informal type means that they were not developed in a planned manner.

Residential land occupied 488.03 acres or about 43.30% of the Planning Area. The survey reveals that residential category is the first major dominated land use. As per Ward-wise statistics, Ward No. 3 occupied highest amount of land (85.75 acres) and Ward No. 4 is minimum (15.04 acres).

Commercial

One hat / bazar is found in the Paurashava in unorganized nature. The bazar is developed naturally through generations and prominent due to its availability of agro-product and fish. People from different Upazilas, Zilas and Capital City accumulate in that bazar as a buyer. A layout plan will be necessary for improvement of the bazar and it will incorporate in the Master Plan.

Land uses under this category are retail and wholesale shopping areas and all categories of ribbon commercial developments formed along the major roads. In the Paurashava, there are large numbers of retail shops, kitchen market, weekly hat and semi-wholesale markets. Extent of commercial land use depends on the size of consumers. Most of the commercial activities are agglomerated in Ward No. 2 and 4 where 5.26 and 7.00 acres of land are using for commercial purposes. All of those Wards are the core areas of Mathbaria Paurashava. In total 18.11 acres or 1.61% of land is using for commercial purposes.

Agricultural

Agricultural land use includes paddy field, cropland, grazing land, horticulture, orchard, etc. It constitutes 78.6% of total land of the Paurashava. The rural agricultural land uses are spread over the entire Planning Area.

Existing Agricultural Landuse of Mathbaria shows that in Ward No. 3 agricultural land use occupied 135.08 acres out of the total land (405.93 acres) under this category. At the same time, Ward No. 8 and 1 are occupied 106.14 acres and 84.19 acres respectively.

Waterbodies

There is one launch terminal at the outside of Mathbaria Paurashava which is also used as Ferry Ghat. Launch terminal is located at north western part of Mathbaria Paurashava. Water transport network of Mathbaria Paurashava has significant importance in carrying both people and goods. Launch and trawler are used for carrying both passenger and commodity frequently.

Transport and Related Use

This category covers an area of 36.60 acres of land or 3.25% of the Planning Area. The highest amount of road coverage is found in the Ward No. 3 (6.69 acres), next in Ward No. 5 (5.33 acres). Ward No. 4 (2.80 acres) is the lowest position of this category.

Community Service

Community services cover such land uses as, community centre, bazar, social organisation, Mosque, etc. About 4.31 acres of land comprising 0.38% of the total area belong to this category.

Service Activity

Paurashava and other service areas provide various utility services at the town level. They have their own establishments. Important of them are fire service, post office, telephone exchange, power sub-station, police station and police out post, etc. All these facilities together cover about 8.72 acres.

3.1.15 Paurashava's Functional Linkage with the Regional and National Network

The Paurashava itself and its citizens are functionally linked with regional and national activities in many ways. This linkage is operated by means of direct communication and through different media. Mathbaria Paurashava is linked with Dhaka through Jhalkathi and Barisal. The existing road of this route is narrow and tortuous to Barisal.

Vandaria, Kawkhali and Pirojpur Sadar are the nearest upazilas and Sadar through MathbariaBazar.

Motorized and non-motorized vehicles are operated in all the nodes of the study area. The non-motorized vehicles are mainly operated within short distance and meet the local needs. The motorized vehicles are mostly local passenger buses and local popular CNG operated autos and human halers. The other popular and easy accessible mode is motor cycle. Existing transportation system is dominated by road network catering to the passenger service and freight transport.

The relationships are there in government services and private sector activities. There are many public sector agencies at the Upazila level under different ministries. These offices take instructions from their concerned ministries, either over telephone or by postal services. Similar way the private business and other agencies also maintain their communication with their head offices at Dhaka. For judicial and land related services common people go to the Zila courts at Pirojpur and land offices at the DC Office.

Many business companies, apart from their head offices at Dhaka, maintain regional offices for convenience of business operation. Such offices are usually located in comparatively nearby larger district towns like, Pirojpur and Barisal. Importers and exporters communicate with Chittagong City and port and even with Mongla port for export import. Physical growth of Mathbaria Paurashava town depends on the road pattern of the Paurashava.

3.1.16 Role of Agencies for Different Sectoral Activities

Agencies responsible for utility facilities and municipal services are an important component for an area who playing their roles in local development. Utility services include water supply, gas supply, electric supply, sewerage and drainage system, telecommunication system, fire services, solid waste management, etc. Almost all national government ministries have their Upazila level offices that are located in the Upazila headquarters town. The concerned departments / organizations responsible for planning and development of utility services are shown in the following table.

Table-3.4: Agencies responsible for sectoral activities

Sl. No.	Sectors	Responsible agencies
1.	Electricity Supply	Power Development Board (PDB)/ 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

All these offices are headed by an officer and staff and they are responsible to execute the development programmes of the concerned ministries at the grassroots level. They also convey to the head office about the impacts of the programmes and problems of existing in the field and

the problems of programmer operation. Some Upazila offices are controlled by the Zila level offices while some are controlled from the head offices at Dhaka.

The authorities (as presented in the Table-3.4) 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.

3.2 Development Problems of the Paurashava

3.2.1 Physical Infrastructure Problems

Road and Transportation Problems

As any other town, Mathbaria has its own road and transportation problems. These problems have been identified from two different sources-first, by reconnaissance survey of the town, field observation, passenger and operator interview and the by means of household sample survey.

Traffic Conflict

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

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

Road Accident

Mentionable accidents were not occurred recently in Mathbaria. Only a minor accident occurs sometimes in Mathbaria. Local police station and Upazila Health Complex could not provide any statistical information about road accident.

Narrow Road Width

Most roads are narrow in the Paurashava like, Main Bazar roads, road in front of Upazila road, etc. In those roads Rickshwas, motorcycle, bicycle, pedestrians, etc. are the major traffic. In the peak period those roads remain very busy because of shops, markets, mixed uses, etc. Narrow widths of roads and poor maintenance are major road problems in the town. About 99% of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Broken road of roads is likely to become a major problem (75.61%) following the problem of narrow road width (18.97%) of traffic movement when the town grows and density of population increases in future. As field survey shows, 79.64% of the households of the town

reported that the road widths in front of their houses are 8 ft. or less and maximum (69.16) of the roads are of katcha. This is alarming, as there will be increase in population leading to higher density.

This will cause traffic on the street to rise that will create serious traffic congestion on the narrow streets. There is little chance that the authority will be able to increase the road width in highly built up areas- especially at the crossing points of main bazaar area, as there will be high cost involvement and social-pressure on any attempt to demolition will be very high.

About 25% of the households reported of having pucca roads in front of their houses, which is an example of poor works by the Mathbaria Paurashava. When asked about the problem of roads, 98.80% household respondents answered affirmative. Indicating to major road problems, they pointed to narrow width of roads, flooding of roads during monsoon, poor condition of roads due to lack of maintenance, traffic congestion at particular points of the town.

3.2.2 Socio-economic Problems

The Mathbaria Paurashava suffers from a number of socio-economic problems. Important of them are highlighted below.

a. Low level of Education

The survey findings show that over 10.67% of the surveyed households have education upto secondary level. It indicates higher level of drop outs at the lower tier of education. It has been found that poverty is the main reason for high level drop outs at lower level.

b. High Dependency Rate

Mathbaria Paurashava has a high level of dependency rate. Socio-economic survey reveals that only about 36% of the people are engaged in formal earning activities. These activities are likely, Government/Autonomous, Private Company, Self employed, Business, NGO Person, Skilled Labor, Labor, Driver, Rickshaw/Van Pullar, Household worker, Day Labor (Agri), Farmer (Land Lord), Farmer (Land Less), Day Labor (Non-agri) and Others. Fully unemployed persons are of 7.87%. Though housewives are not unemployed, but they are actually dependent with our socio-cultural perspective and it is a significant 16.67%. Students are of 32.05% which is also dependent. As a whole, there is about 61.68% of people who are directly or indirectly dependent.

c. Low level of Working Force

There is about 61.79% of total population who are belongs to working group as per working force between 16 to 55 age at Mathbaria Paurashava and remaining about 38.21% of population lies under nonworking group. The situation of Mathbaria Paurashava is that most of the female population belongs to unemployed. This is about 39.63% of total populations who are female and lies between non working groups. As a result the actual percentage of working people is about 38.37% of the total existing population. This means that, there is a very low level of working force in Mathbaria and it is alarming.

d. Urban Poverty

Field survey shows a higher percentage (40%) of household of Mathbaria are living below the poverty level that is their monthly income is less than or equal to 5000. Present population distribution and growth including migration shows that the area is developing significantly in terms of trade and large business and trying to get out of agriculture based activity. Income ranges basically support this concept which is evident by the ranges of income earned by households. In Ward No. 9, 46% household earns Tk.9001-12000 compared to 36% within Tk.6001-9000 per month. There are good numbers of households who earn Tk.12000+ per month. Tk.9001-12000 income group is dominant income group in the Paurashava (34%)

followed by the Tk. 6001-9000 (30%). On the other hand, average monthly income per household is highest (Tk.15667) in Ward No. 6 and lowest (Tk.7800) in Ward No. 5.

e. Active and Passive Recreation Facilities

The Paurashava has no public play field and recreational park to facilitate outdoor recreation of the Paurashava people, particularly the young and the juvenile. It has only a few small institutional play fields.

3.2.3 Environment

Drainage Management Problems

The condition of drainage maintenance service in the Paurashava is not satisfactory. The drains are not properly connected that often causes water flow blockage leading to pool of stagnant water at places. During the heavy rainfall the effects of inadequate drainage system become visible. There is no serious attempt to clear drainage encroachments and opening up the system. Powerful encroachers often hinder any such attempts. As a result problems of the primary drains remain unresolved.

The natural khals in the Paurashava serve as the primary drains, but in most areas substantial parts of natural drainage khals have either been filled up or have gone to unauthorized occupation by the adjacent land owners. In busy commercial areas the khals are getting filled up as people indiscriminately throw trash into them. There is no measure by any authority to prevent such practices. There is no regular maintenance or excavation of the drains/khals. Blockages at various points' causes' disruption in drainage water flow that results in water logging in many parts of the Paurashava during monsoon.

Waste Management

There is no network and treatment based sewerage system in the Paurashava. There is no formal dumping ground and formal solid waste management system of Mathbaria Paurashava authority.

Water Supply

Due to salinity and iron contamination of the ground water, drinking water is a critical problem in the town. Most people use surface water from ponds. But with the advent of urbanization these ponds are likely to get filled up as land prices go up. Besides, in the face of increasing population the existing ponds are unlikely to serve as the only sources of water supply for the constantly growing population. This will create problem regarding water supply in the town in future.

Chapter Four

PROJECTION OF FUTURE GROWTH BY 2031

4.1 Introduction

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

The population figures collected from secondary sources, especially for Paurashava were very much ambiguous. So for the final projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2011 Population Census, the projection upto the year 2031, with five years interval has been made.

The data gathered from the several sources were arranged in different formats according to their requirement and analysis. So, comparison of data between different sources is very difficult. When it is calculated for the projection, the output shows different results.

Migration information is not available in population census by BBS. It only considers the natural growth rate. But actual population projection requires both natural growth rate and migration rate. For unavailability of migration rate, population projection becomes very difficult. To avoid this problem, an alternative population projection method has been used as stated below.

4.2 Projection of Population

It is difficult task to collect information on population. The details of how the estimation of population is made have been discussed below.

Basis of population projection

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

On the other hand, the difference of data from different secondary sources also makes the job more problematic. The population figures collected from secondary sources especially for Paurashava were very much ambiguous. So for the final projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2011 Population Census, the projection upto the year 2031 with five years interval has been made. Population census 2011 has been selected as the base year population for Mathbaria.

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

$$P_n = P_o (1 + r)^n$$

where,
 P_o = the base year population,
 P_n = the projected year population,
 n = time period,
 r = annual growth rate.

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

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

On the basis of the above formula ward wise population of Mathbaria Paurashava has been estimated upto the year 2031 with a five year interval. We have made three projections with three different growth rates- 1.78, 2.78 and 3.78 as presented in Table-4.1, Table-4.2 and Table-4.3 respectively. For planning purpose the projection based on 2.78 as growth rate will be considered so that the data has been generated from BBS, 2011.

Table 4.1: Population Projection with Low Growth Rate for Mathbaria Up to 2031

Ward No.	BBS 2011	Projected Population at Different Years			
		2016	2021	2026	2031
1	1565	1709	1867	2039	2227
2	2281	2491	2721	2972	3246
3	2844	3106	3393	3706	4047
4	1047	1144	1249	1364	1490
5	2507	2738	2991	3267	3568
6	1711	1869	2041	2229	2435
7	2268	2477	2706	2955	3228
8	2207	2411	2633	2876	3141
9	1945	2124	2320	2534	2768
Total	18375	20070	21921	23942	26150

Annual growth rate is 1.78% (BBS 2011)

Table 4.2: Popⁿ Projection with Medium Growth Rate for Mathbaria Up to 2031

Ward No.	BBS 2011	Projected Population at Different Years			
		2016	2021	2026	2031
1	1565	1795	2059	2361	2708
2	2281	2616	3001	3442	3947
3	2844	3262	3741	4291	4922
4	1047	1201	1377	1580	1812
5	2507	2875	3298	3783	4338
6	1711	1962	2251	2582	2961
7	2268	2601	2984	3422	3925
8	2207	2531	2903	3330	3819
9	1945	2231	2559	2935	3366
Total	18375	21075	24172	27724	31798

Annual growth rate 2.78%, estimated by Consultant

Table 4.3: Population Projection with High Growth Rate for Mathbaria Up to 2031

Ward No.	BBS 2011	Projected Population at Different Years			
		2016	2021	2026	2031
1	1565	1884	2268	2730	3287
2	2281	2746	3306	3980	4791
3	2844	3424	4122	4962	5973
4	1047	1260	1517	1827	2199
5	2507	3018	3633	4374	5265
6	1711	2060	2480	2985	3594
7	2268	2730	3287	3957	4763

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

Ward No.	BBS 2011	Projected Population at Different Years			
		2016	2021	2026	2031
8	2207	2657	3198	3850	4635
9	1945	2341	2819	3393	4085
Total	18375	22121	26630	32058	38592

Annual growth rate 3.78%, estimated by Consultant

For planning purpose, the projection based on medium growth rate that is 2.78% has been taken. The projection has been generated from BBS, 2011. The existing population of Mathbaria Paurashava is 18375 in 2011 within an area of 1124.92 acres. With an annual growth rate of 2.78% the forecasted population of Mathbaria Paurashava will be 31798 in the year 2031. The gross density of the area will be 28 ppa (person per acre). Due to the maximum concentration of residence in Ward no. 02 the density of population will also be higher (57 ppa) in this zone.

Table- 4.4: Gross population density of some areas

Ward No.	Area (Acre)	Population	Density /Acre
1	169.56	1565	9
2	69.60	2281	33
3	262.55	2844	11
4	40.63	1047	26
5	116.28	2507	22
6	82.06	1711	21
7	85.19	2268	27
8	205.97	2207	11
9	93.08	1945	21
Total	1124.92	18375	15
National (2011*)	147570 skm	144043697	4
Barisal Division (2011)	13225.20 skm	8325666	2.5
Pirojpur zila (2011*)	1277.80 skm	1113257	3.5
Bhandaria Upazila(2011)	163.56 sq.km	148159	3.7
Kawkhali Upazila(2011)	79.56 sq.km.	70130	3.6
Mathbaria Upazila(2011)	344.23 sq.km	262841	3.1
Nazirpur Upazila(2011)	228.69 sq.km	180408	3.2
Nesarabad Upazila(2011)	200.33 sq.km	211032	4.3
Pirojpur Upazila(2011)	166.81 sq.km	163470	4.0
Zianagar Upazila(2011)	94.59 sq.km	77217	3.3

Source: BBS 2011, Community Series, Zila: Pirojpr, 2011, BBS 2011 and Field Survey, 2011

* Projected Population considering National annual growth rate 1.47% and Pirojpur zila growth rate 0.02%

Most of the Upazila level towns in Bangladesh are rural based urban settings. Characteristics of the residents are mostly semi-rural; permanent settler, ancestral land and less use of land than required make density minimum or towards rural. This type of expansion can be termed as 'wide horizontal growth' that actually misuses the urban land in comparison of scarcity of land and

population density of the country. One of the reasons is less pressure of migrated people due to agrarian economy or minimum non-agrarian economic opportunities. The table above shows that the maximum density of population in Pirojpur and Barisal region is 4.3 ppa in Nesarabad Upazila (2011). Even, gross density of Mathbaria Paurashava was below 20 (actually 15) during 2011. The main reason for this low density but more use of land as residential purpose is the rural type and horizontal development.

In context of residential area of Mathbaria, existing residential land will cover the requirement of land for next 20 years population demand, but in reality, most of the residential land is ancestral land that have minimum scope to accommodate a large number of migrated population coming to Mathbaria due to its future growth if the plan will be executed as assumed. The same situation will be found in most of the Bangladeshi small towns.

Vertical expansion is a must prescription considering land scarcity and population growth. Culture and legal options regarding land may act as hindrance to implement the prescription.

4.3 Identification of Future Economic Opportunities

Most of the entrepreneurs expressed their desire of implementing future development plan. A major portion mentioned that their development plan is the expansion of their enterprises (80%) and others intend to increase their production (20%). Expansion of existing industries and establishment of new industries will create more jobs and thus have multiplier effect in the overall economy leading to create more consumption capacity, investment opportunities in diversified economic fields and thus push the economy upward.

Fresh fish and dry fishes are marketed all over the country. Investment in this field will bring huge prospects of the Paurashava. Other economic prospect summarizes in the following discussions:

- Availability of unskilled and cheap manpower.
- 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.
- The Paurashava has been developed as growth centre. Some cluster development is found around this growth centre. Planned development through the master plan will initiate to arrange the growth component in a systematic manner. At the same time, economic development parallel to the physical and social development will be encouraged.
- The town has good prospects to local economic upliftment provided appropriate government policies and initiatives are taken. People have money but they will have to be converted into capital. The following suggestions may be considered.

First, training on entrepreneurship development may be arranged for prospective young and educated entrepreneurs to encourage them to invest in manufacturing, in particular.

Second, there is tendency of the affluent to invest on land. Organised real estate can be developed with local initiatives. Banks may come up with credit in this sector. This will create new local employment in construction sector.

Third, local entrepreneurs may go for consumers goods production targeting local market. Ambitious investors may go further and invest in exportable or export substitutes taking advantage of the proximity of the Chittagong and Mongla Port and road transport facilities available.

Fourth, prospective investors may also explore possibilities of investment in agriculture sector for local as well as export market, particularly, in fisheries, poultry and horticulture.

4.4 Projection of Land use

4.4.1 Estimation of Residential Land Requirement

The present (2011) population of the planning area is 18375 as per growth rate of 1.78%. This gives a gross density of 16 person/acre.

The future housing area need to be based on a recommended planning standard of 100 persons per acre. With this standard, the estimation shows, the land required to accommodate total estimated population 31798 in the year 2031 will be 476.97 acres. But survey of existing land use has identified 488.03 acres of land currently under housing use with a medium density of population (about 28 persons/acre). The consultant, therefore, retrains the existing housing land for the population of the Paurashava in 2031.

Table- 4.5: Estimation of Housing Land Requirement

Use/Facility	Recommended standard	Projected Population 2031	Estimated Land Requirement	Existing Land (Acre)	Additional Land Requirement (2031)
General Housing	100 persons/acre	31798	317.98 acres	488.03	0
Real Estate (Public/Private)	200 person/acre		158.99 acres		0
Total		31798	476.97 acre	488.03	0

4.4.2 Estimation of Land for Business

There is hardly any reason to expect any sharp rise in business activities in next 20 years in the Mathbaria Paurashava. The current land under business/trading use is only 18.11 acres including bazaar, retail shops and business areas beyond the Paurashava. Considering a small annual increase of 2.78% in business activities each year, on average about 0.50 acres of additional land will be added to the existing commercial land use every year. So, there will be an increase of 12.38 acres by the year 2031 (19 years). Adding the current land (18.11 acres) under commercial use to the additional land the total land under business will be 30.49 acres in 2031. But if approved standard is followed than following is the standing in commercial land requirement, in total 48.72 acres (including 3.17 acres of wholesale market) of land will be needed by the year 2031. So total additional land will be needed about 30.61 acres as per standard. For the sake of relocating commercial activities and areas trough planning it is not possible to accept existing commercial area. It is therefore, recommended that 48.72 acres is allocated for commercial use.

4.4.3 Estimation of Land for General Industry

According to approved planning standard the total land for industries comes to 79.50 acres with 47.70 acres for small scale industries and 31.80 acres for cottage and agro based industries. We assume that the estimated land will cover BSCIC initiative to set up a 40-50 acres industrial estate in every Upazila shahar.

Therefore, in the years 2031, the estimated land for general industry and manufacturing will stand at 79.50 acres and the existing landuse of this purpose is 2.57 acres. So 76.93 acres of additional land will be required.

**Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan**

Table- 4.6: Estimation of Land Requirement for General Industries

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Small scale	1.50 acres /1000 population	47.70	0.00	46.41
Cottage/ agro-based	1.00 acres /1000 population	31.80	2.57	28.37
Total		79.50	2.57	76.93

The details of land requirement estimations as per recommended standard of UTIDP are presented in **Table-4.7** below:

Table-4.7: Gross land requirement by 2031

SI No	Land use categories	% use of total land area	Sub Categories	Planning Standard (Acre)	Projected Land Requirement (Acre) in 2031	Existing Land (Acre)	Deficiency /Surplus in the year 2031 (Acre)
1	Residential	45-55	General Residential	100- 150 person/acre	317.98	488.03	
			Real Estate (Public/Private)	200 person/acre	158.99		
		Total		476.97	488.03	+11.06	
2	Commercial	3-5	Whole Sale Market	1 acre/ 10000 population	3.17		
			Retail sale Market	1 acre/ 1000 population	31.80		
			Corner shop	0.25 acre/ per corner shop	2.25		
			Neighbour hood Market	1 acre/per neighborhood market	9		
			Super Market	1.50 – 2.50 acres/per super market	2.50		
			Total		48.72	18.11	30.61
3	Industrial	5-10	Small Scale	1.50 acres /1000 population	47.70		
			Cottage/Agro-based	1.0 acres /1000 population	31.80	2.57	
			Total		79..50	2.57	76.93
4	Administrative	3-5	Upazila Complex	15 acres	15	12.52	
			Paurashava Office	3-5 acres	5		
			Police Station	3-5 acres/Upazila HQ	3		
			Police Box/outpost	0.5 acre/ per box	4.00		
			Post office	0.5 acre /20,000 population	0.79		
			Telephone exchane office	0.5 acre /20,000 population	0.79		
			Jail/Sub-jail	10 acres/Upazila HQ	10		
			Total		38.58		
5	Educational	3-5	Nursery	0.5 acre/ 10,000 Population	1.59	15.68	
			Primary School /kindergarten	2.00 acre/ 5,000 Population	12.72		
			Secondary/ high school	5.00 acre/ 20,000 Population	7.95		
			College	10.00 acre/ 20,000 Population	15.90		
			Vocational Training centre	5 - 10 acres / Upazila	5		
			Other	5.00 acre/ 20,000 Population	7.95		
			Total		51.11		
6	Community Facility	5-10	Mosque/ Church/ Temple	0.5 acre/ 20,000 Population	0.79	4.31	
			Eidgah	1 acre/ 20,000 Population	1.59		
			Cyclone Shelter		5.00		

**Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan**

SI No	Land use categories	% use of total land area	Sub Categories	Planning Standard (Acre)	Projecte d Land Requirement (Acre) in 2031	Existing Land (Acre)	Deficiency /Surplus in the year 2031 (Acre)
			Community Centre	1 acre/ 20,000 Population	1.59	4.31	6.19
			Central Graveyard	1 acre/ 20,000 Population	1.59		
			Total		10.50		
7	Health	2-3	Upazila health complex/Hospital	10 -20 acres/Upazila HQ	10	8.72	7.64
			Health Centre/ Maternity clinic	1.00 acre/ 5,000 population	6.36		
			Total		16.36		
8	Utility Services	5-10	Drainage	As per local requirement	--	0.00	16.00
			Water supply	1 acre/20,000 population	1.59		
			Gas	1 acre/20,000 population	1.59		
			Solid waste disposal site	5– 10 acres/Upazila HQ	5.00		
			Solid waste transfer station	0.25 acre per waste transfer station	2.25		
			Fire Services	1 acre/20,000 population	1.59		
			Water Treatment Plant	1 acre/20,000 population	1.59		
			Electric Sub-station	1 acre/20,000 population	1.59		
			Total		16.00		
9	Open spaces & Recreational	10-12	Play field/ ground	3 acre/20,000 population	4.77	2.64	73.32
			Park	1 acre/1000 population	31.80		
			Neighborhood Park	1 acre/1000 population	31.80		
			Stadium/ sports complex	5 – 10 acres/Upazila HQ	6		
			Cinema/Theatre	1 acre/20,000 population	1.59		
			Total		75.96		
10	Transportation	10-15	Bus terminal	1 acre/20,000 population	1.59	0.50	6.52
			Truck terminal	0.5 acre/20,000 population	0.79		
			Launch/steamer terminal	1 acre/20,000 population	1.59		
			Rickshaw/van stand	0.25 acre per stand	2.25		
			Fuel Station	0.5 acre/20,000 population	0.79		
			Total		7.02		
11	Water Bodies	10-15	Must be preserve all water bodies above 0.20 acre			--	

Source: The Consultants' Estimation from Population Census 2011 and Planning Standard of UTIDP

4.4.4 Estimation of Land for Commercial Use

There is no reason to expect any sharp rise in commercial activities in next 20 years in the Mathbaria Paurashava. The current land under commercial use is only 18.11 acres including business areas beyond Paurashava that cover shopping and bazar areas. Market facilities are usually provided privately on commercial basis depending on trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. Field observations shows that most commercial areas are actually mixed areas combined with residence and small scale industry. So, instead of marking commercial areas exclusively for commerce use (that would never develop in this small town), it is better to term the area as mixed use area and allow it to develop as mixed use areas.

Table- 4.8: Estimation of Land Requirement for Commerce and Shopping

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Wholesale market	1.00 acre/ 10000 population	3.17	0.00	3.17
Neighborhood/ Local market	1.00 acre/per neighborhood Market	9.00	0.00	9.00
Retail sale Market	1.0 cres/ 1000 population	31.80	18.11	12.83
Corner Shop	0.25 acre/ per corner shop	2.25	0.00	2.25
Super Market	1.50 – 2.50 acres/per super market	2.50	0.00	2.50
Total		48.72	18.11	30.61

For the sake of current planning the land may earmark as per standard for commercial land use and put them at appropriate locations where mixed use facilities may be developed privately or publicly. The total required commercial land will stand at 48.72 acres. The extra land requirement will stands at 30.61 acres. Please see **Table-4.8** for details.

4.4.5 Education & Research

Estimation of land according to standard indicates there will be a land requirement of 51.11 acres to accommodate educational facilities by the year 2031. If we deduct the already available 15.68 acres of existing land uses under various education facilities there will be need of additional 35.43 acres of land for education facilities.

Table- 4.9: Estimation of Land Requirement for Education Facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Nursery	0.5 acre/10,000 population	1.59	15.68	35.43
Primary School/ kindergarten	2.00 acres/5000 population	12.72		
Secondary/High School	5.00 acres/ 20,000 population	7.95		
College	10.00 acres /20,000 population	15.90		
Vocational Training Centre	5 - 10 acres / Upazila	5.00		
Other	5.00 acres/ 20,000 population	7.95		
Total		51.11	15.68	35.43

4.4.6 Health Services

There already exists an Upazila health complex. The total area under health facilities in Mathbaria is 8.72 acres. Estimation shows 10.00 acres of land for the health complex according to recommended standard. The consultant feels that no additional land is required for the Upazila

health complex for Mathbaria. In future, as the population and density increases, additional 7.64 acres demand for health services (health centre/maternity clinic) will be required.

Table- 4.10: Estimation of Land Requirement for Health Services

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Upazila health complex/ hospital	10 -20 acres/ Upazila HQ	10.00	8.72	7.64
Health centre/ Maternity clinic	1.00 acre/ 5,000 population	6.36		
Total		16.36	8.72	7.64

4.4.7 Open Space

Field survey shows no public park or play field in the town for use by general public except play grounds in the premises of educational institutions. Total recommended land required for various open space recreation facilities stands at 75.96 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex.

Table- 4.11: Estimation of Land Requirement for Open Space

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Play field/ground	3.00 acres /20,000 pop ⁿ	4.77	2.64	75.43
Park	acre /1000 population	31.80		
Neighborhood park	1.00 acre /1000 population	31.80		
Stadium/ sports complex	5 – 10 acres/ Upazila HQ	6.00		
Total		75.96	2.64	73.32

4.4.8 Transportation Facilities

In the field of transport establishment the consultant proposes such facilities as, bus terminal, truck terminal, rickshaw stands at selected places, baby taxi/tempo stand and passenger shed for local bus users. However, many of the proposals may seem pre matured, but will be necessary in future. If land acquisition for these facilities is delayed, land may not be available in future for providing such facilities.

Table- 4.12: Estimation of Land Requirement for Transportation Facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Bus terminal	1 acre /20,000 population	1.59	0.50	1.09
Truck terminal	0.50 acre /20,000 population	0.79	0.00	0.79
Baby taxi/ tempo stand	0.25 acre /one baby taxi/tempo stand	2.25	0.00	2.25

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	2.25	0.00	2.25
Passenger Shed	0.25 acre /one baby taxi/tempo stand	2.25	0.00	2.25
Total		9.13	0.50	8.63

4.4.9 Government Offices

Mathbaria Paurashava has an own office building. Consultant considers that no additional land is required other than the present office building. Other Government Offices (Police Station, Police Box/Outpost, Fire Station, and Post Office) require land as per following table:

Table- 4.13: Estimation of Land Requirement for Administration

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Upazila Complex	15.00 acres	15.00	12.52	12.79
Paurashava Office	3 – 5 acres	3.00		
Police Station	3 – 5 acres/ Upazila HQ	3.00		
Police Box/outpost	1.00 acre/Box	2 x 1.00 = 2.00		
Fire Station	1.00 acre/ 20,000 Pop ⁿ	1.59		
Post office	0.5 acre / 20,000 Pop ⁿ	0.79		
Total		25.35	12.52	12.83

4.4.10 Community Facilities

For various community facilities, the land requirement has been fixed at 10.50 acres. Details are presented in following table (Table-4.14).

Table- 4.14: Estimation of Land Requirement for Community Facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Mosque/Church/ Temple	0.5 acre / 20,000 population	0.79	*	0.00
Eidgah/Graveyard	1.0 acre/ 20,000 population	1.59	**	1.59
Community centre	1.00 acre / 20,000 population	1.59	0.00	1.59
Central Graveyard	1 acre/ 20,000 Population	1.59	0.00	1.59
Cyclone Shelter		5.00	0.00	5.00
Total		10.50	--	9.77

*N.B. * the coverage area of Mosque/Church/Temple has been exceeded Paurashavas requirement already.*

***the existing lands are under mosque of family based and no centrally or publicly provided.*

4.4.11 Utility Services

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 1.59 acres for water supply installations, like, pump stations and other establishments related to water supply; 1.59 acres have been fixed for gas related facilities. There will be 9 waste transfer stations for collection of solid waste located at suitable locations. Each ward will have one station with an area of up to 0.25 acre. So there will be need for maximum 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 5.00 acres for final disposal of the solid waste. For power sub supply, an electric substation has been earmarked. For this purpose, 1.59 acres of land is required as per standard supplied by PMO. The total land requirement under this category is 12.75 acres. Please see **Table-4.15** for details.

Table- 4.15: Estimation of Land Requirement for Utilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Water supply Establishment	1 acre /20,000 population	1.59	0.00	1.59
Gas Distribution Station	1.00 acre/20,000 population	1.59	0.00	1.59
Solid waste disposal site	5 – 10 acres/Upazila HQ	5.00	0.00	5.00
Waste Transfer Station	0.25 acres/per waste transfer station	2.25	0.00	2.25
Power sub-station	1 acre/20,000 population	1.59	0.00	1.59
Telephone Exchange	0.5 acre/20,000 population	0.79	0.00	0.79
Total		12.75	0.00	12.75

Chapter Five

REVIEW OF POLICY, LAW AND REGULATION

5.1 Introduction

The urban planning and land use regulations *per se* are neither good nor bad. They impact on land and housing markets favorably or unfavorably and result in social benefits and costs depending on their nature and the specific contexts in which they are applied. When regulatory costs outweigh benefits, regulations should be amended or repealed. Careful reforms of these regulations can result in a lower cost for urban development and for housing. An additional benefit could be in terms of a more functional spatial organization of the city or town. If the objective of orderly town development is to be achieved, regulations need to be amended from time to time to make them function effectively. Regulations and processes that facilitate land availability and uses for planned development at affordable costs need to be continued. Those that lead to contrary results need to be eliminated or modified.

The preparation of Structure Plan, Urban Area Plan and Ward Action Plan for the Mathbaria Paurashava will be supported by the policies and relevant contemporary rules and regulations of the state. In the following paragraphs a review of the prevailing relevant policies, laws and regulation have been carried out.

5.2 Review of Relevant National Policies

5.2.1 National Land Use Policy 2001

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

Key Issues of the National Land Use Plan

Preparation and implementation of national land use plan in order to ensure best use of land is a major objective of land use policy. The plan is to be based on the criteria of land productivity and land capability and land suitability, use and requirement of land by agriculture, forestry, industrialization, urbanization and housing. Following are the key issues of the national land use plan.

1. Execution of coordinated land conservation projects aimed at prevention of desertification in the northern region.
2. Take up effective programmes aimed at preventing weathering of land, conservation of land fertility, development and conservation of land in coastal areas.
3. Prevention of destroying the hilly landscape by earth cutting, excavation and removal of land. Appropriate measures to be taken against indiscriminate collection of earth and stone from hilly areas and disturbance ecological balance. Emphasis on watershed management.
4. Formulation and effective execution of land use plan act and in order to ensure planned use of land.
5. Payment of compensation to those who will be affected by land weathering and land acquisition by the government.
6. Regular monitoring, survey and research on desertification in the northern region, land reclamation, prevention of weathering of land, multi-use of land, conservation and development of coastal area land and condition of watershed areas.

The policy stressed on most intensive and best use of scarce land resources of the country. In one of its objectives (objective 'Kha') the policy aims to introduce 'land use zoning', based on particular characteristics of land, to make best use of land, prevent unplanned expansion of

residential areas and control indiscriminate growth of industrial and commercial activities. The policy called for planned and best use of land.

Observation

There have not been effective steps taken to execute any of the policies mentioned in the land use policy. In absence of execution the situation in land use and land management is severely being deteriorated in the country.

About 36% land of the Mathbaria Paurashava is under the agricultural practices. According to the Landuse Policy, those lands should be preserved as agriculture land. For this purpose the first step will be to exclude agricultural from the Paurashava area. For such preservation, policy prescription such as', *in case of rehabilitation of the landless people, Khas land will be emphasized for distribution by the government.*' should be adhered.

5.2.2 National Housing Policy, 1993

The Government of Bangladesh formulated the first ever housing policy of the country in 1993. In describing the housing problems of the country, the policy, in its Article-2.3, expressed concern over concentration of population in some big cities, where housing is becoming a severe crisis without any effective role played by the government to create affordable housing. Concern was also expressed about the unplanned and haphazard housing area development. In objectives of the policy, it stressed (Article-3.3) on useful and effective strategy to tackle growth of unplanned and unhealthy habitations. The policy, in Article-5.1.4, committed to encourage private developers in land development, infrastructure development and house construction. The policy also made commitment to provide government assistance on participatory housing infrastructure development involving the community, NGOs, CBOs, private developers and social welfare organizations (Article-5.2.7). It also committed to assist in introducing new infrastructure development method based on leasing. In Article-5.2.8, the policy declared to provide necessary assistance to local governments in recovering investments in infrastructure and services and provide necessary training to their staff and employees to increase their efficiency. About the roles and responsibilities of the government (Article-5.7), the policy said that in housing activities the government will continue to remain as a facilitator. The government will provide housing only to the poor and the rootless classes of the society (Article-5.7.1). The policy also made commitments to encourage private organizations, NGOs and CBOs in housing infrastructure development, income generation and environmental improvement under its policy and local level planning (Article-5.7.3).

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 Housing

Clause 5.9 of the Housing Policy describes about the rural housing. The Mathbaria Paurashava is semi-urban 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 upgradable 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-ordinate with other development policies e.g. land, environment, population, employment, social welfare, fiscal and monetary policies at national and local levels.

Observation

But despite formulation of housing policies, so far no effective programme and project have been undertaken. National Housing Authority has been formed but it is yet to draw up any workable programme to realise national housing policies. National Housing Authority has not been able to address the housing problem of the country particularly, in urban areas. The private sector housing has flourished in country, particularly, in big cities where land value is sky rocketing. But such housing is not benefiting the low and medium income group, who constitute majority of the housing need. Nothing has, so far, been done for participatory housing promotion. The conventional site and services approach to housing is still continuing that does not help solving housing problem of the mass people.

5.2.3 Population Policy 2004

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

Objectives

The objectives of the National 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 of Bangladesh through making a desirable balance between population and development in the context of Millennium Development Goals (MDGs) and Interim Poverty Reduction Strategy Paper (IPRSP).

The Population Policy proposals can broadly be divided into four sectors, human resources development, decentralization of population activities, participation of NGOs and private sector in population planning, building of planned family.

Human Resources Development

The population policy aims to create a large skilled workforce, emphasizing on education and training strategies. It calls for introduction of population, public health and health science in all levels of education. Undertake initiative to incorporate population, family planning, maternal and child health and reproductive health issues in different curriculums of medical education. Design and implement appropriate training and learning programs for managers and service providers from different disciplines, covering the necessary mix of skills required for family planning, maternal and child health and reproductive health services. To this end, the policy aims to strengthen training activities including existing human resources development (HRD) institutions.

Decentralization of Population Activities

Decentralization of population activities is another area of recommendation of the population policy. It calls for decentralization of population activities and ensure people's participation in population control, nutrition and health activities; decentralization of services through devolution of power to the Upazila level and further below. The policy aims to prepare action plan through participation of local elites, opinion makers, women's representatives of poorer section of the society along with the local level Government official; empowerment of local level (Upazila and Union level) committees to generate fund for their use in improving quality; access to RH services is another aim of the policy; it also aims to ensure strong local Government presence for transparent administration. Mothers are to be oriented about family planning, maternal and child health and reproductive health through commissioning mother's centers at Union level and below.

Participation of NGOs and Private Sector

With a view to give a holistic approach, the population policy calls for making the NGOs and private sector as important partners. Hence, to ensure their active involvement in population activities at various levels the policy recommends the following strategies:

- a) Provide support to the registered NGOs in Health, Nutrition and Population sectors to work in the underserved areas;
- b) Encourage them to undertake motivational works and services particularly for the poor and other vulnerable groups;
- c) Engage them in awareness creation activities regarding the benefits of delayed marriage and delayed birth, health and nutrition issues as well as of STIs, RTIs, HIV/AIDS;
- d) Utilize NGOs and private sector effectively in community mobilization in population, family planning, maternal and child health and reproductive health activities; and
- e) Ensure coordination and intimate linkages of the NGOs and private sector with the Ministry of Health and Family Welfare and other relevant ministries and institutions and avoid duality.

Building of Planned Family

To keep the size of population contained in view of country's limited resources, the policy stresses, on all out efforts to popularize and ingrain the slogan "not more than two, one child is better". (a) The policy stresses on the effective role of the doctors in implementing the population policy. It calls for ensuring participation of government and non-government doctors in implementation of population program.(b) It also proposes to engage government and non-government doctors in reducing the incidences of RTI/STI and preventing the spread of HIV/AIDS towards ensuring better reproductive health services; (c) Encourage the doctors in

providing family planning services along with information, education and motivation activities according to the need of their patients; (d) Provide family planning services regularly along with maternal and child health services in all government and non-government health facilities.

Legal and social Measures

A set of legal and social measures have been proposed by the policy to achieving the goal and objectives of the national population policy as well as for implementing the relevant program strategies.

Observation

1. The population policy has not been able to address the population issues adequately. There has not been any effort for 'all out efforts to popularize and ingrain the slogan "not more than two, one child is better"'.
2. The policy aimed at decentralization of population activities and ensure people's participation in population control, nutrition and health activities; decentralization of services through devolution of power to the Upazila level and further below. But there have not been any effective steps in this regard.

As a result the population of the country is increasing steadily giving warning about a grim future ahead.

5.2.4 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.

The Transport Policy had prepared in 2004, following are the policy objectives of Transport Policy.

1. To provide a safe and dependable transport service.
2. Removal of unnecessary control and formulation of laws and regulations conducive to providing service.
3. Fare control.
4. Determining the roles of the Government sector and the private sector.
5. To maintain an economic and environmental balance.
6. To ensure maximum good utilization of Government funds.
7. Expansion of the role of transport in the ever increasing economic activities.
8. Reduction of transport cost of goods for export.
9. Growth of traffic commensurate with economic development.
10. Formulation of transport system for Dhaka city (Greater Dhaka).
11. Introduction of an integrated transport system.
12. Provision of alternate transport systems.
13. Creating of awareness regarding better standard of life and safety.

14. Poverty alleviation.

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	Bullock Cart	4.0
Motor Cycle	0.3		
Tempo	1.0		
Autorickshaw	0.5		

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-5.2 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 type- B/Upazila Road	1.0	10	Upazila	6	1.0	10
				5	1.6	10
Feeder Road type- 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.

The policy makes discussion and recommendation such issues as road, road transport and traffic, non-motorized traffic, railway and integrated issues.

Strategic policy issues of the transport policy cover the following:

Greater private sector participation

Encourage greater private sector participation with national ownership of road and rail infrastructure; lease of infrastructure may be allowed on long term basis; encourage private sector in infrastructure development.

Effective co-ordination in transport

Better coordination to be established between the Ministries and Departments under its control; policy/rules & regulations will be formulated to achieve the goal of creating better working links between the Government and the public and private sectors. Creation of discussion and consultation forums will be created for policy implementation; Government to promote clearer objectives and responsibilities for each sector in order to create more integrated working relationships.

Promoting the role of the transport users

The Government will examine how best the interests of users can be represented within the existing national government and local authority system. The Government will establish a user role within its transport planning process.

Transport users should pay for the costs of services

The Government to introduce makes arrangements to realise cost of transport operation and road maintenance from road users through new fiscal policies; to protect public interest, the Government will regulate tariffs for passenger and goods both in road and rail transport.

Subsidies for transport services

The government should allow subsidy to the transport sector only on consideration of public interest.

Create public awareness for the policy

Make people aware of the national transport policy.

Observation

1. Fare control policy could not be achieved.
2. Road safety is at stake.
3. Quality of roads has substantially deteriorated due to lack of regular maintenance.
4. Private sector is playing effective role in the transport sector.
5. Failure to take timely steps deteriorates transport situation in the capital city.
6. Development in the railway sector has been miserably poor.
7. No steps are visible about public participation in the transport sector.

5.2.5 National Environment Policy 1992

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

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

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

Industrial Sector

The environmental policy on industrial sector call for taking up following environmental measures:

1. Take up pollution control measures for selected polluting industries
2. Potential polluting industries must incorporate control measures in its set up.
3. All industries must conduct EIA and take pollution control measures.
4. All industries in residential areas to be gradually shifted and new locations to be identified for planned industrial development.
5. The industries harmful for environment and producing non-biodegradable products must be gradually banned.
6. Any industries using harmful and toxic waste as raw materials must be banned.
7. Use heavy metals, like, mercury, chromium, lead should be discouraged in industries.
8. The industries producing pollutants should have their own system of pollution monitoring.
9. Introduce 'waste permit/consent order' to improve waste treatment and disposal system.
10. Recycling of waste in order to reduce the volume of waste.
11. Safeguard health of industrial workers..

The policy document also indicated the concerned agencies to take care of implementing the above issues.

Health and Health Sector

This sector emphasised on the following environmental issues:

1. Supply of safe drinking water in urban and rural areas and introduction of low cost healthy sanitation system.
2. Control of pollution in all kinds of waterbodies by municipal, industrial and industrial waste and toxic materials.
3. Ban on carrying waste during day time and in open garbage trucks.
4. All steps to be taken to protect public health and environment from kinds of radiations including x-ray, nuclear waste, all equipment producing radiation, atomic reactor and research, and all activities harmful for human health.
5. Include environment in the academic syllabi.

Energy Sector

The energy sector recommended the following policies.

1. Take up large scale for introduction of improved cooker and wide dissemination of the technology to conserve energy and save environment.
2. Popularise use of coal, kerosene and petroleum in rural areas in order to save fire wood, agricultural waste and cow dung and use them in agriculture as compost.
3. Promotion of biogas, solar energy, mini hydro electric unit and wind mill in rural areas as sources of energy.
4. Take up measures to reduce the amount of harmful elements in fuel including, sulfur in diesel and lead in petrol.
5. Increase research activities to invent alternative sources of energy.
6. Care has to be taken so that use and transformation of primary and commercial energy does not create any adverse impact on the environmental balance.
7. Appropriate measures have to be taken during extraction and distribution of different natural resources like, oil, gas coal, peat so that they do not create any adverse impact on air, water, land, hydrological balance and the eco-system.
8. Study the possibility of use environment friendly petroleum (free of lead).
9. Care has to be taken during giving fitness certificate to vehicles that emit black smoke. Mobile courts will have to be arranged to enforce the relevant legal provisions.

Transport and Communication Sector

1. Care to be taken to make the road infrastructure development congenial to environment and the development of roads does not impede drainage of water.
2. Appropriate measure to be taken so that the passengers and the transport do not endanger public health by indiscriminate throwing of solid waste and defecation.
3. The rail, road and water transport must adopt measures to control emission of excessive black smoke.
4. Creation of public awareness and take care about pollution of river water.
5. Control on water pollution to be ensured in inland river ports and dockyards.
6. Airports to be developed avoiding environmental degradation.
7. Care to be taken to reduce air and sound pollution by aircrafts.
8. Encourage railway rolling stocks that generate less pollution.
9. Forestation on both sides of railways and roads.

Population Sector

1. Conduct study on impact of population growth on environment and take appropriate measures to mitigate the problems of population growth.
2. Prepare manpower utilisation plan to make planned and effective use of human resources congenial to environment.
3. Emphasise participation of women in environment conservation.

4. Mark population as No.1 problem of the country and take appropriate measures to curb population growth.
5. As the poor are mostly affected by environment degradation, appropriate measures are needed to safeguard their health and save them from the adverse effects of environment degradation.

Observation

1. The pollution control measures against polluting industries has not been effective or inadequate.
2. No measure has been taken to shift industries from residential areas.
3. No measure has been taken to introduce 'waste permit/consent order' method.
4. There has not been an effective step to control of pollution in all kinds of waterbodies by municipal, industrial and industrial waste and toxic materials. The situation is grave in industrialized cities like, Dhaka.
5. Ban on carrying waste during day time and in open garbage trucks has not been effective.
6. No wide spread programme has been worked out for popularising improved cooker and wide dissemination of the technology to conserve energy and save environment.
7. No steps have been taken about control of pollution of river water.
8. No programme undertaken for forestation on both sides of railways and roads has been taken.

5.2.6 Industrial Policy 2005

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. The key objective of the Industrial Policy 2005 is to,

- set up planned industries considering the real domestic demand, prospect of exporting goods abroad, and discouraging unplanned industries in the light of past experience,
- accept private initiatives as the main driving force of economic development and uphold the government's facilitating role in creating a favourable atmosphere in order to augment private investments,
- arrange for state-owned industrial enterprises to be sold/transferred/leased or administered in any other way by the Privatization Commission or concerned ministries in order to accelerate the privatization process,
- take necessary initiatives to establish industries on state initiative in those sectors that are considered very important and essential because of national interest, where private entrepreneurs are not forthcoming,
- catering the needs for local and foreign market and also for consumer satisfaction of the local products; measures to be undertaken (a) produce world class quality products, (b) diversification of goods, (c) introduce cost-effective management in the production system, (d) more value addition in the industrial sector, and (e) provide support for enhancing productivity by using continuous, appropriate and advanced technology,
- provide inspiration for the speedy expansion of cottage industries and SMEs and for further investment in these sectors so that new employment opportunities are generated, unemployment reduced and poverty alleviation program made in the country.
- prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat-sheep industry as agricultural industries.
- provide women entrepreneurs with all necessary assistance in establishing industries in various sectors. Increase productivity at enterprise level; produce high-value added

products step by step through development and application of appropriate technology and increase of export through export diversification.

- provide all necessary assistance for producing environment-friendly product with the objective for creating a pollution-free environment in the industrial sector.
- expand the local market and establish more backward linkage industries in order to accelerate the export of high value-added garments produced in the export-oriented garment industries and other relevant industrial subsectors.
- Further enrich the industrial sector with the proper utilization of the country's various natural and mineral resources.

Strategy

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.

Observation

1. The policy does not say anything about setting up of industrial estate or special economic zones to reduce environment pollution and make service provision easier.
2. Should have given more incentive on local-foreign joint investment. This policy will help technology transfer and help grow local entrepreneurship.
3. Diversified policy needed to encourage export diversification in order to reduce dependency on a few export items.

The Mathbaria Paurashava is agro-based semi-urban area. To reduce poverty and generate employment opportunities, more efforts are needed to establish agro and cottage 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.

5.2.7 National Tourism Policy

Promotion of tourism in Bangladesh under the aegis of the government started in 1972, following independence of the country. The main attractions of the tourism industry of Bangladesh are varied cultural heritages, ancient archaeological sites, Buddhist heritages and many eco-tourism sites, world's longest natural sea beach, etc. Recognizing the contribution of tourism to the socio-economic development of the country, the government framed the National Tourism Policy in 1992. In the Tourism Policy, status of tourism industry in Bangladesh was described, aims and objectives were defined and implementation strategies were suggested. The National Tourism Policy of Bangladesh was declared in 1992. Its main objectives are:

- To create interest in tourism among the people
- To preserve, protect, develop and maintain tourism resources
- To take steps for poverty-alleviation through creating employment
- To build a positive image of the country abroad
- To open up a recognized sector for private capital investment
- To arrange entertainment and recreation
- To strengthen national solidarity and integrity

In line with the policy, the Bangladeshi Government provides incentives to attract private sector partners. The incentives include tax-holiday, loans, concession rates for taxes and duties and in specific cases, allotment of land etc.

Observation

As per the recommendation of the National Tourism Policy, a 'National Tourism Council' headed by the Prime Minister and an 'Inter-ministerial Coordination Committee' headed by the Minister of Civil Aviation and Tourism were formed. Unfortunately, both the committees virtually remained dysfunctional. Until now, only two meetings of the National Tourism Council were held. The National Tourism Policy undertook some initiatives for a vigorous promotion of tourism within and outside the country. However, most of those remained unimplemented. Against this backdrop and emergence of private sector tourism industry, it is urgently felt that the 1992 policy needs updating.

5.2.8 Agriculture Policy

Agriculture Policy of Bangladesh was framed in 1999. A new policy under the present government is under preparation. The following review is on the 1999 Agriculture Policy.

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

Land Use

The Policy stresses on all possible steps to ensure optimum use of land. Although land is a privately owned property in general, its use has to be compatible with the overall social goals and utility. Moreover, it is important to consider that the interests of small arid marginal farmers and the sharecroppers are protected, as they constitute the majority of farmers.

The policy targeted to take the following steps to ensure planned utilization of land for crop production:

- Land zoning programme will be taken up by the Soil Resources Development Institute (SRDI) on a priority basis. Integrated approach of SRDI will be further strengthened for this purpose.
- To ensure maximum utilization of land, bottom up planning through people's participation and its implementation will be started from the mouza or village level.
- In most areas the same land is suitable for more than one crop. Therefore, farmers will be encouraged to grow more profitable crops as an alternative to only rice-rice cropping pattern.
- Fertile agricultural land is going out of cultivation due to its use for non-agricultural purposes such as private construction, house building, brickfield, etc. Appropriate measures will be taken to stop this trend in the light of the Land Policy of the government.
- Maximum utilization of land will be ensured through promotion of inter-cropping with the main crops.
- Acquisition of land in excess of requirement for non-agricultural purposes will be discouraged.
- Programmes will be taken up to motivate the landowners not to keep their land unused without any acceptable reason.
- Appropriate measures will be taken in the light of the Land Policy so that the interests of small and marginal farmers and the sharecroppers are protected and that the agricultural land is not kept fallow for a long period.

Observation

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

2. Government has not framed any effective mechanism to discourage acquisition of land in excess of requirement for non-agricultural purpose.

3. To protect agricultural land immediate steps are necessary to delineate agricultural lands. This issue has not been covered in the policy. It has been found that large areas of agricultural lands are unnecessarily being included within Paurashava. Sometimes it is about 70% of the total Paurashava area.

5.2.9 Urban Forest Policy

Representing an amendment of the forest policy of 1979, current national forest policy was enacted in 1994 and officially announced on 31st May 1995 (Bangladesh Gazette, July 6, 1995, pp 241-244). The policy was formulated to initiate a 20-year Forestry Master Plan (FMP). The Government of Bangladesh, assisted by the Asian Development Bank and the United Nations Development Program, prepared the FMP to preserve and develop the nation's forest resources. The plan provides a framework for optimizing the forestry sector's ability to stabilize environmental conditions and assist economic and social development. As such, three imperatives were identified: sustainability, efficiency and people's participation (FMP 1994).

Objectives of the 1994 National Forestry Policy:

- To afforest about 20% of the total area of the country by initiating various afforestation programmes in forest lands, fallow lands, lands not useful for agriculture, hinter lands and other possible areas to meet the basic needs of the present and future generations and to ensure greater contribution of the forestry sector to economic development ;

- To enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals.
- To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources
- To fulfill national responsibilities and commitments by implementing various efforts and government ratified agreements relating to global warming, desertification and the control of trade and commerce of wild birds and animals ;
- To prevent illegal occupation of forest lands, illegal tree felling and hunting of wild animals through the promotion of participation of local people;
- To encourage effective use and utilization of forest products at various stages of processing;
- To provide for and implement afforestation programmes on both public and private lands.

Statements of the 1994 National Forestry Policy:

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

- Community forestry and socially oriented leasehold forestry will be promoted by giving priority to poorer communities and poorer members of the community in the allocation of leasehold contracts;
- Women and poor people who do not have a land-based source of livelihood will be employed on a priority basis in nurseries, plantations, forest management, harvesting and industrial work ;
- tree growing by communities, local groups or individual families on roadsides, windbreaks, canal/river banks and other public or marginal lands will be promoted through NGOs and relevant state agencies;
- Plantations on farms and private lands will be managed according to the priorities set by their owners or duly authorized tree growers
- Buffer zones attached to protected areas may be allocated for tree farming and agro-forestry on a long term lease basis;
- The State will provide technical assistance and financial support to promote all forms of homestead forestry;
- Industries located in rural areas, particularly those cottage and small scale labor intensive industries which contribute to the local economy and process wood and other forest based raw materials, will be promoted by the State ;
- The funds to be made available through international development assistance will be increasingly directed to support involvement of tree farmers and other producers in reforestation and forest and tree-based rural development;
- The FD is responsible for protection and management of the national forests but in areas under high demand the needs of local people will be accommodated through participatory management;
- The traditional rights of people living within and adjacent to designated forest areas will be maintained and their forest-related cultural values and religious beliefs will be respected;
- The State shall modify land-use, agricultural, industrial, trade, fiscal and other policies and related legislation in order to discourage deforestation and promote farm forestry;
- The FD will be re-structured and strengthened to support social forestry.

5.2.10 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.

Strategy

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.

5.2.11 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.

Strategy

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 be responsible for infrastructural reformation, employment, development planning and implementation of human resources relevant with the health activities and development of carrier of workforces.

5.2.12 National Urbanisation 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.

5.2.13 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 কর্মসূচি)
- 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 প্রকল্প)
- Back to home Program (ঘরে ফেরা কর্মসূচি)
- Food for Education Program (কাজের বিনিময়ে শিক্ষা)
- Rural Occupational Project
- Poverty Reduction Project (দারিদ্র দূরীকরণ কর্মসূচি)
- Self-employment Program for Women (নারীর জন্য আত্মকর্মসংস্থান)
- Women Empowerment Program
- Coordinated Women Development Program
- Peace Home Program
- Shelter Support Program (আশ্রয়ণ সহায়তা কর্মসূচি)
- Educational Allowance Program (শিক্ষা ভাতা কর্মসূচি)
- Aged-allowance Program (বয়স্ক ভাতা কর্মসূচি)
- Micro-credit Program (ক্ষুদ্র ঋণ কর্মসূচি)
- Allowances for Widowed, Poor and Husband-renouncement Women Program

Aim and Objective

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.
- To reduce distances between towns and villages about services prevail through collective efforts and develop gradually.

5.2.14 Strength and Weaknesses of the Existing Policies

The Consultant has identified following weaknesses in the existing policies. These are –

Accommodation of future thrust, 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.

To increase the agro-product and use them in income generating activities, a vast agriculture land will be used and at the same time, 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.

5.3 Plan and Program

5.3.1 National Plan for Disaster Management

National Plan for Disaster Management 2008-2015 is an outcome of the national and international commitments of the Government of Bangladesh (GoB) and the Ministry of Food and Disaster Management (MoFDM) for addressing the disaster risks comprehensively. The plan has been developed on the basis of the GoB Vision and MoFDM mission to reduce the vulnerability of the poor to the effects of natural, environmental and human induced hazards to a manageable and acceptable humanitarian level by a) bringing a paradigm shift in disaster management from conventional response and relief practice to a more comprehensive risk reduction culture and b) strengthening the capacity of the Bangladesh disaster management system in improving the response and recovery management at all levels.

Objectives of the Plan

The objectives of this Plan are to:

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

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

Observation

Bangladesh has taken a holistic approach for disaster management where emphasis has been given to work together with all the stakeholders and build strategic, scientific and implementation partnerships with all the relevant government departments and agencies, other key non-government players including NGOs, academic and technical institutions, the private sector and the donors. The role of Government is mainly to ensure that risk reduction and comprehensive disaster management is a focus of national policy and programmes.

5.3.2 National Plan of Action for Person's With Disabilities (PWDs) as well as Autism

In line with the Government policy the Department of Social Services under the Ministry of Social Welfare has an enthusiastic vision & mission to address the social issues relating to Person's With Disabilities (PWDs) as well as Autism. Bangladesh has formulated a good number of policies specially National policy for the persons with disability, 1995 for social protection and ensured the rights of the vulnerable groups. Accordingly concerned Ministry has formulated National Plan of Action to implement the provisions of the said convention.

In the recent time dynamic and sustainable steps have been taken for the PWDs. The steps are:

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

Observation

Bangladesh, Ministry of Social Welfare is the lead Ministry and acts as the coordinating agency for Government and Non-government interventions towards addressing disability issues. Autism has received serious policy attention in Bangladesh. Over the years the country has made important gains in autism development through different measures. Indeed, Bangladesh has a robust portfolio of social protection programme which addresses various forms of risks and vulnerability of autistic children.

5.4 Act and Ordinance

5.4.1 Local Government (Paurashava) Act 2009

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. Local Government (Paurashava) Act 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 Local Government (Paurashava) Act, 2009.

The Local Government (Paurashava) Acts at different time since 1960's till the present time have iterated that a Paurashava as it gets established must prepare its Master Plan for planned municipal development. So far there Ordinances have been made in 1967, 1977 and 2009 all suggesting for planned development.

Functions of Paurashava in the Light of Local Government (Paurashava) Act 2009

The Local Government (Paurashava) Act 2009 is the successor of Paurashava Ordinance 1977 passed on 6, October has made the provision of having the Master plan prepared by a Paurashava within five years of its inception. The function of the Paurashava also include that it ensures planned development following the rules of the ordinance.

The Master Plan should include the following:

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

Paurashava Development Management

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 Govt. (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.

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

Major activity	Specific functions	Functions in brief
	Site development schemes	<p>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 covered by the provisions of a site development scheme sectioned to area in the prescribed manner.</p> <p>Among other matters, a site development scheme may provide for-</p> <ul style="list-style-type: none"> (a) the division of the site into plots; (b) the street, drains and open spaces to be provided; (c) the land to be reserved for public purposes and to be transferred to the Paurashava; (d) the land to be acquired by the Paurashava; (e) the price of plots; (f) the works that shall be executed at the cost of the owner or owners of the site or sites; and (g) the period during which the area shall be developed.
	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 required 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</p>

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

Major activity	Specific functions	Functions in brief
		of such building till it has been suitable repaired 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

Mathbaria Paurashava Master Plan: 2011-2031
Structure Plan

Major activity	Specific functions	Functions in brief
		limits of the Paurashava any public vehicle other than a 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.

5.4.2 Act for Preservation of Natural Water Reservoir, Open Space, 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.

5.4.3 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.

5.4.4 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.

5.4.5 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.

5.4.6 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.

5.4.7 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.

5.4.8 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 Local Government (Paurashava) Act, 2009 under which the Master Plan (Structure Plan, Urban Area Plan and Ward Action Plan) is being prepared.

5.5 Review of Relevant Laws and Regulations

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

Following is a review and observation on the relevant parts of the above mentioned act.

Restriction on Change the Land Use of Play field, Open space, Park and Natural Water Reservoir (Section 5)

According to the section 5 of the act, any land having such use as play field, park and natural reservoir can not be changed or can not be used for any other purpose.

Appeal (Section 6)

However, any land owner having any land with above mentioned use may apply to the appropriate authority to have permission to change the use. The authority shall convey the results of appeal within 60 days of the appeal.

Punitive Action (Section 8)

Any person violating the act may be liable to punishment upto 5 years of imprisonment or Tk. 50,000 fine or both.

Observation

1. The failed to give appropriate definition of waterbody. As a result the act creates legal complicity.
2. Enforcement of the act has not been effective. Despite prevalence of the act, rampant violation goes unabated.
3. Most urban centres do not have land use or master plan, as result there is no land use zoning. So the act can not be applied.

5.5.2 Bangladesh National Building Code (BNBC) 1993

The purpose of Bangladesh National Building Code (BNBC) is to establish minimum standards for design, construction, quality of materials, use and occupancy, location and maintenance of all

buildings in order to safeguard within achievable limits, life, limb, health, property and public welfare. It aims to insure public safety, health, and general welfare insofar as they are affected by the construction, alteration, repair, removal, demolish, use or occupancy of buildings, structures or premises, through structural strength, stability, means of egress, safety, from fire and other hazards, sanitation, light and ventilation.

The BNBC deals with such key issues as general building requirements, fire protection, building materials used, structural design of buildings, construction practices and safety and Building services. Besides, the code also deals with historic buildings with respect to their conservation and restoration. The code was formulated in 1993 but given legal status in 2008.

5.5.3 The Building Construction Act 1952

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

Preparation of Master Plan

The act calls for preparation of a master plan of the area concerned before approval of building plan. The master plan shall show the future land use of the area through land use zoning. The buildings will be approved according to the land use provisions of the zoning plan.

Building Construction Rules

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

Power to Removal of Construction (Section 3B)

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

Restriction on Cutting of Hills (Section 3C)

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

Removal of Unauthorized Building (Section 7)

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

Appeal

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

Observation

1. Master Plan zoning form the basis of building plan approval. But in most urban centres, there is no master plan. This hampers application and enforcement of the building construction rules.
2. There is serious lack of monitoring of disobedience of rules by the builders.
3. At Paurashava level the approving authorities do not follow the rules properly.

Chapter Six

CRITICAL PLANNING ISSUE

6.0 Introduction

Chapter 6 of the planning report introduces the critical planning issues of Mathbaria Paurashava. The discussion has been carried out on sectoral basis.

6.1 Transport

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

6.1.1 Traffic Conflict

Generally intersections are the traffic conflicting points but intersections at Mathbaria Paurashava do not face traffic conflicts. As because Mathbaria is a remote southern Paurashava and traffic flow specially motorized traffic flow is very low. From traffic volume survey at Mathbaria Paurashava it is found that all the major link roads have Level of Service A. That means Mathbaria is a zone of free flow, with low volumes, high speeds and road capacity is high. Traffic density is low and little or no restriction in maneuverability.

But there may arise serious traffic congestion in future because of the increase of the population and increased traffic demand. The reason for which traffic conflict will occur are, improper intersection design, on street parking of vehicles, waiting of operators on the roads looking for possible passengers, absence of traffic signal, disobedience of traffic rules, etc.

6.1.2 Unplanned and Narrow Roads

Road network in the town is not planned nor standardised. As there was no town plans earlier covering road network, roads were developed in an unplanned manner. No standards have been followed in determining road width, network design. Road widths are of rural type. More than 50% of the total road length is pucca roads, which is an example of good work done by the Paurashava. As physical feature survey shows, about 64% of the total length of roads widths in the town are 8 ft. or less as field survey shows, 50% of the households of the town reported that the road widths in front of their houses are 8 ft. or less. These roads are not capable to serve an Upazila town like Mathbaria. Therefore, narrow widths of roads and poor maintenance have been marked everywhere. These also have been expressed in opinion survey of the households.

Narrow widths of roads and poor maintenance have been marked by most respondents as major road problems in the town. About 20% of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Narrow width of roads is likely to become a major problem of traffic movement as the town grows and density of population increases in future. As field survey shows, 50% of the households of the town reported that the road widths in front of their houses are 8 ft. or less. In future traffic will rise and will create serious traffic congestion on the narrow streets. There is little chance that the authority will be able to increase the road width in highly built up areas- especially in the crossing point of main bazaar area, as there will be high cost involvement and social-pressure on any attempt to demolition.

6.2 Environment

6.2.1 Drainage Problem

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

6.2.2 Waste Management

At present, there is no solid waste management system at Mathbaria Paurashava. Most of the people throw garbage here and there, which causes serious environmental pollution and also some times clogged the existing drainage network.

For solid waste management, the amount of solid waste generated in the study area has been estimated as per standard demand rate in chapter 3 of Mathbaria Interim Report.

6.2.3 Water Supply

Due to salinity and highly iron contamination of the ground water, drinking water is the most critical problem for the town. Most people use surface water from ponds. But with the advent of urbanisation these ponds are likely to get filled up as land prices go up. Besides, in the face of increasing population the existing ponds are unlikely to serve as the only sources of water supply for the constantly growing population. This will create problem regarding water supply in the town in future.

6.3 Land Use Control

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

6.4 Disaster

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

Chapter Seven

LANDUSE ZONING POLICIES AND DEVELOPMENT STRATEGIES

7.1 Background Study

Bangladesh is a small land mass with a large population, increasing at a rate of over 1% per annum. About 116 million population of the country is sheltered and feeded from its 1,44,000 sq.km land, where the density is 10015 per sq. km. , the highest in world. Over 60% employment comes from agriculture and all urban development take place on land.. Thus land is the most valuable resource of the country. But with rapid urbanization agricultural land is reducing every year at an alarming rate. As there is hardly any fallow land all settlements take place by devouring valuable farm land. Once gone out of farming these lands never come back to agriculture again. Thus country is losing net food and cash crop. Losing food crop means throwing the entire nation into a vulnerable position of food insecurity. Under such a circumstance, it is the utmost responsibility of the government and the professionals to make the most judicious use of land for non-productive purposes. Make the best use of scarce land and economise land use. Any strategy for land use development should thrive on this basic theme.

7.2 Structure Plan Zone

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 Landuse Plan (2011-2021) period. 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.

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. It will be very difficult to find difference between Fringe Area and Peripheral Area in most of the Upazila level Paurashavas. But a very few Paurashavas this difference will be very clear. Fringe Area will be used for these categories of Paurashavas.

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.

New Urban Area

This zone will be the required additional area for future planned urban development as per population projection. Existing physical trend of growth and potential areas shall have to be considered in demarking for new urban land development. 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 2030.

Agricultural Area

Agricultural land (also **agricultural area**) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock.

Waterbody

Waterbody containing an area equals to or more than 0.15 acres excluding those of khal, irrigation canal and river (sometimes parcel of land may separated from the main flow due to the GIS database management and the existing condition) will be treated as this category.

The total area of Mathbaria Structure Plan is 13.87 sq. km or 3422.23 acres of land that includes existing Paurashava area (1124.92 acres or 4.56 sq. km) and recently extended and gazetted area at Mathbaria, Uttar Mithakhali, Andhr Manik, Dakkhin Mithakhali and Bakshir Ghotichora mouza and additional possible extended area at the south of present Paurashava area (total 2299.62 acres or 9.31 sq. km.). The policy zone wise detail area of Mathbaria will be as following table.

Table- 7.1: Structure Plan zone wise area distribution

Policy Zoning	Area in Acre	%
Agriculture	1939.50	56.67
Core Area	41.40	1.21
New Urban Area	494.01	14.44
Peripheral Area	801.89	23.43
Waterbody	145.43	4.25
Total	3422.23	100.00

7.3 Strategy to achieve the targets of Optimum and Organized Use and Creation of Congenial Urban Habitable Environment

Currently there is hardly any control over private development all over the country. Situation in paurashavas is more precarious. Land owners are not aware of the disadvantages of spontaneous development. To save valuable land and create livable environment the following strategies may be adopted:

a. Prepare land use and development plan for the Paurashava

This is necessary to streamline use of land and impose control on indiscriminate use and abuse of private land.

b. Implement plans with strong hand

Establish good governance in enforcement of plan provisions without any compromise or favor. This is necessary to create a culture of abiding by the rules and plans.

c. Enforce building construction rules to their maximum

To achieve the target of organized development and create an urban livable environment the building construction rules have to be adhered. It is responsibility of the paurashava to ensure strict execution of the rules.

d. Involve land owners in planning and development

In the wake of public sectors inability to achieve comprehensive development it has become necessary to evolve innovative ideas in participatory land development. Effective participatory development will help achieve the targets of planned development with basic urban services at

almost no government cost. Customized land readjustment, land pooling and guided land development methods may be tried as pilot projects.

e. Make land owners aware of the ills of spontaneous development

The land owners must be made aware of the demerits of free for all development and the benefits of planned development, wider road, open space. This may be achieved through seminar, workshop, local level meeting and group discussions.

f. Avoid lavish land acquisition based development

To save scarce land resource it is necessary avoid development proposals that involve huge land. This is necessary to save valuable land.

g. Set 20 ft, as the minimum road width for local roads

Narrow roads are sources of traffic congestion that create uncomfortable living environment and reduce property value. To avoid future congestion on narrow roads it is necessary to encourage and promote wider road at local level.

h. Involve planning department of the Paurashava in local development

Initial roads at local level are designed by the local community. Within Paurashava boundary planning department of the Paurashava should be involved in such initiatives. The advice and negotiation the local community leaders should will be convinced in favor of wider standard road.

i. Prepare standard design for local roads

Paurashava's planning department should prepare standard design for local road and compel land owners to follow the standard while developing local roads on community initiatives.

j. Develop major road on comparatively vacant land instead of widening existing roads

Widening existing road is often more cumbersome and costly. Develop new major roads on vacant land is less costly. It will be free of negotiation and litigation.

k. Land contribution for road widening

In case widening is necessary it will be best to liaise with land owners for land contribution through negotiation. This will keep the cost of road development minimum.

l. Emphasise on compact town

In a country of scarce land supply emphasis should be more on compact development instead of horizontal expansion of the town. Horizontal expansion of settlement will increase the Paurashava's cost of providing urban basic services. Infilling of vacant land should be stressed. To compel infilling restore to taxation on vacant land. This will increase supply of urban land and reduce unnecessary horizontal expansion of urban centres and thus will ensure compact development.

m. Involve local land owners while planning and implementing ward action plans.

Care should be taken to involve local land owners in planning and implementing ward action plans. This will create belongingness of the beneficiaries to development and help achieve development targets.

n. Choose areas for priority development

Select most potential areas under ward action plan for development and avoid indiscriminate development. Mobilize all resources to develop the selected area. Stress on public participation to avoid lengthy and complex process of land acquisition.

o. Create places of industrial agglomeration

Create selected places of industrial agglomeration providing all necessary services and facilities to encourage the entrepreneurs to set their industries in those places.

p. Encourage and promote alternative sources of water

To create sustainable supply of water restore to new water sources, like, surface water from river, khal and rain water harvesting. Gradually reduce absolute dependency on ground water.

q. Get the habit of hygienic disposal of solid waste

Porashava citizens should be taught on the benefits of livable environment and health by hygienic disposal of solid waste. This should be promoted through participatory methods involving beneficiaries.

r. Encourage and promote hygienic sanitation

Discourage people disposal of human excreta into surface drains and use sanitary latrine.

s. Take all legal and preventive measures to stop encroachment of drainage path.

Take measures to recover illegally occupied drainage channels and prevent further encroachment of canals and state owned waterbodies.

t. Discourage infrastructure development in uninhabited areas

No infrastructure should be provided in areas unlikely to develop in near future. The money saved can be used for improvement of services in existing habitat areas.

u. Undertake commercial land development to increase land supply

Paurashava can provide housing land in an planned environment to increase land supply. It can also encourage private developers to land development so that they can supply housing land under certain rules and standards. Ensure that lands are supplied in a planned environment provided with all necessary basic services. Take measures to secure public interest.

v. Strengthen Paurashava manpower capacity and skill

To execute the above strategies the existing Paurashava manpower capacity should be enhanced. More over to equip them with new ideas and efficient discharge of duties they should be trained for skill development.

w. Raise Paurashava income

Paurashava must adequate resources to execute development project. For this reason its resources base has to be increased. Existing sources should be strengthened to procure greater income, while new sources have to be explored to enhance income. Attention should be paid to secure highest possible revenue from holding tax, the leading source of Paurashava income.

x. Make best use of khas land

Paurashava should take over all khas land (total 87 acres according to Mathbaria Paurashava, 2013) and develop facilities to benefit the people. These lands can be used for play field and park development; for community centre development. It is advised not to make commercial use of khas land.

y. Areas for conservation and protection

The heritages of the Paurashava should be safe guarded and preserved to protect the identity of the Paurashava. It should conserve and safeguard structure and places, like,

- historical building, monument, sculpture or any other related articles.
- park, important play field or any other active recreational areas.

- River front areas and the places of natural beauty where go for recreation.

z. Identify and protect areas of ecological significance

It is important to protect ecologically sensitive areas before they are inadvertently destroyed. This will include areas of forest / bushes and areas of un-spoilt river line, waterbody. Once the initial priority of protection is successfully achieved, measures can be taken to enhance the quality of these areas.

7.4 Policies for Socio-economic Sector

7.4.1 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. So it is necessary to enhance population control drive. Grassroots level workers can play very 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 tool in creation of awareness about small family size.

Strategy:

- Raise the level education among mass people
- Create grassroot level population control program emphasising more on grassroots level family planning workers services with effective delivery of birth control services.

Policy:

Item	Executing Agency
<p>Population Policy/1: Declare population as one of the most critical sectors of national development</p>	<ul style="list-style-type: none"> ✓ Ministry of Planning, ✓ Ministry of Health and Family Planning
<p>Justification: Per capital 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 of the people.</p>	
<p>Population Policy/2: Put more efforts and resources in raising the level of education.</p>	<ul style="list-style-type: none"> ✓ Ministry of Planning, ✓ Ministry of Health and Family Planning, ✓ Ministry of Education.
<p>Justification : Education would not only create awareness among the masses about the benefits of small family size, it will also help secure better job with higher pay that would reduce poverty, which is a major source of large family.</p>	
<p>Population Policy/3: Create well paid and well train grassroots level family planning workers for motivational work.</p>	<ul style="list-style-type: none"> ✓ Ministry of Planning, ✓ Ministry of Health and Family Planning,
<p>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 well paid and efficient.</p>	

7.4.2 Economic Development and Employment Generation

There is about 60% of total population who are belongs to working group as per working force between 16 to 55 age at Mathbaria Paurashava and remaining about 40% of population lies under

nonworking group. The situation of Mathbaria Paurashava is that most of the female population belongs to unemployed. This is about 50% of total populations who are female and lies between non working groups. As a result the actual percentage of working people is about 36% of the total existing population. This means that, there is a very low level of working force in Mathbaria and it is alarming.

Population projection at a growth rate of 2.78% shows that the size of the population, who will come to the working force, will be 15778 including the students and housewives by 2030 (for detail, please see the **Table-9.6** of Chapter 9 of Interim report). Economic development of any place is associated with generation of employment. But there initiative to generate employment opportunities in Mathbaria is not adequate to cope with growing labour force. There is need to invest in basic industries to boost non-basic sector that will generate employment on a large scale.

Generation of employment depends on the rate of investment in various sectors of an economy. An urban economy of any town starts building up with investment in the basic sector that leads to the building up of the non-basic sector. Investment in basic sector is not very bright in Mathbaria as it is a very small town with a very low level of population. Besides, it has to compete with other adjoining urban centres like, Bhandaria, Kawkhali and Pirojpur sadar and larger towns, like, Patuakhali and Barisal. These urban centres serve as counter magnets of investment.

Strategy:

- Creating basic sector investment climate and lead the local economy forward through promotion of Small and medium Enterprise (SME).

Policy:

Item	Executing Agency
<p><u>Economic Policy/1:</u> Provide bank loans on easy terms to attract prospective investors in the SME sector.</p> <p>Justification: Easy loans would encourage and attract prospective investors for investment in small scale industries.</p>	<p>✓ Ministry of Industries.</p> <p>✓ Ministry of Commerce.</p>
<p><u>Economic Policy/2:</u> Take measures to channelize remittance to value adding productive sectors.</p> <p>Justification: Larger amount of remittance is being diverted to land purchase, which is considered as the safest investment. This huge capital may be channelized to productive sectors to help create more employment.</p>	<p>✓ Ministry of Industries.</p> <p>✓ Ministry of Commerce.</p>
<p><u>Economic Policy/3:</u> Arrange entrepreneurship training programmes for prospective investors.</p> <p>Justification: There are many potential investors who are ignorant of the ways and means of investment and operating an enterprise, The training can help them get educated in these lines.</p>	<p>✓ Ministry of Industries.</p> <p>✓ Ministry of Commerce.</p>

Bangladesh Bank has started a project to use remittance as capital investment rather than idle money through motivating people, making formalities easy to reduce hassle and initiate enterprises locally. A good number of inhabitants of Mathbaria region live abroad. They could use this opportunity to utilize their huge amount of idle remittance to channelize in the productive

sector. The poura authority may take initiative together with public line agencies to facilitate channelizing remittance towards productive sector.

7.4.3 Housing and Slum Improvement

As the town has low level of population and not industrialised, housing is yet to become a problem here. Spontaneous house building is common in Mathbaria. There is still shortage of dwelling unit in Mathbaria. Considering the annual growth rates of household and dwelling unit mentioned in BBS 2011, the demand for housing unit will be 8298 in 2030 (for detail, please see sub-section 5.7.5.2 of chapter 5 of Mathbaria Interim Report).

National Housing Authority executes housing policy and programmes on behalf of 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 is highly lacking.

In context of residential area of Mathbaria, existing residential land cover the requirement of land for 20 years population demand, but in reality, most of the residential land is ancestral land that has minimum scope to accommodate a large number of migrated populations coming to Mathbaria due to its future growth if the plan will be executed as assumed. In that case, vertical expansion is the ultimate prescription considering land scarcity and population growth.

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.

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 in housing area development on public-private partnership basis.

Policy:

Item	Executing Agency
Policy for Housing/1: Provide all necessary services and facilities to promote housing at private sector.	- Ministry of LGRD - Mathbaria Paurashava
Justification: It is more difficult to provide housing on public sector initiatives as it involves funding, land acquisition, takes long time. By providing infrastructure and services general people can be enables to build their own houses.	
Policy for Housing/2: Housing zone land owners can be involved in a participatory development technique where Paurashava will provide infrastructure and the cost will be shared by land owners.	- Ministry of LGRD - Mathbaria Paurashava

7.4.4 Social Amenities and Community Facilities

Social amenities and community facilities include, education facilities, health facilities, open space recreation facilities, like, park and play ground, amusement park, 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 goods. For education and

health facilities national government has policies and there are separate ministries and their agencies to execute the policies through programmes and projects. These agencies also have Upazila level offices to take care of the national education and health policies and programmes execution. For providing amenities like, park and play ground, 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. For community centre intensive use of land should be made by making multiple use of same space. For example, providing community centre, ward commissioner's office, clinic or any other uses in the same building.

Strategy:

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

Policy:

Item	Executing Agency
<p><u>Policy-Amenity/1:</u> Procurement of khas and other public land for park, playfield, community centre.</p>	<p>- Ministry of LGRD - Mathbaria Paurashava</p>
<p><u>Justification:</u> Since above facilities are non-revenue earning, they should be procured at least cost.</p>	
<p><u>Policy-Amenity/2:</u> Procure land for open space facilities as quick as possible, because when land value will be higher cost of providing the facilities will also be very high. 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>- Ministry of LGRD - Mathbaria Paurashava</p>

7.5 Physical Infrastructure Sector

7.5.1 Transport

By far, transport is the most important means to revitalize an urban centre. Intra and inter transportation facilities create economies of scale for prospective investors and enables easy and comfortable mobility of people and goods. 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 development of thriving urban centre. To create transportation facilities, quality inter-district road network will have to be created that makes movement faster and easy. With good infrastructure transport there will be induced growth of road transport. 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-city communication for easy transportation of goods and passengers.

Policy:

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

7.5.2 Utility Services

Utility services are the most essential parts of urban life. To make an urban centre 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.
- Address national policies regarding social services effectively.

Policy:

Item	Executing Agency
<p><u>Policy-Utility/1:</u> Exploration of alternative sources of water to ensure sustainable supply.</p> <p>Justification: Amid constant rise of urban population, it is time to explore alternative sources of water, like, rain water harvesting and surface water supply.</p>	<p>- LGED, - Mathbaria Paurashava</p>
<p><u>Policy-Utility/2:</u> Involve beneficiary participation in solid waste management.</p> <p>Justification: Involvement of beneficiaries in solid waste management will make the operation more effective and reduce financial responsibility of the Paurashava.</p>	
<p><u>Policy-Utility/3:</u> Exploring re-use and recycling of waste materials to extract resources.</p> <p>Justification: Re-use and recycling of waste materials will</p>	<p>- Mathbaria Paurashava, - NGO and CBO</p>

produce resources and reduce cost of waste management.	
<p><u>Policy-Utility/4:</u> Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.</p> <p><u>Justification:</u> Motivation will encourage people to adopt healthy sanitation and reduce health risks.</p>	<p>- LGED, - Mathbaria Paurashava, - NGO and CBO</p>
<p><u>Policy-Utility/4:</u> Protection of natural drainage system and preparation of hierarchical drainage network.</p> <p><u>Justification:</u> Natural drainage systems are being grabbed and filled up, which increases the risk of water logging. Well planned hierarchical drainage network help smooth drainage of storm and waste water.</p>	<p>- LGED, - Mathbaria Paurashava,</p>

7.6 Environmental Issues

From environmental point of view Mathbaria Paurashava is yet to reach a vulnerable position. There are some issues that must be taken care of before they turn precarious. The issue of sanitation has already been dealt with in utility services section. Except cyclone there is no natural hazard. There is no air, water or soil pollution in the Paurashava from any source.

7.6.1 Natural Resources

The Paurashava is not endowed with many natural resources that can be conserved. Among the meager natural resources available it has are, 945 nos of ponds/ditches, and 10 km of natural drainage canals. These need conservation to ensure sustainability in drainage and water supply of the Paurashava.

Strategy:

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

Policy:

Item	Executing Agency
<p><u>Policy-Nature /1:</u> All khas land within Paurashava must be assessed and handed over to the Paurashava for use in community interest.</p> <p><u>Justification:</u> This will prevent misuse of khas lad but political and the powerful.</p>	<p>- Ministry of Land - Mathbaria Paurashava</p>
<p><u>Policy-Nature/2:</u> All canals within Paurashava must be vested with the Paurashava for maintenance proper use as drainage channel.</p> <p><u>Justification:</u> This will help prevent unauthorized occupation and filling of natural drainage.</p>	<p>- Ministry of Land - NGO and CBO</p>

Chapter Eight

IMPLEMENTATION ISSUE

8.0 Introduction

This chapter deals with the issues concerned with implementation of the plan. Here, recommendations have been made about capacity building and resource mobilisation

8.1 Institutional Capacity Building of the Paurashava

8.1.1 Human Resource Management

Mathbaria is a “A” class Paurashava. According to Paurashava manual as a “A” class Paurashava, there should have been 162 official/staffs with other pump operator/guard, teachers-staffs and librarian and contractual sweepers in Paurashava to manage the engineering, administrative, health, family planning; conservancy works (**Appendix D of Interim Report**). In this organogram Mayor is in top position. Chief Executive Officer (CEO) will coordinate the three major divisions. These divisions are Engineering Division (Headed by Executive Engineer), Administrative Division (Headed by Secretary), Health, Family Planning and Conservancy Division (Headed by Medical Officer). In this organogram both full time and contractual official will be engaged.

It can not virtually function effectively as a Paurashava under such a stringent low staff and financial condition. To function, effectively, it must raise its revenue earning. But it is reported that the Paurashava cannot collect all its holding tax, the prime source of revenue, from its citizens by adequate amount. Holding tax is the most important source of its own revenue earning. It must take care to ensure 100% collection of the holding tax.

8.1.1.1 Staff Training

There is no arrangement for regular staff training. As a result the staffs are not capable to adjust with the up to date technology and information. As per ground level information, they cannot deliver proper service to the citizens. Besides, many of them have lacks in quality to render proper services.

8.1.1.2 Lack of Automation

Most works in the Paurashava are done manually. Such practice delays works and deprives the citizens from appropriate services. This is also a source of mal-practice and corruption. The Paurashava must go for automation in rendering all its public services. Ministry of LGRD should strictly enforce their automation programmes.

8.1.1.3 Short of Paurashava Town Planning Capacity

At present, the Paurashava has no any appropriate manpower to prepare, monitor implementation of the master plan. It will be in deep trouble in updating the plan when its validity expires. The Paurashava must strengthen its capacity to monitor, amend, update and implement its master plan.

Institutional Re-arrangement

Government has provided an organogram up to A type Paurashavas. Only A Type Paurashavas has an option of Town Planner (only one in number) and no provisions for Town Planner in B and C type Paurashavas. Mathbaria Paurashava is A type Paurashava and it has only one option of Town Planner and there is lacks in full fledge planning section. This will create serious problems in overseeing plan implementation and monitoring of plan implementation. It is suggested to add a full fledge Town Planning section in the organogram directly under the Mayor as described in sub-section 3.1.11.4 of **Chapter-3** of this plan report.

Institutional Framework

To rearrange the institutional framework for the Paurashavas recently the government has made a committee to reform the organogram of all the Paurashavas of Bangladesh. According to the clause no. 72-78 (Paurashava Officer & staff, provident fund etc) of Paurashava Act, 2009 and on the basis of the type and category of works, the committee suggested appropriate section/units/divisions within the Paurashava framework. Planning unit or division will be necessary to set sequentially as the authority can perform it's mandatory responsibility 'town development and control' well and serve the inhabitants presently as well as in the future. The planning unit/division may have some sections that are as follows:

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

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

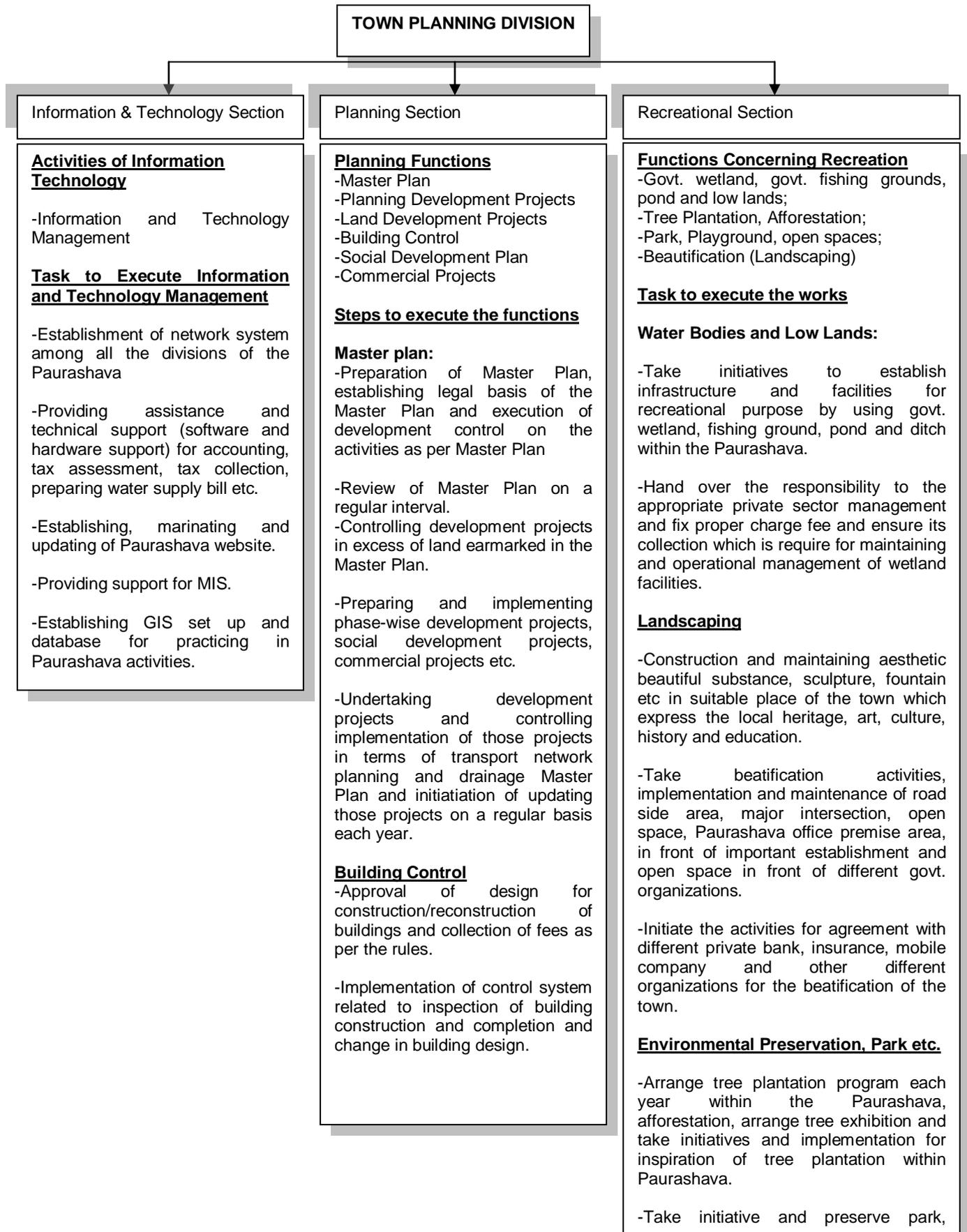


Figure 8.1: Scope of Work for Planning Division

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

Lack of Paurashava Town Planning Capacity

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

Mathbaria is a 'A' class Paurashava. For the 'A' 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:

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

Community Mobilization Program

Following are the community mobilization support activities:

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

Distribution of Plans Including Report

The approved plans and report must be distributed among relevant government agencies. This will enable them to know about what town development projects are there in the plan. This will help them adjust their plans and programmes with the plans. Interested general public should be given easy access to the plans and reports as part of establishing good governance.

Coordination

The proposed Planning Section of the Paurashava should coordinate with other stakeholder agencies to see that there is no duplication of projects or any agency undertaking projects ignoring the plan. Any such deviation should be reported to the respective agency, LGRD Ministry, Deputy Commissioner, Upazila Nirbahi Officer for necessary action. Sometimes duplication of work causes wastage of resources which can be averted through such coordination.

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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.

8.1.2 Legal Aspects

The drive to establish governance is yet to be legalized. The governance programmes are operated on project basis and formulated policies. The acts that the country inherited are mostly prepared by the colonial rulers, to serve their own interest. Even after independence from the British the issue of good governance was not infused into the new acts formulated.

8.1.3 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.

Section 73 (4) of the Town Improvement Act 1953 asks RAJUK to publish all its master plans prepared for knowledge of the general public and seek their opinions about the plan provisions. The act says that RAJUK should make available copies of the plan to the public. It should display the plan for 60 days for public to express their opinions. However, it is not a binding on RAJUK to comply with all the opinions expressed, which indicates absolute power of the government in making final decision. However, this is only a very insignificant sign of governance that does not have any bearing on Paurashava. The Paurashava/Municipal act/ ordinances prepared at different time since 1960's have iterated 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 suggesting for planned development. The Local Government (Paurashava) Act 2009 has made the provision of having a master plan prepared by a Paurashava within five years of its inception. The function of the Paurashava also includes that it ensures planned development following the rules of the ordinance. But there is no provision for public participation. In all these legal documents people's role has been ignored that is violation of the norms of good governance.

The constitution of the People 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.

8.1.4 Financial Issues

8.1.4.1 Governance in Mathbaria Paurashava

Financial governance refers to transparency and accountability of financial matters. All financial matters must be transparent to all. People must know what is going on in the Paurashava with their taxes paid. How much revenue has been collected and what is the development expenditure of the Paurashava. They must also be answerable to the people how the public money is being spent. The accounts services to the public should be easy and smooth and free from hassle and corruption. LGRD and Cooperative Ministry 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 Mathbaria Paurashava.

8.1.4.2 Revenue Management

Governance of Bangladesh Paurashavas' is relatively weak, lacking effective citizen participation, accountability and financial management. Another important problem is centralization of power practice over the Paurashavas. The Paura Authorities are very much dependent on Central Government to make major financial decision because of malpractice of state power by other line government institutions and lack of Paurashava financial capability. Paurashava's are governed by elected Mayor and Councilors. The Mayor tends to dominate decision making on different aspects of Paurashava management, with little responsiveness and accountability to the public. It is required to ensure the financial management of Paurashava which will ensure the financial sustainability and governance of Paurashava. For this, generation of sufficient revenues from different sectors and also the proper utilization of generated revenues are necessary rather than dependency on budgetary transfers from the Central Government.

8.1.4.3 Paurashava's Financial Capacity and Plan Execution

The prime focus of Paurashava financial governance is to establish automation in entire financial management. This includes computerization of accounts system, holding tax management, billing of different service charges. Software for above functions have been supplied and installed in Paurashava covered by financial automation projects. The projects also provided training to the relevant staff for functioning of the systems. With the implementation of these projects people can now instantly know about the status of their tax payment, bill payment, licensing. This has not only made the functions of the Paurashava easy, but also has freed the citizens from paying bribe, and hassle.

It has been observed that income from the revenue of Paurashava was highest in financial year 2011-2012 and it is increasing by years. In respect of total income, the amount of total revenue income of the Paurashava from revenue in 2007-2008 was 10462405, in 2008-2009 was 12352990, in 2009-2010 was 15794059, in 2010-2011 was 17991059 and 2011-2012 was 30752900. Being a small Upazila town, its revenue generation is significant and like any other Paurashava its major revenue incomes comes from holding tax. The budget is made public through displaying in the Paurashava office.

8.1.5 Plan Execution Monitoring and Evaluation

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 Mathbaria Paurashava is not

equipped with qualified manpower to make such evaluation. Monitoring and evaluation of a plan is essentially, the responsibility of qualified and experienced planners. As there is no planner in the Paurashava, its monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing.

To ensure the future development according to the proposals prescribed in the Urban Area Plan and Ward Action Plan, the Paurashava must maintain the following guidelines during the land use clearance.

- Must ensure 20 ft. access road for any type of land use clearance.
- No permanent land use should be allowed in the area demarcated as urban reserve and the authority will follow the guideline provided to **Annexure- C** when the will provide land use clearance.
- Must ensure that no land use clearance is issued on the lands indicated as road, drainage channel, water reservoir, educational institution, health services, open space, fruit garden / orchard in the Urban Area Plan.

8.1.6 Updating of Plans

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

8.2 Resource Mobilization

Financial capacity is very important to render effective municipal services. Like, all other small Paurashavas of the country, Mathbaria Paurashava, has also very weak financial footing, Holding tax collection is in a fluctuating condition with respect to percentage of total revenue income but it is growing with respect to amount and has sharply increased in the year 2011-2012 (about 25% of the total revenue). From this it can be realized that people are becoming more aware to give tax regularly. People have realized that the regular payment will ensure the -good service of government including road development, street lighting, provision of footpath, other social infrastructure etc. Again, Paurashava is unable to collect hundred percent of the revenue levied. So, it has to depend on government funding and BMDF source for financing its development projects. However, it must try to become self reliant financially. Following suggestions may taken care of in achieving the targets of self reliance,

- explore the possibility of new sources of taxes,
- search for profitable ventures, like, market development, property leasing, exhibition, etc.,
- drive to collect maximum holding tax.

It is extremely difficult for a Paurashava to function properly and independently with such a small and weak own financial base. With very low level of commercial and basic sector activities, the tax base increase has a bleak future in Mathbaria. So, to carry on its activities, the Paurashava will have to depend on government support for an indefinite period. This will not only affect its normal functions, but will also the planning and related activities substantially. Because there is no hope, that government will be able to provide enough resources to over 300 urban local governments of the country. Therefore, there is no way for Mathbaria Paurashava, but to go for mobilization of its own resources. It should also try to boost investment in the town by attracting investment. These strengthen its economic base through generation of employment. New investment and employment will help raising revenue of the Paurashava.

Chapter Nine

URBAN AREA PLAN

9.1 Introduction

This is the first chapter of **Part- B** that starts with Urban Area Plan. Urban Area Plan is the mid level plan that covers fairly, the existing urban part and the immediate surroundings of the Paurashava. It lays down the land use zoning plan and infrastructure development proposals at the town level.

9.1.1 Goal and Objectives

The Urban Area Plan is the second Part of the Mathbaria Paurashava Master Plan and Land Use Plan is one of the four components of Urban Area Plan. The Urban Area Plan (UAP) has been prepared for managing and promoting development over medium term on the basis of the strategies set by the longer-term Structure Plan. Basically the UAP is an interpretation of the Structure Plan over the medium term (10 years). The coverage of the UAP 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 20 years. Delineation of the UAP is based on the urban growth area identified in the Structure Plan. It contains more details about specific programs and policies that require to be implemented over the medium term.

9.1.2 Methodology and Approach to Planning

The Land Use Plan preparation is based on the land use survey which basically records the use of land by its functional activity such as residential, industrial, commercial, health, cultural, etc. During the TS and DGPS based physical feature survey each feature was recorded with individual ID or code also representing their use. At the same time, uses of lands without structures were coded on mouza plots. Later on land use features were identified and classified using the recorded code and separated in different layers during data processing stage, from where the category-wise land use maps were prepared using the identification layers of each land use feature. The land use map has prepared indicating the broad categories of land use described in the ToR. The land use map has been prepared on CS mouza map at a scale 1"=165' (RF 1:1980) suggested by the LGED.

Spatial information or data of all existing land uses from land use 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) and 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.

Land use maps have been prepared applying the appropriate systematic command through GIS. Land use is transferred on CS mouza map in a scale of RF 1:1980. Land use is divided into different categories and sub-categories approved by the LGED. Land use colour and legend were also fixed by the PMO (Project Management Office) 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 land use, Consultants have prepared existing land use map.

Based on the existing land use map, the land use plan has been prepared using the guidelines in 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

Mathbaria Paurashava Master Plan: 2011-2031 Landuse Plan

detail also covers the delineation of existing urban area and the new urban area. The Plan comprises a set of policies including a broad framework for development promotion, control and coordination.

At the **beginning** of the planning process, relevant higher-level plans were studied. The **Second step** of the plan process includes several consultations with local communities / beneficiaries and other agencies / interest groups (stakeholders). Information resulting from the consultations has summarized and included in this report as a part of explanatory report as well as a fourth overlay on the base map. **Third step** comprises formulation of planning principles and standards addressing the land use, infrastructures and utility services. This is an important stage in design process, crucial to the final functional quality of the result and its efficiency and cost effectiveness. These planning principles and standards address two distinct situations: existing urban area and new urban areas. **Fourth step** of the planning is integrated plan. The integrated plan has been formulated through the consolidation of inputs from different sectors, local leaders, interest groups, etc. At the same time assessment has been made on future economic, social and environmental impact of the integrated plan and its financial viability. The plan will be adjusted based on the significance of these impacts. The **next step** of the plan was the incorporation of development proposals with actual design. Response to the community desire, planning strategies has to be set and integrated planning maps have been prepared considering the functional quality, aesthetic quality, flexibility and environmental sustainability. **Finally**, the development proposals of the plan have prioritized and phasing out.

9.1.3 Area Delineation of Urban Area Plan

For delineation of Master Plan area, it is necessary to identify the possible future urban growth locations. The objective of project area demarcation is to determine the boundary of the area and mark it on the map as well as in the field. Logic behind the delineation of the Planning area of Mathbaria Paurashava for the year 2031 has been done on the basis of the gazette notification of the Paurashava and after the reconnaissance survey and, Landuse and Physical Feature survey of the area, discussions with groups of stakeholders, analyzing the present trend of developmental of the town. The Paurashava authority was involved closely although the processes of urban plan area delineation.

The Urban Area Plan area also covers 13.87 sq. km or 3422.26 acres of land that includes existing Paurashava area (1124.92 acres or 4.56 sq. km) and recently extended and gazetted (May 20, 2013) area at Mathbaria, Uttar Mithakhali, Andhr Manik, Dakkhin Mithakhali and Bakshir Ghotichora mouza and additional possible extended area at the south of present Paurashava area (total 2299.62 acres or 9.31 sq. km.). Paurashava operates its jurisdiction area that provides the basic urban services and facilities as preconditions for urban proliferation.

Table- 9.1: Urban Area Plan Coverage

Mathbaria Paurashava Urban Area Plan	Area	
	Sq. km	Acre
Urban Area Plan Coverage	13.87	3422.26
Percent of Structure Plan Area	100%	

The Urban Area Plan constitutes 100% of the Structure Plan area. The details have been presented in **Table-9.1, 9.2** and **9.3** and again in **Map-9.1**.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Table- 9.2: Mouza Sheduling for Urban Area Plan (Existing Paurashava)

No.	Mouza Name _JL_Sheet	J.L.N o.	Area (Acre)	Area (Sq.Km.)	Plot No.
1	Mathbaria (021_02)	21	295.00	1.19	701-1474, 1601-1793
2	Mathbaria (021_03)	21	18.96	0.08	
3	Baksir Ghatichora (022_03)	22	309.27	1.25	1707-2144
4	Dakkhin Mithakhali (037_04)	37	429.94	1.74	3007-3174, 3322, 3340- 3952
5	Uttar Mithakhali (066_07)	66	71.60	0.29	4632-4800
Total	Total		1124.92	4.56	

Table- 9.3: Mouza Sheduling for Urban Area Plan (Extended at May 20, 2113)

No.	Mouza Name _JL_Sheet	J.L.N o.	Plot No.
1	Mathbaria	21	1-700
2	Andhar Manik	20	625-770, 772-1029
3	Baksir Ghatichora	22	801-1185, 1204-1236, 1578, 1583, 1597-1599, 2157-2212
4	Dakkhin Mithakhali	37	784-1453, 1800-1913, 1915-2620, 3175-3321, 3323-3339
5	Uttar Mithakhali	66	3784-3794, 3823-3832, 3834-3840, 3842-4631
6	South of Mathbaria*		

* Policy Area extension proposed by consultant

9.1.4 Content and Form of Urban Area Plan

Urban area plan is broadly divided into three forms, plan map, explanatory report and GIS database. The plan map depicts the future land use zoning, infrastructure development and other development proposals. Report elaborates all the proposals made in the plan, including, rules, regulations and recommendations for implementation of the plan and GIS database supports the both plan map and reports which have originated from that database. 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.

Part- B: the Urban Area Plan is 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.

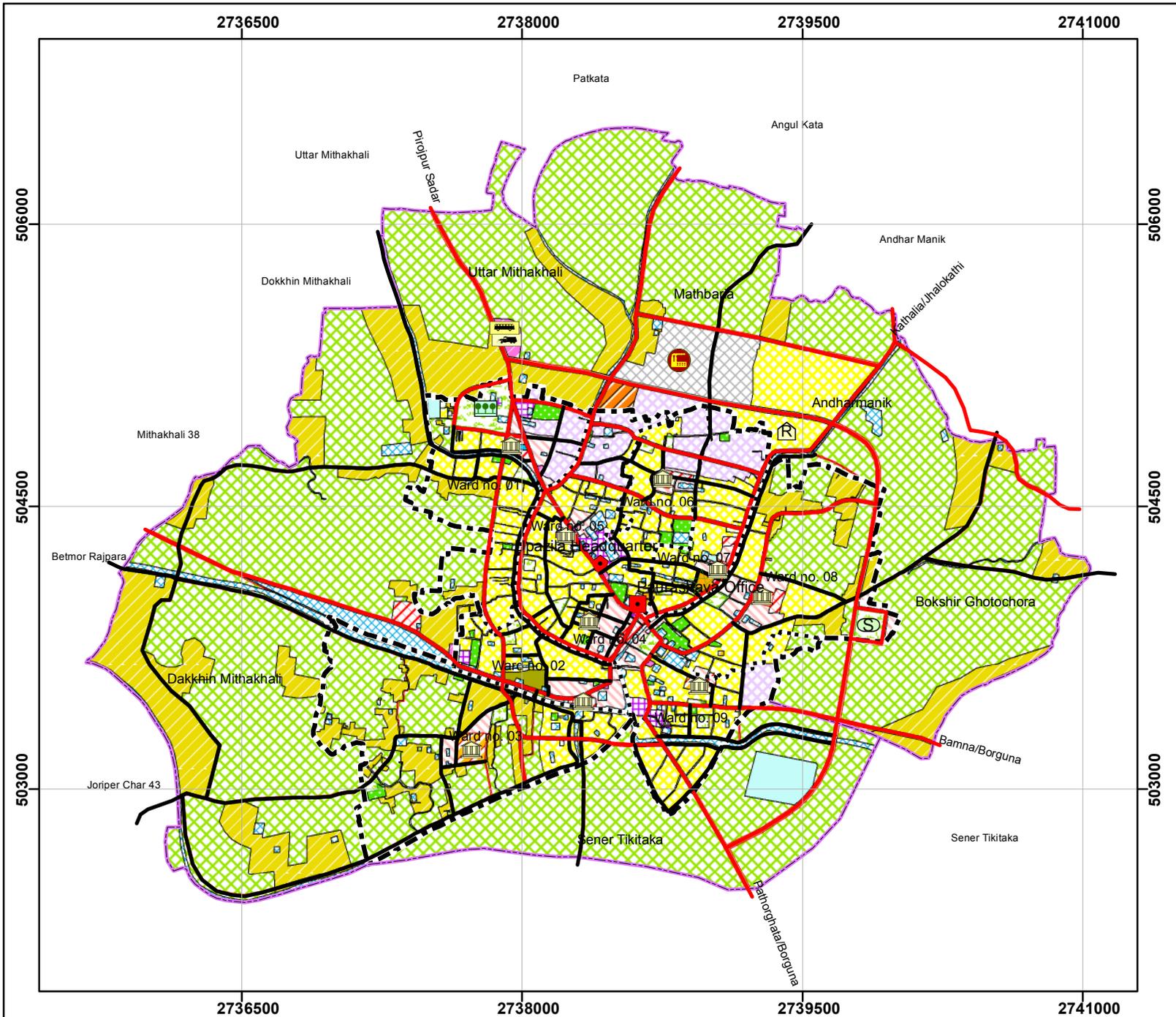
Chapter- 10 of the report covers the Land Use Plan. The Land Use Plan identifies approaches of planning, existing and projected land use and proposed land use. Requirement of land for different purposes, land use zoning and plan implementation strategies are also included here.

The Transportation and Traffic Management Plan is the **Chapter- 11** which explains 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 **Chapter- 12** of the Urban Area Plan. The chapter again is, subdivided into two parts – drainage part and environment part. Existing drainage network, land level and topography /contour, plan for drainage management and flood

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

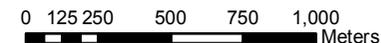
control and plan implementation strategies are the components of the drainage part. Existing environmental condition, solid waste and garbage disposal, environment pollution, water logging, natural calamities and localized hazards, plan for environmental management and pollution control and plan implementation strategies are the key issues of the environment part.

Chapter- 13 of this report is Plan for urban services. Existing condition and demand of the services, projection of proposed urban services, proposals for urban services and implementation, monitoring are the key issues of this part.



SCALE

1:29,500



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary
- Paurashava Office
- Upazila Headquarter
- Bus Terminal
- Central Graveyard
- Central Park
- Industrial Estate
- Neighbourhood Center
- Paurashava Office
- Resettlement Zone
- Truck Terminal
- Upazila Hospital
- Upazila Stadium

Major Services

Proposed Landuse Plan

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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Chapter Ten

LAND USE PLAN

10.1 Introduction

Landuse Plan is the main part of the Urban Area Plan and is planned for the period of first 10 years. The proposals in the Landuse Plan will be implemented through the 1st and 2nd phase development programmes of the Master Plan. The 1st phase development projects are identified as priority projects and are listed in the Ward Action Plan for implementation within the first five years of the Master Plan.

10.2 Existing and Estimated Future Land Use

10.2.1 Existing Land Use Types and Patterns

The existing land use of the urban area, that is Paurashava area land uses, has been grouped into 16 categories (**Table-10.1**). The land uses have been classified for Paurashava area. It is clearly evident from the table that residential land use that includes all types of dwelling houses, dominate the built up part of the Paurashava, while 36.01% of the total Paurashava land is still under agriculture. **Map- 10.1** shows the urban area map with existing land use pattern of Mathbaria Paurashava.

Table-10.1: Existing Land Use of the Existing Paurashava Area

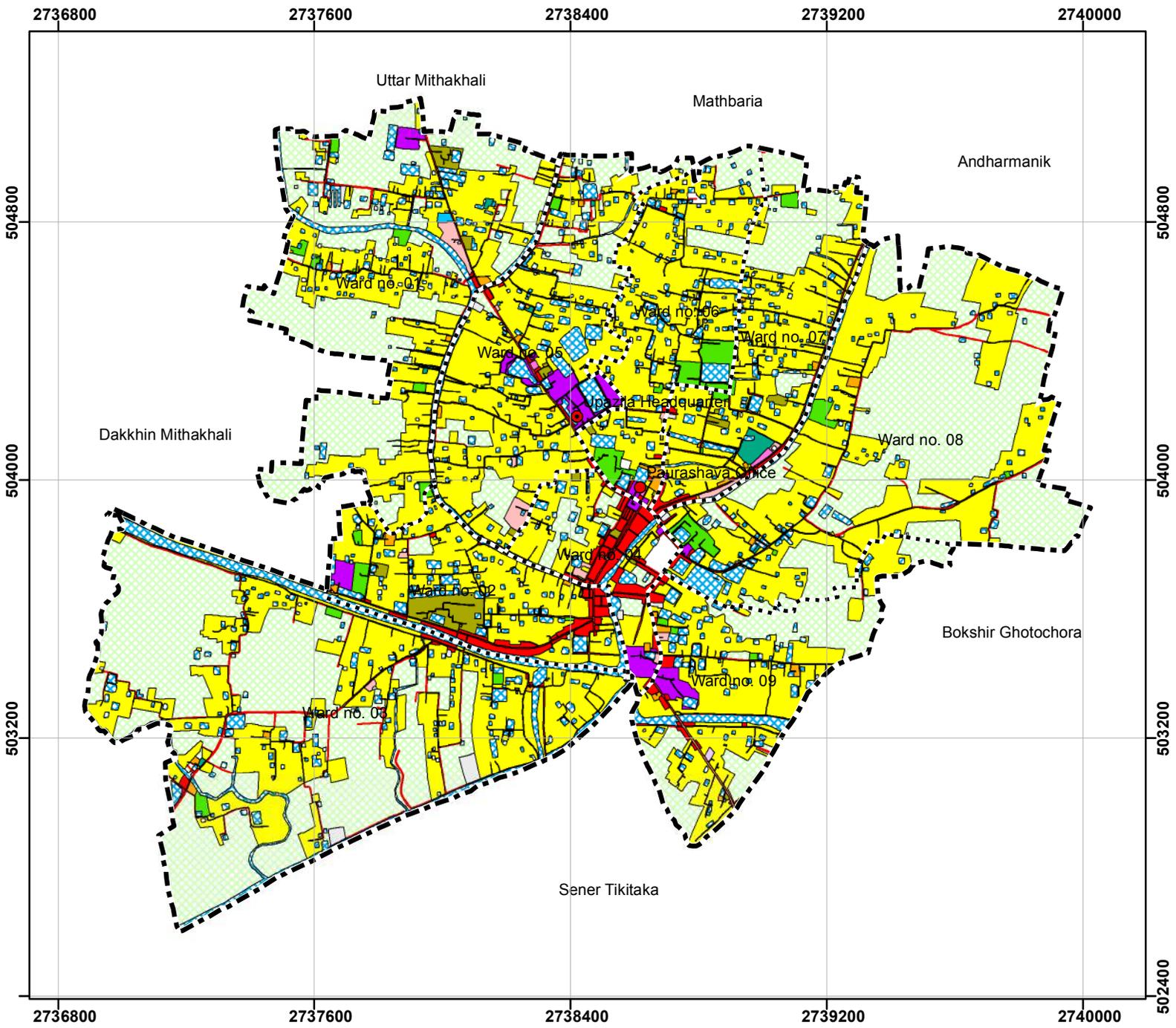
Landuse Category		Area (Acre)	%
1.	Agriculture	405.93	36.01
2.	Circulation Network	36.60	3.25
3.	Commercial Activity	18.11	1.61
4.	Community Service	4.31	0.38
5.	Education & Research	15.68	1.39
6.	Governmental Services	12.52	1.11
7.	Manufacturing and Processing Activity	2.57	0.23
8.	Mixed Use	4.63	0.41
9.	Non Government Services	0.18	0.02
10.	Open Space	2.30	0.20
11.	Recreational Facilities	0.34	0.03
12.	Residential	488.03	43.30
13.	Service Activity	8.72	0.77
14.	Transport & Communication	0.50	0.04
15.	Urban Green Space	2.22	0.20
16.	Waterbody	124.54	11.05
Total =		1124.92	100.00

Source: Physical Feature Survey, 2012

The land use of the project area has been analyzed ward wise as well as for the entire project area. Within the built up part of the town, residential land use features, that include all types of dwelling houses, dominate the total planning area. In respect of entire Paurashava area, the highest land use goes to residential (43.30%). The second major land use is agricultural use, and it occupies 36.01% (405.93 acres) of the Paurashava area. Besides, there is 11.05% waterbody, 3.25% circulation network, and 1.61% commercial activities and otherwise 4.78% of lands are being used for education, urban green space, recreational facilities etc.

Map 10.1

Urban area map with existing landuse pattern of Mathbaria Paurashava



SCALE

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LEGEND

- Upazila Headquarter
- Paurashava Office
- Planning Area Boundary
- - - Paurashava Boundary
- · · · · Ward Boundary

Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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10.2.2 Estimated Future Land Use

The Paurashava is not an ideal township in respect of land use distribution. It is dominated by agricultural land use, which is unusual. 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 town. This can 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 land use 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 land use demarcation. Slow change of land use 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 land uses. Three parts of the projection are, land use change, land use control and land use restriction is included in the Master Plan. In any case, areas of khal (canal) edge should be restricted for human habitation. As a result, khals will not be polluted and silted and these existing canals will act as uninterrupted natural drainage system and drainage outfall.

a. Basis of Estimation

The important basis of estimating the amount of land under each land use type is the size of population in different periods of the Master Plan. The distribution of existing land uses have been estimated considering the total requirement of land in future. Land for different uses have been determined on the basis of estimated future demand for each category of land use. **Under this sub-section, existing Paurashava (gazetted on May 27, 1993) area and its existing uses are compared with the proposed landuse of the existing Paurashava (gazetted on May 27, 1993) area.**

b. Estimation of Urban Residential Land Requirement

The present population of the planning area is 18375 (2011) as per growth rate of 1.78%. This gives a gross density of 16 persons/acre.

The future housing area need to be based on a recommended planning standard of 100 persons per acre including 200 persons per acre for real estate and private residential land development. With this standard, the estimation shows, the land required to accommodate total projected population (31798) in the year 2031 will be 476.97 acres including 158.99 acres of public and private real estate. But survey of existing land use has identified 488.03 acres of land currently under housing use with a medium density of population (about 28 persons/acre). The consultant, therefore, retrains the existing housing land (488.03 acres) for the population of the Paurashava in 2031.

Mathbaria Paurashava Master Plan must have an area delineated for housing the poor, disadvantages and refugee of climate change and other disasters to fulfil National Housing Policy, Disaster Policy and other policy prescriptions of the Government.

c. Estimation of Land for Commercial Use

There is no reason to expect any sharp rise in business activities in next 20 years in the Mathbaria Paurashava. The current land under business/trading use is only 18.11 acres including business areas beyond Paurashava that cover shopping and bazar areas. Market facilities are usually provided privately on commercial basis depending on trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. Field observations shows that most commercial areas are actually mixed areas combined with residence and small

Mathbaria Paurashava Master Plan: 2011-2031

Landuse Plan

scale industry. So, instead of marking commercial areas exclusively for commerce use (that would never develop in this small town), it is better to term the area as mixed use area and allow it to develop as mixed use areas.

Five categories under the title of Commerce and Shopping are considered in the Planning Standard; Wholesale, Retail, Corner shop, Neighborhood and Super Shop. Last three categories are actually homogeneous on the basis of retail commerce. As a result, demanding land for corner shop, neighborhood market and Super shop will allocate from the land accounted for retail market.

Every wholesale market requires space for at least three major activities along with utilities and services. The activities are: stockyard, loading-unloading yard and parking. Usually one wholesale market will be enough for most of the small towns like Mathbaria having population of 20000 to just above 30000.

Shops, loading-unloading yard, parking and dropping zone are the major space requirements along with utilities and other services for an independent retail market. A modern retail market should, compact, vertically developed and functional. One acre land is likely to be reasonable to develop a planned retail market that can serve easily 3 to 5 thousand populations.

For the sake of current planning the consultant can earmark land as per standard for commercial land use and put them at appropriate locations where mixed use facilities may be developed privately or publicly. The total required commercial land will stand at 48.72 acres (including 3.17 acres of wholesale market). The extra land requirement will stand at 30.61 acres.

d. Mixed-use

Existing land under this use is 4.63 acres (0.41%). Up to the year 2031, such use of land may remain the same. Mostly central area of the Paurashava is under mixed-use zone. The residences with mixed-use activities are discouraging here. Those residences should be shifted gradually to the residential area.

e. Estimation of Land for General Industrial Zone

According to approved planning standard the total land for industries comes to 79.50 acres with 47.70 acres for small scale industries and 31.80 acres for cottage and agro based industries. At present there is 2.57 acres land used for industrial purpose. So 76.93 acres of additional land will be required.

f. Education & Research Zone

Estimation of land according to standard indicates there will be a land requirement of 51.11 acres to accommodate educational facilities by the year 2031. If the consultant deducts the already available 15.68 acres of existing land uses under various education facilities there will be need of additional 35.43 acres of land for education facilities. For detail information, please see **sub-section 4.4.5** of Chapter- 4.

g. Health Services

There is one existing health complex within the Paurashava. Estimate shows 10 acres of land for the health complex according to recommended standard. The consultant feels that no additional land is required for the Upazila health complex for a Paurashava like Mathbaria. So no additional land is proposed for the facility. In future, as the population and density increases, demand for local health facilities will increase. So according to standard 7.64 acres is required for Health centre/Maternity clinic.

h. Open Space

Field survey shows no public park or play field in the town for use by general public except play grounds in the premises of educational institutions. Total recommended land required for various open space recreation facilities stands at 75.96 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex.

i. Circulation Network

In the Paurashava, 36.60 acres (3.25%) of land is under regional and local roads within the Paurashava. Most of the existing roads are with below standard according to the desired width (about 64% of the total length of existing roads widths in the town are 8 ft. or less). So, more standard roads will be needed for proposed roads (including widening, link and new roads) up to the year 2031.

j. Transportation Facilities

In the field of transport establishment the consultant proposes such facilities as, bus terminal, truck terminal, rickshaw stands at selected places, baby taxi/tempo stand and passenger shed for local bus users. These categories of land uses require a total 9.3 acres of land where there is about 0.50 acres of existing land under such facilities. So an additional 8.63 acres of land will be required up to the year 2031. Please see **sub-section 4.4.8 of Chapter- 4**. However, many of the proposals may seem pre matured, but will be necessary in future. If land acquisition for these facilities is delayed, land may not be available in future for providing such facilities.

k. Government Office

Mathbaria Paurashava has an own office building. There is also Upazila Complex in Mathbaria and the consultant considers that no additional land is required other than the present Paurashava and upazila office building. Other Government Offices (Police Station, Police Box/Outpost, Fire Station, and Post Office) require a total of 12.83 acre land shown in Table-4.13 of Chapter 4 in this report. Mathbaria Fire station is already existed within Paurashava and the consultant requires no further land for this purpose.

l. Community Facility

For various community facilities, the land requirement has been fixed at 10.50 acres. The existing coverage area of Mosque/Church/Temple exceeds the standard requirement. There is about 2.22 acres of graveyard (urban green space) in Mathbaria Paurashava but all these lands are under mosque or family based and not centrally or publicly provided. There is no central or Paurashava owned graveyard in Mathbaria Paurashava. For details, please see **sub-section 4.4.10** of Chapter- 4.

m. Utility Service

A number of utility establishments are required in a town to run services properly. The consultant, according to approved standard, has earmarked 1.59 acres for water supply installations, like, pump stations and other establishments related to water supply; 1.59 acres have been fixed for gas related facilities. There will be 9 waste transfer stations for collection of solid waste located at suitable locations. Each ward will have one station with an area of up to 0.25 acre. So there will be need for maximum 2.25 acres for 9 transfer stations. A dumping site will be developed and over an area of 4.00 acres for final disposal of the solid waste will be enough for a small Paurashava like Mathbaria. For power supply, an electric substation has been earmarked. For this purpose, 1.59 acres of land is required as per standard supplied by PMO. The total land requirement under this category is 12.75 acres. Please see **Table-4.15** of Chapter 4 in this report for details.

n. Recreational Facility

There is no available indoor recreation facility in Mathbaria except Alim Cinema Hall. Recreation facility (cinema/theater hall) requires a total of 1.59 acres of land as per standard supplied by PMO.

o. Agriculture

Existing total area under agricultural use is 405.93 acres and it is the 36.01% of the total Paurashava area. After implementation of the Urban Area Plan up to the year 2031, it will be reduced to 239.88 acres and it will become only 21.26% of the Paurashava area during the end of the plan period.

p. Rural Settlement

Most of the Upazila level towns in Bangladesh, including Mathbaria, are rural based. It is unlikely that all the lands under agriculture will be converted to urban during the project period. A portion of this agriculture based residential area is earmarked in the Master Plan and this residential area will remain as rural settlement area with low density and limited urban services. This area will have a density of maximum 20 – 30 persons per acre. For the project period, a total of 99.16 acres of land or 8.79% of the total Paurashava area has been earmarked as rural settlement area.

q. Urban Deferred

The Urban Deferred refers to lands lying outside of the urban growth boundary and identified as Urban Deferred and encompassed by the Urban Deferred Boundary. According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 81.22 (7.20% of the existing Paurashava area) acres that include existing and proposed land uses. Livestock and vegetation based agriculture and existing facilities up to the date of gazette notification of the master plan are permitted uses within the Urban Deferred Zone.

r. Water Body

Water bodies like canal, tanks, ponds, ditch, etc. encompass almost 124.54 acres which is about 11.05% of the Paurashava area. Machua khal and other few small khals have flown all over the Paura area as spider web and are connected with Kacha, Baleswar and Bishkhali Rivers. More or less, all of the wards have significant amount of water bodies. Total 76.71 acres (6.80% of the total structure plan as well as the existing Paurashava area) of land are proposed as waterbody and retention area and it is the 6.80% of the total Paurashava area.

Other 6 categories of landuse, (Heavy industrial zone, historical and heritage site, overlay zone, forest, beach and miscellaneous) are not existed as well as proposed in Mathbaria Paurashava and following **table- 10.2** shows the existing and proposed Landuse within Mathbaria Paurashava (**gazetted on May 27, 1993**).

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Table- 10.2: Existing and Proposed Landuse within Mathbaria Paurashava (Excluding Extended Area that gazetted at May 20, 2013)

SI No.	Landuse Category	Existing Landuse		Proposed Landuse	
		Area (Acre)	%	Area (Acre)	%
1	Agricultural Zone	405.93	36.01	227.43	20.23
2	Circulation Network	36.60	3.25	160.65	14.29
3	Commercial Zone	18.11	1.61	8.25	0.73
4	Community Facilities	4.31	0.38	2.16	0.19
5	Education & Research Zone	15.68	1.39	18.62	1.66
6	Government Office	12.52	1.11	29.94	2.66
7	Health Services	8.72	0.77	3.50	0.31
8	Mixed Use Zone	4.63	0.41	58.66	5.22
9	Open Space	2.30	0.20	32.45	2.89
11	Recreational Facilities	0.34	0.03	0.26	0.02
12	Rural Settlement	0.00	0.00	98.46	8.76
13	Transportation Facilities	0.50	0.04	0.99	0.09
14	Urban Deferred	0.00	0.00	80.69	7.18
15	Urban Residential Zone	488.03	43.30	326.05	29.01
16	Utility Services	0.00	0.00	2.92	0.26
17	Waterbody	124.54	11.05	72.93	6.49
18	General Industrial Zone	2.57	0.23	0.00	0.00
19	Non-Government Services	0.18	0.02	0.00	0.00
20	Urban Green Space	2.22	0.20	0.00	0.00
Total		1124.92	100	1124.92	100

10.3 Land Use Zoning and Development Control

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

10.3.1 Land Use Zoning

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

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

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

Area Zoning

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

Density Zoning

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

Height Zoning

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

Considering the existing level of development and development prospects and the location of the project area, consultant recommends to follow the area zoning only.

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

10.3.2 Land Use Zone Classification

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 landuse zone classification recommended by the PMO.

- | | |
|------------------------------|----------------------------------|
| 1) Urban Residential Zone | 2) Rural Settlement |
| 3) Commercial Zone | 4) Mixed Use Zone |
| 5) General Industrial Zone | 6) Government Office |
| 7) Education & Research Zone | 8) Agricultural Zone |
| 9) Waterbody | 10) Open Space |
| 11) Circulation Network | 12) Transportation Facilities |
| 13) Utility Services | 14) Health Services |
| 15) Community Facilities | 16) Urban Deferred |
| 17) Recreational Facilities | 18) Restricted Area |
| 19) Overlay Zone | 20) Forest |
| 21) Beach | 22) Miscellaneous |
| 23) Heavy Industrial Zone | 24) Historical and Heritage Site |

First 19 landuse zoning of the above list are available and proposed for Mathbaria Paurashava Master Plan and the **last 5** will not be applicable for Mathbaria. 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**.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

After a detailed consultation with the LGED counter-part, the land use classification for the Paurashava Master Plan is being finalized as shown in the **Table-10.3**. **Map 10.3** shows Land Use Plan of the Mathbaria Paurashava.

Table-10.3: Land Use Plan of Mathbaria Paurashava (Whole Planning Area)

SL.	Land use Category	Remarks	Area (acre)	%
1	Urban Residential Zone	Urban Residential area is a land use in which housing predominates. These include single family housing, multi-family residential, or mobile homes. Zoning for residential use may permit some services or work opportunities or may totally exclude business and industry. It may permit high density land use.	388.72	11.36
2	Rural Settlement	Rural settlement includes the low dense residential area which is scattered and rural in nature. It may permit only low density uses. Aiming to control the growth in this zone, less service and facilities will be provided.	438.84	12.82
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". Even though these commercial activities use only a small amount of land, they are extremely important to a community's economy. Commercial land includes established markets and areas earmarked for markets.	12.67	0.37
4	Mixed Use Zone	Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.).	58.66	1.71
5	General Industrial Zone	Green and Orange A categories as per The Environment Conservation Rules, 1997	51.19	1.50
6	Heavy Industrial Zone	Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997)	Not Recommended	
7	Government Services	All Government Offices except large scale service based offices as Civil Surgeon Office, DC Office, Police Box, Police Fari, Police Station, LGED Office, Paurashava Office, Settlement Office, Union Parishad Office, Upazila Headquarter, BADC Office, Fisheries Office, Ansar/VDP Office, Agriculture Office, Zila Parishad Office, Post Office ,Telephone Exchange Office and Other Government Offices.	29.94	0.87
8	Education & Research Zone	All kinds of educational institutes like Primary/secondary/other Schools/ Colleges etc are mentioned to calculate the land use for education and research purpose.	18.62	0.54
9	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.	1857.52	54.28
10	Water body	Equal or More than 0.25 acre and justification by the consultant and wet land will merge with water body	137.57	4.02
11	Open Space	Playground, Botanical Garden, Stadium, Zoo	32.45	0.95

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

SL.	Land use Category	Remarks	Area (acre)	%
		etc. (Facilities without or with minimum building structure)		
12	Recreational Facilities	Facilities other than those mentioned to Open Space and indoor based facilities with designated building structure i.e. Cinema Hall, Theater Hall etc.	0.26 (Except Facilities at Ward Center)	0.01
13	Circulation Network	Road and water communication	264.62	7.73
14	Transportation Facilities	Under transport and communication land use both transport and communication services are considered. This category includes airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc.	6.62	0.19
15	Utility Services	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal, Fire Service, Water Pump House, Water Reservoir, Water Treatment Plant, etc.	22.37	0.65
16	Health Services	This land will be used to provide health facility.	3.50	0.10
17	Community Facilities	All community facilities including funeral places and other religious uses	2.16	0.06
18	Historical and Heritage Site	The entire mentionable historical and heritage site.	Not Recommended	
19	Restricted Area	A Restricted Area is an area where no one but certain people can enter. Here the areas which are not accessible for the general public except some high ranked personnel are considered as restricted area.	6.20	0.18
20	Overlay Zone	If the consultant justify any area that should not be defined as other given definitions but the facility(s) may not be avoidable, they may use this category	0.00	0.00
21	Urban Deferred	Optional depending on the Paurashava and the Consultant's judgment	90.36	2.64
22	Forest	Designated Forest Area	Not Recommended	
23	Beach	Sea Beach	Not Recommended	
24	Miscellaneous	Any other categories which are not related to above 23 categories.	Not Recommended	
Total			3422.26	100

One of the major tactics/strategies of the current master plan preparation is to emphasize on ward based development. For this purpose, 'Ward Centre or Neighbourhood Centre' has been proposed at each and every ward. This ward centre is a combination of a series of development proposals namely- Counsellor Office, Neighbourhood Park, Community Centre, Police Box/Outpost, Neighbourhood Market or kitchen market, car parking, community clinic, waste transfer station etc. and this centre will be the centre of all financial and other development activities for the respective ward.

Following is a short description recommended land use zones. The whole urban area (13.87 sq. km.) will be discussed but the plot scheduling will be presented only for the existing Paurashava area that gazetted on May 27, 1993. The other area (the area recently extended and gazetted on May 20, 2013 and proposed extension area recommended by the consultant), considered here as the part of Urban Area Plan, will not provide plot scheduling (for the specific development proposal i.e. Bus Terminal etc.) and the consultant also recommended to detail physical feature survey on mouza maps of recently added as Paurashava extended area and additional extended area recommended by the consultant.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

1) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing 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. It will permit high density land use. In total this zone covers 388.72 acres (11.36% of the total urban plan area) of land delineated up to the year 2031, considering standard provided by LGED. This zone will allow commercial uses as listed in **Table-A.1, ANNEX-C**, and conditional uses as listed in **Table-A.2, ANNEX-C**. Following table shows the plot schedule for special proposal for housing area.

Table- 10.4: New Development proposal for Urban Residential

Type of Facilities	Mouza Name	Plot No.	Area (acre)
Housing Estate	Andhar Manik	Detail survey is required*	38.87
	Mathbaria	Detail survey is required*	6.83
Resettlement Zone	Andhar Manik	Detail survey is required*	12.13
	Mathbaria	Detail survey is required*	4.83
Sweeper's Colony	Uttar Mithakhali/Ward 1	4638-4642	0.54
Total			63.2

* This landuse proposal has been proposed at the extended part of the Paurashava (gazetted on May 20, 2013) and the consultant has been recommended to conduct detail survey during the plan revision after five year of the project.

2) Rural Settlement

Rural settlement includes the low dense residential area which is scattered within planning area 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. This zone has an area of 438.84 acres (12.82% of the urban plan area) designated up to 2031. This zone will allow rural residential uses as listed in **Table-A.7, ANNEX-C**, and conditional uses as listed in **Table-A.8, ANNEX-C**.

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. This zone has an area of 12.67 acres (0.37% of the urban plan area) designated up to 2031. This zone will allow commercial uses as listed in **Table-A.5, ANNEX-C**, and conditional uses as listed in **Table-A.6, ANNEX-C**. Following table shows the plot schedule for commercial activities.

Table- 10.5: New Development proposal for Commercial Activities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Neighborhood Market	8 & 9	Bokshir Ghotichora 022 03	1828-1830, 1882-1884, 1988, 1989, 1992, 1995, 1996	2.38
	2	Dakkhin Mithakhali 037 04	3849, 3862	0.28
	5, 6 &	Mathbaria 021 02	846, 850 - 852, 949, 997, 1001-	2.23

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
	7		1003, 1014, 1127, 1145 - 1147	
	1	Uttar Mithakhali 066 07	4689-4693	0.60
Slaughtering House	2 & 4	Dakkhin Mithakhali 037 04	3920, 3949	0.04
Super Market	5	Mathbaria 021 02	1124-1127	0.13
Cow Hat/Cattle Market		Dakkhin Mithakhali	Located at newly added Paurashava	4.42
Total				10.08

4) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Mathbaria, 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. Total area earmarked for mixed uses stands at 58.66 acres (1.71% of the urban plan area). This zone will allow residential structures together with commercial uses as listed in **Table-A.11, ANNEX-C**, and conditional uses as listed in **Table-A.12, ANNEX-C**.

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. Existing industrial zone has an area of 2.57 acres (0.23% of the existing Paurashava area) and this area is mainly small scale and agro-based industries (poultry saw mills and rice mills mainly). Additional industrial park at recently extended area (Mathbaria and Andhar Manik mouza) has been proposed on an area of 51.19 acres of land (1.50% of the urban plan area). In this zone a complex line of industrial and supporting non-industrial land uses will be permitted as per **Table-A.3, ANNEX-C** and conditional permission will be given to a number of other land uses as specified in **Table-A.4, ANNEX-C**. Following table shows the plot schedule for proposed mini industrial park.

Table- 10.6: New Development proposal for Industry

Type of Facilities	Mouza Name	Plot No.	Area (acre)
General Industrial Zone	Mathbaria and Andharmanik	Detail survey on mouza map is required at revision phase*	51.19
Total			51.19

** This landuse proposal has been proposed at the extended part of the Paurashava (gazetted on May 20, 2013) and the consultant has been recommended to conduct detail survey during the plan revision after five year of the project.*

6) Government Office

Government Office zone covers all kinds of government offices including existing and proposed 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, Upazila Parisad Office. The proposed Government Offices are counsellor office, police box/outposts proposed at ward centres proposed for all the existing wards. The permitted uses in this zone is presented in **Table-A.15, ANNEX-C** and conditional uses as listed in **Table-A.16, ANNEX-C**. The total area under this use has been proposed at 29.94 acres (0.87% of the urban plan area) that include existing and proposed land uses.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Ward Centre

For proper decentralization of facilities, more employment opportunity and inspiring local community bounding consultant has been proposed **Ward Centre Complex** in each and every ward. The center may be three storied and accommodate various facilities in the ward. **Map 10.2** shows the location of proposed **Ward Centre Complexes** in Mathbaria Paurashava. The following proposed facilities can accommodate in the **Ward Center Complex**:

- a. Ward Councilor Office (1st Floor)
- b. Club/ Political Office (1st Floor)
- c. Police Box/Outpost (1st Floor)
- d. Community/Maternity/ Local emergency health facility (Ground Floor)
- e. Car Parking (Ground Floor)
- f. Katcha Bazar (Ground Floor)
- g. Community Center and Theater Hall (2nd Floor)

Table-10.7: Proposed location of the Ward Center Complex in the project area

SI No.	Ward No.	Mouza Name	J. L. No	Sheet No.	Plot No.	Area (Acre)
01	Ward no. 01	Uttar Mithakhali	066	07	4683-4689, 4694-4696	1.36
02	Ward no. 02	Dakkhin Mithakhali	37	04	3848-3849, 3862	1.02
03	Ward no. 03	Dakkhin Mithakhali	37	04	3455, 3464-3478	5.66
04	Ward no. 04	Mathbaria	021	02	1399, 14461449, 1460-1463	1.50
05	Ward no. 05	Mathbaria	021	02	1279 - 1281	0.89
06	Ward no. 06	Mathbaria	021	02	949	1.26
07	Ward no. 07	Mathbaria	021	02	1021, 1039	1.08
08	Ward no. 08	Bokshir Ghotichora	022	03	1828, 1885, 1894	1.81
09	Ward no. 09	Bokshir Ghotichora	022	03	1952, 1989, 1995, 1996, 1999, 2237, 2275, 2276	1.95
Total						16.53

7) Education & Research Zone

Educational & Research zone refers to mainly education & research and other social service facilities as listed in **Table-A.13, ANNEX-C**, and conditional uses as listed in **Table-A.14, ANNEX-C**. The total area under this use has been determined as 18.62 acres (0.54% of the urban plan area) that includes existing, newly proposed land uses and expanding land for existing educational institutions. 4 new primary schools (ward no. 1, 4, 5 & 8) and 3 High Schools at ward no. 02, 03 and 09 along with 1 vocational institute cum cyclone shelter are proposed and other existing institutes are recommended to strengthen their status through vertical expansion and conversion of non-government institutions to MPO (Monthly Payment Order). Following table shows the plot schedule for proposed education & research use zone only.

Table- 10.8: New Development proposal for Education & Research

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Primary School	04	Mathbaria 021 02	1464-1467	0.49
	08	Bokshir Ghotichora 022 03	1916, 1917, 1935-1940	1.02
	01	Dakkhin Mithakhali 037 04	3069-3072	0.28
	05	Mathbaria 021 02	723, 725	0.07
High School	03	Dakkhin Mithakhali 037 04	3661-3663	0.66
	02	Dakkhin Mithakhali 037 04	3341-3343	0.58

Mathbaria Paurashava Master Plan: 2011-2031**Landuse Plan**

	09	Bokshir Ghotichora 022 03	2105, 2106, 2108, 2109	0.28
Vocational Institute & Cyclone Shelter	01	Uttar Mithakhali 066 07	4722-4726, 4735, 4736	2.81
	Total			6.19

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. Details of land uses is presented in **Table-A.17, ANNEX-C** and conditional uses as listed in **Table-A.18, ANNEX-C**. The total area will stand at 1857.52 acres (54.28% of the urban plan area) after the urban area plan is implemented within 2031.

9) Waterbody

72.93 acres or 6.49% of the existing Paurashava (137.57 acres or 4.02% of the urban plan area) area is indicated as waterbody. These will act as water retention area which includes 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 0.15 acres will be preserved as the water retention ponds. There will be permitted uses in this zone as stated in **Table-A.23, ANNEX-C** and allow some other uses conditionally as stated in **Table-A.24, ANNEX-C**.

Water courses are the water flow paths or the existing natural water courses that carry storm water and waste water. These are the existing khals. These facilities should not be allowed to such that endanger their existence and use. In order to preserve them and keep them functional only the uses as suggested in **Table-A.21, ANNEX-C** will be permitted. Some other uses will be permitted on conditions as suggested in the list put in **Table-A.22, ANNEX-C**.

10) Open Space

Recreational and sport facilities without or with minimum building structure i.e. Playground, Botanical Garden, Stadium, Zoo etc. will be listed and proposed under Open Space zone. This zone has been provided to meet the active and passive recreational needs of the people and at the same time, conserve the natural resources. The total area earmarked for this zone stands over 32.45 acres (0.95% of the urban plan area). The details of permitted and conditional permits have been presented in **Table-A.19, ANNEX-C** and conditional uses as listed in **Table-A.20, ANNEX-C**. Following table shows the plot schedule for Open Space zone.

Table- 10.9: New Development Proposal for Open Space

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Central park	01	Uttar Mithakhali 066 07	4632-4633, 4655-4657, 4665-4668, 4700-4715	12.22
Neighbourhood Park	09	Bokshir Ghotichora 022 03	1993, 2108-2112, 2122, 2123, 2236	1.02
	03	Dakkhain Mithakhali 037 04	3447-3449	1.40
	02	Dakkhain Mithakhali 037 04	3361, 3365	0.76
	08	Bokshir Ghotichora 022 03	1897-1901, 2367-2370	1.33
	07	Mathbaria 021 02	1053-1056, 1060, 1061, 1103, 1104	0.66

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

	05	Mathbaria 021 02	1257-1259, 1329, 1330, 1404, 1408 - 1412	2.02
	01	Dakkhain Mithakhali 037 04	3084	1.24
	06	Mathbaria 021 02	830, 831, 858, 859	0.63
Playground	09	Bokshir Ghotichora 022 03	1997, 2102, 2104-2106	0.40
	02	Dakkhain Mithakhali 037 04	3359-3361, 3378	0.77
	07	Mathbaria 021 02	990, 991	0.39
	06	Mathbaria 021 02	839, 840	0.73
	04	Bokshir Ghotichora 022 03	1943, 2291-2294, 2338, 2339	1.65
	03	Dakkhain Mithakhali 037 04	3661-3664	0.60
Upazila Stadium	08	Bokshir Ghotichora 022 03	1856 - 1859	5.32
Total				31.14

11) Circulation Network

In total 160.65 acres or 14.29% of the existing Paurashava area (including 36.60 acres of existing circulation network) has been proposed for circulation network for 2031. The total proposed area of circulation network within the whole urban plan area is 264.62 acres or 7.73% of the whole urban plan area. Road network including primary, secondary, tertiary and local access road falls 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. There is no formal Bus Terminal of Mathbaria Paurashava. Hence, a Bus and Truck Terminal has been proposed as multi modal terminal for Mathbaria Paurashava located beside Tushkhali road, some 300 metre from Mathbaria Fire Service and Civil Defence Office along with other 6 CNG/Rickshaw stand at different locations of the Paurashava. Following table shows the plot schedule for Transportation Facilities zone.

Table- 10.10: New Development proposal for Transportation Facilities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Bus & Truck Terminal	Uttar Mithakhali	Uttar Mithakhali	Detail Survey required*	5.06
	Dakkhin Mithakhali	Dakkhin Mithakhali	Detail Survey required*	0.56
CNG/Rickshaw Stand	01	Uttar Mithakhali 066 07	4757, 4797	0.26
	02	Dakkhin Mithakhali 037 04	3850, 3938	0.09
	06	Mathbaria 021 02	1112-1114	0.26
	07	Mathbaria 021 02	1038	0.09
	09	Bokshir Ghotichora 022 03	1944	0.29
Total				6.61

* This landuse proposal has been proposed at the extended part of the Paurashava (gazetted on May 20, 2013) and the consultant has been recommended to conduct detail survey during the plan revision after five year of the project.

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. The consultant has earmarked area for water supply installations, like, pump stations and

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

other establishments related to water supply at the different locations. There will be 9 waste transfer stations for collection of solid waste located at suitable locations of each wards. Each ward will have one station with an area of up to 0.25 acre. The Consultant has earmarked those. So there will be need for maximum 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 1.99 acres for final disposal of the solid waste proposed at the north-western periphery of the existing Paurashava (Uttar Mithakhali Mouza. It is less than the standard due to the scarce of the land and the consultant feel that it will be enough if it be used under scientific method. Following table shows the plot schedule of proposed utility services proposed for mathbaria Paurashava.

Table- 10.11: New Development proposal for Utility Services

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Dumping Station	01	Uttar Mithakhali 066 07	4635, 4636, 4638-4643, 99999	1.99
Waste Transfer Station	01	Uttar Mithakhali 066 07	4690	0.04
	02, 03	Dakkhin Mithakhali 037 04	3477, 3478, 3849, 3862	0.12
	04, 05, 06, 07	Mathbaria 021 02	851, 852, 1039, 1281, 1449	0.26
	08, 09	Bakshir Ghatichora 022 03	1911, 1925, 2139, 2217	0.11
Water Supply Station	07	Mathbaria 021 02	1012, 1021	0.39
	Sener Tikikata	Sener Tikikata	Detail Survey required*	19.45
Total				22.36

* This landuse proposal has been proposed at the extended part of the Paurashava (gazetted on May 20, 2013) and the consultant has been recommended to conduct detail survey during the plan revision after five year of the project.

14) Restricted Area

To ensure uninterrupted electricity supply, an electric sub-station has been proposed for Mathbaria Paurashava. Following table shows the ward wise plot schedule for Community Facilities zone.

Table- 10.12: New Development Proposal as Restricted Area

Type of Facilities	Mouza Name	Plot No.	Area (acre)
Electric Sub-station	Mathbaria	Detail Survey required*	6.20
Total			6.20

* This landuse proposal has been proposed at the extended part of the Paurashava (gazetted on May 20, 2013) and the consultant has been recommended to conduct detail survey during the plan revision after five year of the project.

15) 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. Without creating hazards to surrounding land uses. This zone (proposed & including) has an area of 3.50 acres designated up to 2031 except the proposed community and maternity clinics proposed at each and every 'Ward Centre as well as neighbourhood center'.

Mathbaria Paurashava Master Plan: 2011-2031 Landuse Plan

Beside the Upazila Health Complex, there are also other 19 private hospitals/health centres and diagnostic centres in Mathbaria. The important private health centres are Islami Hospital, Al Manar Islami Hospital, Mathbaria Sadar Clinic, Feroza Clinic Nursing Home Private Limited, Matresadan Clinic & Diagnostic Centre, Kuwait Probasi Hospital & Diagnostic Centre, Mahima Clinic & Diagnostic Centre, Palli Orthopedic Clinic & Diagnostic Centre, Mazeda Memorial Hospital etc.

There are also one permanent and other twelve temporary EPI Vaccination centres in Mathbaria Paurashava. This zone will allow rural residential uses as listed in **Table-A.9, ANNEX-C**, and conditional uses as listed in **Table-A.10, ANNEX-C**.

16) Community Facilities

All community facilities, including funeral places (i.e. graveyards) and other religious uses denoted as community facilities. This zone earmarked with an area of 2.16 acres (including existing and proposed) designated up to 2031 and it covers about only 0.06% of the urban plan area. Beside these, community centre facilities also been proposed at each and every 'Ward Centre' proposed for the Paurashava. Following table shows the ward wise plot schedule for Community Facilities zone.

Table- 10.13: New Development proposal for Community Facilities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Central Cremation Ground	07	Mathbaria 021 02	899, 1036, 1037	0.10
Central Graveyard	07	Mathbaria 021 02	1025-1027, 1032, 1035, 1036, 1038	1.54
Total				1.64

17) Recreational Facilities

Mathbaria Paurashava has a lack of formal recreational facilities both on active and passive. It has only a cinema hall at ward number 1 beside Tushkhali road. The total existing recreational area in Mathbaria Paurashava is only 0.26 acres. The consultant proposes community centre and theatre hall located on proposed ward centres.

18) Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 90.36 acres or 2.64% of the urban plan area and 7.18% 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.

19) 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 an 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.

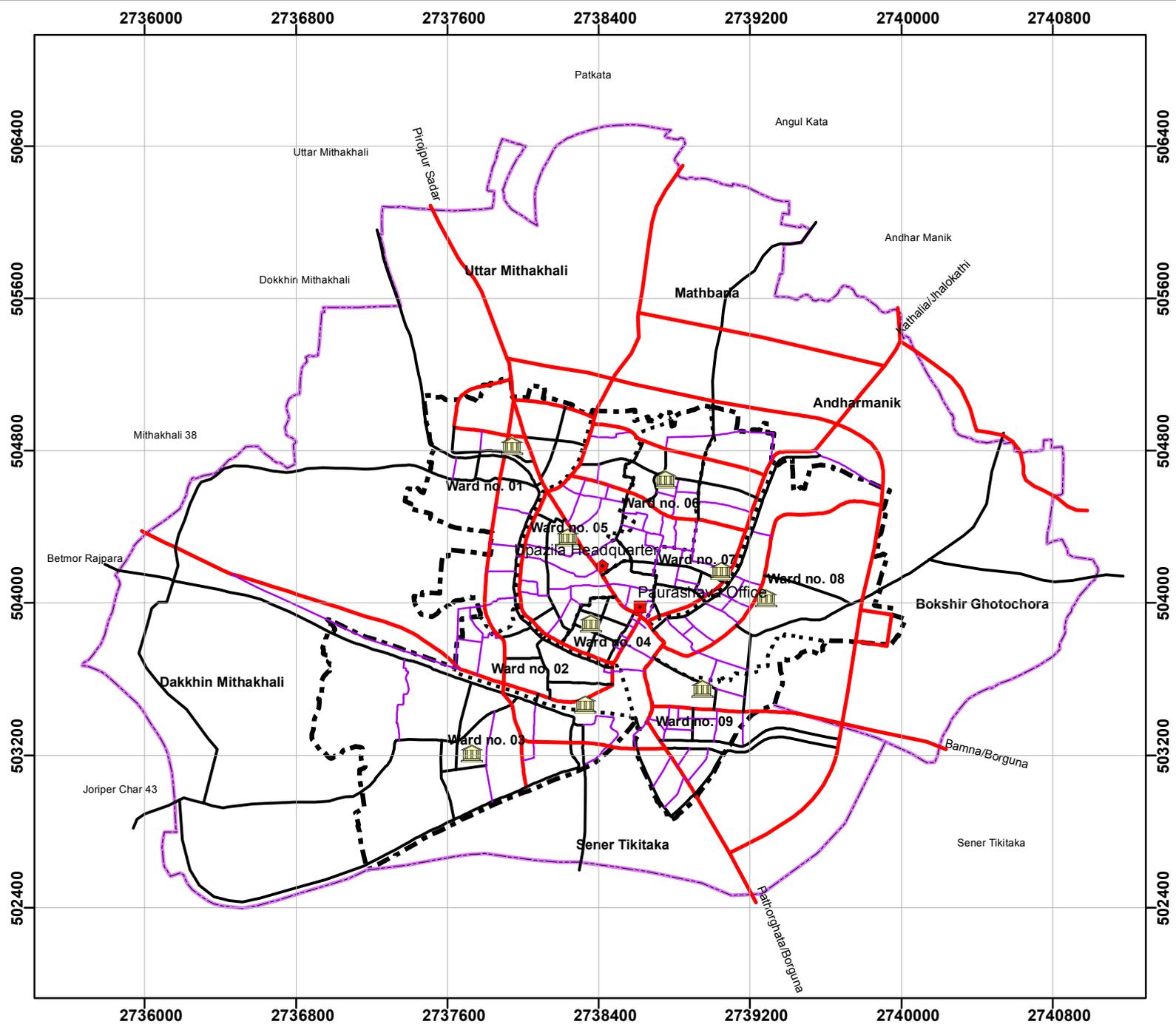
- ***Special Use Sites***

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.

Following **Map- 10.3** and **Annexure** (attached later) shows the urban area map with proposed landuse pattern of Mathbaria Paurashava.

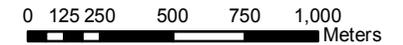
Map 10.2

Location of proposed Ward (Neighbourhood) Centre Complexes in Mathbaria Paurashava



SCALE

1:29,500



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Urban Services

- Paurashava Office
- Upazila Complex
- Neighbourhood Center

Proposed Roads

- Primary Road
- Secondary Road
- Tertiary Road

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



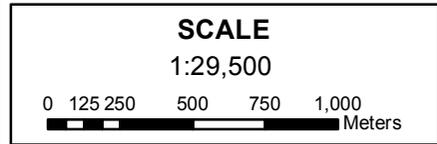
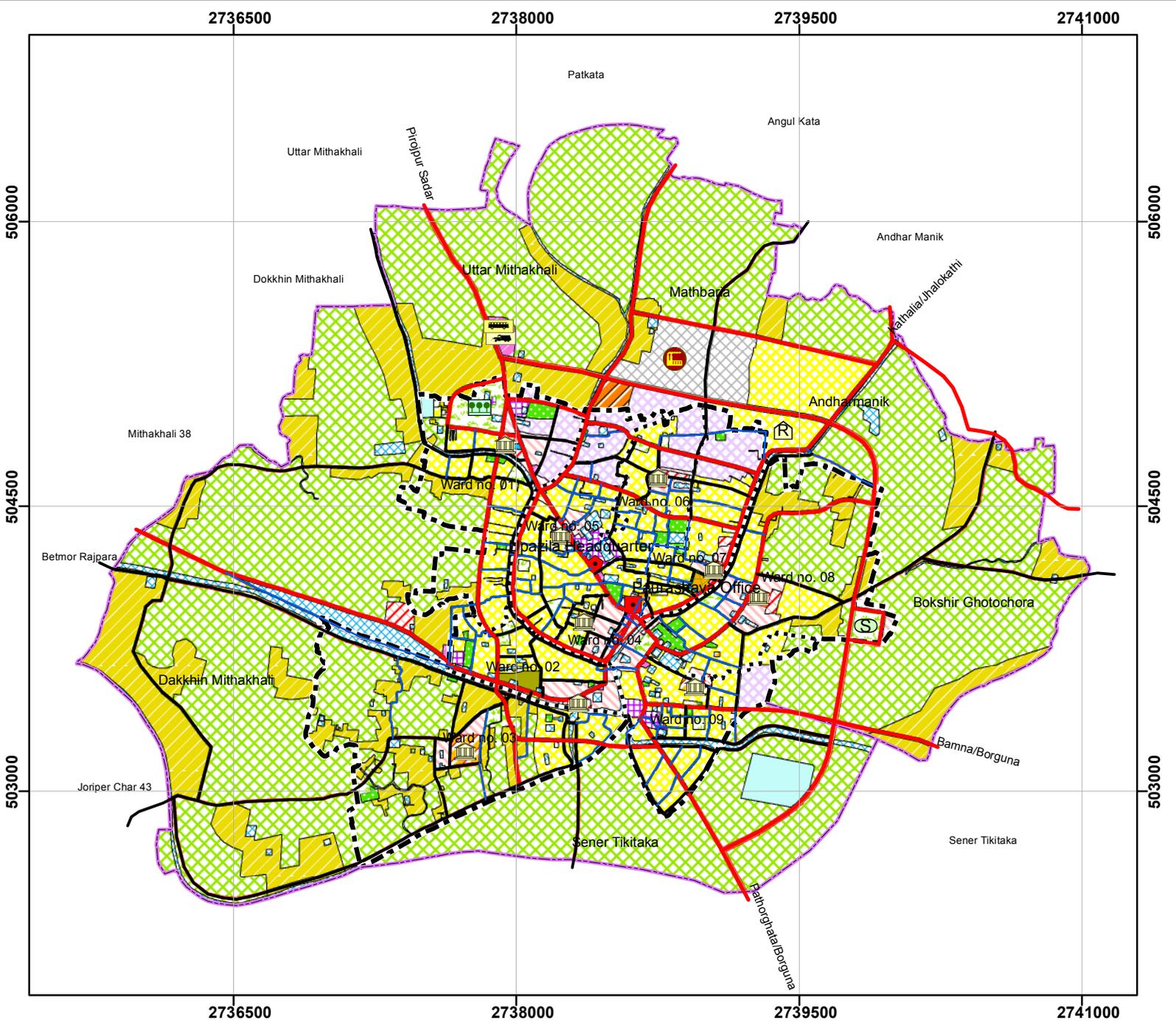
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Ministry of Local Government, Rural Development and Cooperatives
Local Government Division

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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Map 10.3

Urban area map with proposed landuse pattern of Mathbaria Paurashava



- LEGEND**
- Planning Area Boundary
 - Paurashava Boundary
 - Ward Boundary
 - Paurashava Office
 - Upazila Headquarter
 - Central Park
 - Industrial Estate
 - Neighbourhood Center
 - Paurashava Office
 - Resettlement Zone
- Major Services**
- Bus Terminal
 - Truck Terminal
 - Central Graveyard
 - Upazila Hospital
 - Upazila Stadium

- Proposed Landuse Plan**
- Urban Residential Zone
 - Rural Settlement
 - Commercial Zone
 - Mixed Use Zone
 - General Industrial Zone
 - Heavy Industrial Zone
 - Government Office
 - Education & Research
 - Agricultural Zone
 - Waterbody
 - Open Space
 - Recreational Facilities
 - Circulation Network
 - Transportation Facilities
 - Utility Services
 - Health Services
 - Community Facilities
 - Historical & Heritage Site
 - Restricted Area
 - Overlay Zone
 - Urban Deferred
 - Forest
 - Beach
 - Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District


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10.4 Plan Implementation Strategy

10.4.1 Land Development Regulations to Implement the Land Use 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 land use plan proposals.

Implementation of the Land use Plan depends on successful pursuit of the policies specified in the Structure Plan. Those policies represent a significant challenge faced 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) Act, 2009 for controlling physical development. This poses a serious constraint to the implementation of the Land use 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 land use plan, following legislative measures are recommended.

1. Impose control on all types 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 land use provision prescribed in the plan. Any permission for building construction, front road width shall not be less than 24 ft. and the construction must follow the Building Construction (Amendment) Rules, 1996.
2. 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 land use component may be controlled with this Act.
3. 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).
4. 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.
5. For the conservation of archeological monuments or structures or historical development the Ancient Monuments Preservation Act, 1904 (Act No. VII of 1904) and National Building Code may be enforced. Archeological Department of Bangladesh and Paurashava authority through a partnership process may preserve such type of development.
6. To control air pollution due for brick burning and 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 securing government authorization.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

7. 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.

8. 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.

9. 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) Act, 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.

10. 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.

11. 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.

12. 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).

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

- the purpose to be achieved by the development controls;
- where controls should be applied;
- what aspect of development needs to be controlled;
- what type of development controls are required;
- what degree or level of development control is required;
- who will be affected by the required control;
- who will be affected by the controls and in what manner;
- when the controls should be applied;
- what will be the likely impact of the controls;
- how and by whom will the controls be administered and enforced.

Development control as an instrument of plan implementation may be selectively applied within the 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.

10.5 Land Use Permit

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

Chapter Eleven

TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

11.0 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.

11.1 Approach and Methodology

A comprehensive transportation study was undertaken to investigate the existing transportation infrastructure, transportation mode and modal share scenario of Mathbaria 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 sixteen hour traffic counting was conducted to assess the traffic volume at the most important traffic point, the zero point of the town as well as 'Mathbaria Chowrasta'. An origin-destination (O-D) survey was also conducted at the same point where origin and destination of the traffic passing through this point was recorded. Speed and Delay survey was done at 3 points on major local roads.

Bus and tempo fleet data were collected from local transport owners' offices like, Bus Owners' Association, Tempo Owners' Association. They also provided information about routes, trips and movement data. Information about bus station and tempo station were collected from the respective owners' associations and the Paurashava/District Administration. Year wise data of non-motorized traffic were collected from the Mathbaria 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.

11.2 Assessment of Existing Conditions of Transportation Facilities

11.2.1 Existing Road Network

According to the Paurashava sources, the length of total roads in the Paurashava is 63.28 km. The physical feature survey of Mathbaria of 2011 and 2012 has identified a total of 63.28 km of road within the Paurashava, among them; ward 3 has highest road length (11.87 k m) whereas ward 4 has lowest length of road (3.98 k.m.). Besides, the Paurashava has 54 bridge/culverts including wooden or bamboo built pools.

Mathbaria is a small newly growing urban centre that has grown out of almost nothing. There only one major road leading to Mathbaria town. A number of other roads pass through the town to different growth centres including district headquarters. Major roads that pass through the heart of the town form an intersection at the centre of the town known as zero point or Mathbaria bazaar. The five roads coming from three different directions meet together at the zero point near the Mathbaria bazar. The routes coming from different places are,

- Sadar Pirojpur
- Soronkhola
- Patharghata
- Bamna and
- Kathali.

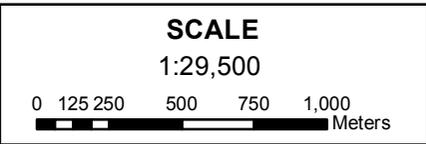
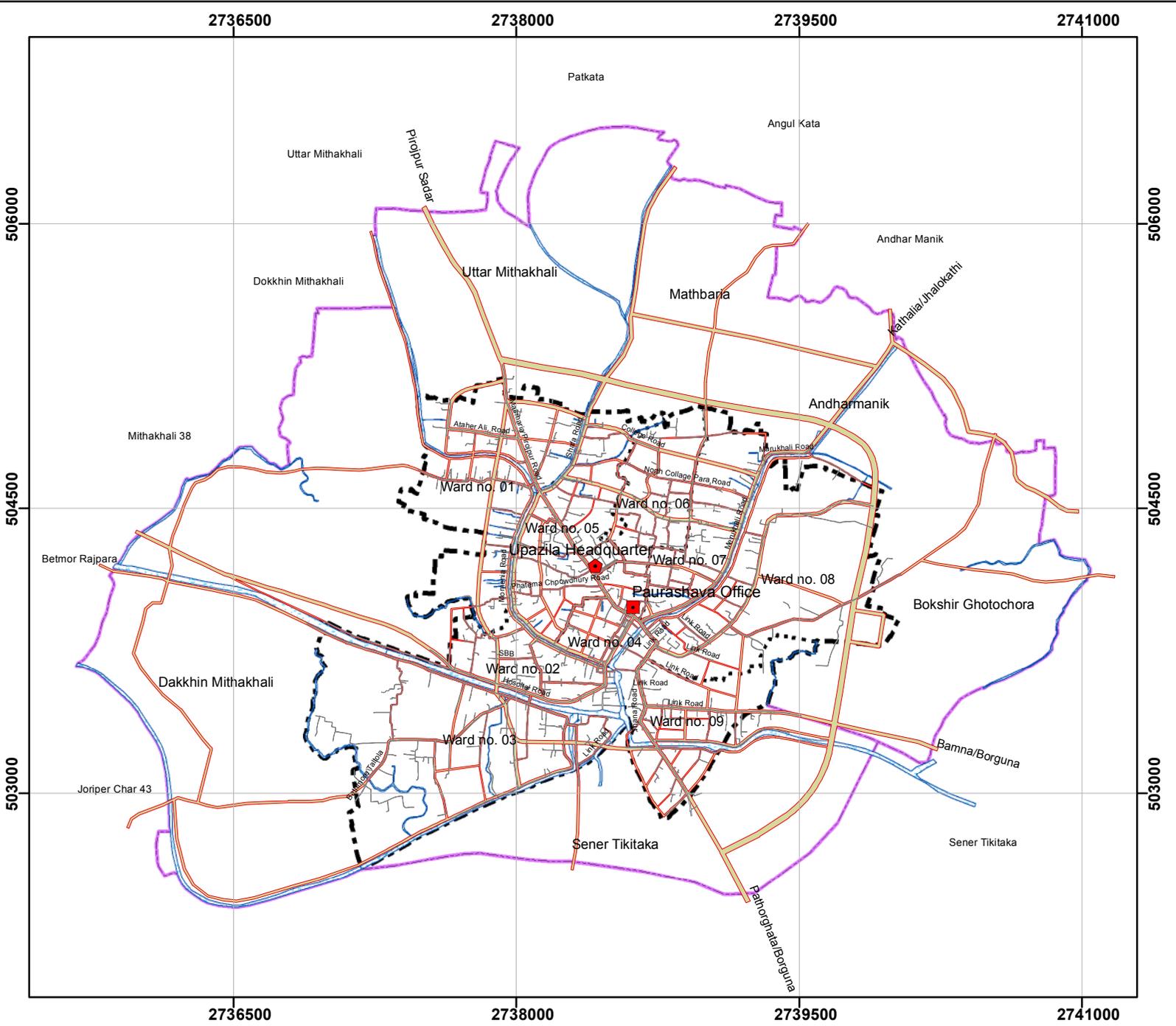
The five roads coming from five different directions cross Machua khal and other small khals. The Pirojpur Sadar road comes from north-west direction, Soronkhola road from the west, Patharghata road from south, Bamna road from east and Kathali road comes from north-east direction. All the roads meet together at zero point as well as the Mathbaria bazaar of the town. Apart from these roads, large number of local roads having width varying from 8 ft. to 12 ft. width, give access to individual houses and establishments and connect them to major roads (**Map-11.1**). All the roads meet together at zero point of the town as well as Mathbaria Zero Point. Apart from major roads, large number of local roads having width varying from 8 ft. to 12 ft. width, give access to individual houses and establishments and connect them to major roads. **Map-11.1** shows the circulation network of Mathbaria Paurashava while a detailed road inventory (proposed) has been enclosed later in **Annexure- E**.

Railway Network

There is no existence of railway network at Mathbaria Paurashava. So, identification of railway network at Mathbaria Paurashava is not possible.

Waterway network

Water transport network of Mathbaria Paurashava has little importance in both carrying people and goods. There is no launch ghat within Paurashava area.



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Admin Point

- Paurashava Office
- Upazila Headquarter

Existing Road

Proposed Road

Canal

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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11.2.2 Mode of Transport

Transportation and Traffic Management Survey results reveal that no public or private bus service is available for internal movement of passengers at Mathbaria Paurashava. Intra city traveling is mostly done through rickshaw, motor cycle, bi-cycle and a small number of rickshaw, etc. Additionally, van is used for carrying both passengers and goods.

11.2.3 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 time periods and determine the influence of large vehicles on vehicular traffic flow, or document traffic volume trends. The counted traffic data for different intersections as well as for different links at different time period and the generated PCU at peak period (from and to) has shown in the following tables.

Direction	Time Period	PCU
Lap pati Mor To Pirojpur	8am-9am	265
Pirojpur to Lap pati Mor	4 pm-5pm	297
Lap pati Mor to Pirojpur	3pm-4pm	152
Pirojpur to Lap pati Mor	2pm-3pm	98
Lap pati Mor to Thana Road	9am-10am	141
Thana Road to Lap pati Mor	8am-9am	174
Upazila Mor to Rajoir	7pm-8pm	41
Rajoir to Upazila Mor	5pm-6pm	173
Lap pati Mor to Bathmore Taltola	11am-12pm	60
Bathmore Taltola to Lap pati Mor	11am-12pm	98
Lap pati Mor to Bathmore Taltola	5pm-6pm	103
Bathmore Taltola to Lap pati Mor	5pm-6pm	124
Hospital Mor to Pathar Ghata	6pm-7pm	121
Pathar Ghata to Hospital Mor	9am-10am	146
Rest house Mor to Paisharhat	9am-10am	135
Paisharhat to Rest House Mor	4pm-5pm	139
Hospital Mor To Sadar Road	5pm-6pm	135
Sadar Road to Hospital Mor	4pm-5pm	103
Hospital Mor to Sadar Road	5m-6pm	121
Sadar Road to Hospital Mor	11am-12pm	143
Rest House Mor to Bazar	1pm-2pm	92
Bazar to Rest House Mor	6pm-7pm	70
Rest House Mor to Bazar	9am-10am	75
Bazar to Rest House Mor	5pm-6pm	84

11.2.4 Level of Service: Degree of Traffic Congestion and Delay

Generally intersections are the traffic conflicting points but intersections at Mathbaria Paurashava do not face traffic conflicts. As because Mathbaria is a remote southern Paurashava and traffic flow specially motorized traffic flow is very low. From traffic volume survey at Mathbaria Paurashava it is found that all the major link roads have Level of Service A. That means Mathbaria is a zone of free flow, with low volumes, high speeds and road capacity is high. Traffic density is low and little or no restriction in maneuverability.

11.2.5 Facilities for Pedestrians

Pedestrians are found to move in both directions, going in and out of the both sides of the roads. The town does not have any footpath for pedestrian movement. Pedestrian movements take place mostly on carriageway and right of way of the roads.

11.2.6 Analysis of Existing Deficiencies

As in any other small town in Bangladesh, Mathbaria has also its own road and transportation deficiencies. These deficiencies have been identified from two different sources-first, by reconnaissance survey of the town, field observation and physical surveys, passenger and operator interviews and the second by means of household sample survey.

11.2.6.1 Roadway Capacity Deficiencies

Narrow Road Width

Road network in the town is not planned nor standardised. As there was no town plans earlier covering road network, roads were developed in an unplanned manner. No standards have been followed in determining road width, network design. Road widths are of rural type. More than 50% of the total road length is pucca roads, which is an example of good work done by the Paurashava. As physical feature survey shows, about 64% of the total length of roads widths in the town are 8 ft. or less as field survey shows, 50% of the households of the town reported that the road widths in front of their houses are 8 ft. or less. These roads are not capable to serve an Upazila town like Mathbaria. Therefore, narrow widths of roads and poor maintenance have been marked everywhere. These also have been expressed in opinion survey of the households.

Narrow widths of roads and poor maintenance have been marked by most respondents as major road problems in the town. About 20% of the respondents have pointed to the misery of road movement during monsoon when unpaved roads get muddy. Narrow width of roads is likely to become a major problem of traffic movement as the town grows and density of population increases in future. As field survey shows, 50% of the households of the town reported that the road widths in front of their houses are 8 ft. or less. In future traffic will rise and will create serious traffic congestion on the narrow streets. There is little chance that the authority will be able increase the road width in highly built up areas- especially in the crossing point of main bazaar area, as there will be high cost involvement and social-pressure on any attempt to demolition.

Tortuous Road and Missing Link

A major characteristic of spontaneously developed roads is that, they are tortuous in their shapes. This is because land owners allow roads to follow alignment along the edges of the tortuous plot boundaries. Another problem of community initiated roads is that they are not in a well Link Road network. Sometimes links to nearby roads are missing. This causes people travel comparatively longer distances to reach a nearby destination.

Traffic Conflict and Congestion

Generally intersections are the traffic conflicting points but intersections at Mathbaria Paurashava do not face traffic conflicts. As because Mathbaria is a remote southern Paurashava and traffic flow specially motorized traffic flow is very low. From traffic volume survey at Mathbaria Paurashava it is found that all the major link roads have Level of Service A. That means Mathbaria is a zone of free flow, with low volumes, high speeds and road capacity is high. Traffic density is low and little or no restriction in maneuverability.

11.2.6.2 Operational Safety, Signal and other Deficiencies

Like any other upazila town, Mathbaria Paurashava lacks traffic management system. There is no traffic management point and traffic island and no signal posts. There is hardly a traffic police at Lap Pati More to maintain manual traffic system. So the traffic operation and road safety are yet to become important traffic issues.

11.3 Future Projections

11.3.1 Travel Demand Forecasting for Next 20 Years

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

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

However, the complexities of traffic in the study area are assumed to be insignificant. At this level of traffic current measures are sufficient to manage traffic. Detailed traffic study is recommended when the size of vehicle to a level which will be unmanageable.

11.3.2 Transportation Network

The physical feature survey has identified a number of problems constraining the development efficient transport network in the Paurashava. There are:

- 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 necessary to workout a comprehensive network based transportation plan and reserve necessary die future road development. In the Transportation Plan, north, south, east and west direction links with the Paurashava have to consider. To maintain an effective linkage, secondary and tertiary roads will have to be proposed.

11.3.3 Future Traffic Volume and Level of Service

Present population of the Paurashava is 18375 (2011) and after 20 years it will be 31798 (2031). Highest PCU/hr. is about 562 at Pirojpur Sadar Road. It is expected that gradual implementation of the components prescribed in the Master Plan will increase traffic volume. This road is the busiest road and main commercial (wholesale, retail and occasional) activities are concentrated on and beside this road. Serious traffic congestion will occur on this road at near future. The highest road width at present varies from 15 to 20 feet (ROW).

11.4 Transportation Development Plan

Following are the suggested planning standards for road transport (**Table-11.1**). The standards are meant for use by UTIDP, LGED and other planning and development agencies. The standards have been adopted by the consultants to use in current series of plans.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Table 11.1: Proposal for Road Standard in the Project area

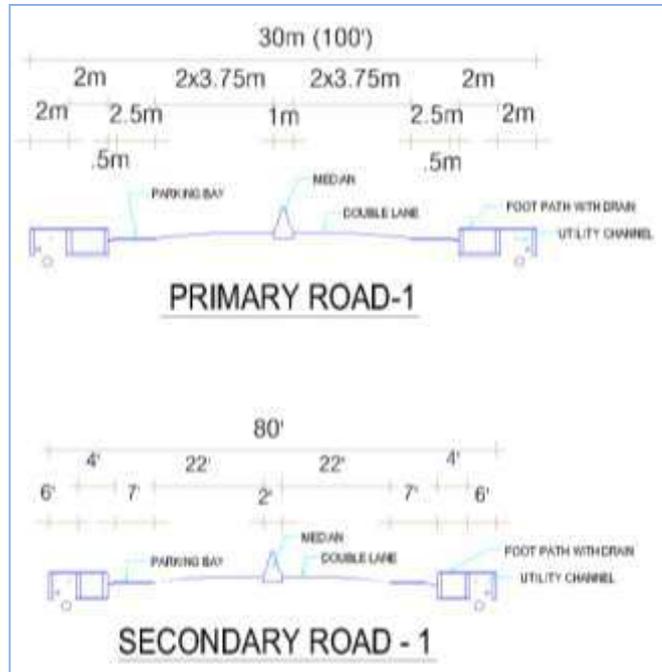
Road Category	Recommended RoW by UTIDP in feet	Recommended RoW by Consultant for Mathbaria in feet
Paurashava primary roads	150 – 100	60 - 100
Paurashava secondary roads	100 – 60	30- 40
Paurashava local roads	40 - 20	20

Source: *Upazila Towns Infrastructure Development Project (UTIDP) & Consultant*

Neighborhood and Local Road

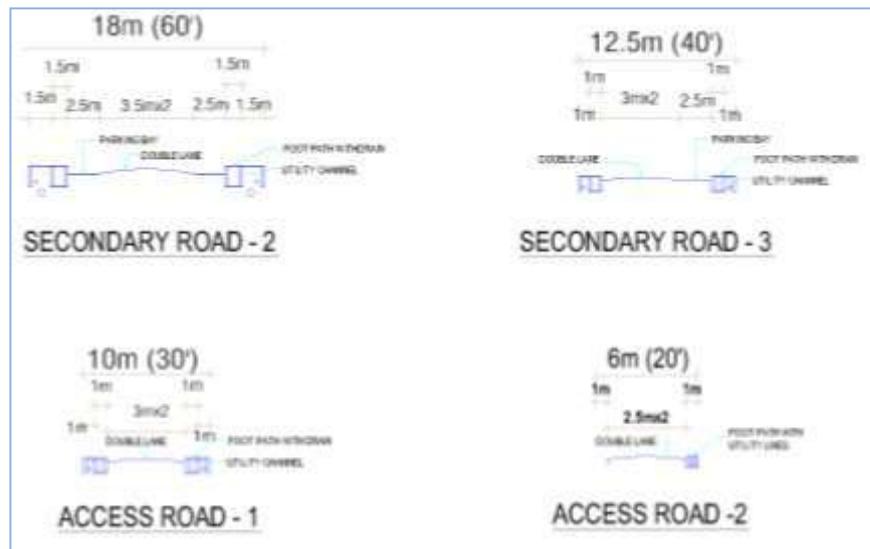
All neighborhoods (mahallah) Roads ROW may be in between 20 ft. to 30 ft wide depending on their functions.

After considering the location of Mathbaria in respect to sadar and Barisal region, physical growth trend, potential future commercial and business route, potential future demand, travel demand and many others, the consultant has redesigned working road standard for Mathbaria. By this time, for the planning purpose of Mathbaria Paurashava under Upazila Towns Infrastructure Development Project (UTIDP), Primary road considered as roads proposed in between 60 to 100 ft RoW, Secondary road considered as roads proposed in between 30 to 40 ft RoW and Tertiary road considered below 30 ft RoW.



Standard Road Design

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



Functions of Roads

Each category of road has its particular functions to perform.

Access Road carries traffic from buildings to the **collector Road** and collector Road carry traffic to the **major Road** and vice versa. In reality, however, it is almost impossible to maintain this hierarchical use of Roads except in an entirely planned area. However, functions will not be dependent on the Road width, rather on the location of the Road, surrounding land use and the link it is providing or the volume of traffic it is carrying. Thus an 60 feet wide road can become a major road due to its strategic location and the purpose it is serving.

11.4.1 Plan for Road Network Development

11.4.1.1 Road Network Plan

The five roads coming from five different directions cross Machua khal and other small khals. The Pirojpur Sadar road comes from north-west direction, Soronkhola road from the west, Patharghata road from south, Bamna road from east and Kathali road comes from north-east direction. All the roads meet together at zero point as well as the Mathbaria bazaar of the town. Apart from these roads, large number of local roads having width varying from 8 ft. to 12 ft. width, give access to individual houses and establishments and connect them to major roads. All the roads meet together at zero point of the town as well as Mathbaria Zero Point. Apart from major roads, large number of local roads having width varying from 8 ft. to 12 ft. width, give access to individual houses and establishments and connect them to major roads. Existing RoW of the leading road (Tushkhali Road or Mathbaria- Pirojpur road) is not sufficient to support all the traffic passes this road which causes serious traffic congestion at this point. Most dense and multi-storied structures are situated in this road. This road requires bypass, and only road widening will not solve the congestion problem to increase the level of service (LoS). Mathbaria – Pirojpur road connects Mathbaria with Patharghata (26 km from Mathbaria) of Barguna Zila. Branches of this leading road connects Soronkhola (12 km from Mathbaria) of Bagerhat, Bamna (12 km from Mathbaria), Amtali (56 km from Mathbaria) and Barguna sadar (37 km from Mathbaria) of Barguna zila, Kuakata (100 km from Mathbaria), Kalapara, Galachipa and Patuakhali sadar of Patuakhali zila, Bhnadaria (34 km from Mathbaria) of Pirojpur zila, Kathalia (35 km from Mathbaria), Rajapur and Jhalkathi sadar of Jhalkathi zila. Location of Mathbaria has a potentiality to become an economic zone with respect to surrounding region. A huge pressure of traffic will create in near future, especially when the current master plan and recently started coastal region project will be implemented and the dream of Padma Bridge become true. It is not possible for the existing road network to support the future traffic pressure. The current plan proposes to improve the major 5 roads of five different directions (mentioned earlier) both by widening and improving the surface condition of the roads. To avoid huge pressure of traffic coming from different locations on Mathbaria core area, two bypass roads have proposed in Mathbaria proposed from the starting point of the existing Paurashava (entry point of the Paurashava through Tushkhali to Mathbaria direction) and will be connected with Patharghata road (at the south – east of existing Paurashava). Details of proposed major new roads and widening of roads is presented in following table while a detailed road inventory (proposed) has been enclosed in **Annexure- E** later. **Map-11.1** shows the proposed and existing road network of Mathbaria Paurashava.

Table 11.2: Major Road (Primary Roads) Proposal for Mathbaria Paurashava

Proposed Road ID	Ex Width (Ft)	Proposed Width (Ft)	Length (m)	Phasing	Road Name	Road Type	Proposal
PP 2	12	60	2084.79	01	Mohila College Road	Primary Road	Widening
PP 3	12	60	616.37	01	Hospital Road	Primary Road	Widening
PP 4	15	60	108.42	01		Primary Road	Widening
PP 5	15	60	216.70	01	Thana Road	Primary Road	Widening
PP 6	10	60	686.10	01	Link Road	Primary Road	Widening
PP 8	15	60	89.31	01	Sadar Road	Primary Road	Widening
PP 9	12	60	373.48	01	Link Road	Primary Road	Widening
PP 17	15	60	1091.34	01	Marukhali Road	Primary Road	Widening
PP 19	12	60	495.35	01	Merukhali Road	Primary Road	Widening
PP 20	13	60	456.64	01	Link Road	Primary Road	Widening
PP 38	15	60	182.50	01	Sadar Road	Primary Road	Widening

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed Road ID	Ex Width (Ft)	Proposed Width (Ft)	Length (m)	Phasing	Road Name	Road Type	Proposal
PP 39	12	60	205.19	01		Primary Road	Widening
PP 40	12	60	808.66	01		Primary Road	Widening
PP 42	15	60	114.05	01	Khan Shaheb Hatimali Road	Primary Road	Widening
PP 51	10	60	276.34	01		Primary Road	Widening
PP 53	10	60	985.72	01		Primary Road	Widening
PP 59	20	60	685.78	01	Mathbaria-Pathorghata Road	Primary Road	Widening
PP 61	15	60	740.53	01	Mathbaria Pirojpur Road	Primary Road	Widening
PP 66	6	60	92.28	01		Primary Road	Widening
PP 77	10	60	492.82	01	Ataheer Ali Road	Primary Road	Widening
PP 84	8	60	165.50	02		Primary Road	Widening
PP 99	8	60	263.13	02		Primary Road	Widening
PP 105	6	60	371.81	01		Primary Road	Widening
PP 111	10	60	82.33	01	Link Road	Primary Road	Widening
PP 119	15	60	273.72	01	Jatio Net Mohi Uddin Ahamed	Primary Road	Widening
PP 129	15	60	189.47	01	Marukhali Road	Primary Road	Widening
PP 130	15	60	72.08	01	Marukhali Road	Primary Road	Widening
PP 142	7	60	670.49	01		Primary Road	Widening
PP 143	0	60	221.21	02		Primary Road	New Road
PP 147	0	60	339.11	03		Primary Road	Link Road
PP 150	0	60	416.61	03		Primary Road	New Road
PP 151	0	60	441.84	03	Proposed Bypass Road	Primary Road	New Road
PP 155	0	60	624.32	03		Primary Road	New Road
PP 165	15	60	61.03	01	Thana Road	Primary Road	Widening
PP 173	0	60	252.39	02	Proposed Bypass Road	Primary Road	New Road
PP 192	0	60	865.87	03		Primary Road	New Road
PP 203	0	60	541.10	03	Proposed Bypass Road	Primary Road	New Road
PP 204	10	60	166.31	01		Primary Road	Widening
PP 205	12	60	1924.58	01	Shafa Road	Primary Road	Widening
PP 206	0	60	129.98	02		Primary Road	Link Road
PP 207	4	60	82.58	01		Primary Road	Widening
PP 208	5	60	624.00	01		Primary Road	Widening
PP 209	5	60	162.42	01		Primary Road	Widening
PP 210	0	60	224.51	01		Primary Road	New Road
PP 217	0	60	1434.70	03		Primary Road	New Road
PP 220	0	60	164.86	01	Proposed Bypass Road	Primary Road	Widening
PP 229	0	60	1330.68	03		Primary Road	New Road
PP 230	0	60	499.03	03		Primary Road	New Road
PP 62	12	60	762.19	01	Mathbaria Pirojpur Road	Primary Road	Widening

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed Road ID	Ex Width (Ft)	Proposed Width (Ft)	Length (m)	Phasing	Road Name	Road Type	Proposal
PP 62	12	80	902.76	01	Mathbaria Pirojpur Road	Primary Road	Widening
PP 59	20	80	295.33	01	Mathbaria-Pathorghata Road	Primary Road	Widening
PP 219	0	100	4453.26	03	Proposed Bypass Road	Primary Road	New Road
Total			29811.57				

Paurashava Primary Road

Zila Road number **Z8701**, that is Charkhali-Tushkhali-Mathbaria-Patharghata Road, is the existing primary road crossing Mathbaria core zrea and is maintained by Roads & Highways Department (RHD). Two proposed bypass roads along with Soronkhola road, Bamna road, Kathalia road a few internal roads are proposed as Primary roads. Total length of primary roads within Mathbaria is 29.81 km with 60 - 100 ft RoW.

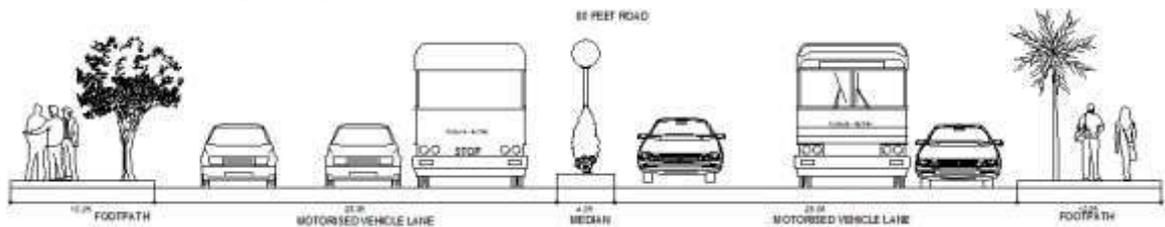


Figure 11.1: Primary Road with 80 ft RoW

Total 18.04 km primary road need to be widened 60 to 100 feet RoW and the rest 11.77 km primary road will be newly constructed to RoW 60 - 100 feet within the Paurashava. **Figure 11.1** shows the layout design of primary road with 80ft RoW and **Figure 11.2** shows the layout design of primary road with 60ft RoW.

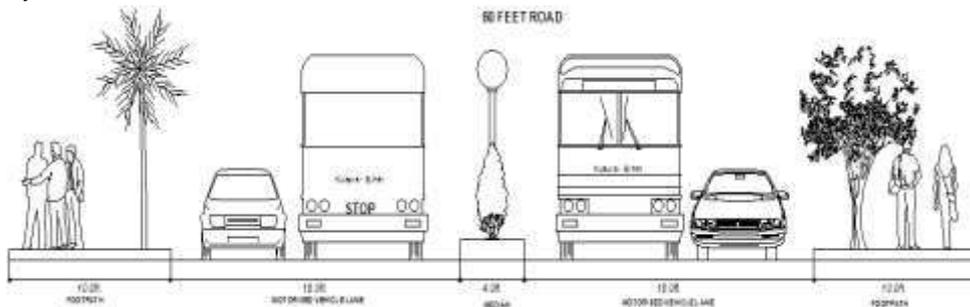


Figure 11.2: Primary Road with 60 ft RoW.

Paurashava Secondary Road

Total secondary road is 35.94 with 40 and 30 ft RoW within Paurashava area. Among this roads, 24.36 km secondary road will be widen to RoW 30-40 feet and rest 11.58 km will be newly constructed to RoW 30-40 feet. **Fig-11.3** shows the layout design of primary road with 40 ft RoW.

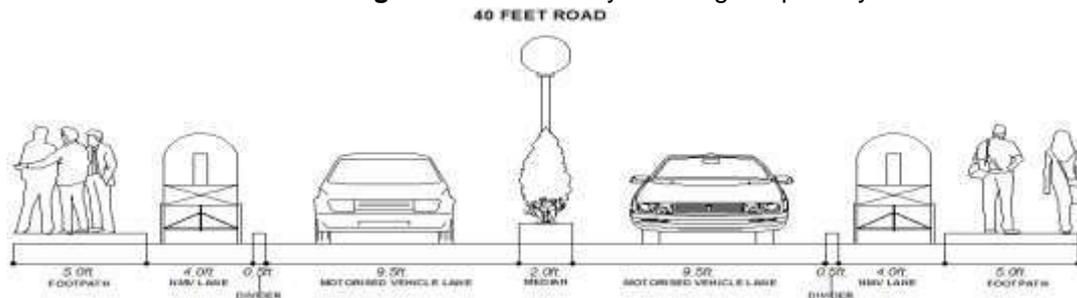


Figure 11.3: Secondary Road with 40 ft RoW.

Paurashava Tertiary Road

Total tertiary road is 17.48 km within Paurashava area with RoW 20 ft. will be developed during the project period. A total of 5.24 km. tertiary road are newly proposed for the existing Paurashava and the rest 12.24 km. tertiary road will be developed as widening within the Paurashava. **Figure 11.4** shows the layout design of tertiary road with 20 ft RoW



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

11.4.1.2 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.

Within the established area, 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 flow 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. Number of junctions or intersections should be minimized with desired spacing being not less than 500 meters.

Mathbaria Paurashava Master Plan: 2011-2031

Landuse Plan

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 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.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

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.

11.4.1.3 Proposals for new roads

To improve existing transportation system a total of 28.59 km new road and 54.64 km widening of different width has been proposed within the entire Paurashava area in the transport development plan. The highest 7.38 km (25.81%) tertiary new road is proposed with 30 ft right of way (RoW), which will function as secondary road, the second highest 7.32 km (25.61%) road is proposed with 60 feet right of way (RoW) and the rest 13.89 km (48.58%) new road is proposed with 20, 40 and 100 ft RoW. Again, 12.24 km, 4.21 km, 20.16 km, 16.84 km 1.20 km road will be widen with 20, 30, 40, 60 and 80 feet RoW respectively. **Table 11.3** shows the summary of new road proposal.

Table 11.3: Summary of new road proposal in Mathbaria Paurashava

RoW (ft)	New Road (km)	(%)	Widening (km)	(%)	Road Type
20	5.24	18.34	12.24	22.40	Tertiary Road
30	7.38	25.81	4.21	7.70	Secondary Road
40	4.20	14.68	20.16	36.89	Secondary Road
60	7.32	25.61	16.84	30.82	Primary Road
80	--	--	1.20	2.19	Primary Road
100	4.45	15.58	--	--	Primary Road
Total	28.59	100.00	54.64	100.00	

11.4.2 Plan for Transportation Facilities

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

11.4.2.1 Proposal for Transportation Facilities

Following are the suggested planning standards (**Table 11.4**) for transport facilities plan. The standards are meant for use by UTIDP, LGED and other planning and development agencies. The standards have been adopted by the consultants to draw up the transportation development plan.

Table 11.4: Estimation of Land Requirement for Transportation Facilities

Use/Facility	Recommended standard	Estimated Land Required (acre)	Existing (acre)	Additional Req. by 2031 (acre)
Bus terminal	1 acre /20,000 popu	1.59	0.50	1.09
Truck terminal	0.50 acre /20,000 population	0.79	0.00	0.79
Baby taxi/ tempo stand	0.25 acre /one baby taxi/tempo stand	2.25	0.00	2.25
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	2.25	0.00	2.25

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Passenger Shed	0.25 acre /one baby taxi/tempo stand	2.25	0.00	2.25
Total		9.13	0.50	8.63

11.4.2.2 Parking and Terminal Facilities

Bus Terminal

There is no formal bus terminal in Mathbaria and it has two informal bus stands in Mathbaria. Buses are currently operates on Charkhali-Tushkhali-Mathbaria-Patharghata route only. In future, there will need a formal bus and truck terminal in Mathbaria hence the consultant has been proposed a bus and truck terminal as multimodal transport facility. The proposed Bus and Truck Terminal for Mathbaria Paurashava is located beside Tushkhali road, some 300 metre from Mathbaria Fire Service and Civil Defence Office (Uttar Mithakhali mouza) on 5.07 acres of land. The bus terminal complex should have to accommodate the following services:

1. Workshop
2. Petrol Pump/Filling Station
3. Market: Equipment, parts, accessories
4. Cleaning and washing
5. Hotel (Food and Residence)
6. Different Courier & Parcel service office
7. Loading and unloading Place
8. Bus Parking Space
9. Police out post/ security outpost
10. Mosque

Truck Terminal

The indiscriminate parking of trucks in the streets and upon spaces of the towns and cities has many adverse effects. The foremost is the degradation of the environment and the increased hazards to traffic. Security of the goods contained in the parked vehicles can also be a serious problem. The needs of the truck drivers who have often to drive for long hours and consequently need rest, toilet facilities and food deserve careful consideration. The right approach is to provide well designed truck terminals at the cities. Following are the remedy of truck terminal design and planning consideration:

- The length of truck berths depends upon the type of trucks to be handled. Truck —trailer combinations obviously need longer lengths than single unit trucks. For single unit trucks a space of 3.75 m * 7.5 m per vehicle is adequate. For truck - tailor combinations lengths up to 15 m may be needed.
- The width of the loading platforms should be 3.5 to 4.5 m.
- About 600- 750 trucks can be accommodated in a parking area of one hectare.

The area required for the entrance forecourt, hotel, resting place and ancillary facilities (Weigh Bridge, fuelling facilities, and workshop) one in addition to the parking area requirement.

As a small town, the economic activity is very low in Mathbaria Paurashava. There are only a handful of small scale processing factories including a few saw mills and limited trading activities. Movement of trucks is extremely negligible here. A truck terminal is proposed for Mathbaria with bus terminal as multimodal terminal facility. Following **Figure- 11.5** presents a typical layout of a Bus & Truck Terminal

Railway Station

There is no existence of railway network at Mathbaria Paurashava as well as within Barisal region. So, proposal for railway network and rail terminal at Mathbaria Paurashava is not addressed.

Tempo Stand

According to the Paurashava source there is two formal tempo or Rickshaw stand in Mathbaria for keeping the vehicles. Rickshaws generally stand here and there of the Paurashava. Tempo drivers generally put their vehicles in four to five places as temporary stand: Mathbaria Bazaar, Mathbaria Chourasta. That's why these areas become the busiest places of Mathbaria. The consultant proposes to formally develop these existing tempo terminals.

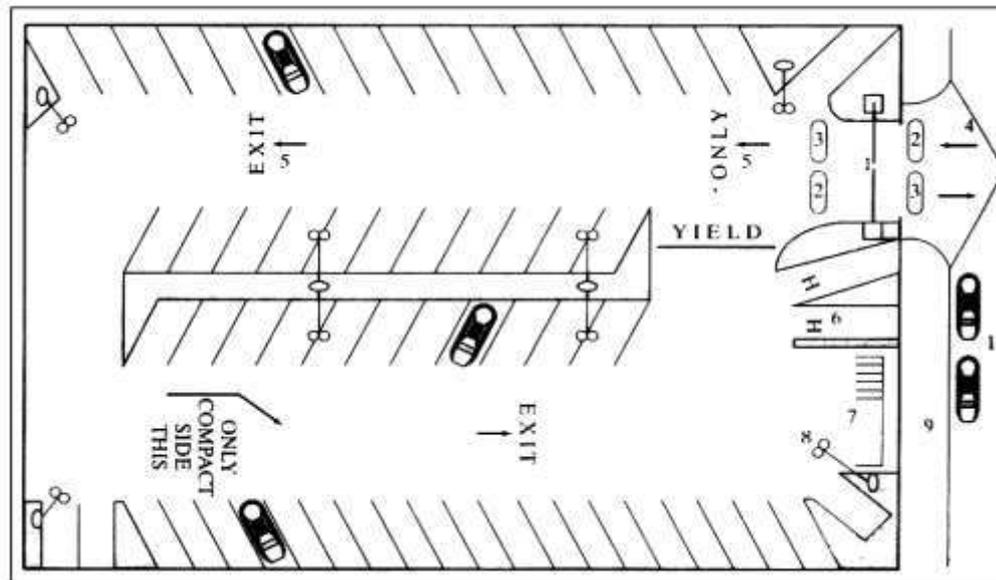


Figure- 11.5: Typical Layout of a Bus & Truck Terminal

CNG/Auto-rickshaw/Easy Bike/Rickshaw Stand

According to the Paurashava source there is no formal CNG/Rickshaw stand in Mathbaria for keeping the vehicles. Rickshaws generally stand here and there of the Paurashava. Tempo/auto-rickshaw/motor-cycle drivers generally put their vehicles in four to five places as temporary stand and sometimes they use existing footpath as their temporary waiting stand for passenger. The consultant proposes 6 CNG/Rickshaw stands at different locations of the Paurashava. The area coverage of the stands is about 1.45 acres. For details, **Please see category- 12** of subsection 10.3.2 of Chapter- 10 of this report.

Bus Stoppage

A bus stop is a designated place where buses stop for passengers to board a bus. A bus stoppage should be a place for safe passengers as well as free the traffic movement on the road. Usually a bus bay is designed off the main road. The construction of bus stops tends to reflect the level of usage. Stops at busy locations will have bus bay designated along with intersection design. These stops will be designed to three different locations namely Mathbaria bazar, proposed eastern bypass rad and Patharghata road intersection etc.

Filling Station

There is no filling station in Mathbaria. The plan proposes one filling station as a part of bus & truck terminal complex proposed at Uttar Mithakhali mouza (north-western part of the existing Paurashava and recently extended and gazette Paurashava area).

Parking Facilities

There is hardly any locally owned car in the town and it is unlikely that there will be a good number of private cars in the near future. The plan proposes nine car parking place within the proposed nine ward centers proposed for all nine wards. Besides, some off-street and on-street parking places have been conditionally permitted in few locations of the Paurashava area.

Policies on Managing Parking Demand

- 1) Non-restrictive parking shall be adopted in residential areas where the demand for parking is much less than the available of parking spaces.
- 2) Restrictive parking shall be adopted in areas where the demand exceeds the available parking spaces. These shall be enforced through pricing and regulatory mechanisms.
- 3) Two types of parking charges shall be levied at public parking places in the restrictive parking areas. Normal charges aimed to recover of operation and maintenance expenses, shall be levied in locations where the parking provision does not adversely affect the movement of traffic. Deterrent parking charges shall be more than the normal charges and shall be adopted in areas where parking demand is in excess of supply or in places where parking is observed to adversely affect the movement of traffic.
- 4) Regulations shall include parking restrictions to specific or all types of vehicles either by time of day or by duration or for specific purpose of travel or for vehicles carrying less than specified number of passengers per vehicle or by location.

Policies on Supply of Parking Spaces

- 1) Parking standards shall be reviewed once every five years. Necessary modifications shall be incorporated in the building rules.
- 2) There shall be regular monitoring of parking provisions in all buildings. Buildings found to be deficient in parking provisions vis-à-vis current building rules shall be required to pay a parking facility fees. This shall be in proportion to the extent of violation with respect to the required provision. The revenue from this source shall be used for augmenting parking facilities (on-street / off-street) in the area.
- 3) Private sector shall be encouraged to build and operate parking facilities to augment parking capacity in deficient zones. A standard and transparent procedure shall be adopted for selection of private enterprises.
- 4) Effort shall be made to develop park and ride facilities at all public transport interchanges in the city.
- 5) While imposing restriction to the movement of specific types of vehicles effort shall be made to provide adequate vehicle parking facilities at the terminal or interface points.
- 6) Effort shall be made to identify locations for truck terminals. Private sector participation shall be encouraged in the development and operation of these facilities.
- 7) Existing statutes shall be amended to make it mandatory for owners and operators of stage and contract carriers to park their vehicles in garages when the vehicles are not in operation.
- 8) Adequate parking spaces shall be reserved for taxis in all public parking places.

Policies on Operation and Maintenance of Parking Facilities

- 1) Concerned local authorities shall be responsible for the efficient operation and maintenance of public parking facilities.
- 2) Private sector should be encouraged to operate and maintain the public parking facilities on behalf of the local authorities.
- 3) A clear and transparent procedure shall be adopted for selection of contractors.
- 4) Paurashava shall develop a standard training program and ensure that all staff of the contractors involved in the operation and maintenance of parking facilities undergoes this training. This would enable standardized operation and maintenance of parking facilities.

Policies on Parking Regulation

- 1) In restrictive parking areas, on-street parking shall be prohibited on all roads within the area except at places where it is specifically permitted by authorized road signs and markings.
- 2) The Chief of Police in Paurashava shall be the authorized person to notify the parking regulations, parking fees to be charged at each location and penalties for violation of parking regulations. This will be done through press releases and gazette publications.
- 3) The Chief of Police shall be advised by a Committee on matters relating to parking regulations, parking charges and penalties for violation.

Parking Requirement

- 1 space for every 300 m2
- 1 space for every 200 m2
- 1 space for every 300 m2
- 1 space for every 20 occupants or 100 m2
- 1 space for every 200 m2
- 1 space for every 300 m2
- 1 space for every 300 m2*
- 1 space for every 300 m2*

Aisle Width

- 3.6 metres (11.8 feet)
- 4.0 metres (13.1 feet)
- 5.5 metres (18.0 feet)
- 5.8 metres (19.0 feet)
- 6.0 metres (19.7 feet)
- 6.4 metres (21.0 feet)

Policies on Enforcement of Regulations

- 1) The Local Police shall be responsible for enforcing parking regulations as notified by the Police Chief.
- 2) They shall assign adequate number of police personnel of appropriate rank for surveillance and enforcement of parking regulations in each zone. There shall have a tow truck to facilitate eviction of offending vehicles.
- 3) Tow trucks shall be requisitioned from private enterprises to facilitate enforcement of parking regulations. The operating expenses shall be recovered through penal fees collected from violators.

Policies on Institutional Setup and Capacity Building

- 1) Preparation of parking plans, provision of parking facilities and its management shall be the responsibility of the Paurashava. They shall also monitor the operation and maintenance of facilities and ensure uniform standards at all locations.
- 2) Paurashava shall regularly monitor the parking provisions in buildings vis-à-vis prevailing building rules and collect necessary fees for non-compliance.
- 3) Local Police shall be responsible for enforcement of parking regulations and shall ensure regular surveillance for parking offenses.
- 4) All fees namely, Operation and Maintenance Contract fees, parking fees, parking development fees etc. collected by the Paurashava and Local Police shall be credited to a parking fund. An appropriate authority in the Paurashava shall operate this fund exclusively for provision of parking facilities and for procurement of equipment and services for all concerned agencies.

Policies on Supportive Legislations

- 1) The Chief of Local Police shall be given the authority to regulate and enforce parking within the Paurashava area.
- 2) Paurashava shall be given the authority to collect parking fees at public parking facilities.
- 3) Paurashava shall also have the authority to inspect premises for parking provision violations. They shall be given the authority to fix, levy and collect development fees from building owners who do not comply with parking provisions as in the prevailing building rules.
- 4) Paurashava shall be given the authority to create a Parking Fund. All fees collected by Paurashava, and Local Police in connection with parking operation and maintenance, violation of building codes and enforcement shall be credited into this.
- 5) Necessary legislation shall be made to direct the Paurashava and Local Police to deposit the collected fines and fees into the parking fund.

Flexibility

This parking policy may need to be reviewed and modified to meet the changing demands, which may be the result of changes in related policies or other economic factors. When ever this is done, the planning, implementing, regulating and enforcing agencies should be advised to proactively respond by making changes if necessary, to the parking plans and regulations in force.

Design consideration:

Off-Street Parking & Loading: Intent

Off-street parking and loading requirements are intended to minimize street congestion and traffic hazards and to provide safe and convenient access to residences, businesses, public services and places of public assembly.

Off-Street Parking Requirements

These shall be provided in such numbers, at such location and with such improvements as required by the provisions of Bangladesh National Building Code (BNBC) as shown below.

General Parking Requirements

Occupancy Class

- Residential
- Educational
- Institutional/Health Care
- Business & Mercantile
- Industrial
- Storage

<u>On-street Parking Angle</u>	
0°	44°
45°	59°
60°	69°
70°	79°
80°	89°
	90°

The diagram below illustrates the parking angle and minimum aisle width.

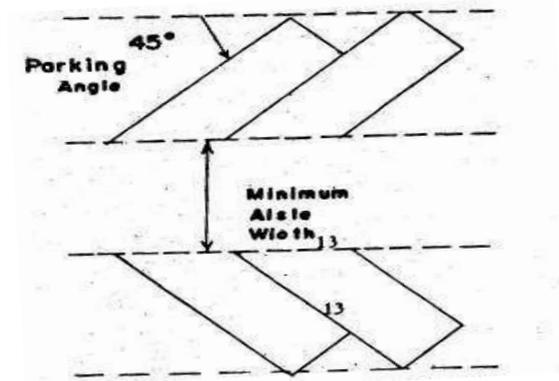


Figure- 11.6: Parking Angle and Minimum Aisle Width

Off-Street Loading Requirements

Off street loading requirements shall apply to all zoning lots exceeding 500 square meters (5,350 square feet) in area for the class or kind of uses indicated below.

- Residential 1 space if 20 units or more
- Institutional/Health Care 1 space if 50 beds for every 300 m²
- Business & Mercantile 1 space if more than 5,000 m²
- Industrial 1 space for every 300 m²
- Storage 1 space if more than 1,000 m²

Notes:

- (a) All references to square meters refer to floor area.
- (b) Standard sized automobile parking spaces shall be at least 4.8 meters (15.75 feet) in length and 2.3 meters (7.5 feet) in width.
- (c) Vehicle entry and exit aisles shall be provided to a street and no driveway leading into a parking area shall be less than 3.5 meters in width.
- (d) Minimum area for a loading space shall be 5.8 meters (19 feet) in length and 2.5 meters (8.2 feet) in width and with a vertical clearance of 3 meters (10 feet).
- (e) When computation of required parking spaces results in a fractional number, the number of required spaces shall be the next highest number.

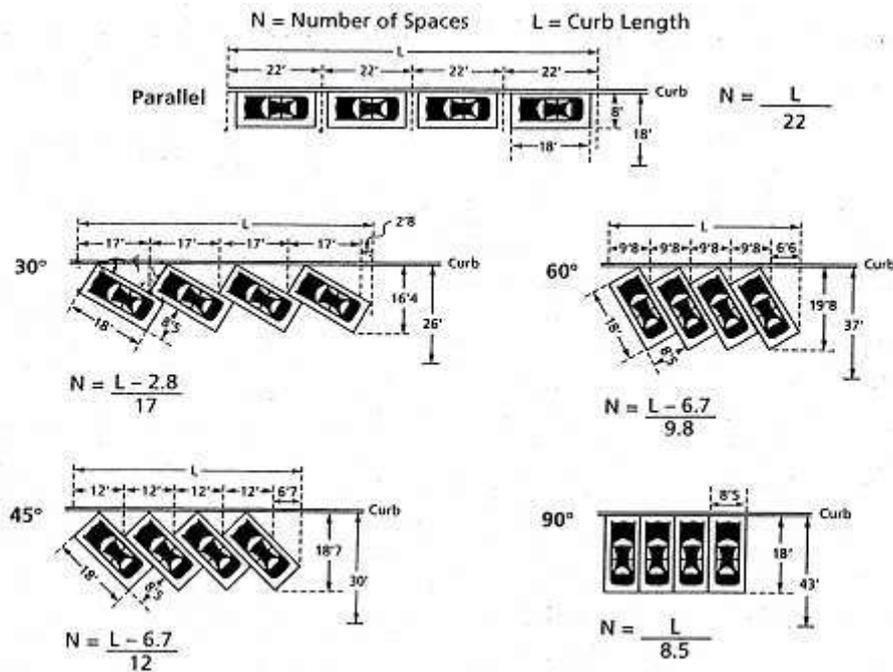


Figure- 11.7: On-Street Space Used for Various Parking Positions

11.4.2.3 Development of Facilities for Pedestrians, Bicycles and Rickshaws

Footpath

Footpath has been recommended for all the roads (above 20 ft) for safety and ease of pedestrian movement. Due to narrow right of way it is difficult to provide wider footpaths. Width of footpaths will vary between 1.5 m to 2.0 m depending on availability of right of way. For design of footpath, please see Figure- 11.1, 11.2, 11.3 and 11.4.

Bicycles and Rickshaws

Separate lane for NMT vehicles will be provided in Transport network development plan which will be used by bicycle and rickshaw. **Figure 11.3** shows the provision of separate lane for NMT vehicles.

11.4.2.4 Other Transportation Facilities

Improvement Roadway Intersection

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

Traffic Management

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

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

- **Signals and Road Marking**

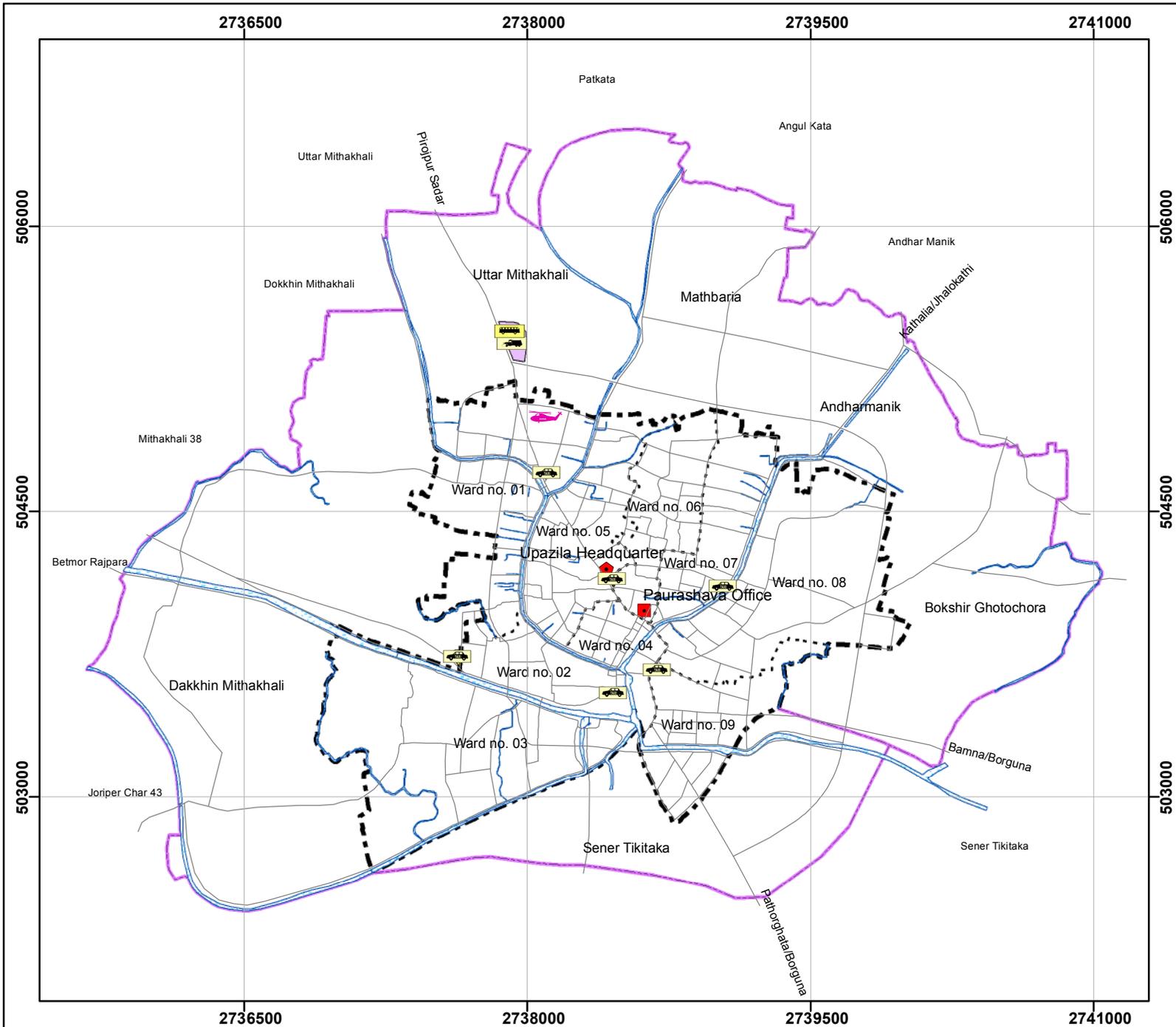
Road markings must be put on major roads and signals must be installed at intersections for good traffic management. Traffic police have to be posted at critical intersections.

- **Road Use Awareness Building**

People must be made aware of road use including traffic rules. Drivers of all kinds of vehicles should imparted training on driving and road use. Publicity may be made for pedestrians on road use. Boys scouts and local NGOs can be engaged for this purpose.

- **Enforcement of Traffic Rules and Regulations**

Traffic rules and regulations should be strictly enforced for all. Provision instant fine for violations may be introduced.



SCALE

1:29,500



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Admin Point

- Paurashava Office
- Upazila Headquarter
- Proposed Road

Transport Facilities

- Bus Stop
- Bus Terminal
- CNG/Rickshaw Stand
- Filling Station
- Helipad
- Passenger Shed
- Truck Terminal

Transport Proposals

- Bus & Truck Terminal
- CNG/Rickshaw Stand
- Car Parking
- Filling Station
- Helipad
- Passenger Shed
- Tempo/Taxi Stand
- Truck Terminal
- Canal

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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In Association with

11.5 Transportation System Management Strategy (TSM)

This section describes transportation system management (TSM) in respect of facilities and operations, traffic flow and safety, and traffic management in Mathbaria Paurashava.

11.5.1 Strategies for Facility Operations

Since road is limited and it is foreseeable that new road construction will be very difficult due to unavailability of land and funding, traffic management strategies are required in order to ensure appropriate mobility. The following strategies are recommended for an overall traffic management improvement program:

Traffic Engineering

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

Parking

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

Roadside Interference

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

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

11.5.2 Strategies for Traffic Flow and Safety

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

Road Safety Initiatives

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

Traffic Law Enforcement

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

Driver Training and Testing

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

Education and Publicity

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

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

Vehicle Safety

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

Despite inspection forms and manuals having been produced under a recent aid project, little priority has gone into their use. While inspection monitoring procedures are thorough, no use is made of the data nor concern shown over the unrealistically high pass rate. Vehicle inspection is treated perfunctorily and the minimal inspection procedures reflect this attitude. This sector has made little significant progress and is unlikely to do so without substantial support. Motivational training of the official’s concerned and strict enforcement of inspection procedures is needed.

Medical Services

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

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

Information and Data

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

11.5.3 Strategies for Traffic Management

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

11.6 Plan Implementation

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

11.6.1 Regulations to Implement the Transportation Plan

Following regulations will be needed for implementation of the plan.

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

- a) establish ownership and responsibilities for roads;
- b) establish the framework for managing the road network;
- c) establish general principles for road management;
- d) provide for general design and planning principles for roads;
- e) confer powers and responsibilities on road authorities;
- f) commit road authorities to provide and maintain safe roads, and to do so using resources efficiently;
- g) provide for the establishment and classification of public roads;
- h) provide for data bases of public roads, and public access to them;
- i) set out rights and duties of road users;
- j) control activities on roads;
- k) make special provision for restriction on access to roads;
- l) identify characteristics of new road types;
- m) provide a legal framework for private sector participation in road construction, operation and maintenance, including tolling of roads;
- n) establish 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:
 - i. a national road;
 - ii. a regional road;
 - iii. a Zila road;
 - iv. an urban road;
 - v. an Upazila road;
 - vi. a union road;
 - vii. a village road.

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

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

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

Highways Act of England and Wales may be followed.

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

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

(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.

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

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

Implementation through Development Control: 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;

Mathbaria Paurashava Master Plan: 2011-2031

Landuse Plan

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

Plan Monitoring

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

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

Evaluation

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

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

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

Co-ordination

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

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

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

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

In spontaneous areas, while all out people's co-operation is needed for project implementation; there will also be some elements of negotiation. Negotiation will be particularly needed in case of road widening projects. It will be a crucial task for Paurashava to convince the affected people to give up their land for road use. Efforts should be made to convince the land owners on the ground of enhancement of property value due to road widening. In case people refuse to offer land free of cost necessary arrangements may have to be made for payment of compensation. This process of negotiation will be very critical, cumbersome and time consuming, and therefore, has to be handled with utmost care and patience. The best results can be accrued only by wining people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land through Acquisition of Requisition of Immovable Property Ordinance, 1982. Attempts may be made to engage NGOs / CBOs / RHD / LGED to work as catalysts in negotiation.

Chapter Twelve

DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

A. DRAINAGE PLAN

12.0 Introduction

Chapter 12 of the planning report states about the development plan proposals made for drainage and environment. The Chapter is divided into two parts-drainage and environment. In each part this report moves with goals and objectives followed by evaluation of existing conditions and after that development proposals have been set for each component.

12.1 Objectives

Objective of the Drainage Master Plan are following:

Firstly, to find out the present condition of all categories of drains including main and secondary drains and natural streams.

Secondly, to find out level of encroachment over drainage reservations which is responsible for flooding, water logging during heavy rains;

Thirdly, to find out, the existing roadside drainage pattern including capacity and gradients.

Since planned development of Paurashava is very much desirable, Drainage Master Plan is necessary to ensure operation and maintenance of the present drainage facilities including development proposal for future. For this, both short and long term 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 infrastructure development projects, 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. 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.

Urban development 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.

12.2 Existing of Drainage Network

This section of the report gives an overview of the present conditions of the drainage system in Mathbaria Paurashava.

12.2.1 Existing Drainage System/Network

12.2.1.1 Man Made Drainage System in Mathbaria Paurashava

Paurashava is responsible for drainage management including their construction and maintenance. There is no hierarchical drainage network in Mathbaria Paurashava. The drainage system can be classified into two parts- natural and man-made. **Natural Drainage** system comprising the natural khals that fall into nearby or far off rivers. These serve as primary drains used, both, for carrying storm run-off as well as waste water of the town. The other is the **Man-made Drainage** systems that are of lower hierarchy. These drains have been developed by the Paurashava to drain out the domestic waste water and storm water from the urban area. Following is the picture of man-made drainage system in the Paurashava.

- Length of constructed drainage:
 - Pucca : 4.85 km
 - Katcha : 0.76 km

12.2.1.2 Natural Drainage System in Mathbaria Paurashava

Natural Drainage system comprising the natural khals, fall into nearby or far off rivers. Natural canals act as primary drain and drain out all storm and domestic waste water which finally thrown to Bishkhali and Baeshwar River which are the nearest rivers from Mathbaria Paurashava and meets with Bay of Bengal at about 35 km. down to south. Existing natural khals act as primary drains and sometimes as local outfalls and sometimes large ponds and ditches also act as the local outfalls of the existing available drains. Following is the picture of natural drainage system in the Paurashava.

- Ponds/ditches : Number- 994 Area : 77.73 Acres
- Natural drainage : Length- 10.00 km Area : 41.32 Acres

Mathbaria Paurashava has approximately 10 km of khals (41.32 acres) including irrigation canal and borrow pit. In addition, there is also 994 numbers of ponds and ditches covering an area of about 77.73 acres. These serve as storage and retention area for storm water during monsoon. But unplanned spatial development activities and rapid growth of settlements due to rapid population growth is causing encroachment on natural water reservoirs, water courses and natural drainage paths, reducing retention basins and drainage capacity. Poor drainage capacity of the existing khals and water bodies cause long-lasting drainage congestion in inland areas and cause inconvenience to inhabitants.

12.2.1.3 Problems of Drainage

The existing drainage network is beset with problems, like,

- tertiary drainage system without link at many places,
- drainage system developed without developed without proper calculation of peak hour run off discharge;
- broken drains at many place due to lack of regular maintenance,
- clogged drains due to disposal of solid waste,
- encroachment of natural drainage system.

The proposed drainage development plan tries to address all the above problems of drainage.

The condition of drainage service in the Paurashava Centre is very much dismal. These drains are not properly connected. The result is pool of stagnant water found almost everywhere during heavy rains. Few pucca drains has been constructed adjacent of Mathbaria Bazar area, BSCIC industrial area and zero point. Katcha drains do exist and constitutes small proportion. During the concentrated heavy rainfall the effect of inadequate drainage become visible.

Mathbaria Paurashava suffers from the shortfall of funding to provide sufficient drainage system as well as its proper operation and maintenance. Only 18 contractual sweeper are engaged in its conservancy division for street sweeping, solid waste collection, cleaning and maintenance of drainage system. But due to the lack of equipments they are unable to do cleaning and maintenance. Negligence of duties/responsibilities of staff is another major problem for the drainage system.

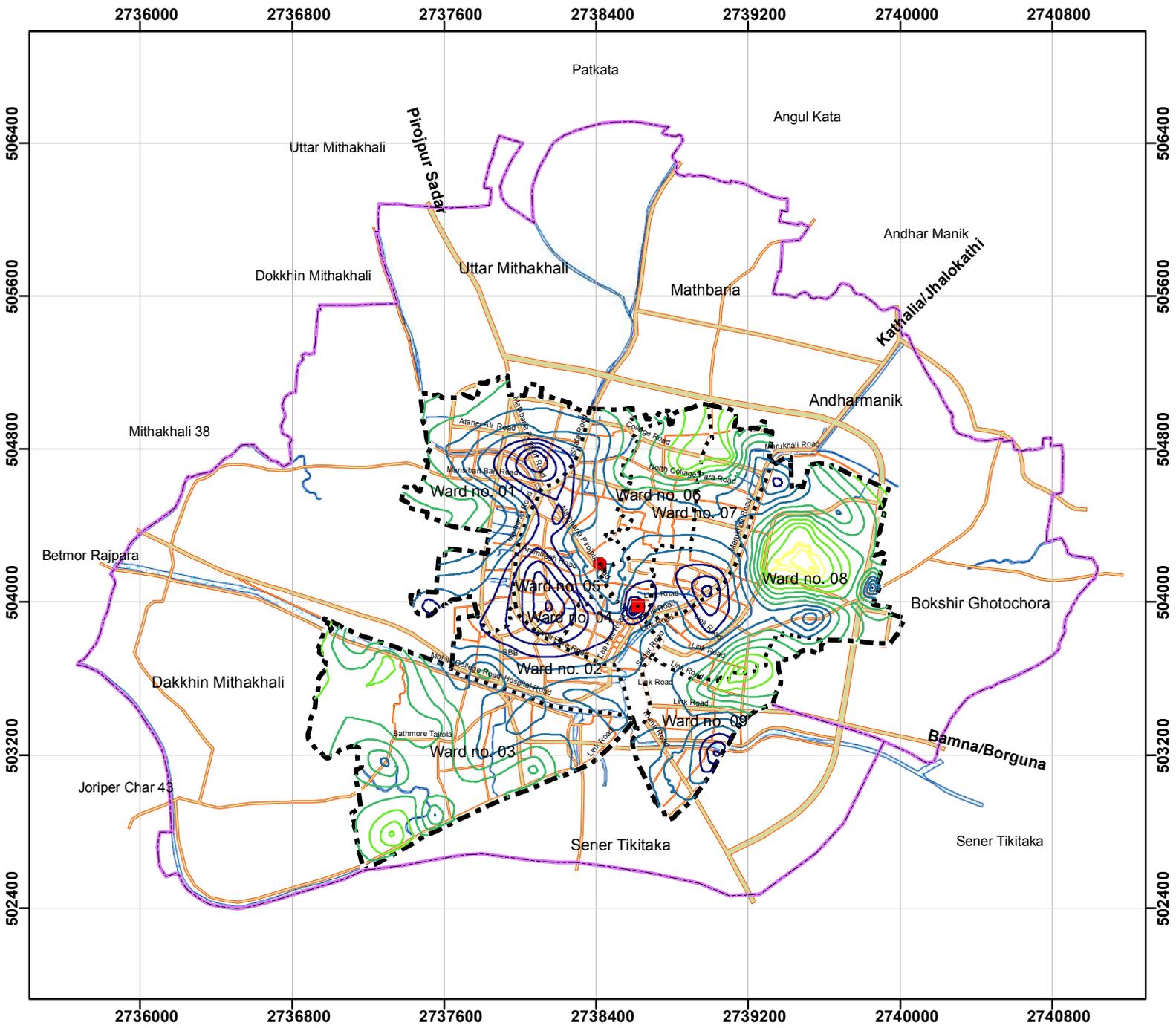
12.2.1.4 Opportunities of Resolving Drainage Problems

According to the Terms of Reference (ToR) of the project, it is mandatory to provide drainage master plan with RoW of drainage for the entire Paurashava to resolve drainage problem. Besides, there is no road hierarchy, but it is mandatory to provide road hierarchy as per ToR and there is opportunity to provide drainage proposals along with the road alignment. Mathbaria is not a vastly built-up area, so it is possible to provide drainage along with the RoW of roads. Natural khals are indicated in the mouza maps and it is possible to re-excavate those khals with their actual area. So, it is very much possible to prepare appropriate primary drainage plan because the master plan will be prepared based on mouza maps.

12.2.2 Appraisal of Local Topography

The study area is mainly medium highland excepting some low lying strips including canals. A small part of it is urbanized with scattered clusters. Generally much of the Paurashava area is under agricultural area characterized by crop production. Survey has conducted to measure the elevation of the existing road network, khal, drainage channel (no embankment or dyke in the study area. It is found that usually road levels are not very high than the surrounding area except Pirojpur – Patharghata (the leading road) passing through the heart of Mathbaria. The height of the road varies from 4 meter to 7 meter compared to the adjacent lands.

Mathbaria Paurashava is located at in the South Central (SC) region. Basically, the Mathbaria Paurashava area has flat with moderately high land at its central part. Total 22379 nos. spot values were collected for the study area. The lowest spot height is 2.05 m and the highest spot height is 7.28 m. Average height of land of the Paurashava area is 4.79 m. From the survey, it is observed that ward no 3, 6, 8 and 9 have undulated land where as the land of other wards (centre part as ward no. 1, 2, 4, 5 and 7 are less undulated. Machua, the most important khal of the Paurashava, has flown through east-west direction and has divided into two parts (north and south). Ward 3 is directed towards north direction (towards Machua khal) and other wards directed towards south (towards Machua khal) except northern portion of 6 and 7 no. ward. The contour map has been prepared on the basis of spot levels readings obtained from the field survey. **Map- 12.1** shows the topographic map Mathbaria Paurashava.



SCALE
1:29,500

0 125 250 500 750 1,000 Meters

LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Urban Services

- Paurashava Office
- Upazila Complex
- Proposed Road
- Khal

Contour (mPWD)

- 2.100000 - 3.000000
- 3.000001 - 3.900000
- 3.900001 - 4.800000
- 4.800001 - 5.700000
- 5.700001 - 7.200000

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

SCPL CONSULTANT
Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

12.2.3 Demand for Drain

The demand for drainage comes from settlements that exist and those will be developed in future. The drainage system will run along the primary, secondary and tertiary or local roads. The plan will be prepared on the mouza maps. There are significant numbers of canals, ditches and large water tanks (Dighi) according to the mouza maps and maximum of these water bodies are khas land or state property. But, in most cases, canals and other khas lands are encroached by the influential persons and the nearby people. These encroached lands will have to be reclaimed and will be planned properly for the purpose of the proper master plan. The requirement of drains will only be ascertained when roads are planned.

12.3 Plans for Drainage Management and Flood Control

Management of a drainage system is more difficult than its construction. It requires not only an institutional set up but also huge resources for regular maintenance. The present master plan proposes a complete drainage master plan for Mathbaria Pourahshava with series of activities. The present engineering set up of the Paurashava is may be sufficient to manage the existing need but it is inadequate to manage the future drainage network. It must be equipped not only with adequate manpower but also with sufficient logistics and resources for sound maintenance. For Mathbaria Paurashava with its meager revenue earnings, it will be extremely difficult to go for regular maintenance of the drainage system without government assistance. So, the Paurashava must be provided with sufficient budget allocation for drainage maintenance to go regularly.

12.3.1 Plan for Drain Network Development

12.3.1.1 Drainage Network Plan

The Paurashava needs a hierarchical drainage system for easy and smooth discharge of storm and waste water. Such drainage shall comprising tertiary, secondary and primary drains. The existing natural khals will serve as primary drains. Here proposal for new drainage have been presented.

Primary Drain

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

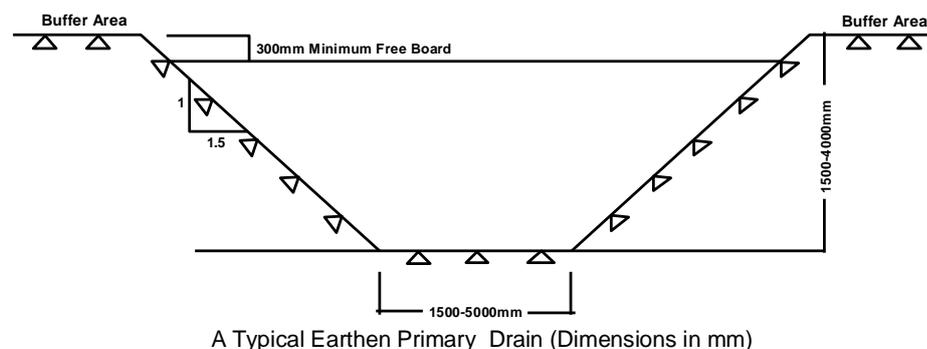
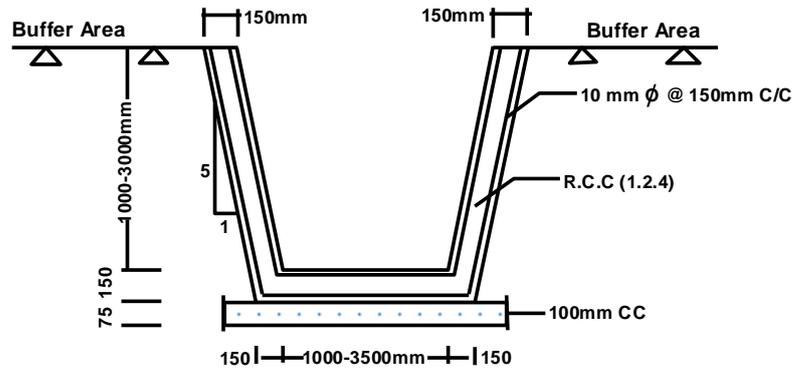


Figure 12.1: Earthen Primary Drain

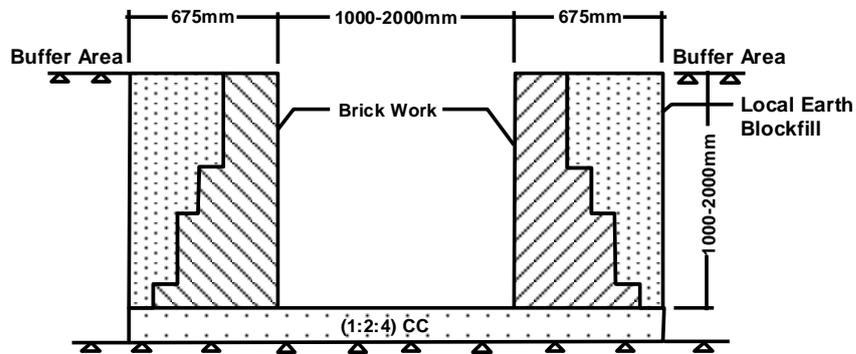


A Typical RCC Primary Drain (Dimensions in mm)

Figure 12.2: Typical RCC Primary Drain

Secondary Drain

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

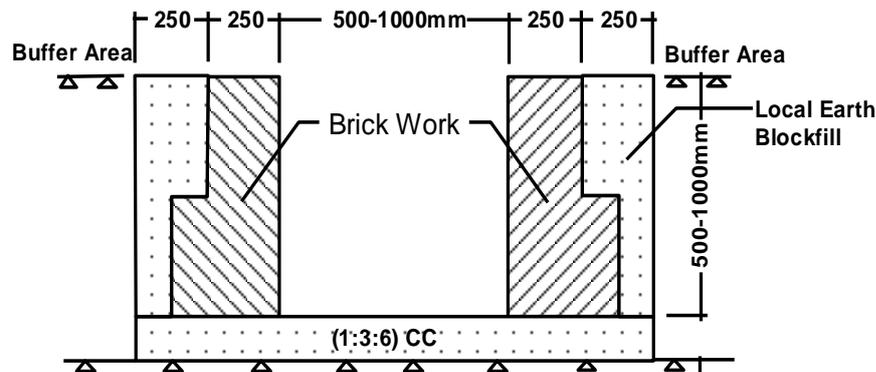


A Typical Secondary Drain (Dimensions in mm)

Figure 12.3: A Typical Secondary Drain

Tertiary Drain

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



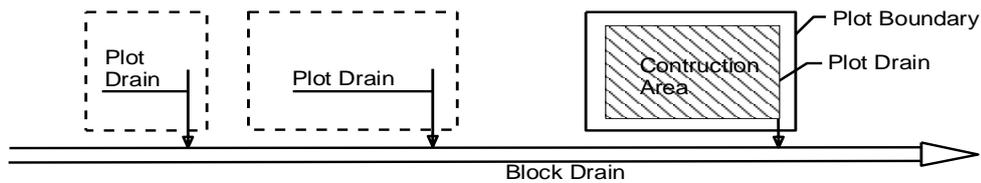
A Typical Tertiary Drain (Dimensions in mm)

Figure 12.4: A Typical Tertiary Drain

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

Plot Drains

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



A Sketch Showing Plot and Block Drain

Figure 12.5: Plot and Block Drain

Block Drain

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

A schematic diagram showing the origin of Primary, Secondary and Primary drains and their destinations to the outfall river is presented below.

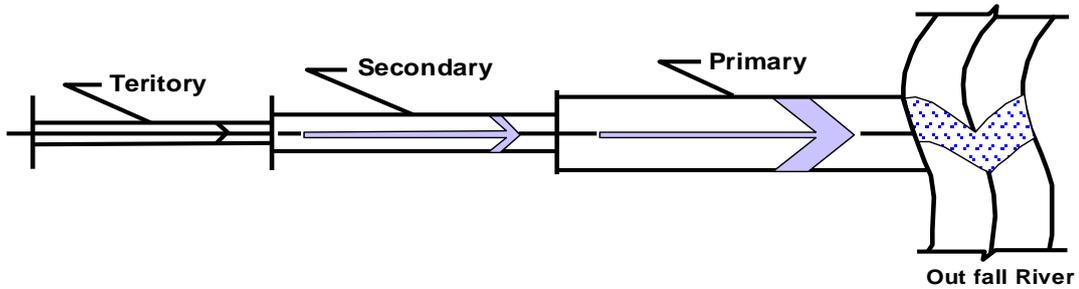


Figure 12.6: A Schematic Diagram showing flow directions from Tertiary drains to Outfall

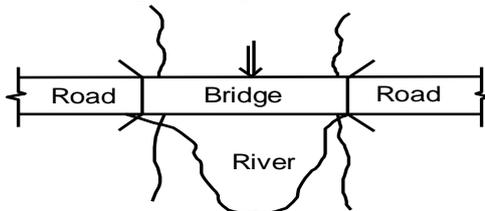
Other Drainage Related Infrastructures

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

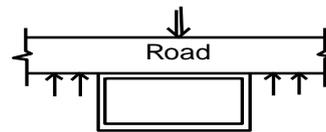
- i. Bridges, culverts, box culverts
- ii. Drainage sluices, pipe sluices, siphons
- iii. Flood protection embankments and flood walls
- iv. Sluice gates, Regulators, Navigation lock
- v. Flood protection and drainage structures.

i) Bridges, Culverts and Box Culverts

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



Definition Sketch Bridge



Definition Sketch Culvert

Figure 12.7: Bridge and Culvert

ii) Drainage sluices, pipe sluices and siphons

Drainage sluices, pipe sluices and siphons are provided on the embankments. Embankments protect the area from floods coming from outside rivers and make the project area flood free. However storm water from rainfall-runoff within the area causes localized flood, drainage congestion and submergence. A sketch below shows a few of such structures.

Dy Ke of Roads Embankment

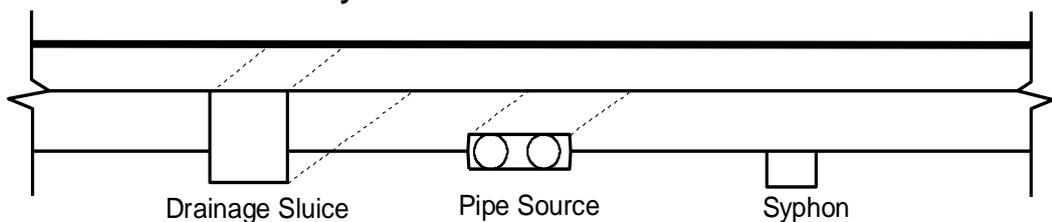


Figure 12.8: A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion.

12.3.1.2 Proposal for Improvement of the Drain Networks

Paurashava has only 5.61 km drainage network. Of these 4.85 km is katcha drain and 0.76 km pucca drain. This drainage network serves mainly Mathbaria Bazar area, Upazila Complex area and Upazila Heath Complex area. Based on the results of drainage study the following recommendations are made for improvement of the conditions.

- Rehabilitation of broken drains;
- Cover the open drains based on budget allocation.
- Construction of new channels and rehabilitation of old ones with enough drainage head.
- Removal of all un-authorized structures developed on drainage.
- Regular cleaning and maintenance of drains by the concerned authorities.
- Embarking on a sustained public enlightenment to discourage residents from dumping their refuse into drainage channels.

12.3.1.3 Proposal for New Drains

The Paurashava needs a hierarchical drainage system for easy and smooth discharge of storm and waste water comprising tertiary, secondary and primary drains. The existing natural khals will serve as primary drains. Here proposal for new drains have been made. **Annexure- F** presenting the detail drainage inventory of Mathbaria Paurashava while a detailed drainage network plan is presented in **Map-12.2**.

Tertiary Drain

Tertiary drains are local drains. Tertiary drains connect primary drains through secondary drains. Tertiary drains usually runs along all local secondary/access roads. The total length of newly proposed tertiary drain is 27.71 km. **Table-12.1** shows the proposals of new tertiary drains.

Table- 12.1: Proposals of New Tertiary Drains in Mathbaria Paurashava

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 2	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	426.71
D_PT 3	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	234.17
D_PT 4	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	233.79
D_PT 5	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	477.60
D_PT 6	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	325.43
D_PT 7	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	132.37
D_PT 9	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	139.67
D_PT 10	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	141.49
D_PT 12	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	431.29
D_PT 13	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	167.43
D_PT 14	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	154.86
D_PT 15	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	167.31
D_PT 16	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	129.68
D_PT 17	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	166.65
D_PT 18	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	168.11
D_PT 19	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	58.45
D_PT 20	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	58.23
D_PT 21	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	101.47
D_PT 22	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	154.47
D_PT 23	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	103.24
D_PT 24	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	154.59

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 25	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	118.50
D_PT 26	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	102.86
D_PT 27	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	520.80
D_PT 28	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	535.76
D_PT 30	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	478.08
D_PT 32	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	127.48
D_PT 33	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	180.97
D_PT 36	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.97
D_PT 37	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.53
D_PT 41	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	306.20
D_PT 44	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	312.35
D_PT 46	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	64.32
D_PT 49	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.30
D_PT 50	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.98
D_PT 55	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	100.66
D_PT 56	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	56.23
D_PT 57	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	96.79
D_PT 60	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	342.77
D_PT 62	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	126.77
D_PT 63	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	165.66
D_PT 65	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	137.68
D_PT 66	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	31.33
D_PT 68	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	31.43
D_PT 69	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	113.39
D_PT 71	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	97.07
D_PT 72	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	115.48
D_PT 77	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	184.03
D_PT 78	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	201.12
D_PT 79	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	69.72
D_PT 80	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	25.21
D_PT 82	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	114.38
D_PT 83	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	25.39
D_PT 84	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	115.00
D_PT 85	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	94.04
D_PT 89	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	114.32
D_PT 91	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	135.11
D_PT 92	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	199.44
D_PT 93	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	136.15
D_PT 95	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	114.49
D_PT 96	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	113.98
D_PT 97	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	139.84
D_PT 98	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	262.70
D_PT 99	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	141.94

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 100	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	193.77
D_PT 101	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	209.92
D_PT 102	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	106.91
D_PT 103	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	83.31
D_PT 104	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	167.87
D_PT 105	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	116.97
D_PT 106	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	123.00
D_PT 107	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	165.90
D_PT 108	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	115.43
D_PT 109	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	143.36
D_PT 110	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	142.76
D_PT 111	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	93.92
D_PT 112	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	110.07
D_PT 113	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	53.08
D_PT 114	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	307.62
D_PT 115	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	103.67
D_PT 116	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	101.63
D_PT 117	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	119.16
D_PT 118	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	304.57
D_PT 119	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	178.68
D_PT 120	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	225.49
D_PT 121	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	70.95
D_PT 122	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	229.88
D_PT 123	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	76.35
D_PT 124	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	121.59
D_PT 125	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	117.64
D_PT 126	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	139.44
D_PT 127	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	182.11
D_PT 128	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	112.75
D_PT 129	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	59.45
D_PT 130	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	143.73
D_PT 131	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	137.56
D_PT 132	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	289.29
D_PT 133	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	41.65
D_PT 134	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	52.76
D_PT 135	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	291.60
D_PT 136	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	300.14
D_PT 137	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	244.04
D_PT 138	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	116.15
D_PT 139	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	58.91
D_PT 140	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	114.89
D_PT 141	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	207.33
D_PT 142	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	203.65

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 143	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	178.44
D_PT 144	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	56.68
D_PT 146	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	53.88
D_PT 147	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	141.75
D_PT 148	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	155.25
D_PT 149	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	105.57
D_PT 150	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	104.81
D_PT 151	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	134.91
D_PT 152	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	167.04
D_PT 153	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	93.11
D_PT 154	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	310.28
D_PT 155	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	92.33
D_PT 156	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	160.80
D_PT 157	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	157.71
D_PT 159	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	149.96
D_PT 160	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	165.21
D_PT 164	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	170.96
D_PT 166	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	271.30
D_PT 168	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	194.73
D_PT 172	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	92.10
D_PT 173	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	195.33
D_PT 174	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	110.77
D_PT 175	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	92.58
D_PT 177	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	172.90
D_PT 184	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	79.66
D_PT 186	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	81.43
D_PT 188	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	103.59
D_PT 190	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	119.45
D_PT 191	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	118.15
D_PT 192	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	367.81
D_PT 194	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	365.64
D_PT 198	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	113.23
D_PT 199	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	123.51
D_PT 204	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	292.18
D_PT 205	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	141.45
D_PT 206	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	77.69
D_PT 208	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	108.53
D_PT 209	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	110.32
D_PT 212	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	53.56
D_PT 214	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	166.66
D_PT 307	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	387.98
D_PT 308	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	393.04
D_PT 309	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	240.42

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 310	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	235.67
D_PT 311	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	146.22
D_PT 312	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	146.14
D_PT 313	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	160.51
D_PT 314	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	161.67
D_PT 315	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	969.15
D_PT 316	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	983.71
Total					27705.95

Secondary Drain

Secondary drains collect discharge from tertiary drains and discharge them into primary drains. . Its catchment area is smaller than primary drains, but bigger than tertiary drains. It may run parallel to bigger roads. Secondary drains may run along and through the middle of its storm water contributing area. However, in a built up area is it is difficult to have space for such alignment. Therefore, drains are built along roads. In Mathbaria, 63.35 km of new secondary drains have been proposed (**Table-12.2**).

Table- 12.2: Proposals of New Secondary Drains in Mathbaria Paurashava

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed DeD_PTh (m)	Length (m)
D_PS 1	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1246.28
D_PS 8	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	336.21
D_PS 11	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	267.48
D_PS 29	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	986.90
D_PS 31	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	990.59
D_PS 34	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	299.90
D_PS 35	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	307.72
D_PS 38	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	2687.91
D_PS 39	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	430.69
D_PS 40	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	466.18
D_PS 42	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1144.40
D_PS 43	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	456.23
D_PS 45	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	343.26
D_PS 47	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	265.14
D_PS 48	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	150.14
D_PS 51	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	180.29
D_PS 52	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	178.36
D_PS 53	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	306.28
D_PS 54	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	302.84
D_PS 58	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1606.45
D_PS 59	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	367.04
D_PS 61	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	343.18
D_PS 64	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	369.18

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed DeD_PTh (m)	Length (m)
D_PS 67	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	118.10
D_PS 70	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	76.43
D_PS 73	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	422.79
D_PS 74	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	163.76
D_PS 75	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1280.25
D_PS 76	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	166.30
D_PS 81	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	416.20
D_PS 86	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	615.69
D_PS 87	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1610.46
D_PS 88	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1392.11
D_PS 90	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	605.57
D_PS 94	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1549.11
D_PS 145	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	157.43
D_PS 158	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	164.22
D_PS 161	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	473.65
D_PS 162	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	173.60
D_PS 163	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	474.81
D_PS 165	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	444.99
D_PS 167	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	229.84
D_PS 169	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	339.23
D_PS 170	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	442.23
D_PS 171	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	165.27
D_PS 176	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	297.32
D_PS 178	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	125.48
D_PS 179	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	365.91
D_PS 180	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	612.86
D_PS 181	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	626.09
D_PS 182	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	368.31
D_PS 183	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	161.34
D_PS 185	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	261.59
D_PS 187	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	357.91
D_PS 189	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	276.99
D_PS 193	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	142.66
D_PS 195	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	385.37
D_PS 196	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	143.99
D_PS 197	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	326.57
D_PS 200	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	203.09
D_PS 201	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	301.98
D_PS 202	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	193.51
D_PS 203	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	307.40
D_PS 207	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	838.16
D_PS 210	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	166.02

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed DeD_PTh (m)	Length (m)
D_PS 211	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	167.36
D_PS 213	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	95.62
D_PS 215	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	111.38
D_PS 216	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	138.96
D_PS 285	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1108.28
D_PS 286	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1096.53
D_PS 287	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	435.55
D_PS 288	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	439.40
D_PS 289	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	169.82
D_PS 290	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	151.43
D_PS 291	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	280.59
D_PS 292	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	281.08
D_PS 293	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	106.42
D_PS 294	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1091.19
D_PS 295	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	233.21
D_PS 296	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	235.81
D_PS 297	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1605.99
D_PS 298	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1617.01
D_PS 299	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	539.04
D_PS 300	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	578.97
D_PS 301	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	975.81
D_PS 302	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	282.53
D_PS 303	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	315.48
D_PS 304	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	337.51
D_PS 305	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1928.77
D_PS 306	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1952.42
D_PS 317	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	403.93
D_PS 318	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	164.31
D_PS 319	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	252.87
D_PS 320	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	259.58
D_PS 321	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	1916.40
D_PS 322	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	297.97
D_PS 323	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	215.29
D_PS 324	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	675.73
D_PS 325	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	675.29
D_PS 326	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	672.99
D_PS 327	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	686.05
D_PS 328	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	4401.15
D_PS 329	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	4473.41
Total					63348.37

Primary Drain

Primary drains carry run-off or storm water to the destination from secondary drains. These drains are constructed by brick, cement concrete and sometimes by excavating earth in their alignments. Sometimes borrow pits of the roads serve as primary drains provided borrow pits are uniformly and continuously excavated. Primary drains deliver its discharge usually to the rivers or larger khals. Primary drains may be of earthen structure provided sufficient land is available and land value is low. Contributing drainage water comes from households and other sources via tertiary and secondary drains. Mainly the existing khals will serve as primary drains. The khals are proposed to be lined up to prevent encroachment and erosion. Lining will also enable easy and quick flow of water during heavy rains. The Paurashava has about 10 km of khals within the Paurashava, all that will serve as primary drains. So no new primary drain is proposed.

Outfall of Drains

There is no formal outfall of drains in or outside Mathbaria Paurashava. The primary drains mainly discharge storm water to the nearby khals and borrow pits. But these outfalls are not formally designed. Through the physical infrastructure survey and extensive field observation the consultant has identified outlets to the Machua and other khal that pass as spider web through the Paurashava. Most of the katcha drains are closed ended without any outlet that causes overflows in the road and surroundings. The khals ultimately end up in Bishkhali and Baleshwar River.

Drainage Development Phasing

The fund must be made available by the central government to develop the drainage system as per plan. It is beyond the capacity of Paurashava to fund such a huge project from its own resources. It is apprehended that the entire drainage development as per plan would not be possible at a time as it would involve huge expenditure. So it is better to phase out the construction in the following way:

Phase 1: 2011-2015: 1.96 km. Tertiary Drains, 15.94 km of Secondary Drains

Phase 2: 2016-2021: 9.19 km. of Tertiary Drains, 9.88 km of Secondary Drains

Phase 3: 2022-2026: 16.58 km. Tertiary Drains and 37.56 km. of Secondary Drains.

Other required tertiary drains and minor drains will be developed by community based with close collaboration of the Pura authority.

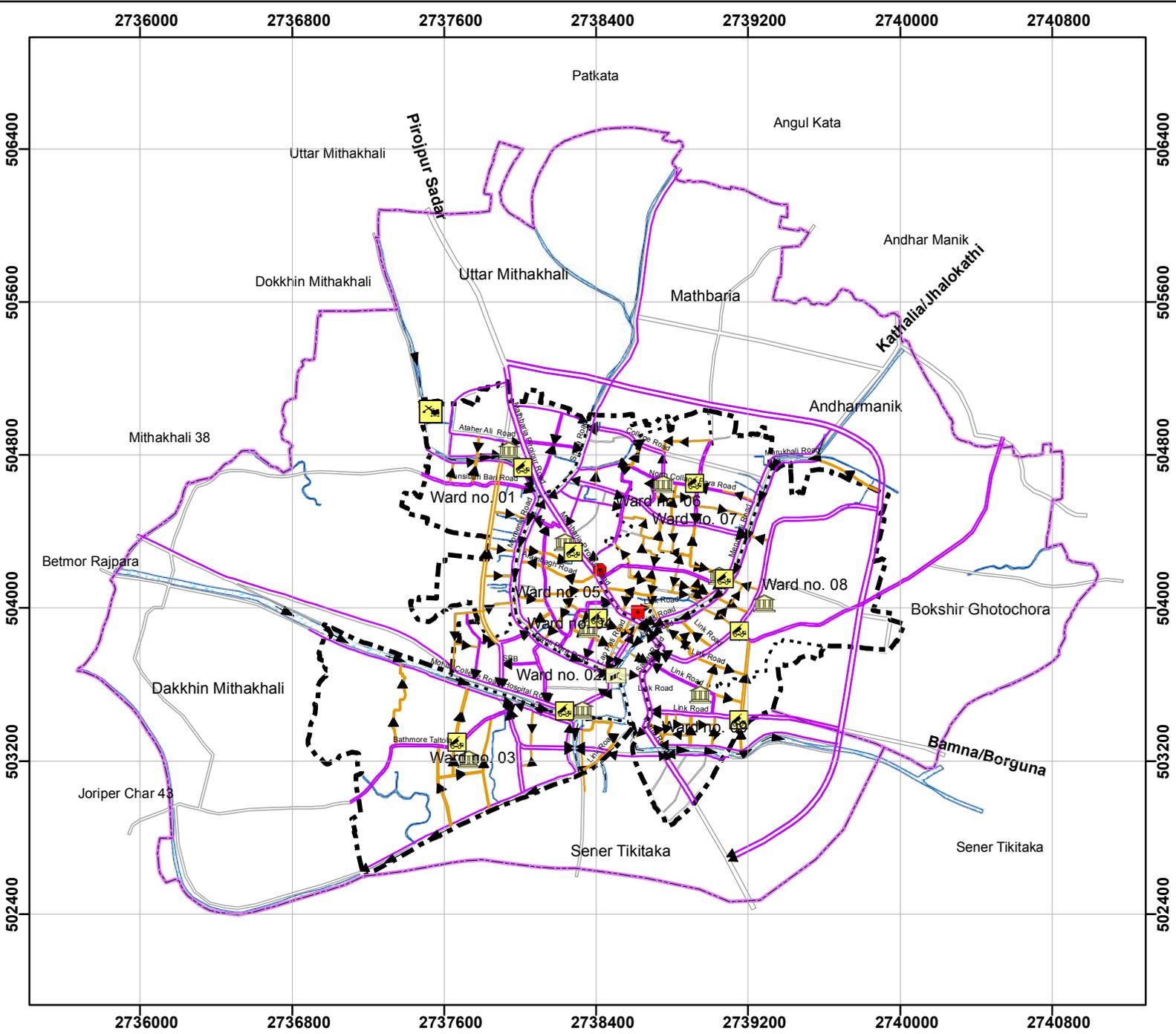
12.3.1.4 List of Infrastructure measures for Drainage and Flood Control Network

Mathbaria Paurashava has 54 numbers of bridge and culverts including wooden or bamboo built pools. Those bridges and culverts are located on the irrigation canals and drainage channels. The study area is moderately flood free area but water logging is alarming.

Except the above infrastructure, 28 more bridges/ culverts will be needed on different proposed roads as presented in the **Map-12.2**.

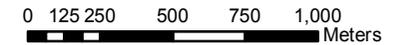
Map 12.2

Proposed Drainage Network and Environmental Facilities of Mathbaria Paurashava



SCALE

1:29,500



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary
- Urban Services**
- Paurashava Office
- Upazila Complex
- Dumping Station
- Neighbourhood Center
- Slaughtering House
- Waste Transfer Station
- Water Flow
- Secondary Drain
- Tertiary Drain
- Drainage Proposals**
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station
- Proposed Road
- Khal

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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In Association with



12.4 Plan Implementation Strategies

12.4.1 Regulations to implement the Drainage and Flood Plan

For plan implementation the first requirement would be resources mobilisation, which is highly lacking in the Paurashava. Mathbaria is a small Paurashava with limited holding tax realized. So, the first strategy will be to increase its revenue and non-revenue earning income. The strategy is to build capacity of the Paurashava to implement the plan. Permission for additional manpower has to be sought from the government. At the same time additional fund has to be provided to pay for salaries and charges. The next strategy will be to create awareness among the citizens not to dispose of solid waste in the drains and get them clogged. This can be done by regular publicity, engaging NGOs for motivation and the last by imposing punitive measures like, fine on the waste disposer. The property owner beside the drains should be made responsible to look after the drains in front of his property and made responsible for any clogging.

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

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

12.4.2 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

Mathbaria Paurashava Master Plan: 2011-2031

Landuse Plan

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 clearly and easily understood by all parties concerned. Paurashava Master Plan 'package' has become statutory, development controls associated with its component plans would also be statutory.

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

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

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

Co-ordination

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

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

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

B. ENVIRONMENTAL MANAGEMENT PLAN

12.5 Introduction

In environmental study, a multi-disciplinary approach has been used. In the present study data collection was shared with drainage and geology, transport engineering, socio-economic, and topographical survey components. A structured questionnaire prepared by LGED for environmental survey followed.

12.5.1 Objectives

Based on the information and data on the air, water, noise, soil, drainage congestion, 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 objectives of the study.

Following are the objectives of environment management:

- a. To create a sustainable living environment.
- b. To create awareness among citizens about livable environment.

12.5.2 Methodology and Approach to Environmental Study

Environmental survey was conducted following the standard methods and procedures to determine environmental pollutions. Elements of pollutions of urban environment are air, water, land and noise. 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 Conditions

Following is a brief study on the existing environment of Mathbaria Paurashava.

12.6.1 Geology, Soil and Sub-soil Conditions

Mathbaria Paurashava has three main types of soils with different qualities. Calcareous grey floodplain soils are structured grey silt loams to silty clays. The northern part of the area has silty clay loam of the Ganges River. The southern part has grey silty clay of the Meghna River. However, soil condition of Mathbaria Paurashava comprises diversified characteristics.

12.6.2 Climate

The Climate of an area is comprised of its Temperature, Average Humidity (%), Rainfall, Wind Speed and Hydrology. This zila bears a hot summer and a mild winter. But almost all the area of the zila is occasionally affected by cyclonic storm surges and tidal bores that originate over the Bay of Bengal during monsoon.

12.6.3 Temperature

Temperature rises steadily from January to April, remains fairly steady from April to October and then falls to reach the lowest in January. The maximum average monthly temperature is 29.7°C in August and minimum average monthly temperature is 20.3°C in January in 2010. The monsoon starts from June and maximum rainfall is experienced from July to September. Fig 12.9 and 12.10 present the temperature level (2000-2010) to convey the circumstances more obviously.

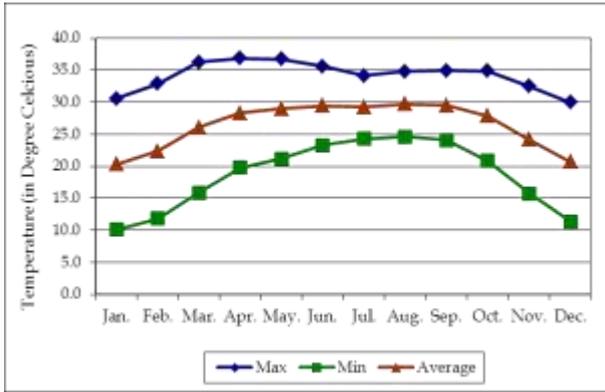


Fig 12.9: Monthly Average Temperature (2000-2010)
 Source: Bangladesh Metrological Department, 2011

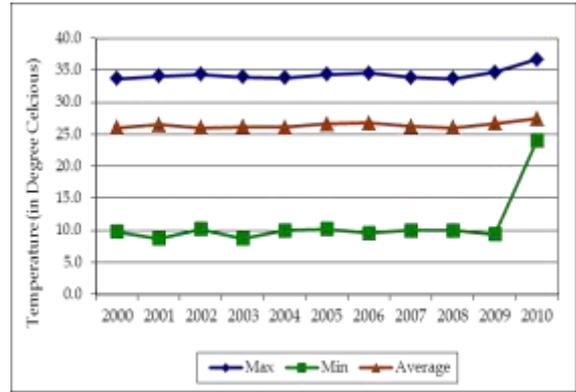


Fig 12.10: Year wise Average Temperature (2000-2010)
 Source: Bangladesh Metrological Department, 2011

12.6.4 Humidity

The weather of Mathbaria Planning area is not more contradictory from the natural weather of Bangladesh. But due to coastal region, weather of this area has few special characteristics. The humidity is comparatively high in the coastal region rather than other districts of Bangladesh.

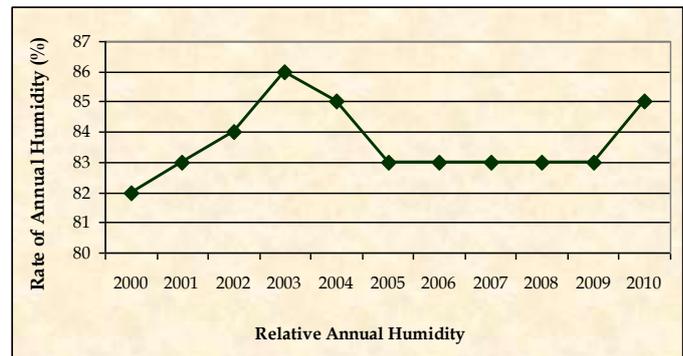


Fig 12.11: Monthly Average Humidity (%) for the year 2000-2010
 Source: Bangladesh Metrological Department, 2011

12.6.5 Rainfall

The monsoon starts from June and maximum rainfall is experienced in 2007 and lowest in 2010. Annual rainfall as recorded from 2000 to 2010, the maximum was 250.47 mm in 2004 and lowest in 2010 about 61.73 mm. It is recorded that during June to October there are high volume of rainfall.

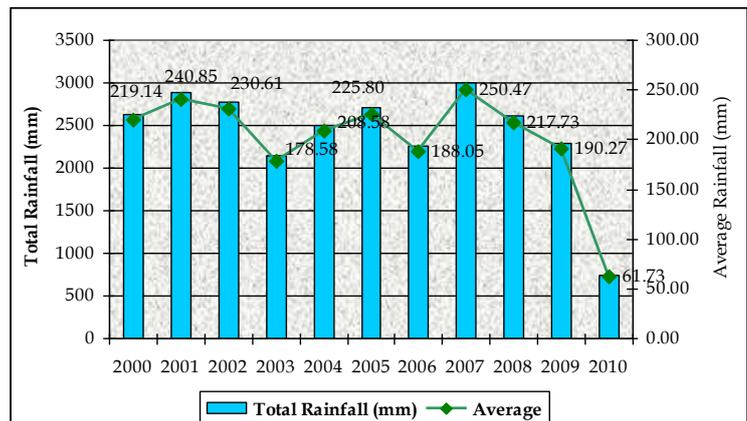
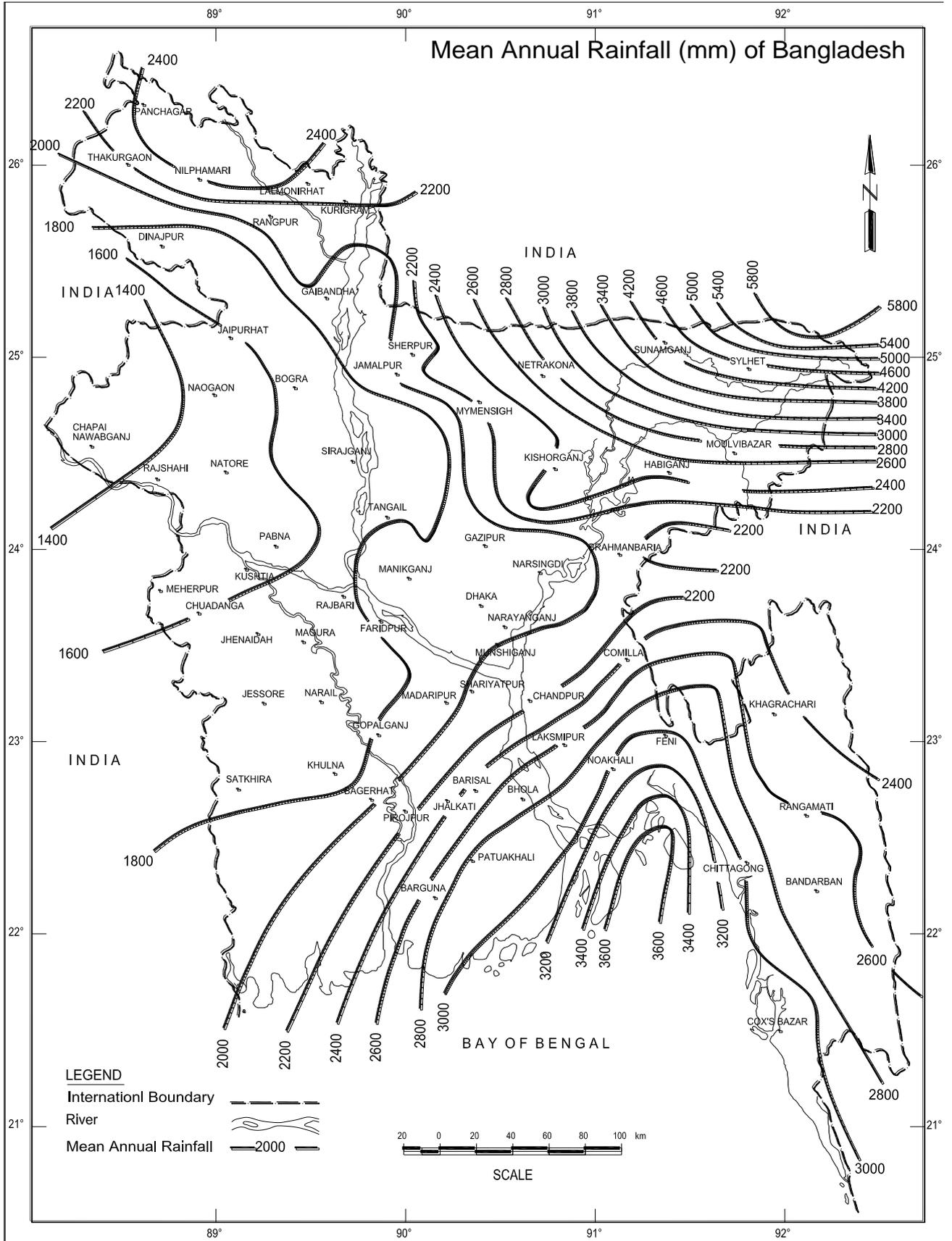


Fig 12.12: Rain Fall Data of Several Years
 Source: Bangladesh Metrological Department, 2011

Following **Map-12.3** shows mean annual rainfall (mm) of Bangladesh.

Map- 12.3: Mean Annual Rainfall (mm) of Bangladesh



12.6.6 Wind Directions

The general direction of the wind is the same as that in the Gangetic Delta: south-west, changing to east for the greater part of the year, with a north and north-west direction during the months of April and May. Nor-westers are caused by outbreaks of cold air from Central Asia which enters Bangladesh from the northwest. Nor-westers occur at the interface between the advancing cold air and warm air already present in the region. The temperature difference across the interface is large enough to generate the large scale turbulence which, in turn, generates thunderstorms along the interface.

Monthly Prevailing Wind speed in knots and direction of Mathbaria Planning area for the years of 1977 to 2007 has been presented below in Figure 7.5. It shows that wind direction in is mainly towards south and most of the time wind is calm (42.9 %) which is followed by 1-2.5 m/s wind speed (38.5%) and 2.5-5 m/s wind speed (14.4%).

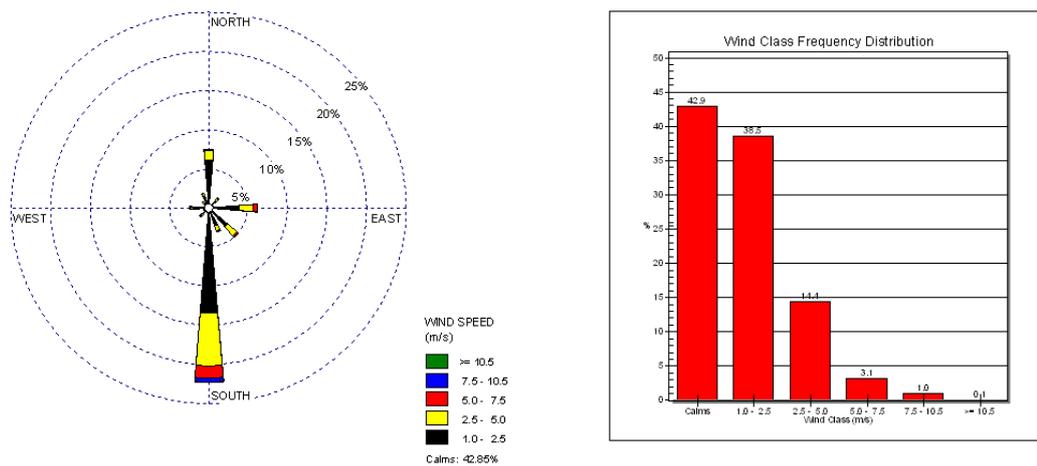


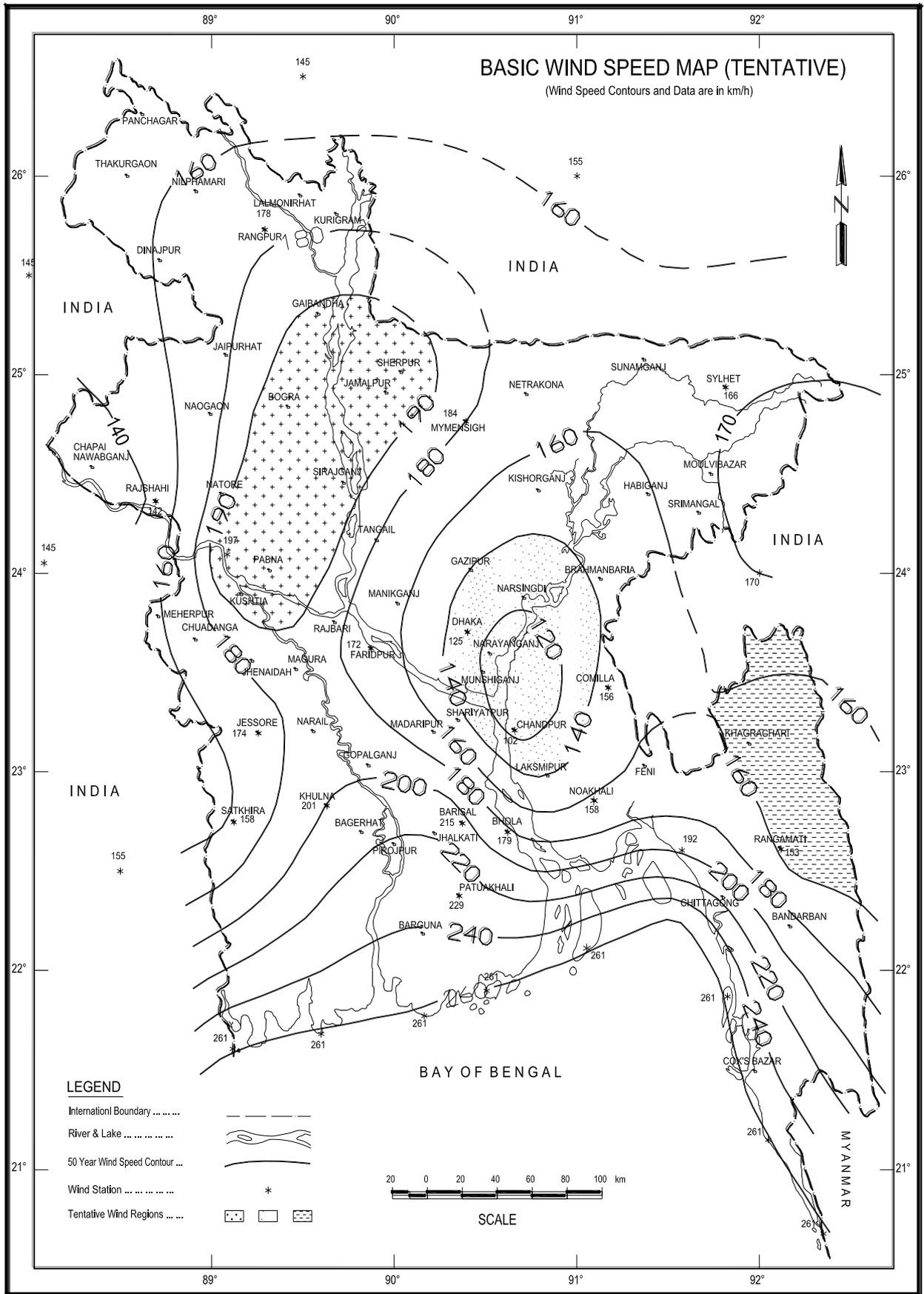
Fig 12.13: Wind Speed Data of Several Years in Pirojpur
 Source: Bangladesh Metrological Department, 2011

General wind speed throughout Bangladesh is shown in **Map 12.4**.

12.6.7 Hydrology

Hydrology can be defined as the scientific study of the waters of the earth, especially with relation to the effects of precipitation and evaporation upon the occurrence and character of water in streams, lakes, and on or below the land surface. The hydrological condition of Mathbaria Planning area is getting of inferior quality day by day.

Map- 12.4: General wind speed throughout Bangladesh



12.6.8 Solid Waste and Garbage Disposal

Household Waste management has not yet been streamlined in the Paurashava. There is no home collection system. People are not used to disposing waste in dustbins that are also very scanty in the town. Households usually dump their waste in nearby ditches or canals. Only a handful of people dump their waste in dustbins. However, as the density of population is very low waste is yet to emerge as a major environmental problem in the area. There is virtually no industry in the town. So, the question of industrial waste does not arise at all.

Kitchen Market Waste is generated from the kitchen markets of the town. Good amount of solid waste is generated from the markets. Due to absence of proper solid waste management system, substantial parts of these wastes find their destination in the local canals. Causing filling of the canals resulting in drainage blockage and water logging.

There is no management system to treat **clinical/ hospital waste** separately. However, there are only a few private and government health facilities in the town. No special arrangement has so far been made for treating clinical waste by the Paurashava. Neither the clinics have their own system of disposing clinical waste. These wastes are disposed of as ordinary solid waste. This system of clinical waste is a threat to human health.

12.6.9 Pollutions

a. Water Pollution

Surface water of ponds, canals in Mathbaria are free from salinity. Ground water level is found between 40 ft to 50 ft during dry season and between 30 ft to 35 ft during wet season. Ground water contains excessive of Iron and Arsenic (Source: DPHE, Mathbaria, 2009). One of the Paurashava sources reported that, 100% of the tube wells are iron contaminated and the provision of deep tube well is not possible because of the presence of salinity in the ground water at the power level. The sources of surface water (ponds and ditches only) are polluted by domestic waste, unhealthy sanitation and extensive use of fertilizer in the agriculture lands.

b. Air Pollution

As Mathbaria Paurashava is one of the most developed areas, many activities are performed inside the pouro area. In the peak period it is very busy. The bazaar and the market place remains very crowd. Lots of motorized transports, like buses, CNGs, tempos are moving here and there. These vehicles are polluting the air largely. In some places poultry/livestock farming is observed. They also cause air pollution.

c. Noise Pollution

Particular areas adjacent to the main road have some noise pollution created by movement of heavy vehicles near zero point, Mathbaria Bazar etc. In these locations traffic congestion is very high which created noise pollution in the town.

d. Land Pollution

Main reasons for land pollution in Mathbaria are extensive use of fertilizer in the agriculture, waste water discharge on the land, water logging, market and domestic waste disposal on the land. Many latrines of households are connected to drains which create a severe environmental problem.

12.6.10 Natural Calamities and Localized Hazards

a. Cyclone and Floods

Tropical cyclones from the Bay of Bengal accompanied by storm surges are one of the major disasters in Mathbaria Paurashava. It is located on the coastal belt, as a result the people of this area face cyclone almost every year. Devastating cyclones hit the area usually accompanied by high-speed winds, sometimes reaching 220 km/hr or more and 5-6m high waves, causing extensive damage to life, property and livestock. It has observed that Cyclone hit Mathbaria Paurashava in different years. But, in 1937, 1958, 1970, 1985, 1991, 2007 and 2009 year the extreme cyclone track is passed over the Mathbaria.

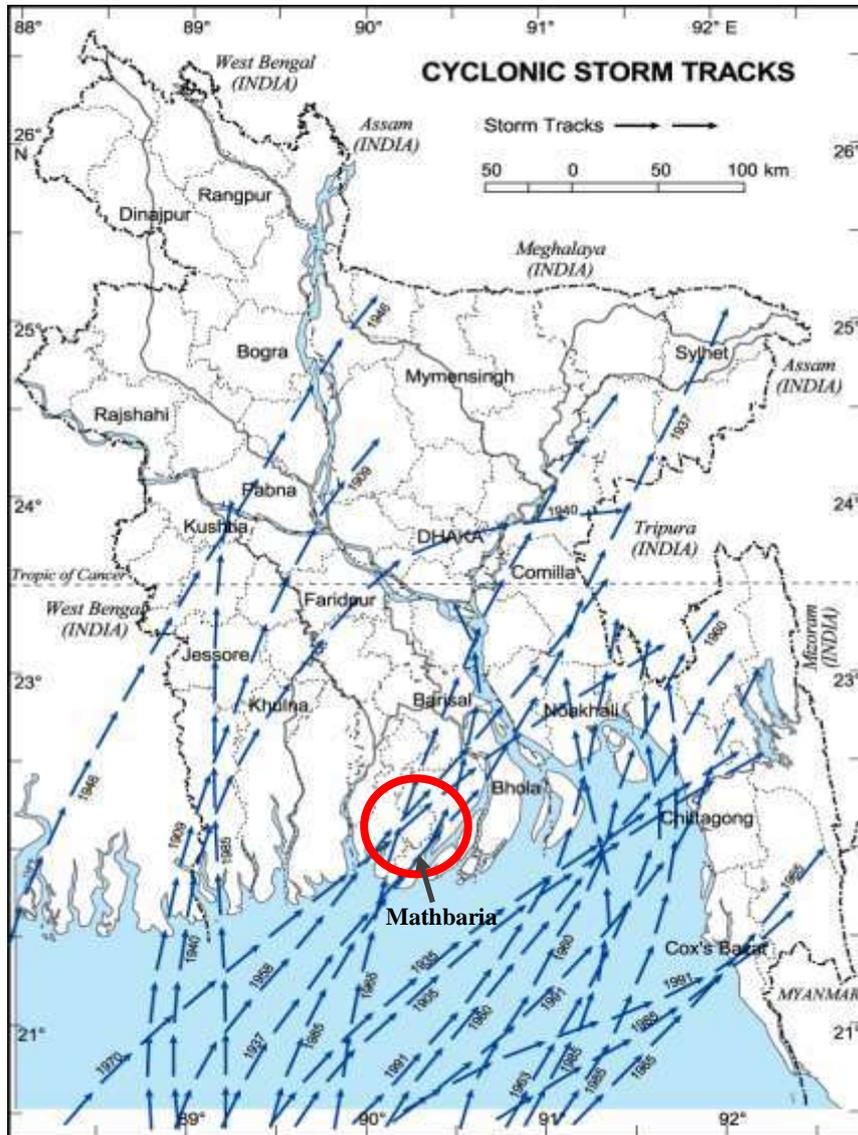


Fig 12.14: Cyclone Hit in different years over Mathbaria Paurashava

The cyclone SIDR and Aila were a big hazard for their natural climatic condition. It also damages many lives, forests, agricultures and infrastructures. For the help of cyclone affected peoples and livestock during and after cyclone there are cyclone centers at Mathbaria Paurashava. Mainly primary schools are serving as cyclone centers. Fig 12.14 shows the track of Cyclone storm over the Mathbaria.

A flood is the most common natural disaster at Mathbaria Paurashava. Tidal surge, caused by depression over the Bay and full moon, sweep Mathbaria Paurashava frequently. Naturally floods

are occurring in every rainy season but it not stay for more time. Direction of flow of water during flood at Mathbaria Paurashava is naturally river to town and the area is inundated during May to November.

b. Water Logging

Water logging is a common phenomenon throughout the year especially during rainy season. As Mathbaria is adjacent to Bay water logging is created by high tide. But the duration is very small. Location of water logging is not fixed but river bank area is more affected due to high tide water logging. Poor drainage system is also an important cause of water logging in the study area.

c. Fire Hazard

The residents of Mathbaria Paurashava frequently face the problem of fire but there is no fire brigade facility available for them. There is a fire station in Mathbaria Paurashava at ward no 01 with an area of 1.65 acres including existing and proposed expansion.

d. Epidemic

There is no treat of any epidemic in the town. The common diseases of the inhabitants in this Paurashava are the seasonal diseases. From the over all survey findings it has been revealed that the inhabitants of the Paurashava do not face any severe environmental problem from any kind epidemic.

12.6.11 Identifying Major Areas of Threat and Risk

a. Drainage Path Encroachment

The main canal in Mathbaria is Machua khal with a few other khals, a significant portion of which have illegally been encroached by the influential persons. At many points the canals have been blocked by the unauthorized and unplanned waste dumping.

b. Water Pollution

Water pollution is not found in Mathbaria Paurashava. As Mathbaria is a coastal area, surface water is refined by high tide and low tide. In Mathbaria Paurashava water is not polluted by marine vehicle. However, as the area is in coastal region, saline and iron have been contaminated the water.

c. Poor Solid Waste Management

Condition of solid waste management at Mathbaria Paurashava is very poor. There is remarkable number of dustbins in the Paurashava but the condition is very poor. To operate the waste collection operation, the Paurashava has only 18 contractual sweepers with only one conservancy inspector. It is reported and observed that, the shop keepers of kitchen market and the nearby inhabitants dump their wastes into the canals. It is also reported and marked that the Paura Authority has dumped solid wastes in the road side ditches.

12.7 Plans for Environmental Management and Pollution Control

12.7.1 Proposals for Environmental Issues

Following mitigation plan is suggested for various environmental problems.

12.7.1.1 Solid Waste Management

Solid waste management is not yet an environmental problem in the town because of low density of population and low consumption rate. But in future population will rise and density will increase. So solid waste will pose a major environmental problem in future. It is better to take precautionary measures now to avoid any future hazard.

Mitigation Measures:

1. *Introduction home collection system on community initiative.*
2. *Creation of solid waste transfer stations at important locations.*
3. *Creation of a dumping site for disposal of solid waste.*
4. *Uses of sanitary land fill method for treatment of waste at the dumping site.*
5. *Introduce recycling of solid waste.*

A number of service establishments are required in a town to serve the people. 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. There will be 9 waste transfer stations for collection of solid waste located at suitable locations of each wards. Each ward will have one station with an area of up to 0.25 acre. The Consultant has earmarked those. So there will be need for maximum 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 1.99 acres for final disposal of the solid waste proposed at the north-western periphery of the existing Paurashava (Uttar Mithakhali Mouza. It is less than the standard due to the scarce of the land and the consultant feel that it will be enough if it be used under scientific method. For detail plot schedule of proposed dumping station for mathbaria Paurashava, please see table- 10.10 of chapter- 10.

12.7.1.2 Ground Water Pollution

Though ground water is not a major source of drinking water supply in the study area, yet ground water pollution by salinity and iron is a serious threat for future water supply. Iron is the major threat to health for those who use ground water for drinking purpose. Iron is a geological problem. Experts view that it arises due to excessive extraction of ground water. So in future, when population rises further excessive ground water extraction will aggravate arsenic contamination situation.

Mitigation Measures:

Following mitigation measures may be adopted:

1. *Expand use of surface water by protecting existing ponds and excavating new ponds.*
2. *Introduce and popularize rain water harvesting system.*
3. *Reduce dependency on ground water.*

12.7.1.3 Surface Water Pollution

Various surface water sources of the town are regularly polluted by deliberate drainage of waste water with respect to pH, turbidity and coliform bacteria when compared with national standard. But present pollution level is low due to low density of population and no industrial agglomeration. The main sources of surface water pollution are urban waste water, sanitary sewage and solid waste dumping. With the implementation of this plan the pollution level may further increase as population and activity will increase leading to increase in waste water, sanitary sewage and solid waste dumping.

Mitigation Measures:

1. *Abolish katcha and hanging latrines.*
2. *Encourage practice of sanitary latrines.*
3. *Take measures against indiscriminate dumping of solid waste.*
4. *Establish and maintain sanitation conditions of slaughter house, fish market and katcha bazaar.*
5. *In future set up sewerage treatment plant to treat waste water.*

73.90 acres or 6.57% of the existing Paurashava (138.60 acres or 4.05% of the urban plan area) area is indicated as waterbody. These will act as water retention area which includes 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 0.15 acres will be preserved as the water retention ponds. Detail plot schedule will attach in **Annexure- G** later.

12.7.1.4 Prevention of Encroachment if Natural Khals

Most of the natural khals flowing through the town have been encroached by land hungry people. At many places the khals have been filled up. All these activities are causing khals to get squeezed lowering their capacity to drain enough water during monsoon. If this trend continues, it will increase flood risk and water logging in the low lying town.

Mitigation Measures:

1. *Strict measures should be taken to recover state property from encroachers.*
2. *Wherever land fill has been done, should be re-excavated and recovered from encroachers.*
3. *Marking pillars should be set up to mark khas lands of the khal area.*
4. *Vegetation may be created along the khal creating buffer zone between khal and the private property.*

12.7.1.5 Open Space Promotion

Present open space in the Paurashava is very negligible. So, the provision of open space must be implemented in the study area for the greater interest of the future urban dwellers.

Mitigation Measures:

1. *The open space provisions have to be implemented to save future town environment.*
2. *Adequate fund need be allotted to execute open space development.*
3. *No building permission should be accorded in locations earmarked for open space in the master plan.*
4. *Land owners may be motivated to donate land for open space development.*

12.7.1.6 Fire hazard

Though fire hazard is low in the town it might increase in future with increased urbanization. Fire hazard will be severe when busties will be built by low income poor people of the town. To avoid fire hazard following mitigation measures are recommended.

Mitigation Measures:

1. *Set up modern fire extinguishing devises.*
2. *Discourage people from using low quality electrical wire in building and industries.*
3. *Ensure periodical checking of electrical lines.*
4. *Advise busty dwellers about cooking safety.*
5. *Create awareness among people about the dangers of fire hazard.*

12.7.1.7 Pollution Protection Proposals

a. Industrial / Brickfield

There are no large scale industries in Mathbaria. Only some medium scale industries and goldsmiths exist. No brickfield is seen within Mathbaria. So, no significant air pollution is caused by these establishments. The steps to be taken to protect future air pollution are:

- Allow all the industries are in mixed-use areas. Some of them will have to be re-arranged and shifted to the proposed industrial site.
- A green buffer need to be created around the proposed industrial site; it will separate the area from adjacent land uses 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. Wherever it is set up, the chimney should not be less than 120 ft high.

b. Environmental Improvement Awareness Building

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 land uses should be provisioned for all the public and private organizations as their necessities.

The Paurashava is rural based urban area. Canal and pond water are 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.

c. 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.

12.7.2 Natural Calamities and Hazard Mitigation Proposals

12.7.2.1 Protection Plan Addressing Natural Calamities

Cyclone is a regular natural calamity in the study area. It affects the poor people mostly who can not build houses with permanent materials. Cyclones also destroy trees and other establishments causing economic losses. It is not possible to prevent cyclones, but it is possible to reduce the losses by cyclones.

Mitigation Measures:

1. Provide housing loan to build houses with permanent materials.
2. Take measures to promote employment and reduce poverty.
3. Take appropriate measures for post disaster loss mitigation.

12.7.2.2 Protection Plan Addressing Regular Hazards

- Most of the natural canals and water courses need to be preserved and maintained. The ponds larger than 0.15 acres should be preserved as water reservoir.
- 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.

12.7.2.3 Protection Plan Addressing Encroachment & Other Relevant Issues

- As a measure of protection from encroachment restrictive buffer zone need to be created on both sides of natural canals 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 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.

12.7.3 Plan Implementation Strategy

For implementation of the mitigation plan emphasis has to be laid on implementing the mitigation measures. Appropriate institutional set up will be required to implement the measures. Government must allocate sufficient budget for this purpose.

12.7.3.1 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** has prescribed duties and responsibilities of the Director. Most of those responsibilities are on the control of pollution.
3. 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.
4. 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.
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.

12.7.3.2 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).

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

- the purpose to be achieved by the development controls;
- where controls should be applied;
- what aspect of development needs to be controlled;
- what type of development controls are required;
- what degree or level of development control is required;
- who will be affected by the required control;
- who will be affected by the controls and in what manner;
- when the controls should be applied;
- what will be the likely impact of the controls;
- how and by whom will the controls be administered and enforced.

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

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

Plan Monitoring

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

Evaluation

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

Co-ordination

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

- Provide pre-application advice to residents, consultants and developers about landuse management issues and application procedures for the submission of development applications.

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

- Enforce planning and land use management related legislation and zoning scheme regulations.
- Issue of property zoning certificates.
- Investigate and resolve landuse management complaints, illegal landuse and prosecuting contraventions.

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

Chapter Thirteen

URBAN BASIC SERVICE DEVELOPMENT PLAN

13.0 Introduction

This Chapter describes the urban basic services development proposals for future development of the Paurashava. The proposals have been made at the town level, that is, the area under the urban area plan. The local level development proposals will be addressed in the Ward Action Plan. The development proposals deal with the basic urban services, like, water supply, drainage, sanitation, solid waste, telecommunication, electricity and gas, community facilities, education and health.

13.1 Basic Urban Services Development Plan

13.1.1 Water Supply

Mathbaria Paurashava has no pipe line water supply system. The Paurashava is yet to develop its own network based water supply system. The entire water supply system of the Paurashava is based on surface water as pond. Though Mathbaria is a river based costal regional pourashva of the south Bengele but it is suffering from serious shortage of pure drinking water for a long. As a result, it is not possible for the Paurashava to provide piped pure drinking water supply to its households. The problem is that, there is no reliable source of pure drinking water in Mathbaria. Mathbaria is rich enough with both surface and ground water but the water is not usable due to

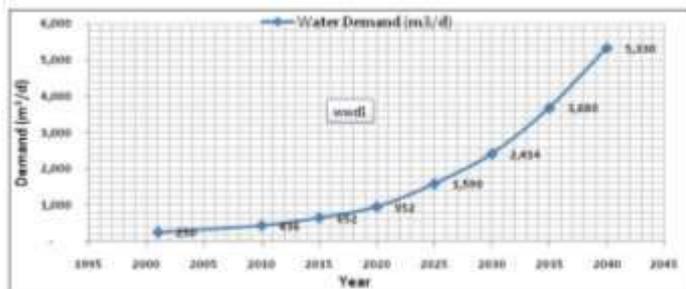


Fig-13.1: Water Supply Demand Chart by 2030 & 2040

excessive salinity of the ground water and the water of Machua khal also be saline contained for at least 3 months in a year. Recently, Public Health and Engineering Department (DPHE) has been studied in association with IWM to find out the potential source of safe and pure drinking water under mathematical model. The study found that Mathbaria Paurashava

will require 2414 cubic meter water supply per day by 2030.

Mathbaria Paurashava is situated on the mouth of Baleshwar and Bishkali River and Machua khal divided Mathbaria into two parts namely south part and north part which (Machua Khal) is linked with both Baleshwar and Bishkhali River through east and west direction. Water could be collected from these two rivers for the treatment and supply to the households as piped water supply system for 9 months (June to February). Besides, an artificial or manmade impounding reservoir will be created to storage the water for treatment and supply for the rest three months (March to May) when the water of Baleshwar and Bishkhali River become excessive saline contaminated. For this purpose, two water supply stations along with two overhead

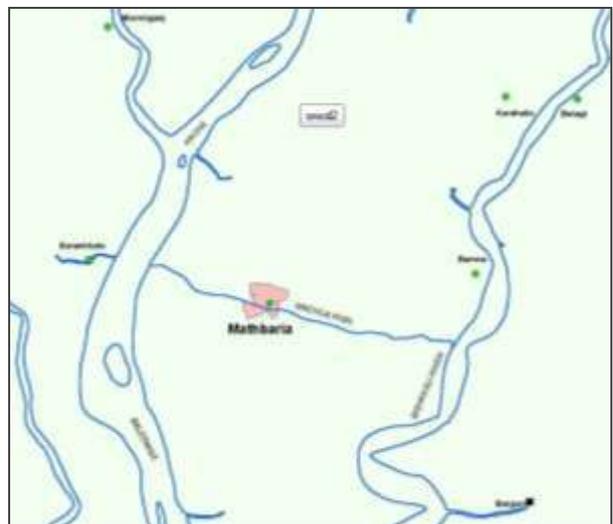


Fig-13.2: Water Source Location of Mathbaria

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

tanks at two desired locations have been proposed for Mathbaria Paurashava. The locations have been described in sub-section 10.3.2 (item 13) of Chapter in this report in details.

The consultant proposes a pipe line network to operate piped water supply system that will be implemented over 20 years. The total length of proposed water supply network is 24.18 km. Following **Table-13.1** shows the inventory of proposed water supply network in Mathbaria Paurashava.

Table- 13.1: Proposed water supply network in Mathbaria

Proposed US ID	Length (m)	Phasing	Proposed US Type
PW 1	1203.77	Phase 02	Water Supply Network
PW 3	333.40	Phase 01	Water Supply Network
PW 5	521.20	Phase 01	Water Supply Network
PW 8	292.30	Phase 03	Water Supply Network
PW 9	2161.84	Phase 02	Water Supply Network
PW 12	239.30	Phase 03	Water Supply Network
PW 14	330.46	Phase 03	Water Supply Network
PW 15	1289.29	Phase 03	Water Supply Network
PW 16	613.35	Phase 03	Water Supply Network
PW 18	516.62	Phase 01	Water Supply Network
PW 20	1752.22	Phase 01	Water Supply Network
PW 21	1726.77	Phase 01	Water Supply Network
PW 25	699.77	Phase 01	Water Supply Network
PW 28	172.47	Phase 03	Water Supply Network
PW 30	1041.87	Phase 03	Water Supply Network
PW 31	583.44	Phase 03	Water Supply Network
PW 34	1193.59	Phase 03	Water Supply Network
PW 36	1019.31	Phase 01	Water Supply Network
PW 37	1125.80	Phase 01	Water Supply Network
PW 39	967.62	Phase 02	Water Supply Network
PW 42	527.73	Phase 03	Water Supply Network
PW 43	315.88	Phase 03	Water Supply Network
PW 44	443.68	Phase 03	Water Supply Network
PW 47	664.51	Phase 01	Water Supply Network
PW 49	408.18	Phase 01	Water Supply Network
PW 50	306.98	Phase 01	Water Supply Network
PW 52	248.95	Phase 01	Water Supply Network
PW 54	145.43	Phase 03	Water Supply Network
PW 57	316.89	Phase 01	Water Supply Network
PW 58	717.44	Phase 01	Water Supply Network
PW 60	392.30	Phase 03	Water Supply Network
PW 62	589.54	Phase 01	Water Supply Network
PW 64	438.43	Phase 03	Water Supply Network
PW 68	392.24	Phase 01	Water Supply Network
PW 70	67.90	Phase 02	Water Supply Network
PW 72	424.45	Phase 01	Water Supply Network
Total	24184.92		

Rain Water Harvesting: As an alternative to drinking water supply harvesting of rain water may be explored. The idea of rainwater harvesting is unknown to the local people. NGOs working in rain water harvesting training and motivation may be engaged for this purpose. Paurashava may

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

take initiative to prepare a programme for popularising rain water harvesting among the Paurashava people.

13.1.2 Gas Supply

Presently Mathbaria Paurashava has no piped gas facility. People are still dependent on LP cylinder gas, kerosene, straws, dry leaves, cow dung, fire wood and other traditional fuel materials for day to day cooking. There are two opportunities of gas supply in Mathbaria. One of these opportunities is considerable Padma Bridge and another is Shahbajpur gas field. When the Padma Bridge becomes true, the economic opportunity will drastically rise and the development of Barisal region including Mathbaria will be done at a high rate. Gas will come to this region. Again, Shahbajpur gas field will play a potential impact on the development of Mathbaria after the completion of Mathbaria Master Plan and when it will start to implement.

Gas supply networks under the current proposals have been shown only along major roads. During the installation of gas network, Paurashava will consider some necessary steps. They are, in case of **gas manifold station**, may be located on small to medium sized plot on the main ring, at the fringe of the Paurashava. **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.

The consultant proposes a pipe line network (considering potential gas availability in this region) to operate piped gas supply system that will be implemented over 20 years. The total length of proposed gas supply network is 24.08 km. Following **Table-13.2** shows the inventory of proposed gas supply network in Mathbaria Paurashava.

Table- 13.2: Proposed gas supply network in Mathbaria

Proposed US ID	Length (m)	Phasing	Proposed US Type
PG 2	1214.38	Phase 03	Gas Supply Network
PG 4	320.60	Phase 02	Gas Supply Network
PG 6	538.74	Phase 02	Gas Supply Network
PG 7	292.73	Phase 02	Gas Supply Network
PG 10	2161.76	Phase 03	Gas Supply Network
PG 11	246.24	Phase 02	Gas Supply Network
PG 13	331.25	Phase 02	Gas Supply Network
PG 17	1892.84	Phase 03	Gas Supply Network
PG 19	480.62	Phase 02	Gas Supply Network
PG 22	1758.90	Phase 02	Gas Supply Network
PG 23	1754.57	Phase 02	Gas Supply Network
PG 24	674.28	Phase 02	Gas Supply Network
PG 26	338.31	Phase 02	Gas Supply Network
PG 27	153.98	Phase 02	Gas Supply Network
PG 29	665.02	Phase 02	Gas Supply Network
PG 32	556.93	Phase 02	Gas Supply Network
PG 33	1167.57	Phase 03	Gas Supply Network
PG 35	989.68	Phase 02	Gas Supply Network
PG 38	1126.19	Phase 02	Gas Supply Network
PG 40	975.97	Phase 03	Gas Supply Network
PG 41	535.49	Phase 03	Gas Supply Network
PG 45	338.70	Phase 03	Gas Supply Network
PG 46	466.92	Phase 03	Gas Supply Network
PG 48	653.77	Phase 02	Gas Supply Network
PG 51	396.66	Phase 02	Gas Supply Network

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

Proposed US ID	Length (m)	Phasing	Proposed US Type
PG 53	225.97	Phase 02	Gas Supply Network
PG 55	147.32	Phase 02	Gas Supply Network
PG 56	689.10	Phase 02	Gas Supply Network
PG 59	324.17	Phase 02	Gas Supply Network
PG 61	420.48	Phase 02	Gas Supply Network
PG 63	589.73	Phase 02	Gas Supply Network
PG 65	444.89	Phase 02	Gas Supply Network
PG 66	285.82	Phase 02	Gas Supply Network
PG 67	392.34	Phase 02	Gas Supply Network
PG 69	71.14	Phase 03	Gas Supply Network
PG 71	459.60	Phase 02	Gas Supply Network
Total	24082.66		

13.1.3 Sanitation

There is no network based sewerage system in Mathbaria. As the field survey shows, the present sanitation system of the Paurashava is composed of a variety of types, like, hanging latrine, pit latrines of different types, water sealed latrines and septic tank based sanitary latrine.

In the Paurashava, 92.04% of the households have sanitary toilet facility and 6.27% has non-sanitary toilet facility. The remaining 1.67% does not have any toilet. But, a scheme is going on to overcome 100% sanitization.

Due to prohibitive expenditure one should not expect establishing network and treatment plant based sewerage system in the town by the Paurashava. So, for long the sanitary system of the Paurashava will remain on site. To promote healthy sanitation, Paurashava should promote low cost sanitary latrines in the town together with awareness building for healthy sanitation. It is proposed to set up public toilets in public gathering areas, like, existing and proposed bus stand, bazaar and the main town centre. This will cause to set up 04 numbers of public toilets in the town.

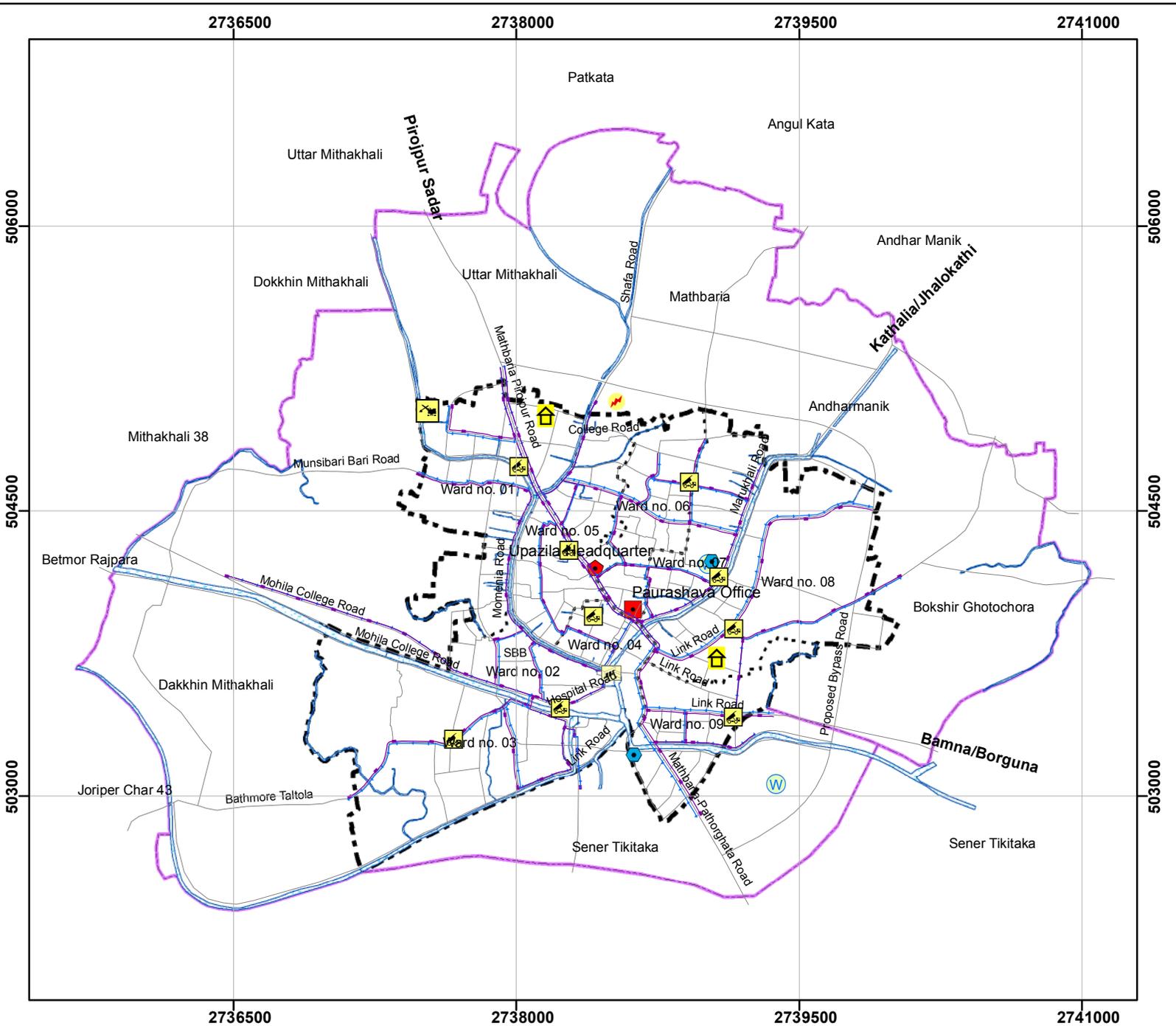
13.1.4 Solid Waste Management

Owing to low density of population solid waste is yet to emerge as a major problem in the town as it happens in larger towns. The households dispose their kitchen waste in nearby ditches or low lands. A major share of solid waste is generated by kitchen markets. These wastes find their destination in local khals. This is causing filling up of these khals reducing their capacity to discharge adequate water during rainy season. The Paurashava has no transfer stations.

Paurashava with its garbage vans collect the waste and dump in various places, mostly make sanitary land fill in low lying areas. The consultant recommended acquiring 1.99 acres for dumping site at the west side of ward no 01 in Uttar Mithakhali mouza. It is less than the standard due to the scarce of the land and the consultant feel that it will be enough if it be used under scientific method. The site is easily accessible. As the wind blows from south to north the site will not produce any odor. The dumping site will be used as sanitary land fill site, where waste will be scientifically treated. It will include methods to contain leachate such as clay or plastic lining material. Deposited waste will be compacted to increase its density and stability, and covered to prevent attracting vermin (such as mice or rats). For landfill gas will be extracted and pumped out of the landfill using perforated pipes and flared off or burnt in a gas engine to generate electricity. There will be 9 waste transfer stations for collection of solid waste located at suitable locations of each wards. Each ward will have one station with an area of up to 0.25 acre. The Consultant has earmarked those. So there will be need for maximum 2.25 acres for 9 transfer stations.

Map 13.1

Proposed Linear Service Network and Urban Facilities in Mathbaria Paurashava



SCALE
1:29,500

0 125 250 500 750 1,000 Meters

LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Utility Services

- Cyclone Shelter
- Dumping Station
- Electric Sub-station
- Overhead Tank/Reservoir
- Slaughtering House
- Waste Transfer Station
- Water Supply Station
- Paurashava Office
- Upazila Headquarter

Utility Network

- Water Supply Network
- Gas Supply Network
- Proposed Road
- Canal
- Tulatuli River

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

SCPL CONSULTANT
Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

13.1.5 Electricity

The project area according to 2011 Census Report is comprised of 4330 households. As per projection it will be about 7000 households in 2031. If the residential consumption per household is calculated as 0.5 KW then the total requirement of electricity will stand at about 3.5 MW by 2031. This is a very conservative estimate because nowadays people of even rural areas have become habituated in the use of many electrical gazettes. The length of the distribution network could not be calculated at the moment. However, this will depend very much on the ability of the government to establish more power generation projects and ability to pay by the people. On the other hand, the following rules should be considered in future for better facility:

1. Location of power line should be carefully planned not to disturb the traffic movement.
2. There are provisions in the BC Rules about line clearance which should be strictly enforced.
3. There are standards in street light arrangements which should be adhered to while selection is made for light post locations.
4. Communal arrangements can be made in low income housing areas. The existing REB system has proved worthwhile, particularly in bill payment management.

Power Development Board (PDB) is mainly responsible for electricity supply in the Paurashava, supported by the Rural Electrification Board (REB). PDB works for power production and distribution, while REB is responsible for distribution only. All the 9 wards of Mathbaria Paurashava have been brought under the Rural Electrification Programme. REB has their own plans for power supply in the town, which is executed in phases, depending on demand for power. In its infrastructure plan has shown the future power supply network of the town. The plan also proposed one electric substation at the extended part of the Paurashava (north) beside the proposed industrial estate with an area of 6.20 acres. The required electricity facility within the Paurashava will be provided through existing power system master plan of both REB and PDB. But the greatest problem of power supply in the entire country remains to be handicapped by the shortage of supply due to low production.

Renewable Energy

In overall Bangladesh where electricity demand is not adequate according to its generation with natural fuel, it has vast potential for renewable energy and the natural availability of alternative energy creates opportunities for growth in power sector. Potential of non-exhaustive source of energies available here in the form of solar, biogas, hydropower and wind can be harnessed to provide an environmentally sustainable energy security, as well as an affordable power supply to the small townships and in rural areas.

In case of this Paurashava, Solar energy and biogas based electricity generation systems can be introduced to supplement the short fall of general electricity supply. As a subtropical country, most of the year sunlight is dropped here. For this reason it is in a perfect location to use solar panels to provide electricity.

Another source of renewable energy are the organic wastes like dead plant, animal dung, poultry dropping, kitchen waste which can be converted into gaseous fuel called biogas. This can be easily used for electrification and cooking burner which can also reduce the consumption of wood as well as imported fuel (kerosene) usually used for cooking in this area. IDCOL a government owned investment Company and some other NGOs like Grameen Shakti, other organizations in association with foreign partners are providing these facilities to different localities in Bangladesh.

In Mathbaria Paurashava, the present population is 18375 (2011) and the projected population is 31798 (2031). Current (2011) volume of waste generation in Mathbaria is 3.47 tonne @ 0.28

Mathbaria Paurashava Master Plan: 2011-2031
Landuse Plan

kg/person per day which will increase to 8.90 tonne @ 0.28 kg/person per day. It is a great opportunity for Mathbaria to introduce the solid waste based electricity generation which is a renewable energy and will also manage solid waste problem scientifically as well as it will help Mathbaria to solve a percentage of electricity scarcity.

13.1.6 Telecommunication

The town enjoys the networks of all mobile and PSTN telecommunication companies operating in the country. Besides, there also exist landlines of BTCL, the national telephone company. Due to easy and cheaper access to mobile, the demand for land lines has decreased substantially. The consultant has shown land phone line alignment along almost all roads.

13.1.7 Community Facilities

13.1.7.1 Open Space Recreation

The consultant has already estimated 75.96 acres of open space requirement for the town. This land will be distributed to various categories of open space to be provided. In Mathbaria Paurashava, the consultant proposes 5 playgrounds (4.83 acres) situated in Ward No. 1, 3, 4, 6, 7 & 9; one central park in ward no. 01 (12.18 acres); 10 neighbourhood park for all the wards (8.95 acres) and one upazila stadium (5.32 acres) in ward no. 08. The existing playgrounds are mainly located within school or college compounds. In Mathbaria, one auditorium beside Mathbaria College and one Cinema Hall in ward no. 1 are available in Mathbaria Paurashava. The consultant also proposes auditorium, theater hall and community centers in all ward centres proposed for Mathbaria Paurashava.

13.1.7.2 Market Facilities

The total land required for additional market facilities stands at 30.61 acres. This covers, 3.17 acres for wholesale market, 9 acre for neighborhood level market, 12.83 acre for retail sale market and 2.50 acres for super market.

Table- 13.3: Estimation of Land Requirement for Market facilities

Use/Facility	Recommended standard	Estimated Land Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Wholesale market	1.00 acre/ 10000 population	3.17	0.00	3.17
Neighborhood/ Local market	1.00 acre/per neighborhood Market	9.00	0.00	9.00
Retail sale Market	1.0 cres/ 1000 population	31.80	18.11	12.83
Corner Shop	0.25 acre/ per corner shop	2.25	0.00	2.25
Super Market	1.50 – 2.50 acres/per super market	2.50	0.00	2.50
Total		48.72	18.11	30.61

The consultant allotted 12.81 acres (0.37% of the urban plan area) for commercial zone including neighborhood market, cattle market or cow hat and super market along with other kitchen markets under ward centers proposed for each and every ward.

13.1.7.3 Mosque, Eidgah and Graveyard

Standard determined for mosque that the allocated land has already been covered by existing mosque. Yet the consultant feels that there should one central mosque in the town. This mosque has to be developed to facilitate enable access to people living in different parts of the town.

The town already has about 2.22 acre of land under graveyard. However, these graveyards are mostly family based graveyards. Mathbaria Paurashava has selected central graveyard (Poura Graveyard) in ward number 7 and divided into two parts namely graveyard for freedom fighter and another for general people. The consultant has earmarked this land as central graveyard at that place in Ward No. 04. There are 2 eidgah (0.38 acres) in Mathbaria these are along with (1.54 acres) and a central cremation ground (0.10 acres) near this central graveyard. The consultant also earmarked central mosque and its adjacent eidgah as central eidgah and mosque for Mathbaria Paurashava.

13.1.7.4 Community Centre

There is no municipal community centre in the town though an auditorium has built beside Mathbaria College. The consultant proposes to set up nine community centers under nine ward centers proposed for all the wards of Mathbaria Paurashava.

13.1.7.5 Police Outpost

In Mathbaria Paurashava there is one Police Station in ward no 04. Nine police outposts will be set up for control of law and order. These will be in each and every ward under the proposed ward centres.

13.1.7.6 Post Office

The consultant does not feel to allocating land for post office. The existing post office will be developed vertically due to scarce of land and few post boxes will set at different location so that people may enjoy easy accessibility to post documents.

13.1.7.7 Fire Station

The consultant does not feel to allocating land for Fire station. The existing fire station will be developed vertically due to scarce of land. Existing fire station is located in ward no. 01, at the north-western part of the existing Paurashava.

13.1.8 Education

18.69 acres of land have suggested for education facilities including existing and proposal. The facilities include nursery, primary school, secondary school, college, vocational training institute and other education facilities.

- Four new **Primary school** for ward no. 01, 04, 05 and 08
- Eight Existing **Primary Schools** will strengthen their capacity and service.
- **High School:** Three new High Schools at ward no. 02, 03 and 09 will be established and existing 4 high Schools (KM Latif High School, Hatem Ali Girl's School, Udayan High School and Mannan Kabir Memorial & Collegiate High School) will be strengthen their capacity and service.
- **College:** Existing Mathbaria Govt. College (in ward no. 06) and Mohiuddin Women College (in ward no. 02) along with Mathbaria TT College (in ward no. 06) will strengthen their capacity and serve the entire Paurashava.
- 1 Proposed **Vocational Institute** located at ward no. 01
- Existing other educational institutions along with existing madrasas will strengthen their capacity and serve the entire Paurashava.

13.1.9 Health

There is one Upazila Health Complex in ward no 02. In future, as the population and density increases, demand for local health facilities will be increased. The consultant feels that additional land is required for the health facilities. Consultant allotted (proposed & including existing) has an area of 3.71 acres designated up to 2031 except the proposed community and maternity clinics proposed at each and every '**Ward Centre**'.

Beside the Upazila Health Complex, there are also other 19 private hospitals/health centres and diagnostic centres in Mathbaria. The important private health centres are Islami Hospital, Al Manar Islami Hospital, Mathbaria Sadar Clinic, Feroza Clinic Nursing Home Private Limited, Matresadan Clinic & Diagnostic Centre, Kuwait Probasi Hospital & Diagnostic Centre, Mahima Clinic & Diagnostic Centre, Palli Orthopedic Clinic & Diagnostic Centre, Mazeda Memorial Hospital etc. There are also one permanent and other twelve temporary EPI Vaccination centres in Mathbaria Paurashava.

Chapter Fourteen

WARD ACTION PLAN

14.1 Introduction

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

14.1.1 Background

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

14.1.2 Content

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

14.1.3 Linkage with Structure Plan and Urban Area Plan

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

Urban Area Plan is an attempts to guide and accomplishing a coordinated, adjusted, and harmonious development of an urban center and its environs in accordance with present and future needs, best promoting health, safety, morals, order, convenience, property, general welfare, as well as efficiency and economy in the process of development; the forecast of a city's future. The plan lays down the infrastructure and future land use zoning of the planning area. The plan must have layer superimposed on mouza map. WAP details out the development proposals taking the framework plan proposed by Urban Area Plan. WAP makes further detailing of the Urban Area Plan as an upper level plan and takes it to links them to the micro level in order to address the local problems in more vivid fashion.

14.1.4 Approach and Methodology

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

14.1.5 Derivation of Ward Action Plan

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

14.1.6 Revisiting of Structure Plan and Urban Area Plan

Revisiting Structure Plan

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

Population

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

Economic

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

Housing and Slum Improvement

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

Social Amenities and Community Facilities

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

Transport

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

Utility Services

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

Urban Area Plan

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

Chapter-10 of the Urban Area Plan is about **land use** proposals. The plan proposes 19 categories of land uses for future urban area. But about 21% of the available land has been retained as agricultural (existing Paurashava area) as much of the current land is under farm use. The population projection and estimated future urban space requirement did not allow more land for urban use reducing the farm land. Residential use fetched about 29% of the land excluding about 9% of the rural settlement, while about 7% land has been earmarked as waterbody already existing and also that they are non-urban use. Circulation network takes 13.45% and 0.70% too commercial along with 4.63% mixed use.

Transportation

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

- Primary Road: RoW 60 - 100 feet
- Paurashava Secondary Road: RoW 30 - 40 feet
- Paurashava Tertiary Road: RoW 20 feet

The plan also proposed a road design standard.

The plan proposed a road network plan of about 83 km including about 28 km of new road, comprising primary and secondary roads only to enable draw the lower level roads by Ward Action Plan.

14.1.7 Prioritization and Ward Wise Action Plan

Ward Action Plan prioritize first phase (2011 - 2016) development proposal. The plan proposes first phase development plan for transportation facilities including circulation network, drainage proposal, utility services proposal and other development proposals.

In the stage of Ward Action Plan (WAP), proposals of only existing Paurashava (gazetted on May 27, 1993) will be discussed as a priority basis. Recently (gazetted on May 20, 2013) extended area and proposed extension area proposed by the consultant, which is also a part of urban area plan, will be narrow down during the second phase after a detail physical feature survey on mouza maps.

14.2 Ward Action Plan for Ward No. 01

14.2.1 Demography

Ward No. 1 is situated on moddho and uttar Mithakhali mouza, located on the north-western part of the town. It has low density of population compare with other wards. In 2011 the Ward had a population of 1565 persons. Family size was 4, sex ratio was 115, 115 males for 100 female. Population projection shows 2708 population for the year 2031. For the same year (2011), it has a density of 9 persons per acre.

Table - 14.1: Population Statistics of Ward No. 01

Item	Year		
	2001	2011	2031
Area (acre)	169.56	169.56	169.56
Population	--	1565	2708
Density of Population (acre)	--	9	16

14.2.2 Critical Issues and Opportunities of the Ward

Ward No. 1 is one of the problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a) Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 6.69 km. This length of roads will not be able to serve the entire area in future when settlements will increase. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 12 ft wide. Another problem of roads is that they are meandering in their layout. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Maximum portion of road is paved and only 0.80 km road is Katcha. Unpaved roads, even paved road also, turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward has only about 250 meter drains (121 meter is katcha) network serving the entire area. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is also a critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are no arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b) Development Opportunities

i. Low Density of Population

The present density of population in the ward is medium, only 9 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.2.3 Ward Action Plan Proposals

14.2.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that major land use goes to Agricultural land and it is 83.98 acres which is 4.53% of the total land. The second major land use is Residential land and occupying about 34.18% (57.95 acres) of the Paurashava area. Besides, there is about 9.90% water body, about 2% circulation network, about 0.09% commercial activities and rest of lands are being used for education, community service, government services, manufacturing or industry, service activity, Urban green space and vacant.

14.2.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 43.84 (25.85%) acres of land delineated up to the year 2031 in Ward No. 01, considering standard provided by LGED.

ii) Community Facilities

Proposed plan suggests a community centre in this ward within proposed ward center proposed for the whole ward.

iii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.60 acres (0.35%) and other kitchen market under proposed ward center designated up to 2031.

iv) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 01 the consultant allocate 6.04 acres (3.56%) land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 3.78 acres (2.23% of the ward area) that includes only one new primary school, one new vocational institute including other existing schools and madrasas.

vi) General Industrial Zone

This landuse has been proposed at the extended part of the existing Paurashava.

vii) Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this use has been proposed as 3.07 acres (1.81%) including one counsellor office, one police box/outpost under proposed ward centre and others existing Government office.

viii) Agricultural Zone

The Paurashava including Ward No. 01 has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone. The total area under this use has been estimated as 36.81 acres (21.719%) that include existing and proposed land uses.

ix) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 5.24% of the total ward and it is 8.88 acres.

x) Health Services

Proposed plan suggests a community clinic in this ward under proposed ward centre.

xi) Circulation Network

Existing and proposed roads covers a total of 22.82 acres of land and it is about 13.46% of the whole ward.

xii) Transportation Facilities

Proposed plan suggests a CNG/Rickshaw stand. The total area covers 0.26 acres of land (0.15%).

xiii) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 13.46 acres of land (7.94% of the whole ward) for open space where the consultant proposes one Neighborhood Park and a central park.

xiv) Utility Services

In existing landuse there is no utility service facility. The plan suggests a solid waste dumping station along with one waste transfer station. The proposed land covers a total of 2.03 acres (1.20% of the ward) including 1.99 acres dumping station and 0.04 acres waste transfer station. **Map 14.1** shows the existing land use of Ward No.1 while **Map- 14.2** shows the proposed landuse zoning of ward no. 01.

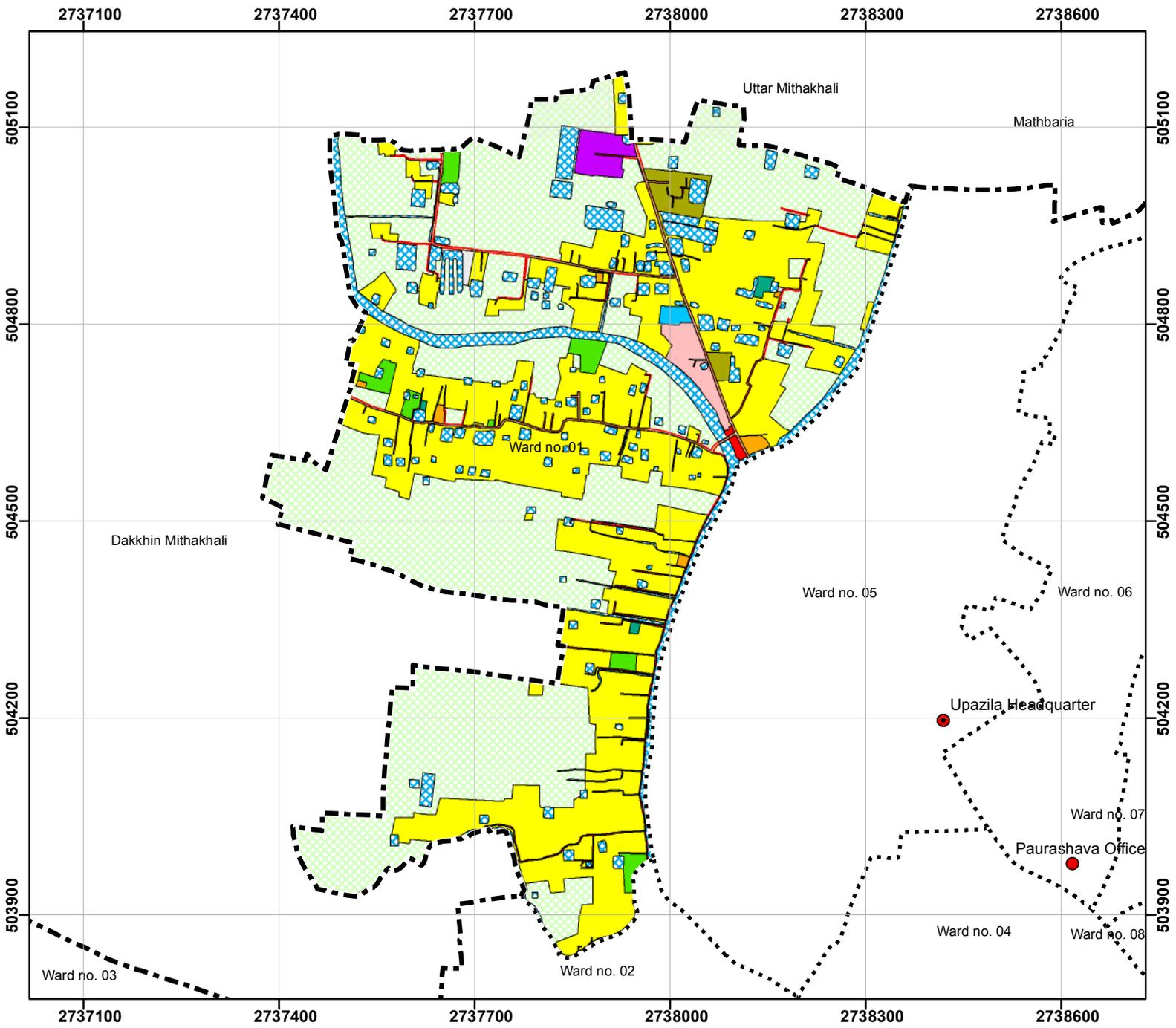
Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

Table-14.2: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	83.98	49.53	36.81	21.71
Circulation Network	3.40	2.00	22.82	13.46
Commercial Zone	0.15	0.09	0.60	0.35
Community Services	0.46	0.27	0.00	0.00
Education & Research Zone	2.04	1.20	3.78	2.23
General Industrial Zone (Manufacturing and processing activity)	0.19	0.11	0.00	0.00
Government Office	1.22	0.72	3.07	1.81
Health Services (Service Activity)	1.42	0.84	0.00	0.00
Mixed Use Zone	1.40	0.83	6.04	3.56
Open Space	0.30	0.18	13.46	7.94
Overlay Zone	0.00	0.00	0.00	0.00
Recreational Facilities	0.00	0.00	0.26	0.15
Restricted Area	0.00	0.00	0.00	0.00
Rural Settlement	0.00	0.00	10.91	6.43
Transportation Facilities	0.00	0.00	0.26	0.15
Urban Deferred	0.00	0.00	16.81	9.91
Urban Residential Zone	57.95	34.18	43.84	25.85
Utility Services	0.00	0.00	2.03	1.20
Waterbody	16.78	9.90	8.88	5.24
Urban Green Space	0.25	0.15	0.00	0.00
Total	169.55	100.00	169.55	100.00

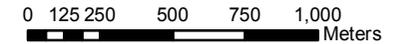
Map 14.1

Existing land use of Ward No.01



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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- ... Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

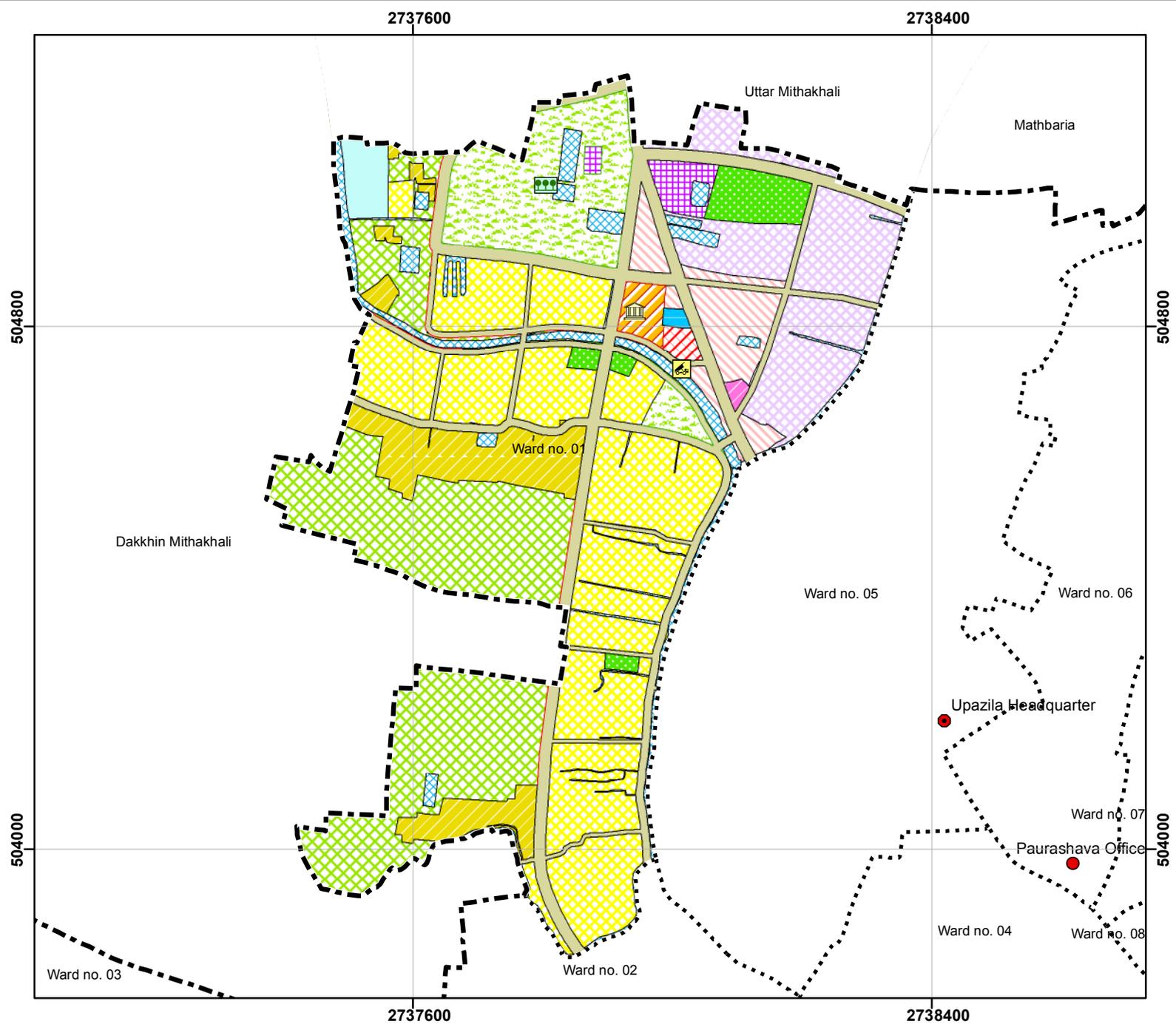
PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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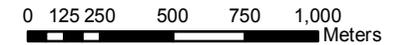
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- Bus Terminal
- Truck Terminal
- Central Graveyard
- Upazila Hospital
- Central Park
- Upazila Stadium
- Industrial Estate
- Paurashava Office
- Neighbourhood Center
- Upazila Headquarter
- Resettlement Zone
- Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



Government of the People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Cooperatives
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Ward Action Plan

14.2.3.3 Proposed Circulation Network Development

7.02 km of circulation network has been proposed for this ward. Majority of these roads will be developed during first phase (2011 - 2016). Following 3.06 km roads will be developed 20 to 60 feet during the first phase. All of first phase will be widen.

Table- 14.3: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PS 72	Munsibari Bari Road	Secondary Road	583.4365	40	Road Widening
D_PS 73	Momenia Road	Secondary Road	652.0248	40	Road Widening
D_PT 75		Tertiary Road	27.0125	20	Road Widening
D_PT 76		Tertiary Road	174.7309	20	Road Widening
D_PP 77	Ataher Ali Road	Primary Road	492.8204	60	Road Widening
D_PS 78		Secondary Road	43.1189	40	Road Widening
D_PS 106		Secondary Road	9.9279	40	Road Widening
D_PT 115	Arambagh Road	Tertiary Road	12.2906	20	Road Widening
D_PS 153		Secondary Road	217.0080	30	Road Widening
D_PT 154		Tertiary Road	10.3675	20	Road Widening
D_PT 194		Tertiary Road	139.4760	20	Road Widening
D_PT 195		Tertiary Road	184.7473	20	Road Widening
D_PP 62	Mathbaria Pirojpur Road	Primary Road	519.9648	60	Road Widening
Total			3066.9261		

Besides roads, 7 numbers of bridge/culverts have to be developed and the existing culverts will make the proposed roads operable.

14.2.3.4 Drainage Development Plan

Presently in this ward have only about 250 meter drains. Rest of the area in this ward has no pucca or katcha drain. The plan proposes 9.48 km of new road and 1806.05 meters of new drains will be developed within first phase.

Table- 14.4: Proposed Drainage Development Plan Proposals for phase 01

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
D_PS 58	Secondary Drain	Phase 01	515.95	2.35 - 3.35	1.124 - 2.124
D_PS 75	Secondary Drain	Phase 01	661.02	2.35 - 3.35	1.124 - 2.124
D_PS 87	Secondary Drain	Phase 01	629.08	2.35 - 3.35	1.124 - 2.124
Total			1806.05		

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.2.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposes a solid waste dumping station with an area of 1.99 acres to dump solid waste under scientific method. The consultant also proposed 0.04 acre areas for waste transfer station for ward 01. It is

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water aquifers. There is no existing water supply network in ward no. 01. The plan proposes 2915.71 meters of water supply lines in this ward running along the roads. 1661.46 meter network will be developed during the first phase (2011 – 2016).

Table- 14.5: Utility Services Development Proposals for Ward 01 (Phase 01)

Item	Existing	Proposed	
	Area/length		Area/Length
Solid Waste Transfer Station	-	One transfer station for the ward	4 decimal
Dumping Station	-	One waste dumping station	1.99 acres
Water Supply Network	-	Proposed Line Length	1661.46 meter
Gas Supply Network	-	Proposed Line Length	None for phase 01
Electricity Line		As per existing programme of PDB/REB	

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There is no existing gas supply network in this ward and the plan proposes 2868.46 meter network to develop during the project period and the whole network will be developed during second and third phase.

d. Sanitation

It is apprehended that there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Recreational Facilities

There is existing Alim Cinea hall as the only recreational facilities in this ward as well as for the whole Paurashava. One Neighborhood park (area 1.24 acres) and one central park (area 12.22 acres) are proposed within the ward number 1.

f. Education Facility

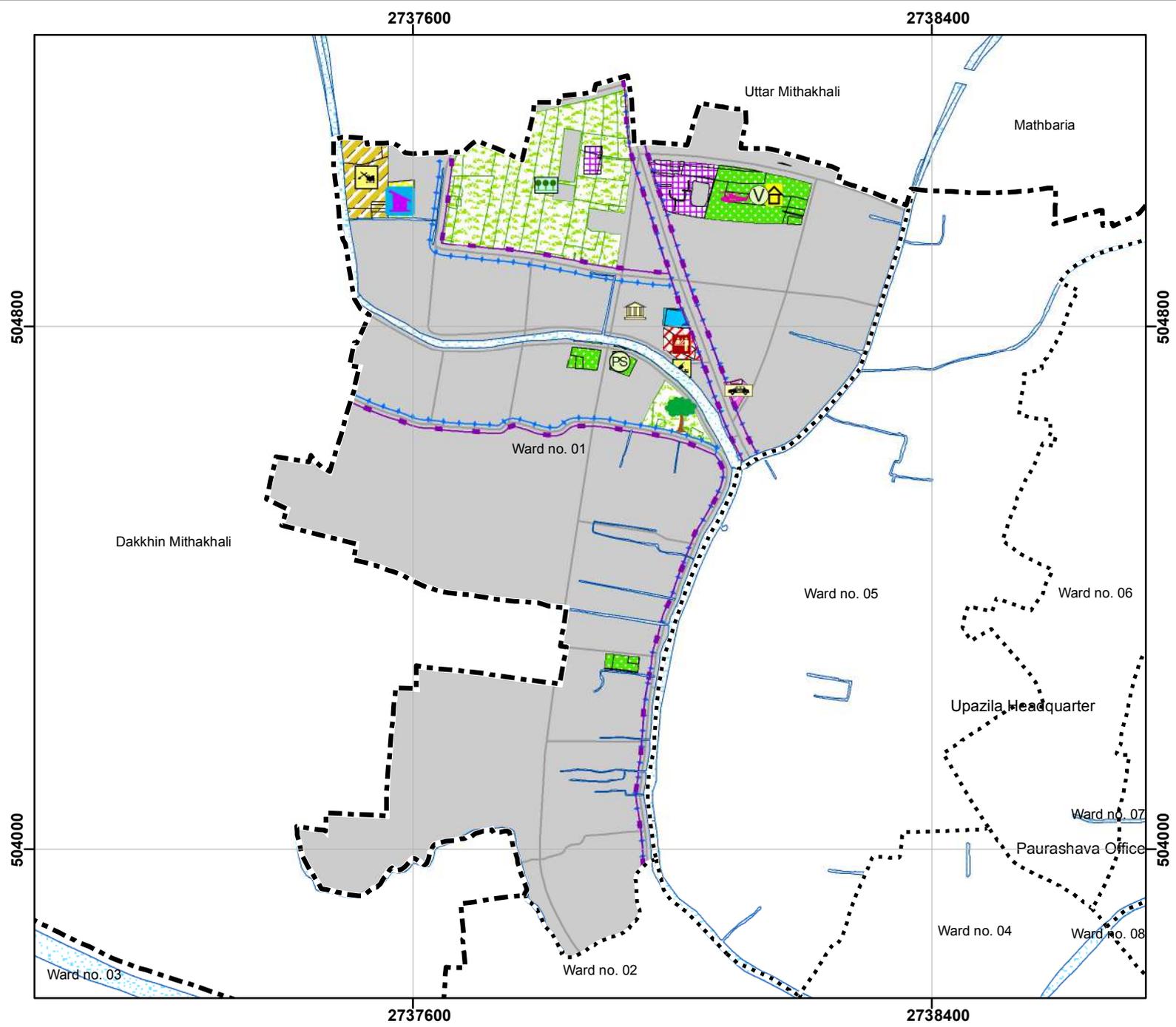
Mathbaria Paurashava is a well developed Paurashava in Pirojpur region. There are three schools and a few madrasas as existing educational facilities in this ward. The plan also proposes a primary school and a vocational institute as well as cyclone shelter in this ward.

Following table and **Map- 14.3** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.1.

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Ward Action Plan

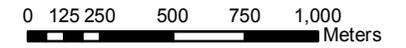
Table- 14.6: Proposed Urban Services for Ward No. 01

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Ward Center	-	-	1	1.36
Neighbourhood Market	-	-	1	0.60
Primary School	-	-	1	0.28
High School	-	-	-	None
Other School	3	existing	-	-
Community Clinic			1	Partial of ward center
Neighbourhood Park			1	1.24
Central Park			1	12.22
Vocational Institute & Cyclone Shelter	-	-	1	2.81
Dumping Station	None	-	1	1.99
Waste Transfer Station	None	-	1	0.04



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LEGEND

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|--------------------------|------------------------|---------------------------------|----------------------|
| Boundary Line | | Proposed Utility Network | |
| — | Paurashava Boundary | —+— | Water Supply Network |
| - - - | Ward Boundary | —+— | Gas Supply Network |
| Proposed Services | | | |
| | Bus Terminal | | Neighbourhood Market |
| | CNG/Rickshaw Stand | | Neighbourhood Park |
| | Central Cremation | | Other School |
| | Central Graveyard | | Overhead Tank |
| | Central Park | | Passenger Shed |
| | Cinema/Theater Hall | | Playground |
| | College | | Police Box/Outpost |
| | Cyclone Shelter | | Police Station |
| | Dumping Station | | Post Office |
| | Electric Sub-station | | Primary School |
| | Waste Transfer Station | | Public Gathering |
| | Filling Station | | Resettlement Zone |
| | Fire Service | | Slaughtering House |
| | Helipad | | Super Market |
| | High School | | Sweepers Colony |
| | Housing Estate | | Telephone Exchange |
| | Industrial Estate | | Truck Terminal |
| | Low Cost Housing | | Upazila Hospital |
| | Madrasa | | Upazila Stadium |
| | Neighbourhood Center | | Vocational Institute |
| | | | Water Supply Station |
| | | | Wholesale Market |

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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Package No: 11 (Barisal Region)

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14.3 Ward Action Plan for Ward No.2

14.3.1 Demography

Ward No. 2 is located at Bandar Mathbaria and Hospital para mohalla of the town. It has high density of population compare with other wards. In 2011 the Ward had a population of 2281 persons. Family size was over 4, sex ratio was 96, 96 males for 100 female. Population projection shows 3947 population for the year 2031. For the same year, it has a density of 33 persons per acre and 55 persons per acre respectively for 2011 and 2031.

Table - 14.7: Population Statistics of Ward No. 02

Item	Year		
	2001	2011	2031
Area (acre)	69.60	69.60	69.60
Population	-	2281	3947
Density of Population (acre)		33	55

14.3.2 Critical Issues and Opportunities of the Ward

Ward No. 2 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in this ward is only 6.47 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. Positive side is that, most of the roads are paved (6.17 km) and the rest is katcha.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. It has only 1.21 km drain. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. Due to construction of rain water, water logging becomes a serious problem and its level is increasing day by day. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the only source of drinking and washing. But, there are no sufficient large water tanks and the existing family based pond/ditches going to be filled due to unplanned pond filling for residential are extension. When population will increase this will become more critical and the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is

likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small, more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help the local economy to grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very low, only 33 persons/acre though it is higher with comparing other wards. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.3.3 Ward Action Plan Proposals

14.3.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to residential and it is 38.30 acres which is 55.19% of the total ward. The second major land use is waterbody, occupying about 17.90% (12.42 acres) of the ward. Besides, there is about 7.59% service activity, 5.38% land under circulation network, 7.56% under commercial activities, 0.67% land under community facilities, 1.72% land under government office, 0.17% land under mixed use and otherwise 2.27% of land is being used for education.

14.3.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 29.98 (43.09%) acres of land delineated up to the year 2031 in Ward No. 02, considering standard provided by LGED.

ii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.032 acres (0.46%) designated up to 2031.

iii) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 02 the consultant allocated 9.32 acres (13.39% of the ward) land for mixed use category.

iv) Education & Research Zone

The total area under this use has been determined as 1.96 acres (2.82% of the ward area) that includes only one new high school along with other existing educational facilities in the ward.

v) Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this use has been earmarked as 2.03 acres (2.91%) other than the counsellor office and police box/outpost within the proposed ward centre.

vi) Health Services

The total area under this use has been earmarked as 3.50 acres (5.02%) that includes the existing Upazila Health Complex and a few of private health facilities. The consultant also proposes a community clinic under proposed ward center.

vii) Agricultural Zone

The Paurashava has a vast area of agricultural land that demands formation of a separate zone like, agriculture zone though ward number 2 has a minimum amount of land. The total area under this use has been earmarked as 0.49 acres (0.70%) that include existing and proposed land uses.

viii) Circulation Network

Existing and proposed roads covers a total of 12.59 acres of land and it is about 18.10% of the whole ward.

ix) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 1.55 acres (2.22% of the ward) of land for open space where they proposed one Neighborhood Park (area of 0.76 acres) and one playground (0.77 acres).

x) Utility Services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.07 acres (0.11% of the ward).

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

xi) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 11.04% of the total ward and it is 7.68 acres.

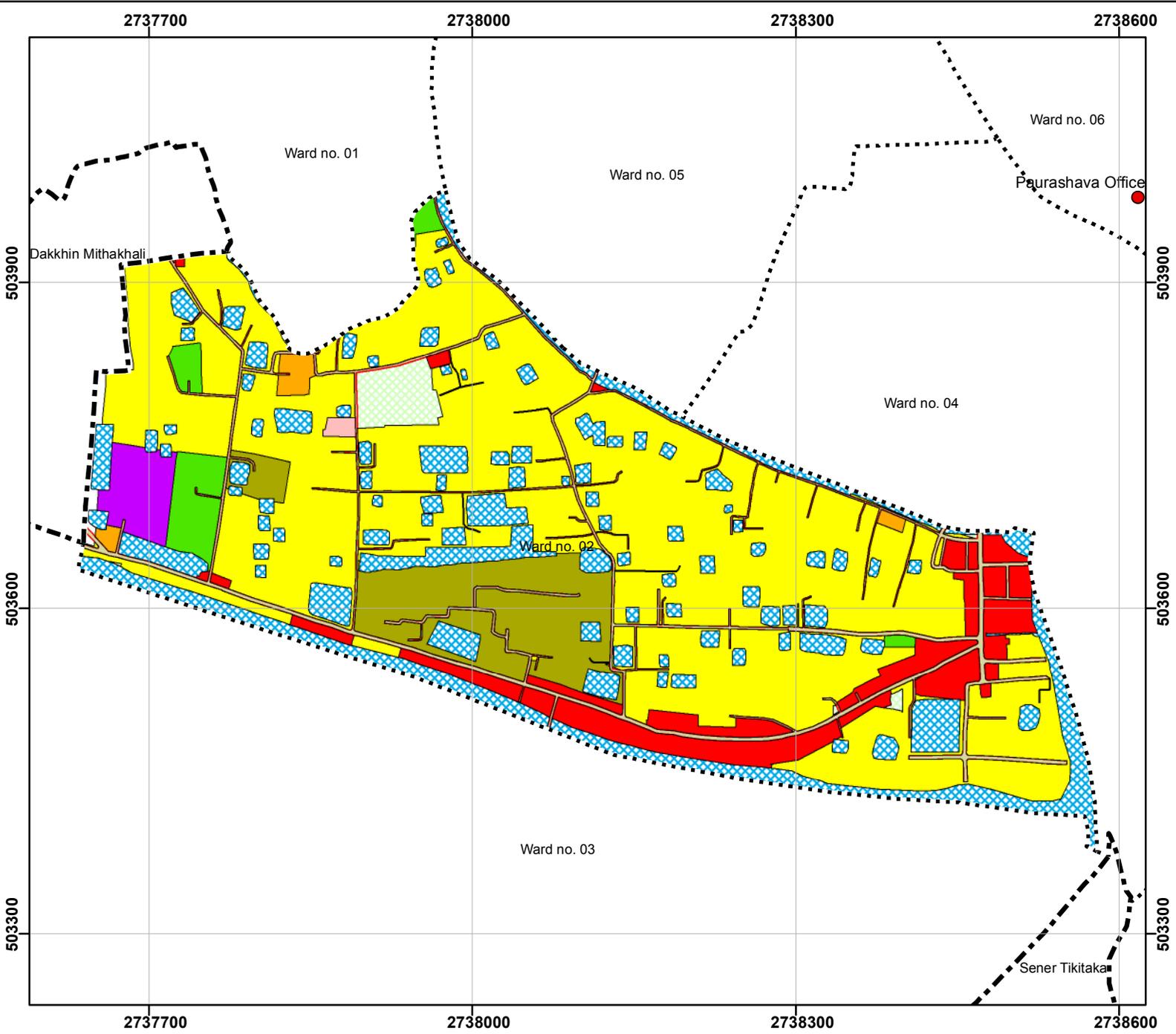
Map 14.4 shows the existing land use of Ward No.2 while **Map- 14.5** shows the proposed landuse zoning of ward no. 02.

Table-14.8: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	1.08	1.55	0.49	0.70
Circulation Network	3.73	5.38	12.59	18.10
Commercial Zone	5.25	7.56	0.32	0.46
Community Service	0.47	0.67	0.00	0.00
Education & Research Zone	1.57	2.27	1.96	2.82
Government Office	1.20	1.72	2.03	2.91
Health Services	5.26	7.59	3.50	5.02
Mixed Use Zone	0.12	0.17	9.32	13.39
Open Space	0.00	0.00	1.55	2.22
Overlay Zone	0.00	0.00	0.00	0.00
Transportation Facilities	0.00	0.00	0.09	0.14
Urban Residential Zone	38.30	55.19	29.98	43.09
Waterbody	12.42	17.90	7.68	11.04
Total	69.60	100.00	69.60	100.00

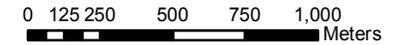
Map 14.4

Existing land use of Ward No.02



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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

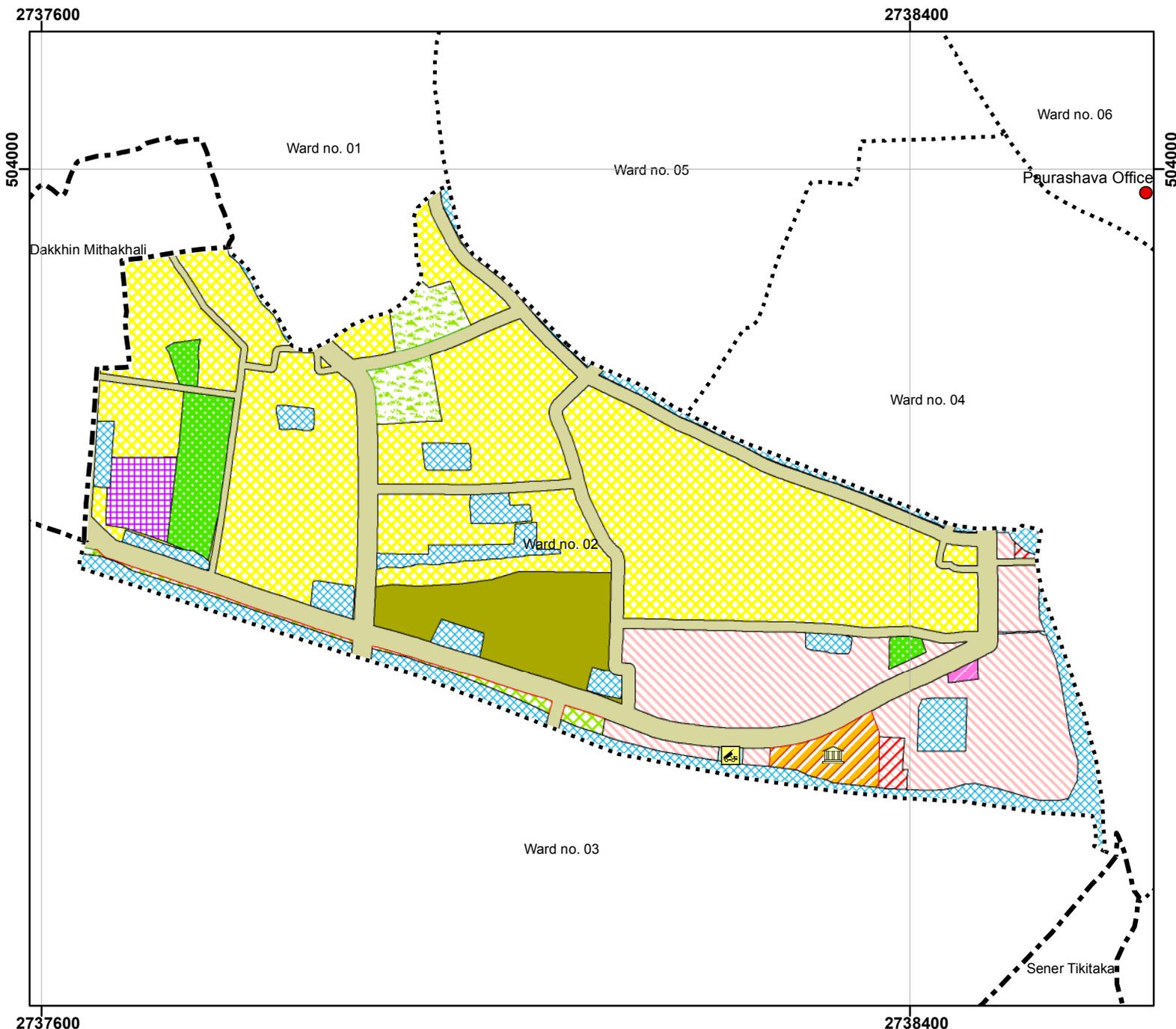
PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
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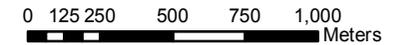
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LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- Bus Terminal
- Truck Terminal
- Central Graveyard
- Upazila Hospital
- Central Park
- Upazila Stadium
- Industrial Estate
- Paurashava Office
- Neighbourhood Center
- Upazila Headquarter
- Resettlement Zone
- Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
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14.3.3.3 Proposed Circulation Network Development

3.90 km of circulation network has been proposed for this ward. Most of these roads will be developed during first phase (2011 - 2016). It is about 3.56 km (portion within the ward) will be developed up to 60 feet during the first phase.

Table- 14.9: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PS 1	SBB	Secondary Road	193.52	30	Road Widening
D_PP 2	Mohila College Road	Primary Road	270.66	60	Road Widening
D_PP 3	Hospital Road	Primary Road	616.37	60	Road Widening
D_PP 4		Primary Road	104.23	60	Road Widening
D_PS 44	Lap Pati Road	Secondary Road	12.89	30	Road Widening
D_PS 74	Gwoli Para Road	Secondary Road	361.03	40	Road Widening
D_PT 86		Tertiary Road	46.30	20	Road Widening
D_PT 87		Tertiary Road	70.99	20	Road Widening
D_PS 88		Secondary Road	179.57	30	Road Widening
D_PS 89		Secondary Road	163.31	30	Road Widening
D_PT 104		Tertiary Road	327.16	20	Road Widening
D_PP 105		Primary Road	272.73	60	Road Widening
D_PS 106		Secondary Road	224.75	40	Road Widening
D_PS 113		Secondary Road	169.56	40	Road Widening
D_PS 120		Secondary Road	361.05	40	Road Widening
D_PS 121		Secondary Road	38.42	40	Road Widening
D_PT 154		Tertiary Road	118.32	20	Road Widening
D_PT 216	Mohila College Road	Tertiary Road	25.67	20	Road Widening
Total			3556.53		

Besides roads, a new bridge/culvert has to be developed and the existing culverts will make the proposed roads operable.

14.3.3.4 Drainage Development Plan

Presently this ward has very limited drain. The plan proposes 14552 meters of new drains and among these drains, 2086 meters of new drains will be developed during first phase.

Table- 14.10: Proposed Drainage Development Plan Proposals for phase 01

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
D_PS 38	Secondary Drain	Phase 01	878.31	2.35 - 3.35	1.124 - 2.124
D_PS 39	Secondary Drain	Phase 01	430.53	2.35 - 3.35	1.124 - 2.124
D_PS 75	Secondary Drain	Phase 01	619.88	2.35 - 3.35	1.124 - 2.124
D_PS 213	Secondary Drain	Phase 01	95.73	2.35 - 3.35	1.124 - 2.124
D_PT 214	Tertiary Drain	Phase 01	61.99	1.50 - 2.50	0.64 - 1.00
Total			2086.45		

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.3.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might lead to problem in future. The consultant proposed 7 decimal areas for waste transfer station. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by purifying surface water. There will about 2353 meters of water supply lines in this ward running along all categories of roads and most of this network (except only about 99 meter) will be developed during the later phases.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There will about 2364 meters of gas supply lines in this ward as a whole running along the roads and the whole network will be developed during the later phases.

d. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

f. Recreational Facilities

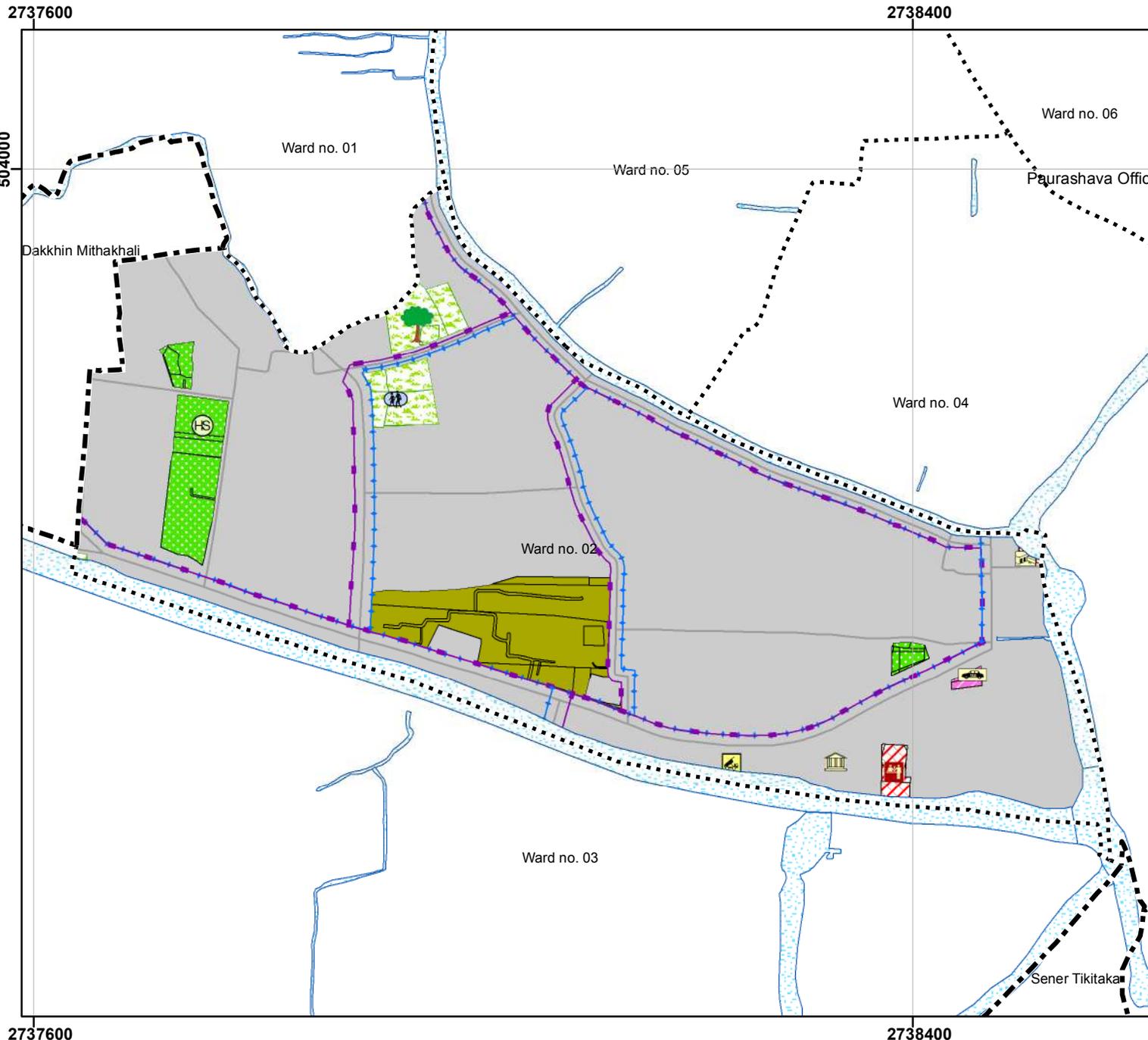
There are no existing recreational facilities in this ward. One Neighborhood park (area 0.76 acres) and one Playground (area 0.77 acres) are proposed to serve the whole.

f. Education Facility

There is existing Primary school and others educational facilities in this ward. But there is no high school in this ward. The plan proposes to establish one high school in this ward with an area of 0.58 acres.

Table- 14.11: Proposed Urban Services for Ward No. 02

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Neighborhood Market	None	-	1	0.28
Slaughtering House	1	0.04	Existing One	0.04
Waste Transfer Station			1	0.07
High School	None	-	1	0.58
Primary School	1	0.24	Strengthen existing capacity	
Neighbourhood Park	None	-	1	0.76
Playground	None	-	1	0.77
Ward Center Complex	None	-	1	1.02
CNG/Rickshaw Stand	None	-	1	0.09



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LEGEND

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| Boundary Line | Proposed Utility Network |
| Paurashava Boundary | Gas Supply Network |
| Ward Boundary | |

Proposed Services

- | | |
|------------------------|----------------------|
| Bus Terminal | Neighbourhood Market |
| CNG/Rickshaw Stand | Neighbourhood Park |
| Central Cremation | Other School |
| Central Graveyard | Overhead Tank |
| Central Park | Passenger Shed |
| Cinema/Theater Hall | Playground |
| College | Police Box/Outpost |
| Cyclone Shelter | Police Station |
| Dumping Station | Post Office |
| Electric Sub-station | Primary School |
| Waste Transfer Station | Public Gathering |
| Filling Station | Resettlement Zone |
| Fire Service | Slaughtering House |
| Helipad | Super Market |
| High School | Sweepers Colony |
| Housing Estate | Telephone Exchange |
| Industrial Estate | Truck Terminal |
| Low Cost Housing | Upazila Hospital |
| Madrasa | Upazila Stadium |
| Neighbourhood Center | Vocational Institute |
| | Water Supply Station |
| | Wholesale Market |

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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14.4 Ward Action Plan for Ward No.3

14.4.1 Demography

Ward No. 03 is located at Dakkhin Mithakhali of the town. It has low density of population compare with other wards. In 2011 the Ward had a population of 2844 persons. Family size was over 4, sex ratio was 91, 91 males for 100 female. Population projection shows 4922 populations in 2031. For the same year, it has a density of 11 persons per acre in 2011 and 18 persons per acre in 2031.

Table - 14.12: Population Statistics of Ward No. 03

Item	Year		
	2001	2011	2031
Area (acre)	262.55	262.55	262.55
Population	-	2844	4922
Density of Population (acre)		11	18

14.4.2 Critical Issues and Opportunities of the Ward

Ward No. 3 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

This ward has the highest numbers of existing roads. The total length of roads in the ward is 11.95 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory. About 9.74 km road is paved and 2.21 km road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have drainage network to serving the entire area. All the households do not have drainage outlet to discharge their waste water. It is already a serious problem and will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause serious water logging at places which is already alarming. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Though it is far from the existing core area, but the spontaneous development is occurring in this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the only source of drinking and washing due to excessive salinity in ground water. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of

the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very low, only 11 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Handicrafts of different kinds, poultry firm and modern technology based agricultural production can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.4.3 Ward Action Plan Proposals

14.4.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 134.74 acres which is 51.43% of the total ward. The second major land use is residential use, occupying 32.65% (85.53 acres) of the ward. Besides, there is 11.73% water body, 2.55% land under circulation network, 0.29% under commercial activities, 0.18% land under community facilities, 0.63% land under manufacturing and processing activity, 0.45% land under education & research, 0.07% land under mixed use zone and otherwise 0.03% land is being used for Urban green space.

14.4.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 19.98 (7.63%) acres of land delineated up to the year 2031 in Ward No. 03, considering standard provided by LGED.

ii) Rural Settlement

Rural Settlement refers to all categories of residential areas with less density and less urban facilities, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 56.66 (21.64%) acres of land delineated up to the year 2031 in Ward No. 03.

iii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. The consultant proposes one kitchen market within the proposed ward center other than the permitted commercial landuse under mixed use zone.

iv) Community Facilities

Proposed plan suggests a community center in this ward which will construct under the proposed ward center complex proposed for ward number 03.

v) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. Total area for mixed uses has been put to 4.50 acres (1.72%).

vi) Education & Research Zone

The total area under this use has been determined as 1.74 acres (0.66% of the ward area) that includes one new high school and existing educational institutions. Existing institutions are proposed to strengthen their capacity of both education and accommodation by following vertical expansion and shifting provision.

vii) Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The total area under this use has been determined as 5.66 acres (2.16% of the ward area) that includes one counsellor office and one police box/outpost under the proposed ward center complex.

viii) Agricultural Zone

At present Ward No. 03 has a vast area of agricultural land which is 134.74 acres. The consultant retains total 125.29 acres (47.72% of the whole ward) of existing agricultural land as agricultural zone for the year 2031.

ix) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 8.11% of the total ward and it is 21.30 acres.

x) Health Services

This category includes existing health facilities located in this ward and the master plan proposes a community clinic under the proposed ward center complex.

xi) Circulation Network

Existing and proposed roads covers a total of 25.32 acres of land and it is about 9.67% of the whole ward.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

xii) Utility Services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.05 acres (0.02% of the ward).

xiii)Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 2.97 acres of land for open space where they proposed one Neighborhood Park (with an area of 1.40 cares) and one playground (area 0.60 acres).

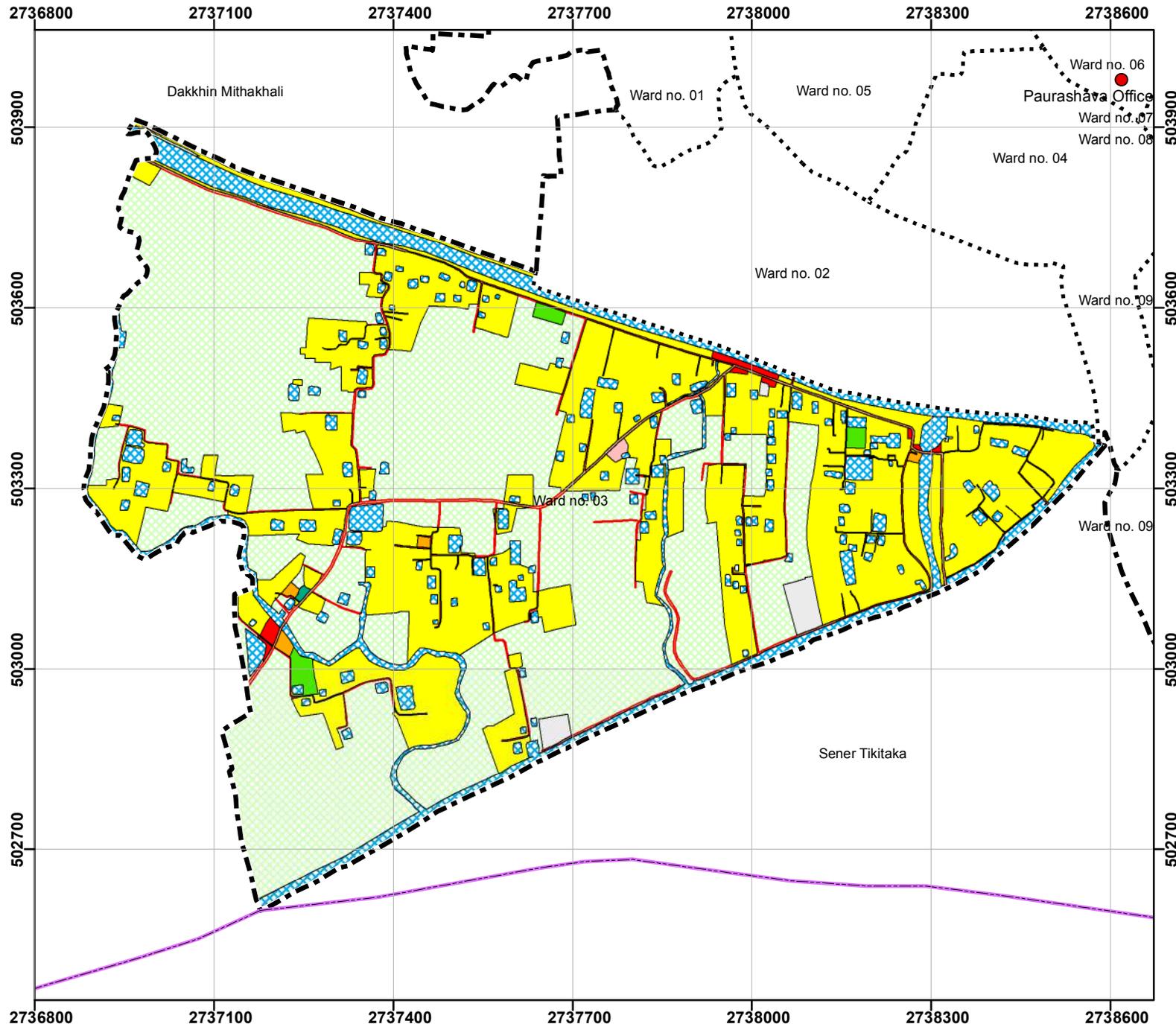
Map 14.7 shows the existing land use of Ward No.3 while **Map- 14.8** shows the proposed landuse zoning of ward no. 03.

Table-14.13: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	134.74	51.43	124.39	47.52
Circulation Network	6.67	2.55	25.32	9.67
Commercial Activity	0.76	0.29	0.00	0.00
Community Service	0.47	0.18	0.00	0.00
Manufacturing and Processing Activity	1.64	0.63	0.00	0.00
Urban Green Space	0.08	0.03	0.00	0.00
Education & Research Zone	1.18	0.45	1.74	0.66
Mixed Use Zone	0.19	0.07	4.50	1.72
Open Space	0.00	0.00	2.97	1.13
Overlay Zone	0.00	0.00	0.00	0.00
Rural Settlement	0.00	0.00	56.66	21.64
Urban Residential Zone	85.53	32.65	19.98	7.63
Utility Services	0.00	0.00	0.05	0.02
Waterbody	30.72	11.73	20.52	7.84
Total	262.55	100.00	262.55	100.00

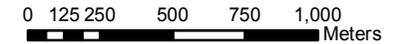
Map 14.7

Existing land use of Ward No.03



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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

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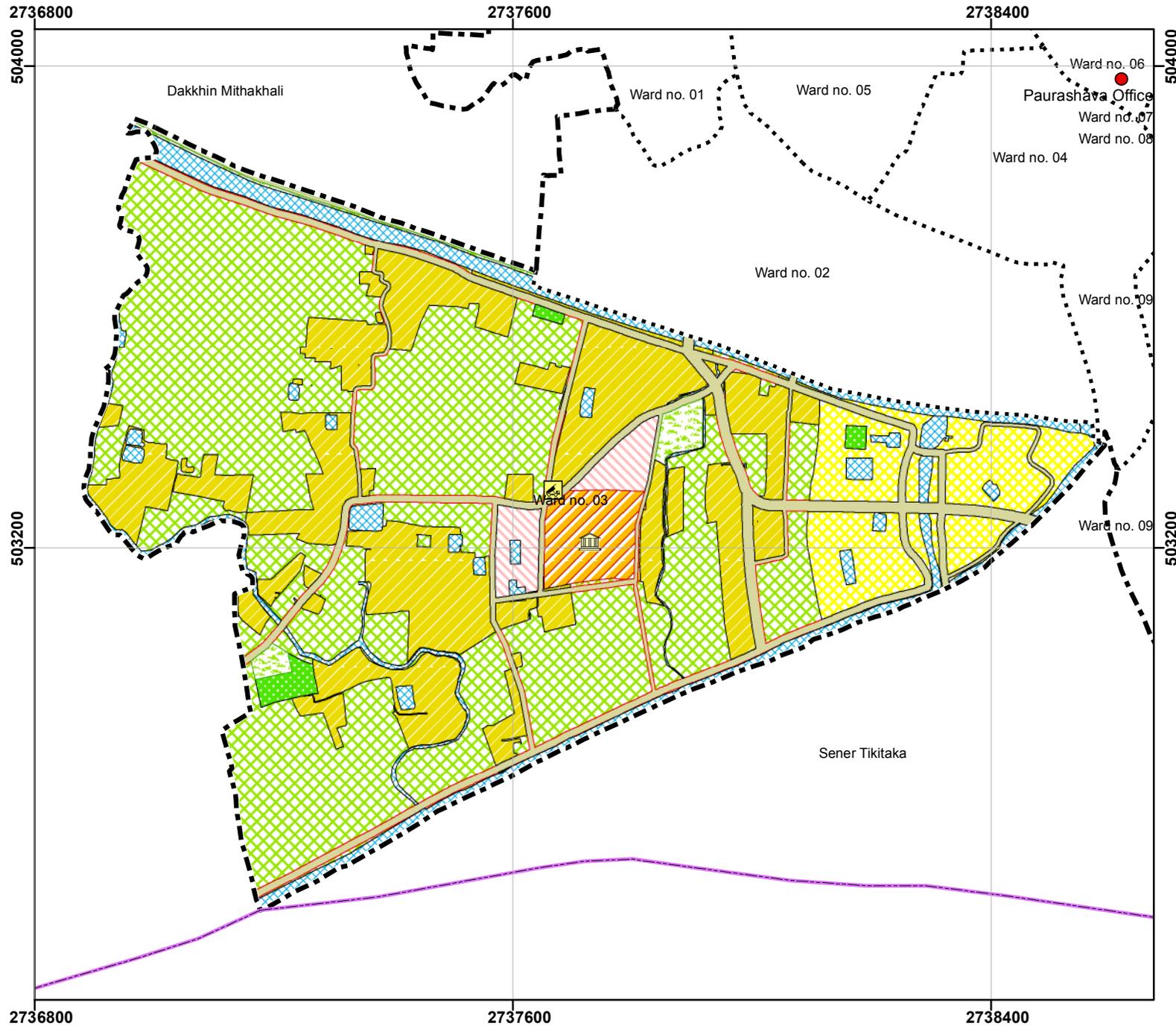


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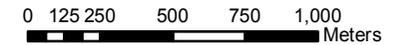
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LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- | | |
|----------------------|------------------------|
| Bus Terminal | Truck Terminal |
| Central Graveyard | Upazila Hospital |
| Central Park | Upazila Stadium |
| Industrial Estate | Paurashava Office |
| Neighbourhood Center | Upazila Headquarter |
| Resettlement Zone | Waste Transfer Station |

Proposed Landuse

- | | |
|-------------------------|----------------------------|
| Urban Residential Zone | Circulation Network |
| Rural Settlement | Transportation Facilities |
| Commercial Zone | Utility Services |
| Mixed Use Zone | Health Services |
| General Industrial Zone | Community Facilities |
| Heavy Industrial Zone | Historical & Heritage Site |
| Government Office | Restricted Area |
| Education & Research | Overlay Zone |
| Agricultural Zone | Urban Deferred |
| Waterbody | Forest |
| Open Space | Beach |
| Recreational Facilities | Miscellaneous |

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Mathbaria Upazila, Pirojpur District



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14.4.3.3 Proposed Circulation Network Development

9 km of circulation network have been proposed for this ward. There are 1.65 km. roads will be developed during the first phase (2011 – 2016). All of these roads will be widened. Following table shows the detail of roads to be developed 20 to 60 feet during the first phase.

Table- 14.14: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PT 85	Link Road	Tertiary Road	546.27	20	Road Widening
D_PP 105		Primary Road	99.15	60	Road Widening
D_PT 216	Mohila College Road	Tertiary Road	720.06	20	Road Widening
Total			1365.48		

Besides roads, 5 bridges and culverts have to be developed and the existing culverts will make the proposed roads operable.

14.4.3.4 Drainage Development Plan

Presently this ward has very limited drains to meet up the existing needs and this drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 12778.53 meters of new drains and all the drains will be developed during the third phase.

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.4.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant 5 decimal areas for waste transfer station. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by purifying the surface water. The plan proposes 2667 meters of water supply lines for this ward running along all categories of roads and among this network; about 855 meter of supply network will be developed during the first phase.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. The ward has no existing gas supply network and the plan proposes about 2699 meters of gas supply lines in this ward will be developed as a whole running along the roads. The whole network will be developed during the later phases.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

d. Sanitation

It is apprehended, there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Recreational Facilities

There are no existing recreational facilities in this ward. The consultant proposed one Neighborhood park (area 1.40 acres) and one Playground (area 0.60 acres).

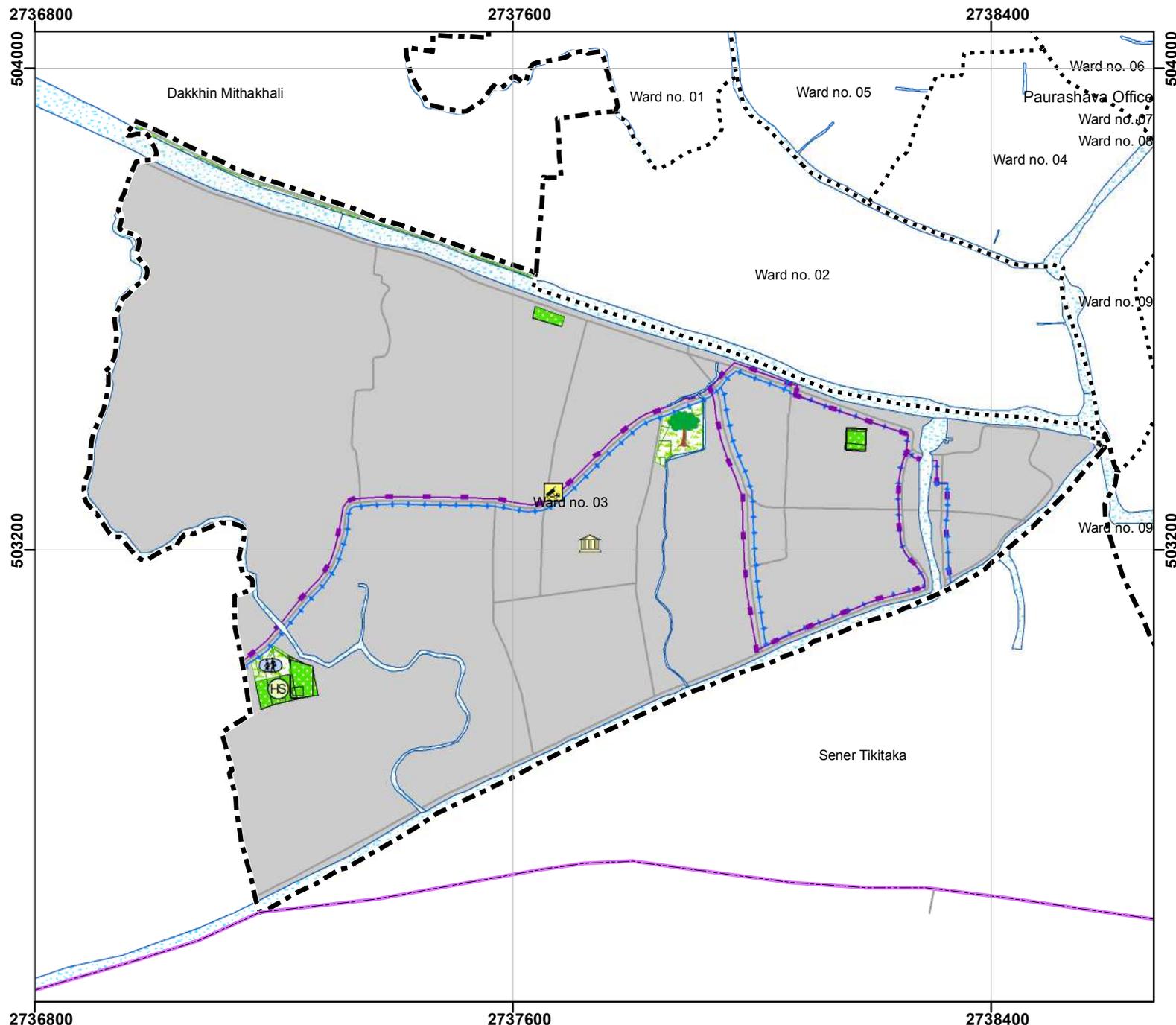
f. Education Facility

There are already existed two primary schools and few other institutions including madrasa. But there is no high school in this ward. The plan proposed to establish one high school in this ward with an area of 0.66 acres.

Following table and **Map- 14.9** shows all the urban services, drainage, water and gas supply network proposed for Ward No.3.

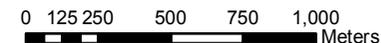
Table- 14.15: Proposal of Urban Services in Ward No. 03

Item	Existing		Proposed	
	No.	Area (acre)	No.	Area (acre)
Neighborhood Market	None	-	1	Part of Ward Center
Primary School	2	0.54	None	-
High School	None	-	1	0.66
Community Clinic	None	-	1	Part of Ward Center
Neighborhood Park	None	-	1	1.40
Playground	None	-	1	0.66
Waste Transfer Station	None	-	1	0.05
Ward Center Complex	None	-	1	5.66



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LEGEND

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| Boundary Line | Water Supply Network |
| Paurashava Boundary | Gas Supply Network |
| Ward Boundary | |

Proposed Services

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PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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14.5 Ward Action Plan for Ward No. 04

14.5.1 Demography

Ward No. 04 is located at Bazar elaka and Paschim Bakshir Ghotichora mouza of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 1047 persons. Family size was over 4, sex ratio was 125, 125 males for 100 female. Population projection shows 1812 populations in 2031. For the same year, it has a density of 26 persons per acre in 2011 and 43 persons per acre in 2031.

Table - 14.16: Population Statistics of Ward No. 04

Item	Year		
	2001	2011	2031
Area (acre)	40.63	40.63	40.63
Population	-	1047	1812
Density of Population (acre)		26	43

14.5.2 Critical Issues and Opportunities of the Ward

Ward No. 4 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in this ward is only 3.99 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory though all the roads are paved.

ii. Poor Drainage

The ward has adequate drainage network comparing other wards to serving the entire ward and it is the main commercial area of Mathbaria Paurashava. It has a total 1.49 km drainage but all the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. It is the main commercial and the land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very high, only 26 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.5.3 Ward Action Plan Proposals

14.5.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to residential use and it is 15.00 acres which is 36.90% of the total ward. The second major land use is commercial use, occupying about 17.18% (6.98 acres) of the ward. Besides, there is 11.86% water body, 6.87% land under circulation network, 14.61% under agricultural, 0.29% land under community facilities, 0.04% land under education & research, 5.23% land under government office, 0.31% land under manufacturing and processing activity, 1.25% land under mixed use, 0.08% land under recreational facilities, 1.01% land under service activity and otherwise 4.32% of land is being used as open space.

14.5.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 7.94 (19.54%) acres of land delineated up to the year 2031 in Ward No. 04, considering standard provided by LGED.

ii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 2.59 acres (6.38%) designated up to 2031 and a kitchen market also been proposed under proposed ward center complex.

iii) Community Facilities

In this ward the consultant allocate a community center under proposed ward center complex.

iv) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 04 the consultant allocate 11.26 acres (27.73% of the ward) land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 0.49 acres (1.20% of the ward area) that includes one new primary school and few other existing educational facilities.

vi) Government Office

Government office zone covers all kinds of government offices in the town. The total area under this use has been earmarked as 3.73 acres (9.19%) that includes existing available government offices. The consultant also proposes one counsellor office and one police box/outpost under the proposed ward center complex.

vii) Agricultural Zone

At present Ward No. 04 has 14.61% land under agricultural land. The consultant retains all the existing land for residential and other purposes by considering potentiality and development trend.

viii) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 8.78% of the total ward and it is 3.57 acres.

ix) Health Services

Existing available health services have been retained under this category. The consultant also proposes a community clinic under proposed ward center complex.

x) Circulation Network

Existing and proposed roads covers a total of 9.00 acres of land and it is about 22.16% of the whole ward.

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Ward Action Plan

xi) Utility services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.06 acres (0.15% of the ward).

xii) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 1.98 acres of land for open space where they proposed two playgrounds and the whole proposal covers 4.88% of the whole ward.

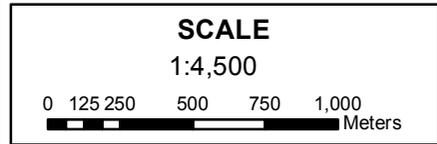
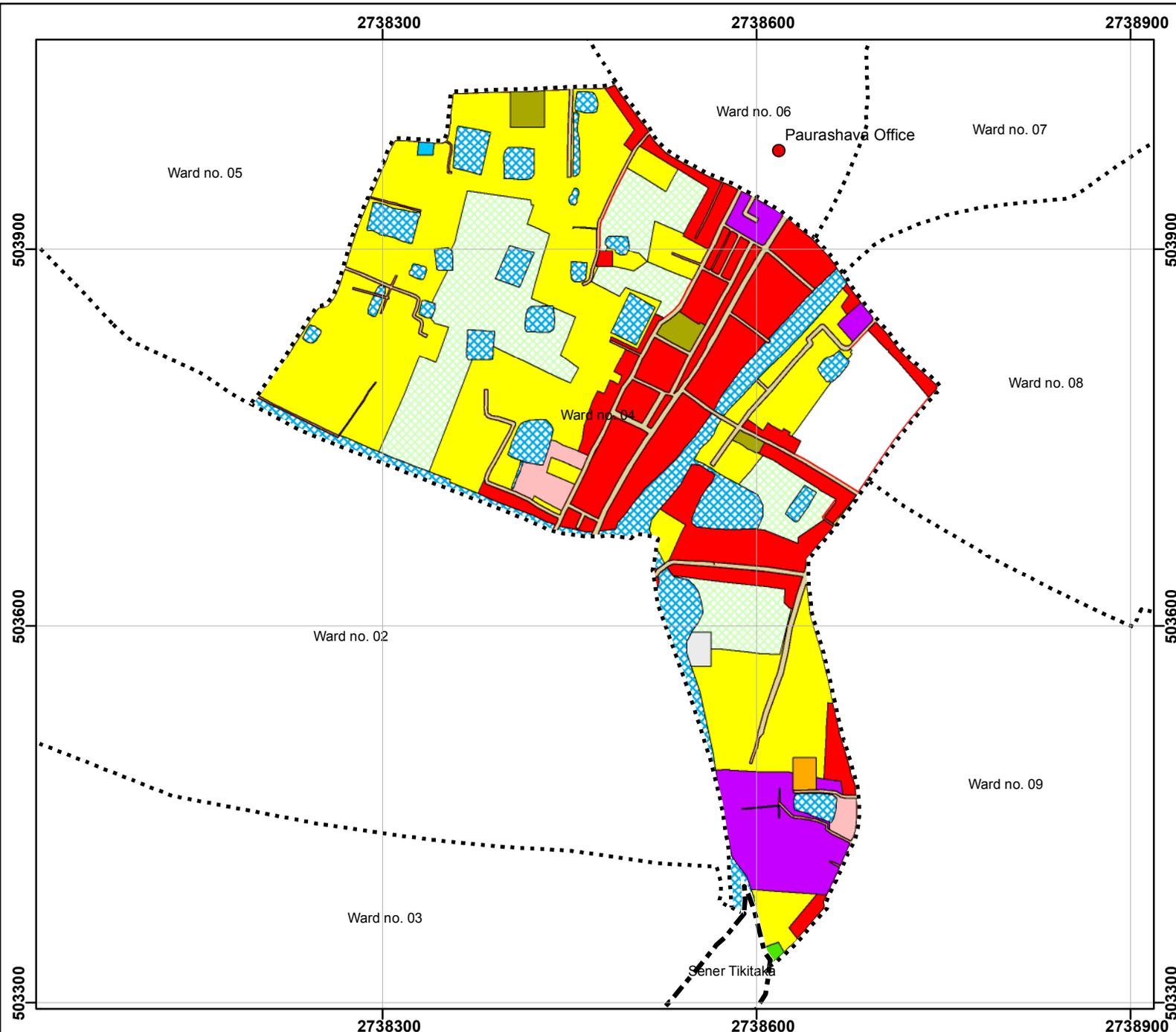
Map 14.10 shows the existing land use o f Ward No.4 while **Map- 14.11** shows the proposed landuse zoning of ward no. 04.

Table-14.17: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agriculture	5.94	14.65	0.00	0.00
Circulation Network	2.79	6.89	9.00	22.16
Commercial Zone	6.98	17.23	2.59	6.38
Education & Research Zone	0.04	0.09	0.49	1.20
Government Office	2.13	5.24	3.73	9.19
Mixed Use Zone	0.51	1.26	11.26	27.73
Open Space	1.76	4.33	1.98	4.88
Overlay Zone	0.12	0.31	0.00	0.00
Urban Residential Zone	15.00	37.01	7.94	19.54
Utility Services	0.00	0.00	0.06	0.15
Waterbody	4.82	11.89	3.57	8.78
Recreational Facilities	0.03	0.08	0.00	0.00
Service Activity	0.41	1.02	0.00	0.00
Total	40.63	100.00	40.63	100.00

Map 14.10

Existing land use of Ward No.04



- LEGEND**
- Admin Point**
- Paurashava Office
 - Union Parishad Office
 - Upazila Headquarter
- Boundary Line**
- Paurashava Boundary
 - Ward Boundary
- Existing Landuse**
- Residential
 - Agriculture
 - Waterbody
 - Educational Facilities
 - Commercial
 - Industrial
 - Education and Research
 - Community Service
 - Service Activity
 - Governmental Services
 - Non Government Services
 - Recreational Facilities
 - Mixed Use
 - Circulation Network
 - Transport and Communication
 - Forest
 - Urban Green Space
 - Vacant Land
 - Miscellaneous/Others
 - Restricted

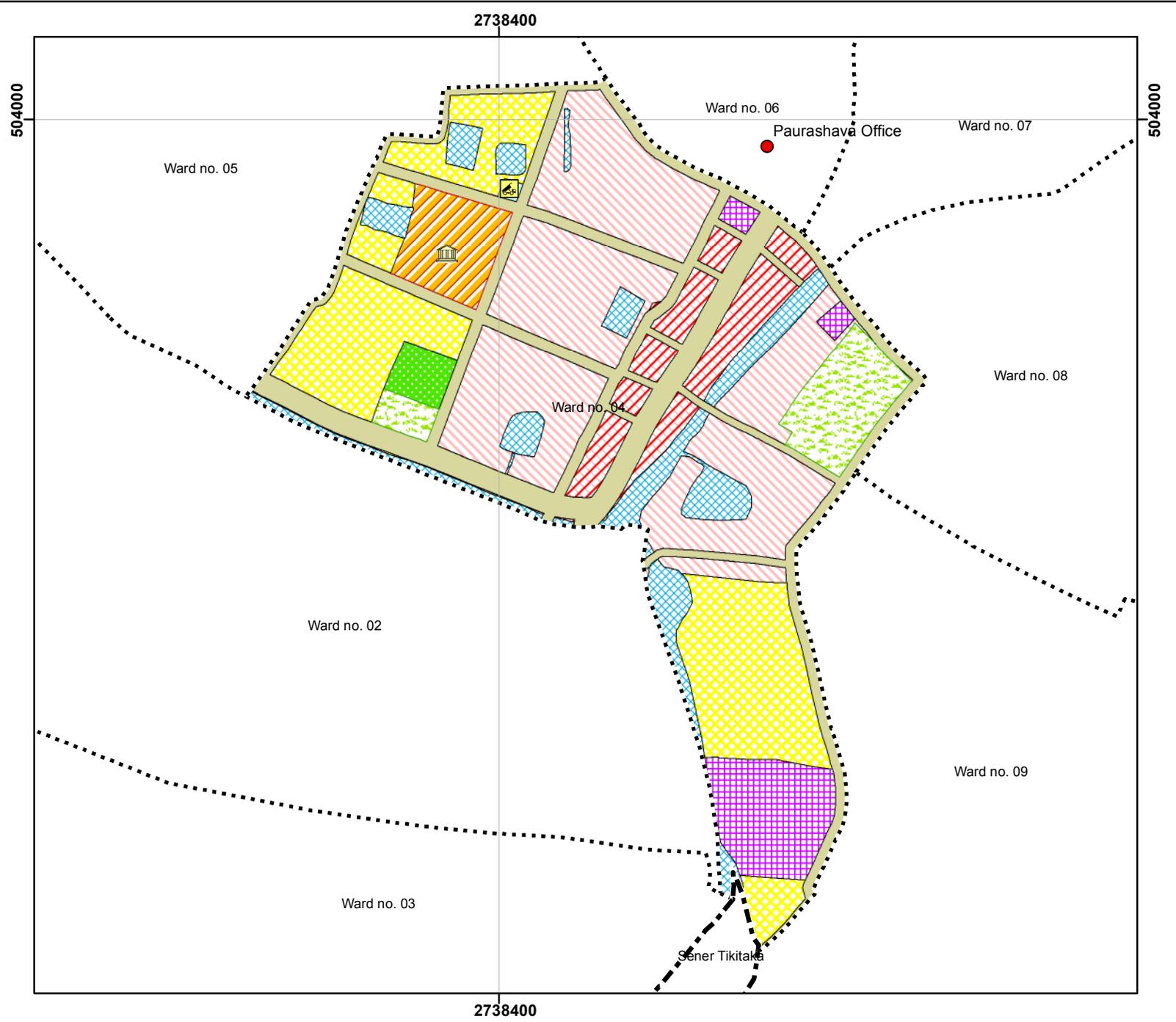
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Mathbaria Upazila, Pirojpur District


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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
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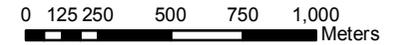
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In Association with





SCALE

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LEGEND

- Planning Area Boundary
 - Paurashava Boundary
 - Ward Boundary
- Major Services**
- Bus Terminal
 - Truck Terminal
 - Central Graveyard
 - Central Park
 - Industrial Estate
 - Neighbourhood Center
 - Resettlement Zone
 - Upazila Hospital
 - Upazila Stadium
 - Paurashava Office
 - Upazila Headquarter
 - Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Urban Deferred
- Forest
- Beach
- Miscellaneous

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14.5.3.3 Proposed Circulation Network Development

About 3.30 km of circulation network has been proposed for this ward. Most (2.46 km) of the roads will be developed during the first phase (2011 – 2016). Most of these roads will be widened 20 to 60 feet except 0.34 km of new road. Following table shows the detail of roads to be developed 20 to 80 feet during the first phase.

Table- 14.18: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PP 4		Primary Road	4.19	60	Road Widening
D_PP 5	Thana Road	Primary Road	72.57	60	Road Widening
D_PP 5	Thana Road	Primary Road	5.82	60	Road Widening
D_PP 8	Sadar Road	Primary Road	57.02	60	Road Widening
D_PP 8	Sadar Road	Primary Road	13.33	60	Road Widening
D_PP 8	Sadar Road	Primary Road	11.56	60	Road Widening
D_PP 38	Sadar Road	Primary Road	182.50	60	Road Widening
D_PP 39		Primary Road	136.82	60	Road Widening
D_PP 39		Primary Road	50.23	60	Road Widening
D_PP 42	Khan Shaheb Hatimali Road	Primary Road	112.70	60	Road Widening
D_PT 43		Tertiary Road	51.06	20	Road Widening
D_PS 44	Lap Pati Road	Secondary Road	313.50	30	Road Widening
D_PT 45		Tertiary Road	55.06	20	Road Widening
D_PT 46		Tertiary Road	111.09	20	Road Widening
D_PT 47		Tertiary Road	76.31	20	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	33.67	60	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	54.27	60	Road Widening
D_PS 68		Secondary Road	142.96	40	Road Widening
D_PS 68		Secondary Road	27.11	40	Road Widening
D_PT 86		Tertiary Road	52.20	20	Road Widening
D_PT 95		Tertiary Road	37.42	20	Road Widening
D_PT 96		Tertiary Road	43.02	20	Road Widening
D_PS 97		Secondary Road	114.22	40	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	17.49	60	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	110.48	60	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	27.25	60	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	32.09	60	Road Widening
D_PT 124	Shapla Bazar Road	Tertiary Road	21.48	20	Road Widening
D_PT 124	Shapla Bazar Road	Tertiary Road	23.16	20	Road Widening
D_PT 134		Tertiary Road	0.01	20	Road Widening
D_PP 165	Thana Road	Primary Road	42.08	60	Road Widening
D_PP 165	Thana Road	Primary Road	18.95	60	Road Widening
D_PT 183		Tertiary Road	39.67	20	New Road
D_PT 184		Tertiary Road	36.20	20	New Road
D_PT 185		Tertiary Road	39.41	20	New Road
D_PP 209		Primary Road	72.12	60	Road Widening
D_PP 210		Primary Road	224.51	60	New Road
Total			2463.53		

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

Besides roads, necessary bridges and culverts have to be developed and the existing culverts will make the proposed roads operable.

14.5.3.4 Drainage Development Plan

Presently Ward no. 04 has 1.49 km of drains. But this length of drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 4.28 km. of new drains for ward no. 04. Out of these proposed drains, 1.55 km of new drains will be developed during the first phase.

Table- 14.19: Proposed Drainage Development Plan Proposals

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
D_PT 46	Tertiary Drain	Phase 01	64.28	1.50 - 2.50	0.64 - 1.00
D_PS 47	Secondary	Phase 01	265.33	2.35 - 3.35	1.124 - 2.124
D_PS 48	Secondary	Phase 01	150.25	2.35 - 3.35	1.124 - 2.124
D_PS 81	Secondary	Phase 01	416.31	2.35 - 3.35	1.124 - 2.124
D_PS 87	Secondary	Phase 01	242.04	2.35 - 3.35	1.124 - 2.124
D_PT 214	Tertiary Drain	Phase 01	104.75	1.50 - 2.50	0.64 - 1.00
D_PS 294	Secondary	Phase 01	310.88	2.35 - 3.35	1.124 - 2.124
Total			1553.84		

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.5.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposed 6 decimal areas for waste transfer station. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water aquifers. There is no existing water supply line and the plan proposes 1451.71 meters of water supply lines will be developed in this ward running along all categories of roads. Among this water line, 982.09 meter network will be developed during the first phase.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There is no existing gas supply network and the consultant proposes 944.37 gas supply lines to be developed in this ward as a whole running along the roads and the whole network will be developed during the later phases.

d. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

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e. Education Facility

There is no existing High School and primary school in this ward. The plan proposes one new primary school (0.49 acres).

f. Recreational Facilities

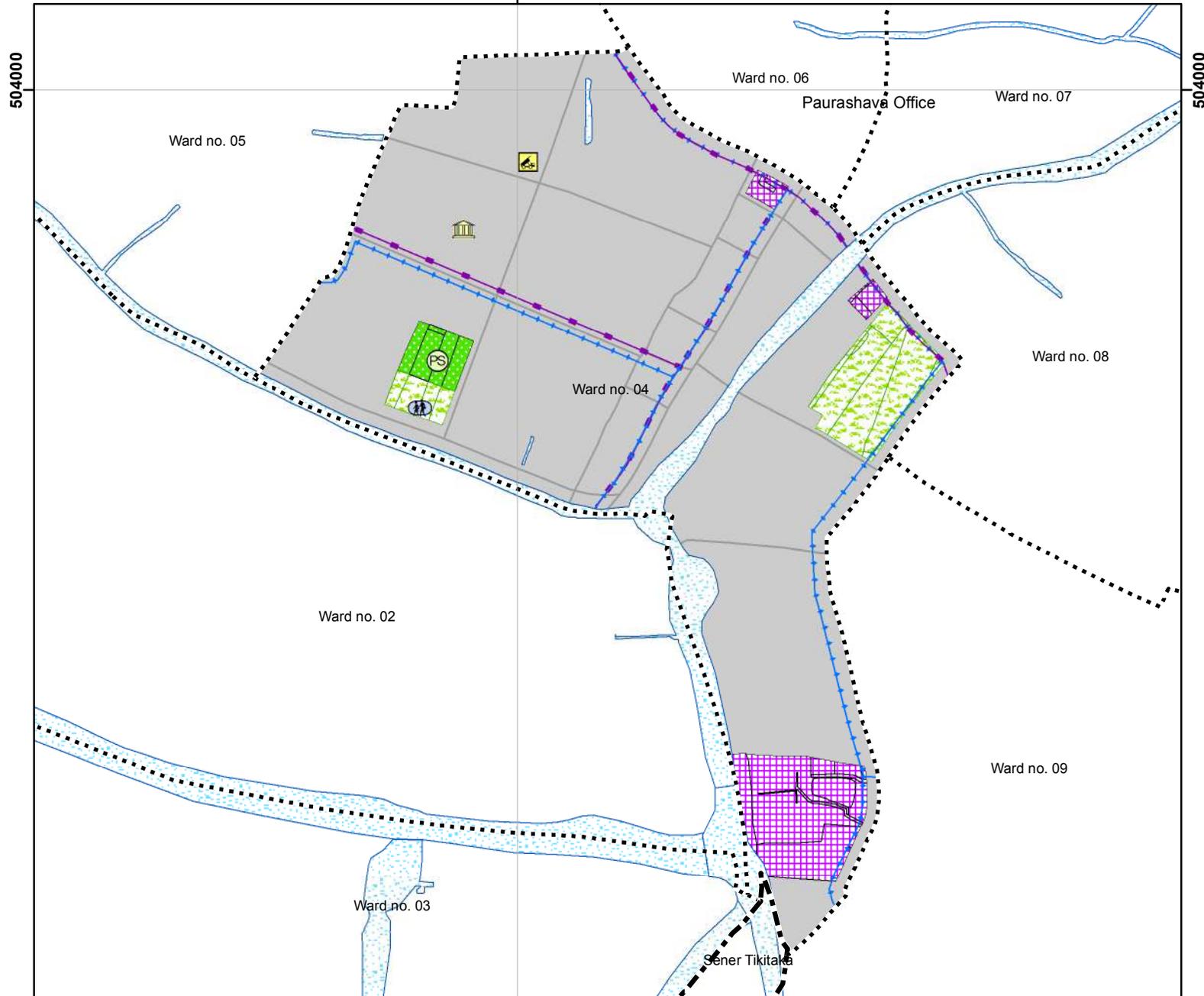
There is no formal playground and park as open space in this ward. The consultant proposed two playgrounds as recreational purpose.

Table- 14.20: Proposal of Urban Services for Ward No. 04

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Community Center	None	-	1	Part of Ward Center
Neighborhood Market	None	-	1	Part of Ward Center
Primary School	None	-	1	0.49
Community Clinic	None	-	1	Part of Ward Center
Community Clinic	None	-	1	Part of Ward Center
Playground	None	-	2	1.65
Waste Transfer Station	None	-	1	0.06
Neighbourhood Center Complex/Ward Center	None	-	1	1.50



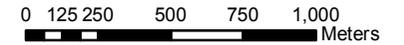
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LEGEND

- Boundary Line
 - Paurashava Boundary
 - Ward Boundary
- Proposed Utility Network
 - Water Supply Network
 - Gas Supply Network

Proposed Services

- Bus Terminal
- CNG/Rickshaw Stand
- Central Cremation
- Central Graveyard
- Central Park
- Cinema/Theater Hall
- College
- Cyclone Shelter
- Dumping Station
- Electric Sub-station
- Waste Transfer Station
- Filling Station
- Fire Service
- Helipad
- High School
- Housing Estate
- Industrial Estate
- Low Cost Housing
- Madrasa
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Other School
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Office
- Primary School
- Public Gathering
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Truck Terminal
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Water Supply Station
- Wholesale Market

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14.6 Ward Action Plan for Ward No. 05

14.6.1 Demography

Ward No. 05 is located at Arambag, Thana parishad (Bahera Tala) and T&T Para (Goalipara) moholla of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 2507 persons. Family size was over 4, sex ratio was 103, 103 males for 100 female. Population projection shows 4338 population in the year 2031. For the same year, it has a density of 22 persons per acre and 36 persons per acre respectively.

Table - 14.21: Population Statistics of Ward No. 05

Item	Year		
	2001	2011	2031
Area (acre)	116.28	116.28	116.28
Population	-	2507	4338
Density of Population (acre)		22	36

14.6.2 Critical Issues and Opportunities of the Ward

Ward No. 05 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 9.30 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory though most of the roads (about 9 km) are paved and only 216 meter road is unpaved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. It has only 751 meter existing drainage. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the only source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in this ward is moderate, only 22 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.6.3 Ward Action Plan Proposals

14.6.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to residential and it is 65.69 acres which is 56.47% of the total ward. The second major land use is agriculture, occupying 17.14% (19.94 acres) of the ward. Besides, there is 4.57% land under circulation network, 14.32% land under waterbody, 0.22% under educational facilities, 0.55% land under commercial zone, 4.37% land under government office, 0.16% land under manufacturing and processing activity, 1.24% land under mixed use, 0.35% land under service activity, 0.11% land under transportation facility and otherwise 0.16% of land is being used for urban green space.

14.6.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 51.89 (44.63%) acres of land delineated up to the year 2031 in Ward No. 05, considering standard provided by LGED.

ii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.41 acres (0.35%) designated up to 2031. The consultant also proposes a kitchen market under proposed ward center complex.

iii) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 05 the consultant allocate 2.92 acres (2.51% of the ward) land for mixed use category.

iv) Education & Research Zone

The total area under this use has been determined as 0.19 acres (0.16% of the ward area) that includes one new primary school.

v) Government Office

This zone covers all kinds of government offices in the town. The total area under this use has been proposed as 6.23 acres (5.36%) that includes all existing government offices within the ward. The consultant also proposes one new counsellor office and one police box/outpost under proposed ward center complex.

vi) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 8.33% of the total ward and it is 9.68 acres.

vii) Health Services

Proposed plan suggests a community clinic in this ward under the proposed ward center complex to serve the health facility to the whole ward.

viii) Circulation Network

Existing and proposed roads covers a total of 22.58 acres of land and it is about 19.42% of the whole ward.

ix) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 2.02 acres (1.74% of the ward) of land for open space where they proposed three Neighborhood Parks.

x) Utility services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.05 acres (0.05% of the ward).

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xi) Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 20.29 acres or 17.45% of the whole ward. 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.

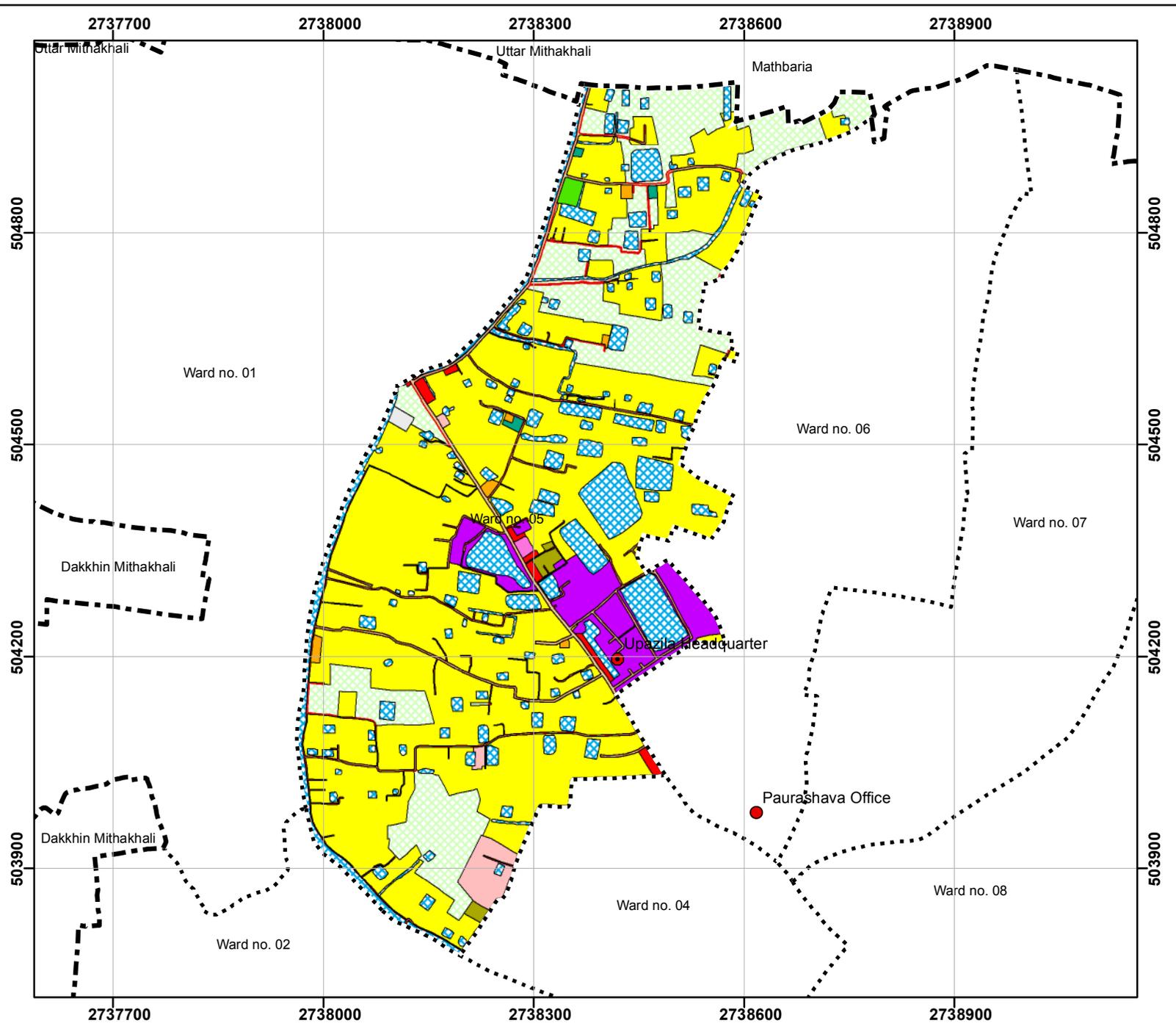
Map 14.13 shows the existing land use of Ward No.5 while **Map- 14.14** shows the proposed landuse zoning of ward no. 05.

Table-14.22: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agriculture	19.94	17.19	0.00	0.00
Circulation Network	5.32	4.59	22.58	19.42
Commercial Zone	0.64	0.55	0.41	0.35
Education & Research Zone	0.26	0.22	0.19	0.16
Government Office	5.09	4.39	6.23	5.36
Mixed Use Zone	1.44	1.25	2.92	17.45
Open Space	0.00	0.00	2.02	1.74
Overlay Zone	0.18	0.16	0.00	0.00
Urban Deferred	0.00	0.00	20.29	17.45
Urban Residential Zone	65.69	56.66	51.89	44.63
Utility Services	0.00	0.00	0.05	0.05
Waterbody	16.66	14.37	9.68	8.33
Service Activity	0.41	0.35	0.00	0.00
Transport & Communication	0.12	0.11	0.00	0.00
Urban Green Space	0.18	0.16	0.00	0.00
Total	116.28	100.00	116.28	100.00

Map 14.13

Existing land use of Ward No.05



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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- ... Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

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Mathbaria Upazila, Pirojpur District



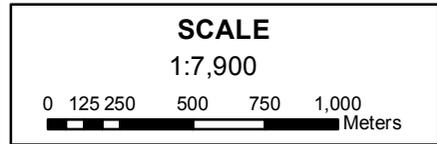
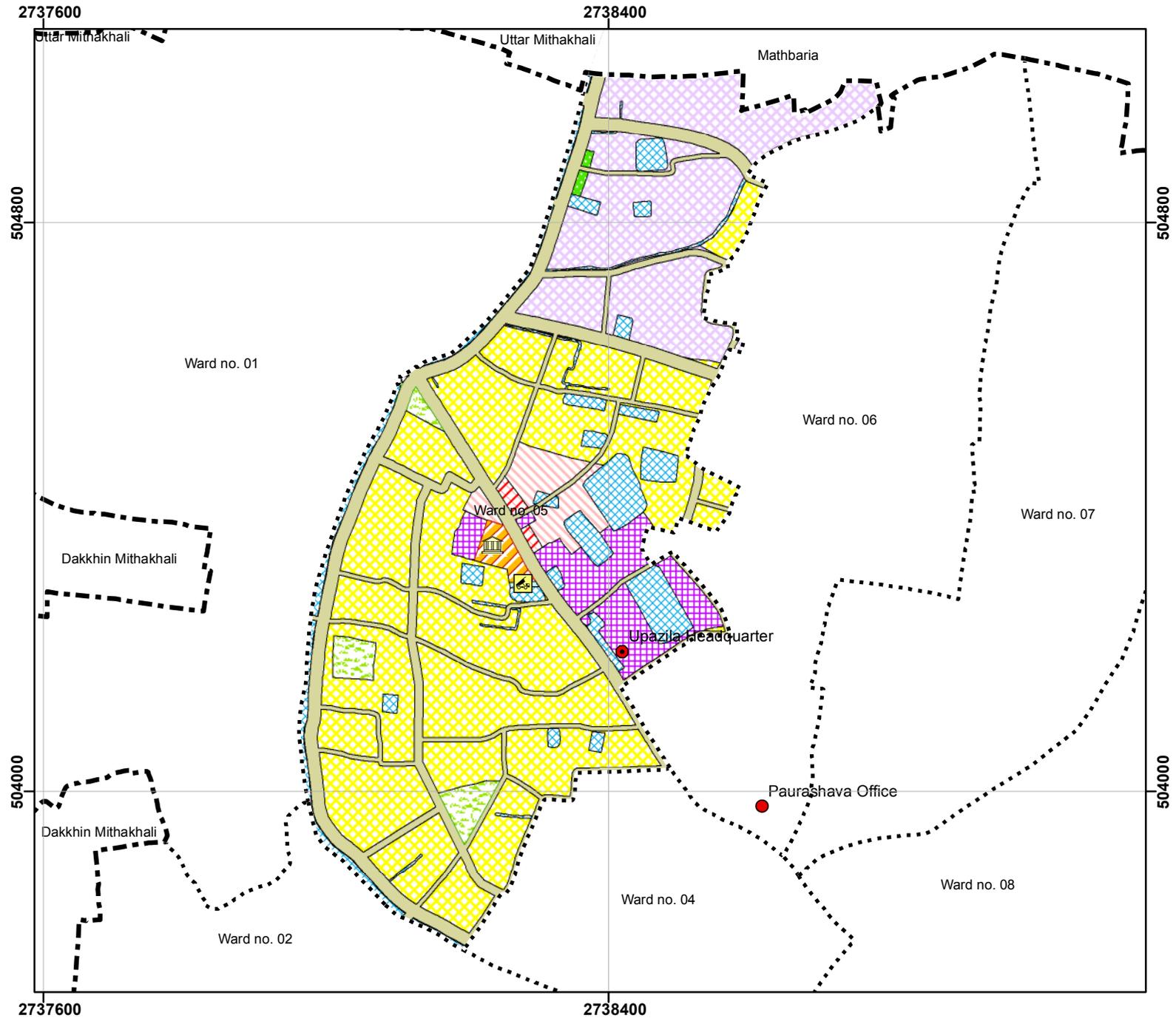
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Ministry of Local Government, Rural Development and Cooperatives
Local Government Division

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
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Map 14.14 Proposed land use of Ward No.05



LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- Bus Terminal
- Central Graveyard
- Central Park
- Industrial Estate
- Neighbourhood Center
- Resettlement Zone
- Truck Terminal
- Upazila Hospital
- Upazila Stadium
- Paurashava Office
- Upazila Headquarter
- Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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14.6.3.3 Proposed Circulation Network Development

About 8.08 km of circulation network has been proposed for this ward. Among These roads, 5.51 km will be developed 20 to 60 ft RoW during the first phase. Rest will be developed during the second and third phase.

Table- 14.23: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PT 10	College Road	Tertiary Road	249.06	20	Road Widening
D_PS 11		Secondary Road	29.62	30	Road Widening
D_PS 30		Secondary Road	7.96	40	Road Widening
D_PS 31		Secondary Road	57.17	40	Road Widening
D_PS 31		Secondary Road	16.99	40	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	41.52	60	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	582.35	60	Road Widening
D_PS 63		Secondary Road	121.95	30	Road Widening
D_PT 64		Tertiary Road	341.98	20	Road Widening
D_PT 65		Tertiary Road	125.81	20	Road Widening
D_PP 66		Primary Road	92.28	60	Road Widening
D_PS 67		Secondary Road	181.09	40	Road Widening
D_PS 68		Secondary Road	43.07	40	Road Widening
D_PS 68		Secondary Road	142.96	40	Road Widening
D_PT 69	Phatema Chpowdhury Road	Tertiary Road	323.99	20	Road Widening
D_PT 70		Tertiary Road	187.35	20	Road Widening
D_PT 71		Tertiary Road	115.17	20	Road Widening
D_PT 91		Tertiary Road	154.24	20	Road Widening
D_PS 92		Secondary Road	81.59	40	Road Widening
D_PS 92		Secondary Road	66.48	40	Road Widening
D_PT 93		Tertiary Road	17.31	20	Road Widening
D_PT 93		Tertiary Road	58.92	20	Road Widening
D_PT 94		Tertiary Road	84.15	20	Road Widening
D_PS 97		Secondary Road	114.06	40	Road Widening
D_PS 97		Secondary Road	114.22	40	Road Widening
D_PS 107		Secondary Road	8.40	40	Road Widening
D_PT 114		Tertiary Road	153.58	20	Road Widening
D_PT 115	Arambagh Road	Tertiary Road	338.57	20	Road Widening
D_PS 117		Secondary Road	0.12	40	Road Widening
D_PS 120		Secondary Road	16.28	40	Road Widening
D_PS 126		Secondary Road	118.38	30	Road Widening
D_PP 142		Primary Road	2.65	60	Road Widening
D_PT 201	Phatema Chpowdhury Road	Tertiary Road	155.59	20	Road Widening
D_PP 205	Shafa Road	Primary Road	523.68	60	Road Widening
D_PP 207		Primary Road	82.58	60	Road Widening
D_PP 208		Primary Road	623.94	60	Road Widening
D_PP 209		Primary Road	90.24	60	Road Widening
D_PP 220	Proposed Bypass Road	Primary Road	12.24	60	Road Widening
D_PP 62	Mathbaria Pirojpur Road	Primary Road	35.87	60	Road Widening
D_PP 208		Primary Road	0.06	60	Road Widening
D_PP 209		Primary Road	0.06	60	Road Widening
Total			5513.53		

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

Besides roads, necessary bridges and culverts have to be developed and the existing culverts will make the proposed roads operable.

14.6.3.4 Drainage Development Plan

Presently Mathbaria has 751 meters of drains in this ward. But this length of drain is not adequate for the town to discharge all its waste water and storm water. But this length of drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 10.78 km. of new drains for ward no. 05. Out of these proposed drains, 4.53 km of new drains will be developed during the first phase.

Table- 14.24: Proposed Drainage Development Plan Proposals

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
D_PS 58	Secondary	Phase 01	535.25	2.35 - 3.35	1.124 - 2.124
D_PS 73	Secondary	Phase 01	422.91	2.35 - 3.35	1.124 - 2.124
D_PS 87	Secondary	Phase 01	666.02	2.35 - 3.35	1.124 - 2.124
D_PT 132	Tertiary Drain	Phase 01	289.20	1.50 - 2.50	0.64 - 1.00
D_PT 135	Tertiary Drain	Phase 01	291.51	1.50 - 2.50	0.64 - 1.00
D_PT 138	Tertiary Drain	Phase 01	116.09	1.50 - 2.50	0.64 - 1.00
D_PT 140	Tertiary Drain	Phase 01	114.83	1.50 - 2.50	0.64 - 1.00
D_PS 145	Secondary	Phase 01	157.43	2.35 - 3.35	1.124 - 2.124
D_PT 146	Tertiary Drain	Phase 01	53.88	1.50 - 2.50	0.64 - 1.00
D_PS 161	Secondary	Phase 01	96.82	2.35 - 3.35	1.124 - 2.124
D_PS 163	Secondary	Phase 01	328.59	2.35 - 3.35	1.124 - 2.124
D_PS 294	Secondary	Phase 01	780.78	2.35 - 3.35	1.124 - 2.124
D_PS 322	Secondary	Phase 01	297.82	2.35 - 3.35	1.124 - 2.124
D_PS 323	Secondary	Phase 01	215.19	2.35 - 3.35	1.124 - 2.124
D_PS 327	Secondary	Phase 01	168.28	2.35 - 3.35	1.124 - 2.124
Total			4534.58		

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.6.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town are yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The consultant proposed 5 decimal areas for waste transfer station. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by purifying surface water. There is no existing water supply network in this ward and the consultant proposes 3416.90 meters of water supply lines will be developed in this ward running along all categories of roads. Among this water supply network, 3107.52 meter will be developed during the first phase.

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Ward Action Plan

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There is no existing gas supply network in ward no. 05 and the consultant proposes 3070.43 meters of gas supply lines will be developed in this ward as a whole running along the roads. Among this network, the whole network will be developed during the later phases.

d. Sanitation

It is apprehended there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Education Facility

There is a High School (Mannan Kabir Memorial Collegiate High School) and a few other institutions in this ward. The plan proposes one new primary school (0.07 acres) and also recommended to strengthen the capacity of existing educational institutions to serve the entire Paurashava as well as the ward.

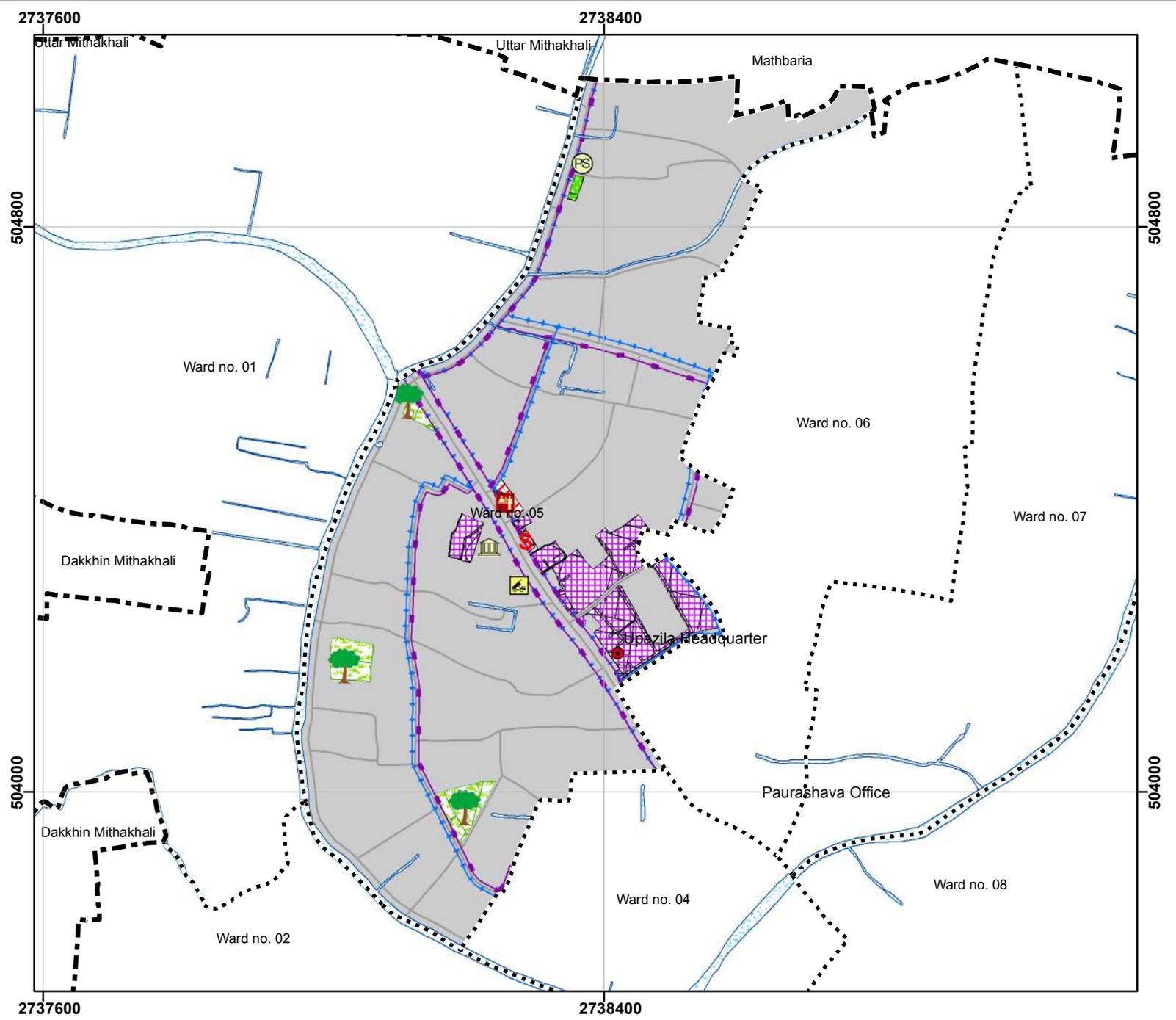
f. Recreational Facilities

There is no formal open space in this ward. The consultant proposed three Neighborhood parks (area 2.02 acres) in this ward for recreational purpose.

Following table and **Map- 14.15** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.5.

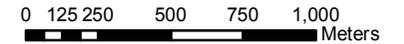
Table- 14.25: Proposal of Urban Services for Ward No. 05

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Neighborhood Market	None	-	1	0.28
Super Market	None	-	1	0.13
Primary School	None	-	1	0.7
High School	1	Existing	None	-
Community Clinic	None	-	1	Part of Ward Center
Waste Transfer Station	None	-	1	0.05
Neighborhood Park	None	-	3	2.02
Ward Center Complex	None	-	1	0.89



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LEGEND

- | | |
|---------------------|----------------------|
| Paurashava Boundary | Water Supply Network |
| Ward Boundary | Gas Supply Network |

Proposed Services

- | | |
|------------------------|----------------------|
| Bus Terminal | Neighbourhood Market |
| CNG/Rickshaw Stand | Neighbourhood Park |
| Central Cremation | Other School |
| Central Graveyard | Overhead Tank |
| Central Park | Passenger Shed |
| Cinema/Theater Hall | Playground |
| College | Police Box/Outpost |
| Cyclone Shelter | Police Station |
| Dumping Station | Post Office |
| Electric Sub-station | Primary School |
| Waste Transfer Station | Public Gathering |
| Filling Station | Resettlement Zone |
| Fire Service | Slaughtering House |
| Helipad | Super Market |
| High School | Sweepers Colony |
| Housing Estate | Truck Terminal |
| Industrial Estate | Upazila Hospital |
| Low Cost Housing | Upazila Stadium |
| Madrasa | Vocational Institute |
| Neighbourhood Center | Water Supply Station |
| | Wholesale Market |

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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14.7 Ward Action Plan for Ward No. 06

14.7.1 Demography

Ward No. 06 is located at new market and college area of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 1711 persons. Family size was over 4, sex ratio was 85, 85 males for 100 female. Population projection shows 2961 population in 2031. For the same year, it has a density of 21 persons per acre and 35 persons per acre respectively.

Table - 14.26: Population Statistics of Ward No. 06

Item	Year		
	2001	2011	2031
Area (acre)	82.06	82.06	82.06
Population	-	1711	2961
Density of Population (acre)		21	35

14.7.2 Critical Issues and Opportunities of the Ward

Ward No. 06 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in this ward is only 6.99 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is not above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory though most of the roads are paved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. It has only 654 meter drainage network. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the only source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is moderate, only 21 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.7.3 Ward Action Plan Proposals

14.7.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to residential landuse and it is 51.57 acres which is 62.82% of the total ward. The second major land use is waterbody, occupying 13.54% (11.12 acres) of the ward. Besides, there is 0.70% land under commercial activity, 4.53% land under circulation network, 6.97% under educational facilities, 1.04% land under community facilities, 0.56% land under government office, 0.07% land under manufacturing and rocessing activity, 0.65% land under open space, 0.36% land under service activity, 0.08% land under transportation facility and otherwise 0.02% of land is being used for urban green space.

14.7.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 37.59 (45.81%) acres of land delineated up to the year 2031 in Ward No. 06, considering standard provided by LGED.

ii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 1.12 acres (1.36%) designated up to 2031. The consultant also proposes a kitchen market under ward center complex.

iii) Community Facilities

Existing facilities covers a total of 0.52 acres of land and it is about 0.63% of the whole ward. The consultant also proposes a community center under ward center complex.

iv) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 06 the consultant allocate 2.85 acres (3.47% of the ward) land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 5.18 acres (6.31% of the ward area) that includes all the existing educational facilities in the ward.

vi) Government Office

This zone covers all kinds of government offices in the town. The total area under this use has been proposed as 2.15 acres (2.61%) that includes all existing government offices within the ward. The consultant also proposes one new counsellor office and a police box/outpost under the proposed ward center complex in this ward.

vii) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 5.98% of the total ward and it is 4.90 acres.

viii) Health Services

Proposed plan suggests a community clinic under the proposed ward center complex to serve the health facility to the whole ward.

ix) Circulation Network

Existing and proposed roads covers a total of 13.38 acres of land and it is about 16.31% of the whole ward.

x) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate land for open space where they proposed one Neighborhood Park and one Playground with a total of 1.36 acre (1.66% of the ward) of land.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

xi) Utility Services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.11 acres (0.13% of the ward).

xii) Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 12.65 acres or 15.42% of the whole ward. 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.

Besides, the consultant also proposes a CNG/Rickshaw stand with 0.26 acres to serve the ward as well as to the whole Paurashava.

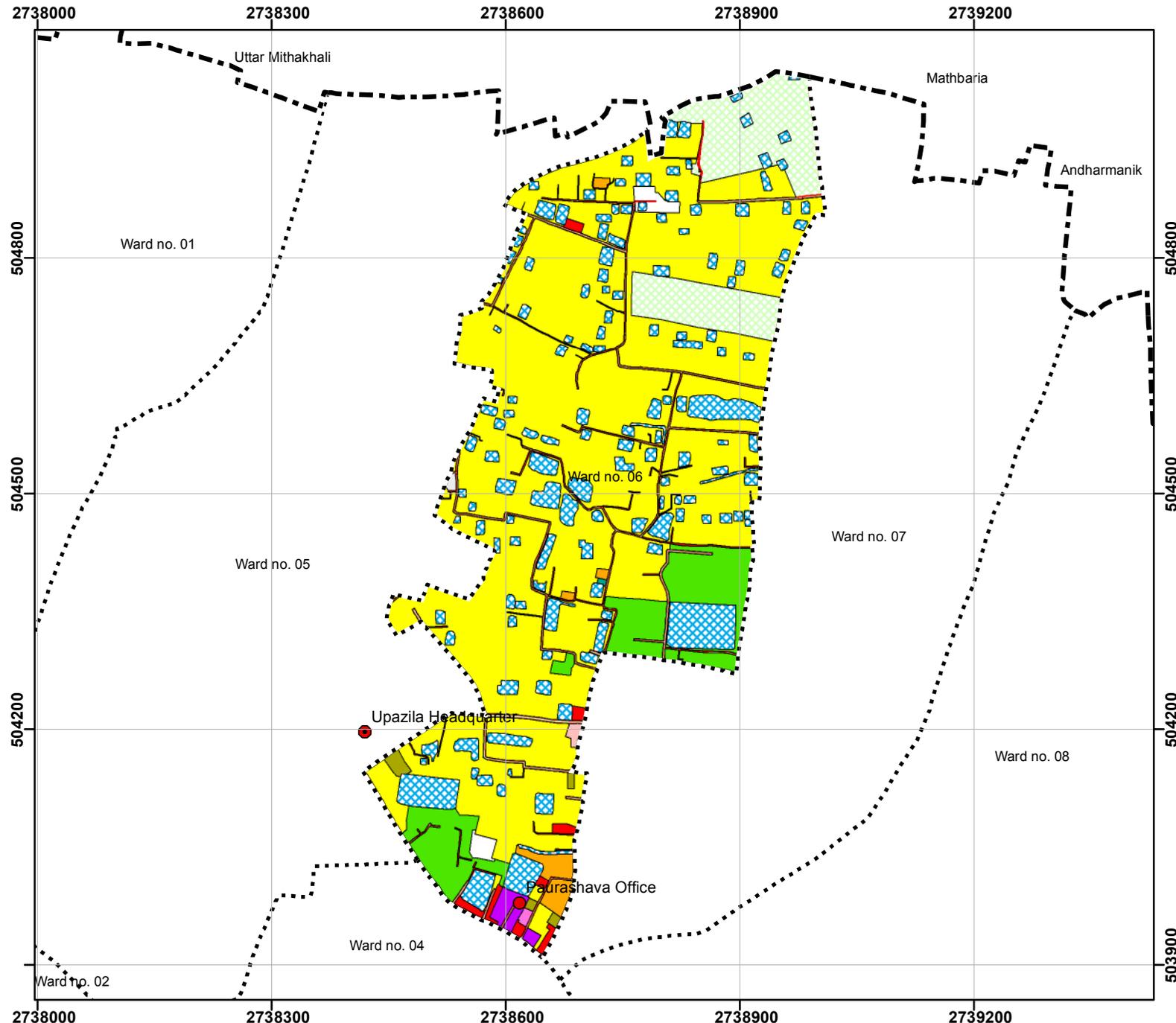
Map 14.16 shows the existing land use of Ward No. 06 while **Map- 14.17** shows the proposed landuse zoning of ward no. 06.

Table-14.27: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agriculture	7.01	8.54	0.00	0.00
Circulation Network	3.72	4.53	13.38	16.31
Commercial Zone	0.58	0.70	1.12	1.36
Community Facilities	0.85	1.04	0.52	0.63
Education & Research Zone	5.72	6.97	5.18	6.31
Government Office	0.46	0.56	2.15	2.61
Mixed Use Zone	0.10	0.12	2.85	3.47
Open Space	0.54	0.65	1.36	1.66
Overlay Zone	0.00	0.00	0.00	0.00
Transportation Facilities	0.06	0.08	0.26	0.31
Urban Deferred	0.00	0.00	12.65	15.42
Urban Residential Zone	51.57	62.81	37.59	45.81
Utility Services	0.00	0.00	0.11	0.13
Waterbody	11.12	13.54	4.90	5.98
Manufacturing and Processing Activity	0.06	0.07	0.00	0.00
Service Activity	0.29	0.36	0.00	0.00
Urban Green Space	0.02	0.02	0.00	0.00
Total	82.06	100.00	82.06	100.00

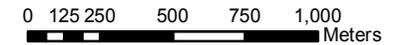
Map 14.16

Existing land use of Ward No.06



SCALE

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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

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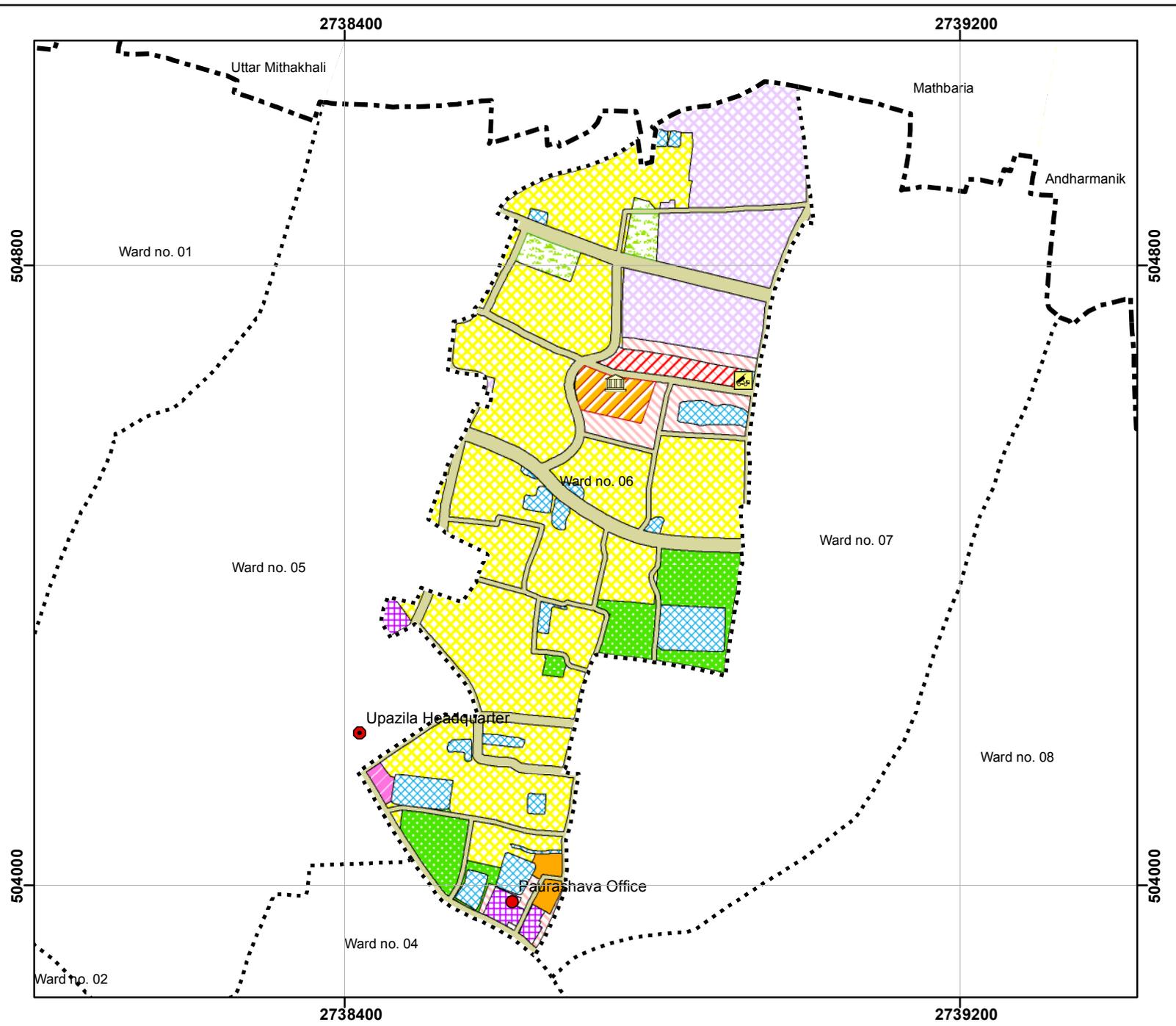


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LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- Bus Terminal
- Truck Terminal
- Central Graveyard
- Upazila Hospital
- Central Park
- Upazila Stadium
- Industrial Estate
- Paurashava Office
- Neighbourhood Center
- Upazila Headquarter
- Resettlement Zone
- Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 11 (Barisal Region)

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Ward Action Plan

14.7.3.3 Proposed Circulation Network Development

About 5.60 km of circulation network has been proposed for this ward. There are 4.79 km. roads will be developed during the first phase (2011 – 2016). Following table shows the detail of roads to be widened 20 to 60 feet during the first phase.

Table- 14.28: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PS 11		Secondary Road	145.84	30	Road Widening
D_PS 12		Secondary Road	54.11	30	Road Widening
D_PT 13		Tertiary Road	0.83	20	Road Widening
D_PT 14		Tertiary Road	27.03	20	Road Widening
D_PT 15		Tertiary Road	129.88	20	Road Widening
D_PT 16		Tertiary Road	0.33	20	Road Widening
D_PT 21		Tertiary Road	208.74	20	Road Widening
D_PT 22		Tertiary Road	161.68	20	Road Widening
D_PT 23		Tertiary Road	81.57	20	Road Widening
D_PT 24		Tertiary Road	4.25	20	Road Widening
D_PT 25		Tertiary Road	184.44	20	Road Widening
D_PT 26		Tertiary Road	160.96	20	Road Widening
D_PT 27		Tertiary Road	32.50	20	Road Widening
D_PT 27		Tertiary Road	75.31	20	Road Widening
D_PS 30		Secondary Road	127.65	40	Road Widening
D_PS 30		Secondary Road	7.96	40	Road Widening
D_PS 31		Secondary Road	72.83	40	Road Widening
D_PS 31		Secondary Road	57.17	40	Road Widening
D_PT 32		Tertiary Road	59.32	20	Road Widening
D_PT 41		Tertiary Road	117.72	20	Road Widening
D_PP 42	Khan Shaheb Hatimali Road	Primary Road	1.35	60	Road Widening
D_PS 44	Lap Pati Road	Secondary Road	0.28	30	Road Widening
D_PT 56		Tertiary Road	118.50	20	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	28.72	60	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	41.52	60	Road Widening
D_PP 61	Mathbaria Pirojpur Road	Primary Road	33.67	60	Road Widening
D_PT 64		Tertiary Road	9.62	20	Road Widening
D_PS 92		Secondary Road	22.65	40	Road Widening
D_PS 92		Secondary Road	81.59	40	Road Widening
D_PT 93		Tertiary Road	12.37	20	Road Widening
D_PT 93		Tertiary Road	17.31	20	Road Widening
D_PS 107		Secondary Road	87.06	40	Road Widening
D_PS 108		Secondary Road	88.39	30	Road Widening
D_PT 109		Tertiary Road	70.26	20	Road Widening
D_PS 116		Secondary Road	7.41	40	Road Widening
D_PS 116		Secondary Road	67.53	40	Road Widening
D_PS 117		Secondary Road	166.16	40	Road Widening
D_PS 117		Secondary Road	20.49	40	Road Widening
D_PT 118		Tertiary Road	159.37	20	Road Widening
D_PT 118		Tertiary Road	85.06	20	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	77.94	60	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	17.49	60	Road Widening
D_PS 126		Secondary Road	58.46	30	Road Widening
D_PP 142		Primary Road	402.37	60	Road Widening

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PS 144	Farajibari Road	Secondary Road	335.32	40	Road Widening
D_PS 145		Secondary Road	328.97	40	Road Widening
D_PS 146	North Collage Para Road	Secondary Road	228.50	30	Road Widening
D_PT 164		Tertiary Road	152.12	20	Road Widening
D_PT 166		Tertiary Road	100.37	20	Road Widening
D_PS 170		Secondary Road	12.23	40	Road Widening
D_PS 170		Secondary Road	32.34	40	Road Widening
D_PT 200	Farazibari Road	Tertiary Road	61.84	20	Road Widening
D_PP 220	Proposed Bypass Road	Primary Road	152.62	60	Road Widening
Total			4790		

Besides roads, necessary bridges and culverts have to be developed and the existing culverts will make the proposed roads operable.

14.7.3.4 Drainage Development Plan

Presently ward no 06 has about 654 meters of drains. But this length of drain is not adequate for the town to discharge all its waste water and storm water. But this length of drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 8.21 km. of new drains for ward no. 06. Out of these proposed drains, 2.65 km of new drains will be developed during the first phase.

Table- 14.29: Proposed Drainage Development Plan Proposals

Drain ID	Drain Type	Length (Meter)	Phasing	Width (Meter)	DeD_PTh (Meter)
D_PS 58	Secondary	Phase 01	334.45	2.35 - 3.35	1.124 - 2.124
D_PT 111	Tertiary Drain	Phase 01	94.03	1.50 - 2.50	0.64 - 1.00
D_PT 127	Tertiary Drain	Phase 01	153.98	1.50 - 2.50	0.64 - 1.00
D_PT 130	Tertiary Drain	Phase 01	138.00	1.50 - 2.50	0.64 - 1.00
D_PT 134	Tertiary Drain	Phase 01	52.82	1.50 - 2.50	0.64 - 1.00
D_PT 147	Tertiary Drain	Phase 01	141.83	1.50 - 2.50	0.64 - 1.00
D_PS 161	Secondary	Phase 01	377.22	2.35 - 3.35	1.124 - 2.124
D_PS 163	Secondary	Phase 01	146.61	2.35 - 3.35	1.124 - 2.124
D_PS 324	Secondary	Phase 01	395.71	2.35 - 3.35	1.124 - 2.124
D_PS 325	Secondary	Phase 01	399.35	2.35 - 3.35	1.124 - 2.124
D_PS 326	Secondary	Phase 01	289.59	2.35 - 3.35	1.124 - 2.124
D_PS 327	Secondary	Phase 01	130.40	2.35 - 3.35	1.124 - 2.124
Total			2653.99		

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.7.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The plan suggests a waste transfer station that covers a total of 0.11 acres (0.13% of the ward) of land. It is recommended that home

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water aquifers. There is no existing water supply network within ward no. 06 hence; the consultant proposes 1816 meters of water supply lines will be developed in this ward running along all categories of roads. About 615 meter of water supply network for this ward will be developed during the first phase.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There is no existing gas supply network within ward no. 06 and the consultant proposes about 2327 meters of gas supply lines will be developed in this ward as a whole running along the roads. The whole network will be developed during the later phases.

d. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Education Facility

There is one existing College (Mathbaria Govt. College), one high school (Hatim Ali Girl's School) and two primary Schools in this ward. The plan proposes to strengthen the capacity of existing educational institutions to serve the entire Paurashava as well as the ward.

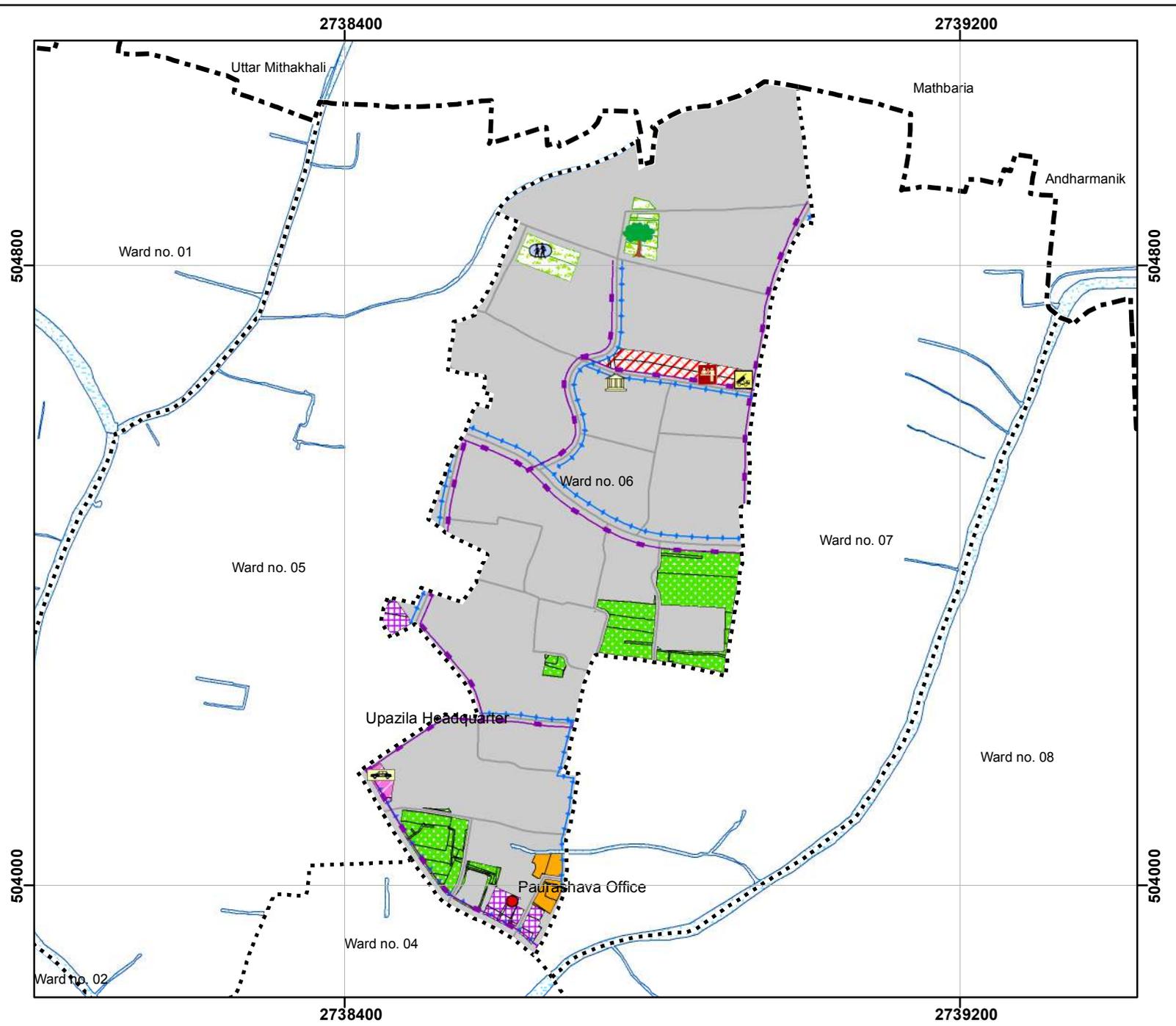
f. Recreational Facilities

There is no formal open space in this ward. The consultant proposed one Neighborhood park (area 0.63 acres) and one Playground (area 0.73 acres).

Following table and **Map- 14.18** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.6.

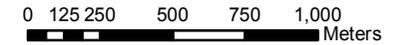
Table- 14.30: Proposal of Urban Services for Ward No. 06

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Neighborhood Market	None	-	1	1.12
Primary School	2	Existing	None	-
College	1	4.03	-	-
Community Clinic	None	-	1	Part of Ward enter
Neighborhood Park	None	-	1	0.63
Waste Transfer Station	None	-	1	0.11
CNG/Rickshaw Stand	None	-	1	0.26
Playground	None	-	1	0.73
Ward Center Complex	None	-	1	1.26



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LEGEND

- Boundary Line**
- Paurashava Boundary
 - - - Ward Boundary
- Proposed Utility Network**
- Water Supply Network
 - Gas Supply Network

Proposed Services

- Bus Terminal
- CNG/Rickshaw Stand
- Central Cremation
- Central Graveyard
- Central Park
- Cinema/Theater Hall
- College
- Cyclone Shelter
- Dumping Station
- Electric Sub-station
- Waste Transfer Station
- Filling Station
- Fire Service
- Helipad
- High School
- Housing Estate
- Industrial Estate
- Low Cost Housing
- Madrasa
- Neighbourhood Center
- Neighbourhood Market
- Neighbourhood Park
- Other School
- Overhead Tank
- Passenger Shed
- Playground
- Police Box/Outpost
- Police Station
- Post Office
- Primary School
- Public Gathering
- Resettlement Zone
- Slaughtering House
- Super Market
- Sweepers Colony
- Telephone Exchange
- Truck Terminal
- Upazila Hospital
- Upazila Stadium
- Vocational Institute
- Water Supply Station
- Wholesale Market

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Ward Action Plan

14.8 Ward Action Plan for Ward No. 07

14.8.1 Demography

Ward No. 07 is located in new market area and uttar purbo new market of the town. It has high density of population compare with other wards. In 2011 the Ward had a population of 2268 persons. Family size was over 4, sex ratio was 101, 101 males for 100 female. Population projection shows in 2031 the Ward will have a population of 3925. For the same year, it will have a density of 45 persons per acre.

Table - 14.31: Population Statistics of Ward No. 07

Item	Year		
	2001	2011	2031
Area (acre)	85.19	85.19	85.19
Population	-	2268	3925
Density of Population (acre)		27	45

14.8.2 Critical Issues and Opportunities of the Ward

Ward No. 07 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 6.25 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory though most of the roads are paved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area. It has only about 1 km drainage network within the ward. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the main source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is low but higher than other few wards, only 27 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Jewelry, handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.8.3 Ward Action Plan Proposals

14.8.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to residential land use and it is 47.45 acres which is 55.72% of the total ward. The second major land use is agriculture, occupying 21.27% (18.11 acres) of the ward. Besides, there is 10.77% waterbody, 1.59% commercial activity, 4.61% land under circulation network, 1.34% under educational facilities, 0.50% land under community facilities, 0.06% land under government office, 0.12% land under manufacturing and processing activity, 0.76% land under mixed use, 0.99% land under service activity, 0.36% land under transportation facilities and otherwise 1.90% of land is being used for urban green space.

14.8.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 34.75 (40.83%) acres of land delineated up to the year 2031 in Ward No. 07, considering standard provided by LGED.

ii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.84 acres (0.99%) designated up to 2031.

iii) Community Facilities

This zone earmarked with an area of 1.64 acres (including existing and proposed) designated up to 2031 and it covers about only 1.92% of the ward. The proposal includes one central graveyard and one central cremation ground. Beside these, community centre facilities also been proposed under 'Ward Centre' proposed for the ward.

iv) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 07 the consultant allocated 3.19 acres (3.75% of the ward) of land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 0.96 acres (1.13% of the ward area) that includes all the existing educational facilities within the ward.

vi) Government Office

This zone covers all kinds of government offices in the town. The total area under this use has been earmarked as 1.12 acres (1.32%) of land. The consultant also proposes one new counsellor office and a Police Box in this ward.

vii) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 5.00% of the total ward and it is 4.25 acres.

viii) Health Services

This category includes all existing private hospital/clinic in this ward. The consultant also proposes a community clinic under the proposed ward center complex for the whole ward.

ix) Circulation Network

Existing and proposed road covers a total of 14.94 acres of land and it is about 17.56% of the ward.

x) Transportation Facilities

The total area under this category has been estimated as 0.09 acres or 0.11% of the whole ward. In this ward consultant proposes a CNG/Rickshaw stand.

xi) Open Space

In this ward there is no outdoor recreational space like park, playground etc. Consultant proposed a neighbourhood park and a playground which will serve the whole Paurashava as well as this ward. Total 1.05 acres of land is proposed as open space and it is about 1.23% of the whole ward.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

xiii) Utility Services

The consultant proposes a water supply station based on College Pond and another adjacent pond water which containing 0.43 acres (0.51% of the ward) of land. There will be one overhead tank to store and supply the pure drinking water.

xiv) Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 21.84 acres or 25.66% of the whole ward. 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.

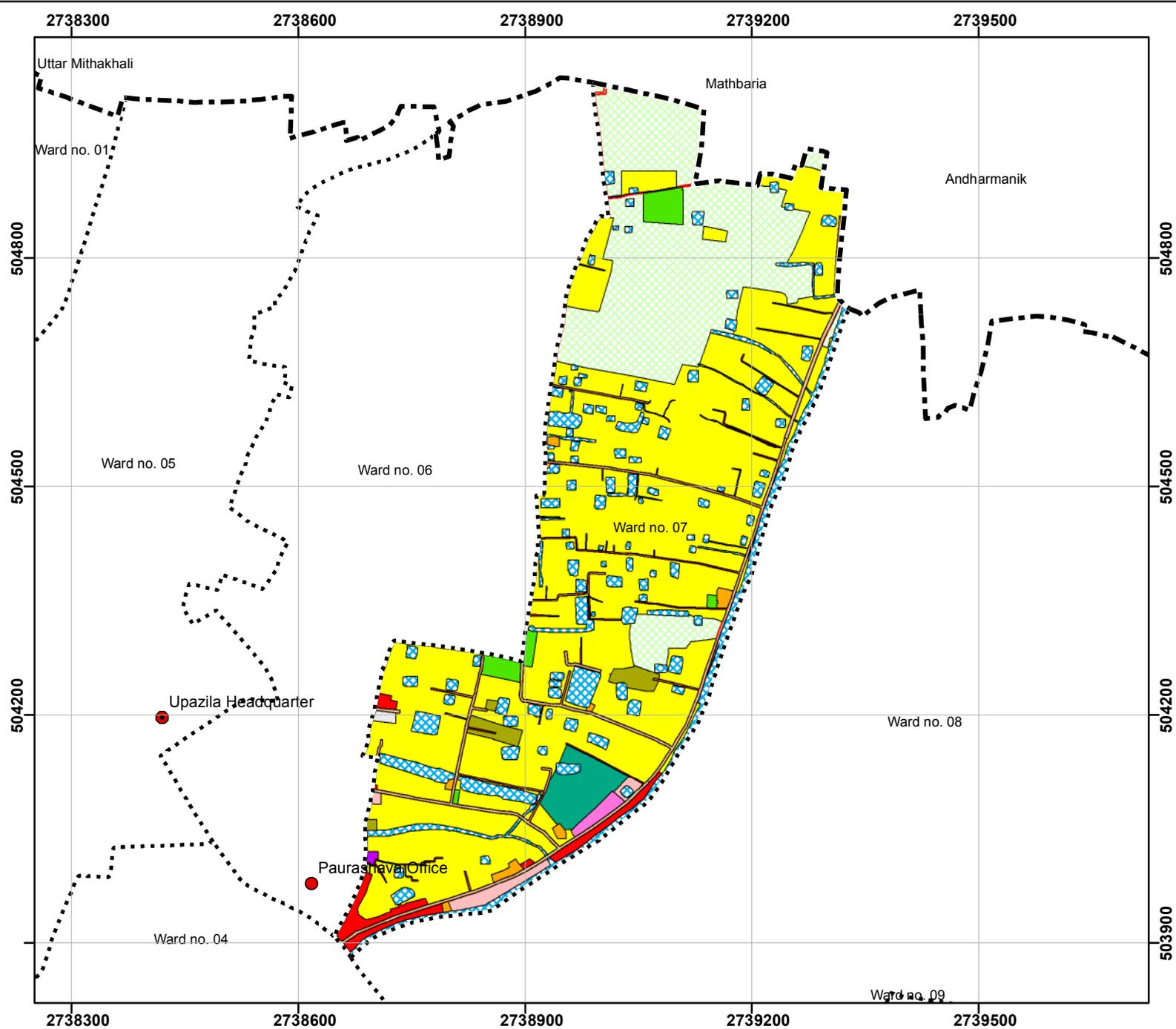
Map 14.19 shows the existing land use of Ward No. 07 while **Map- 14.20** shows the proposed landuse zoning of ward no. 07.

Table-14.32: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agriculture	18.11	21.27	0.00	0.00
Circulation Network	3.92	4.61	14.94	17.56
Commercial Zone	1.36	1.59	0.84	0.99
Community Facilities	0.43	0.50	1.64	1.92
Education & Research Zone	1.14	1.34	0.96	1.13
Government Office	0.05	0.06	1.12	1.32
Mixed Use Zone	0.65	0.76	3.19	3.75
Open Space	0.00	0.00	1.05	1.23
Overlay Zone	0.00	0.00	0.00	0.00
Transportation Facilities	0.31	0.36	0.09	0.11
Urban Deferred	0.00	0.00	21.84	25.66
Urban Residential Zone	47.45	55.72	34.75	40.83
Utility Services	0.00	0.00	0.43	0.51
Waterbody	9.18	10.77	4.25	5.00
Manufacturing and Processing	0.10	0.12	0.00	0.00
Service Activity	0.84	0.99	0.00	0.00
Urban Green Space	1.62	1.90	0.00	0.00
Total	85.19	100.00	85.19	100.00

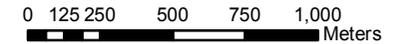
Map 14.19

Existing land use of Ward No.07



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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

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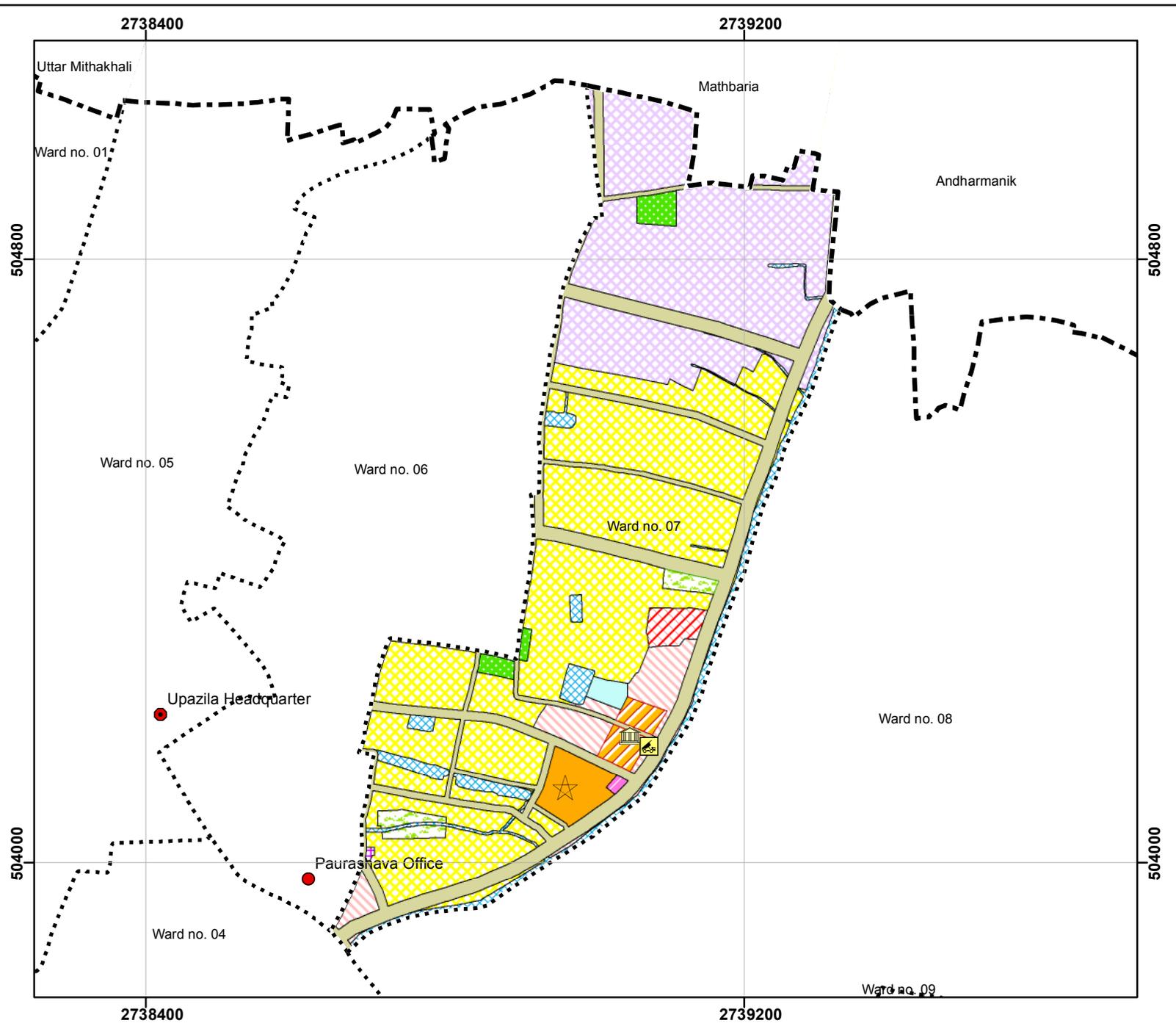
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Map 14.20

Proposed land use of Ward No.07



SCALE

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LEGEND

- Planning Area Boundary
 - Paurashava Boundary
 - Ward Boundary
- Major Services**
- Bus Terminal
 - Truck Terminal
 - Central Graveyard
 - Upazila Hospital
 - Central Park
 - Upazila Stadium
 - Industrial Estate
 - Paurashava Office
 - Neighbourhood Center
 - Upazila Headquarter
 - Resettlement Zone
 - Waste Transfer Station
- Proposed Landuse**
- Urban Residential Zone
 - Rural Settlement
 - Commercial Zone
 - Mixed Use Zone
 - General Industrial Zone
 - Heavy Industrial Zone
 - Government Office
 - Education & Research
 - Agricultural Zone
 - Waterbody
 - Open Space
 - Recreational Facilities
 - Circulation Network
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14.8.3.3 Proposed Circulation Network Development

About 5.07 km of circulation network has been proposed for this ward. During the first phase in ward no. 07, 3.78 km of roads have to be widened 20 to 60 ft RoW.

Table- 14.33: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PT 13		Tertiary Road	285.54	20	Road Widening
D_PT 16		Tertiary Road	154.38	20	Road Widening
D_PP 19	Merukhali Road	Primary Road	495.35	60	Road Widening
D_PP 20	Link Road	Primary Road	456.64	60	Road Widening
D_PT 27		Tertiary Road	75.31	20	Road Widening
D_PT 27		Tertiary Road	61.68	20	Road Widening
D_PT 28		Tertiary Road	54.36	20	Road Widening
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D_PS 30		Secondary Road	33.66	40	Road Widening
D_PT 32		Tertiary Road	59.32	20	Road Widening
D_PT 32		Tertiary Road	43.23	20	Road Widening
D_PS 33		Secondary Road	265.91	30	Road Widening
D_PS 34		Secondary Road	47.53	30	Road Widening
D_PT 36		Tertiary Road	119.15	20	Road Widening
D_PT 56		Tertiary Road	0.08	20	Road Widening
D_PS 116		Secondary Road	67.53	40	Road Widening
D_PS 116		Secondary Road	23.57	40	Road Widening
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D_PT 118		Tertiary Road	128.05	20	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	8.47	60	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	27.25	60	Road Widening
D_PT 127		Tertiary Road	212.06	20	Road Widening
D_PP 129	Marukhali Road	Primary Road	189.47	60	Road Widening
D_PP 130	Marukhali Road	Primary Road	10.41	60	Road Widening
D_PP 142		Primary Road	265.47	60	Road Widening
D_PS 145		Secondary Road	274.15	40	Road Widening
D_PS 146	North Collage Para Road	Secondary Road	130.95	30	Road Widening
D_PS 170		Secondary Road	32.34	40	Road Widening
Total			3777.4		

Besides roads, one bridge/culvert has to be developed and the existing culverts will make the proposed roads operable.

14.8.3.4 Drainage Development Plan

Presently ward no 07 has only about 1033 meters drains. But this length of drain is not adequate for the town to discharge all its waste water and storm water. But this length of drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 5.68 km. of new drains for ward no. 07. Out of these proposed drains, 2.80 new drains will be developed during the first phase.

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Ward Action Plan

Table- 14.34: Proposed Drainage Development Plan Proposals

Drain ID	Drain Type	Length (Meter)	Phasing	Width (Meter)	Depth (Meter)
D_PS 58	Secondary	Phase 01	34.12	2.35 - 3.35	1.124 - 2.124
D_PS 94	Secondary	Phase 01	1152.43	2.35 - 3.35	1.124 - 2.124
D_PT 101	Tertiary Drain	Phase 01	210.15	1.50 - 2.50	0.64 - 1.00
D_PT 127	Tertiary Drain	Phase 01	28.11	1.50 - 2.50	0.64 - 1.00
D_PT 130	Tertiary Drain	Phase 01	5.65	1.50 - 2.50	0.64 - 1.00
D_PT 133	Tertiary Drain	Phase 01	41.69	1.50 - 2.50	0.64 - 1.00
D_PS 324	Secondary	Phase 01	279.75	2.35 - 3.35	1.124 - 2.124
D_PS 325	Secondary	Phase 01	275.67	2.35 - 3.35	1.124 - 2.124
D_PS 326	Secondary	Phase 01	383.11	2.35 - 3.35	1.124 - 2.124
D_PS 327	Secondary	Phase 01	387.07	2.35 - 3.35	1.124 - 2.124
Total			2797.75		

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.8.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The plan suggests a waste transfer station with an area of 0.04 acres. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water aquifers. There is no existing water supply network within ward no. 07 and the consultant proposes 2583.92 meters of water supply lines will be developed in this ward running along all categories of roads. Among this water supply network, 1595 meter network will be developed during the first phase.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There is no existing gas supply network within ward no. 07 and the consultant proposes 2435 meters of gas supply lines will be developed in this ward as a whole running along the roads and the whole network will be developed during the later phases.

d. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Education Facility

There is one existing Primary School (77 no. Udayan Reg. Primary School), one High school (Udayan High School) and few other institutions in this ward. The plan proposes to strengthen

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

the capacity of existing educational institutions to serve the entire Paurashava as well as the ward.

f. Health Facilities

This category includes four existing private hospital/clinic in this ward (Ex: Feroza Clinic) in the ward. The consultant also proposes one community clinic under the proposed ward center complex.

g. Recreational Facilities

There is no formal open space in this ward. The consultant proposed one neighbourhood park (0.66 acres) and a playground (0.39 acres).

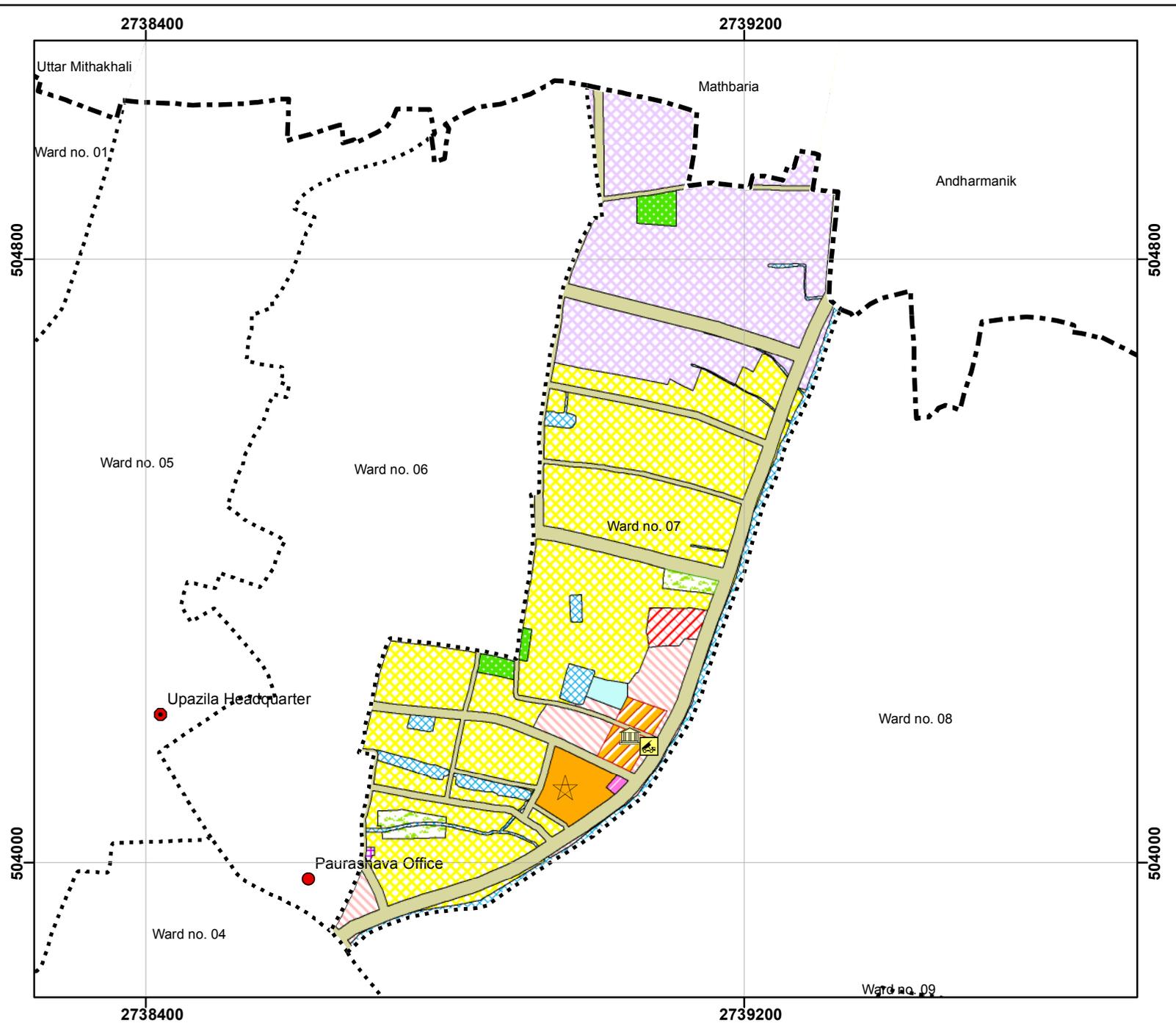
Following table and **Map- 14.21** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.7.

Table- 14.35: Proposal of Urban Facilities for Ward No. 07

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Neighborhood market	None	-	1	0.84
Primary School	1	Existing	None	-
High School	1	Existing	None	-
Health Center	1	Existing	1	Part of Ward Center
Neighbourhood Park	None	-	1	0.66
Playground	None	-	1	0.39
CNG/Rickshaw Stand	None	-	1	0.09
Waste Transfer Station	None	-	1	0.04
Water Supply Station	None	-	1	0.39
Central Cremation Ground	None	-	1	0.10
Central Graveyard	None	-	1	1.54
Ward Center/Neighbourhood Center Complex	None	-	1	1.08

Map 14.20

Proposed land use of Ward No.07



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LEGEND

- Planning Area Boundary
 - Paurashava Boundary
 - Ward Boundary
- Major Services**
- Bus Terminal
 - Truck Terminal
 - Central Graveyard
 - Upazila Hospital
 - Central Park
 - Upazila Stadium
 - Industrial Estate
 - Paurashava Office
 - Neighbourhood Center
 - Upazila Headquarter
 - Resettlement Zone
 - Waste Transfer Station
- Proposed Landuse**
- Urban Residential Zone
 - Rural Settlement
 - Commercial Zone
 - Mixed Use Zone
 - General Industrial Zone
 - Heavy Industrial Zone
 - Government Office
 - Education & Research
 - Agricultural Zone
 - Waterbody
 - Open Space
 - Recreational Facilities
 - Circulation Network
 - Transportation Facilities
 - Utility Services
 - Health Services
 - Community Facilities
 - Historical & Heritage Site
 - Restricted Area
 - Overlay Zone
 - Urban Deferred
 - Forest
 - Beach
 - Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
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Ward Action Plan

14.9 Ward Action Plan for Ward No. 08

14.9.1 Demography

Ward No. 08 is located at Maddhya Purbo Bakshir Ghatichora and Uttar Bakshir Ghatichora mouza of the town. It has low density of population compare with other wards. In 2011 the Ward had a population of 2207 persons. Family size was over 4, sex ratio was 93, 93 males for 100 female. Population projection shows in 2031 the Ward will have a population of 3819 persons for the year 2031. For the same year, it will have a density of 18 persons per acre.

Table - 14.36: Population Statistics of Ward No. 08

Item	Year		
	2001	2011	2031
Area (acre)	205.97	205.97	205.97
Population	-	2207	3819
Density of Population (acre)		11	18

14.9.2 Critical Issues and Opportunities of the Ward

Ward No. 08 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 6.44 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide except. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory though most of the roads are paved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area except dak bangalow. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. In future due to construction the net run off area will increase that will cause water logging at places which is alarming already. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the only source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is medium, only 11 persons/acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry has already established its roots in the town. Handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.9.3 Ward Action Plan Proposals

14.9.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to agricultural and it is 105.87 acres which is 51.38% of the total ward. The second major land use is residential use, occupying 38.54% (79.40 acres) of the ward. Besides, there is 6.01% waterbody, 0.21% commercial activity, 1.89% land under circulation network, 1.59% under educational facilities, 0.19% land under community facilities, 0.10% land under government office, 0.06% land under manufacturing & processing activity and otherwise 0.03% of land is being used for urban green space.

14.9.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 46.57 (22.62%) acres of land delineated up to the year 2031 in Ward No. 08, considering standard provided by LGED.

ii) Rural Settlement

Rural Settlement refers to all categories of residential areas with less density and less urban facilities, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 30.90 (15.00%) acres of land delineated up to the year 2031 in Ward No. 08.

iii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 1.97 acres (0.96%) designated up to 2031. The consultant also proposes a kitchen market under the proposed ward center complex.

iv) Community Facilities

Proposed plan suggests a community center in this ward under the proposed ward center complex to serve the whole ward.

v) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 08 the consultant allocates 18.19 acres land for mixed use category which is 8.83% of the whole ward.

vi) Education & Research Zone

The total area under this use has been determined as 3.76 acres (1.83% of the ward area) that includes one new primary school (1.02 acres) along with other existing educational facilities.

vii) Government Office

This zone covers all kinds of government offices in the town. The total area under this use has been earmarked as 2.15 acres (1.04%). The consultant also proposes a counsellor office and a police box/outpost under the proposed ward center complex for this ward.

viii) Agricultural Zone

At present Ward No. 08 has 105.87 acres of agricultural land. Commercial and residential structures are established in this ward. Therefore in future, demand for new residential area and other urban facilities will be high in this ward. To accommodate future facilities vast amount of existing agricultural land is converted into others landuse. Other than 62.92 acres (30.55% of the whole ward) has been earmarked as agricultural zone.

ix) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 3.53% of the total ward and it is 7.26 acres.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

x) Health Services

This category includes existing available health facilities. Besides, the consultant proposes one new community clinic under the proposed ward center complex.

xi) Circulation Network

Existing and proposed road covers a total of 25.19 acres of land and it is about 12.23% of the whole ward.

xii) Urban Deferred

According to planning standard provided by LGED seeks about 10 percent of the total built up area. The total area under this use has been proposed as 0.30 acres or 0.15% of the whole ward.

xiii) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 6.65 acres of land for open space where they proposed one Neighborhood Park (1.33 acres) and one upazila standard stadium (5.32 acres).

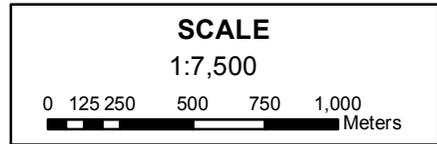
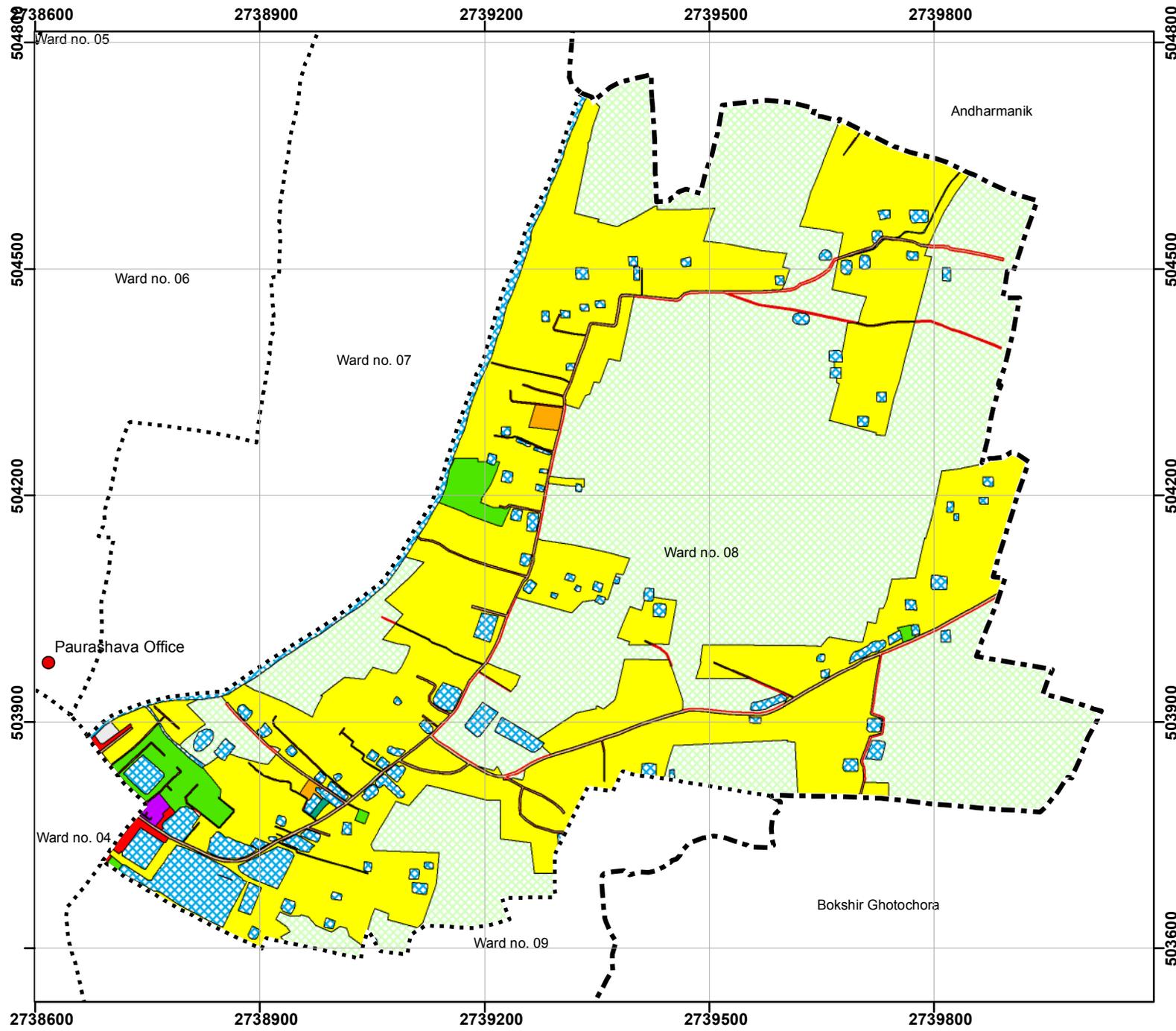
Map 14.22 shows the existing land use of Ward No. 08 while **Map- 14.23** shows the proposed landuse zoning of ward no. 08.

Table-14.37: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	105.87	51.38	62.92	30.55
Circulation Network	3.89	1.89	25.19	12.23
Commercial Zone	0.42	0.21	1.97	0.96
Community Service	0.39	0.19	0.00	0.00
Education & Research Zone	3.28	1.59	3.76	1.83
Government Office	0.22	0.10	2.15	1.04
Mixed Use Zone	0.00	0.00	18.19	8.83
Open Space	0.00	0.00	6.65	3.23
Overlay Zone	0.00	0.00	0.00	0.00
Rural Settlement	0.00	0.00	30.90	15.00
Urban Deferred	0.00	0.00	0.30	0.15
Urban Residential Zone	79.40	38.54	46.57	22.62
Utility Services	0.00	0.00	0.06	0.03
Waterbody	12.38	6.01	7.26	3.53
Manufacturing and Processing Activity	0.12	0.06	0.00	0.00
Urban Green Space	0.06	0.03	0.00	0.00
Total	205.97	100.00	205.97	100.00

Map 14.22

Existing land use of Ward No.08



LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- - - Paurashava Boundary
- ... Ward Boundary

Existing Landuse

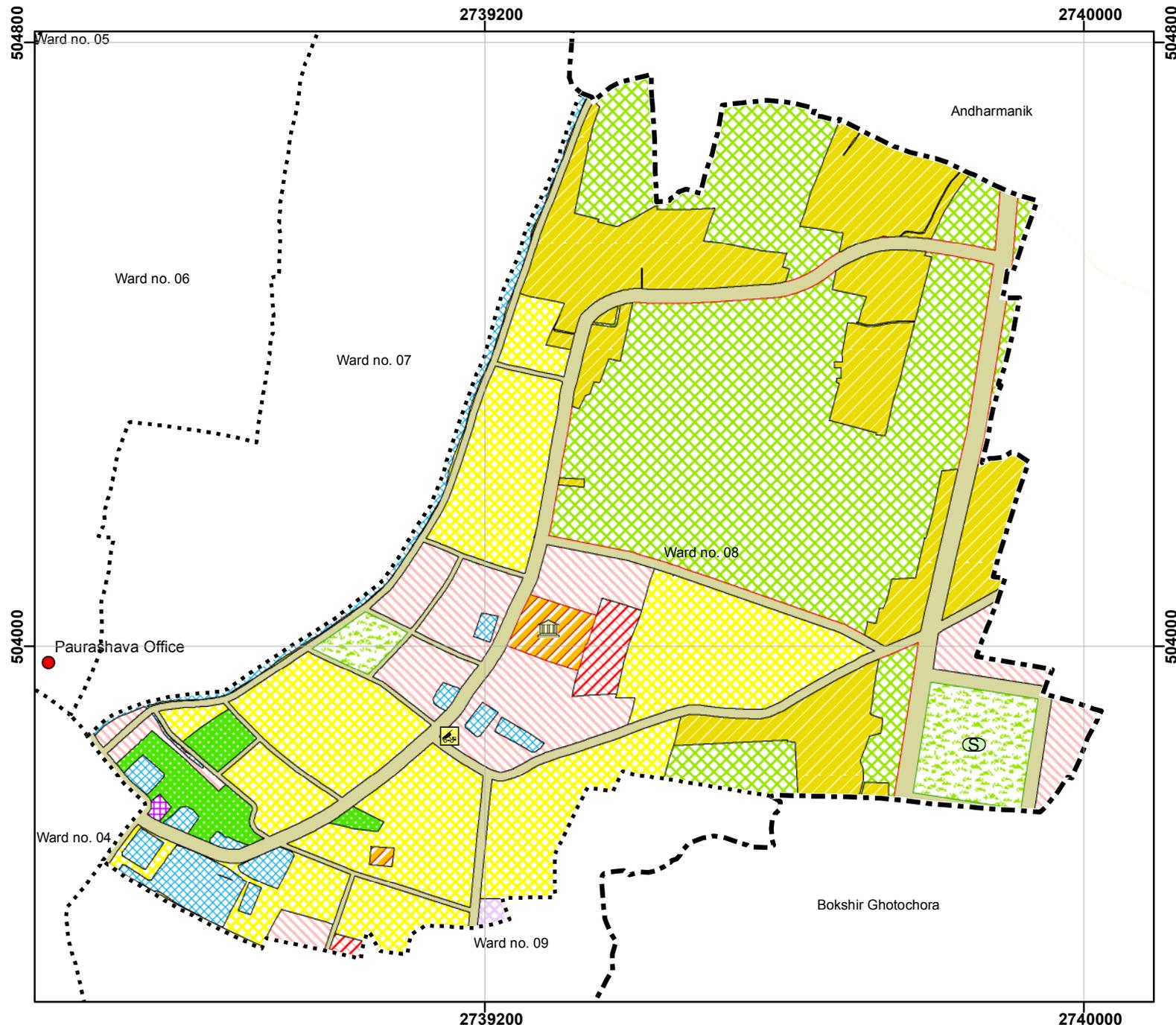
- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District

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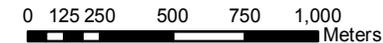
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LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- Bus Terminal
- Central Graveyard
- Central Park
- Industrial Estate
- Neighbourhood Center
- Resettlement Zone
- Truck Terminal
- Upazila Hospital
- Upazila Stadium
- Paurashava Office
- Upazila Headquarter
- Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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Ward Action Plan

14.9.3.3 Proposed Circulation Network Development

About 7.10 km of circulation network has been proposed for this ward. There are 3.29 km. roads will be developed during the first phase (2011 – 2016). Following table shows the detail of roads to be widened 20 to 60 feet during the first phase.

Table- 14.38: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PT 7	Link Road	Tertiary Road	214.10	20	Road Widening
D_PP 8	Sadar Road	Primary Road	7.40	60	Road Widening
D_PP 8	Sadar Road	Primary Road	57.02	60	Road Widening
D_PP 9	Link Road	Primary Road	373.48	60	Road Widening
D_PP 51		Primary Road	276.34	60	Road Widening
D_PT 52		Tertiary Road	115.75	20	Road Widening
D_PP 53		Primary Road	985.72	60	Road Widening
D_PT 54		Tertiary Road	176.78	20	Road Widening
D_PS 55		Secondary Road	832.02	40	Road Widening
D_PP 119	Jatio Net Mohi Uddin Ahamed	Primary Road	110.48	60	Road Widening
D_PT 125		Tertiary Road	105.65	20	Road Widening
D_PT 128		Tertiary Road	38.99	20	Road Widening
Total			3293.73		

Besides roads, necessary bridges and culverts have to be developed and the existing culverts will make the proposed roads operable.

14.9.3.4 Drainage Development Plan

Presently ward No. 08 has only 91 meters of drain. But this length of drain is not adequate for the town to discharge all its waste water and storm water. But this length of drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 11.22 km. of new drains for ward no. 08. Out of these proposed drains, the whole network will be developed during the third phase.

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.9.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. The plan suggests a waste transfer station with an area of 0.06 acres. It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

b. Water Supply

It is proposed to install a network based water supply system by exploring fresh water aquifers. There is no existing water supply network within ward no. 08 and the plan proposes 2813 meters of water supply lines will be developed in this ward running along all categories of roads. Among this water supply network, 1415 meter network will be developed during the first phase.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There will about 2907 meters of gas supply lines in this ward as a whole running along the roads and the whole network will be developed during the later phases.

d. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Education Facility

There is one existing TT College (0.32 acres), one High School (2.55 acres) along with other institutions. The plan proposes one new Primary School (1.02 acres). The Consultant also proposes to strengthen the capacity of existing educational institutions to serve the entire Paurashava as well as the ward.

f. Health Facilities

This category includes one new Community Clinic under the proposed ward center complex and existing other private hospital/clinic in this ward.

g. Recreational Facilities

There is no formal open space in this ward. The consultant proposed one Neighborhood Park (1.33 acres) and one stadium (5.32 acres).

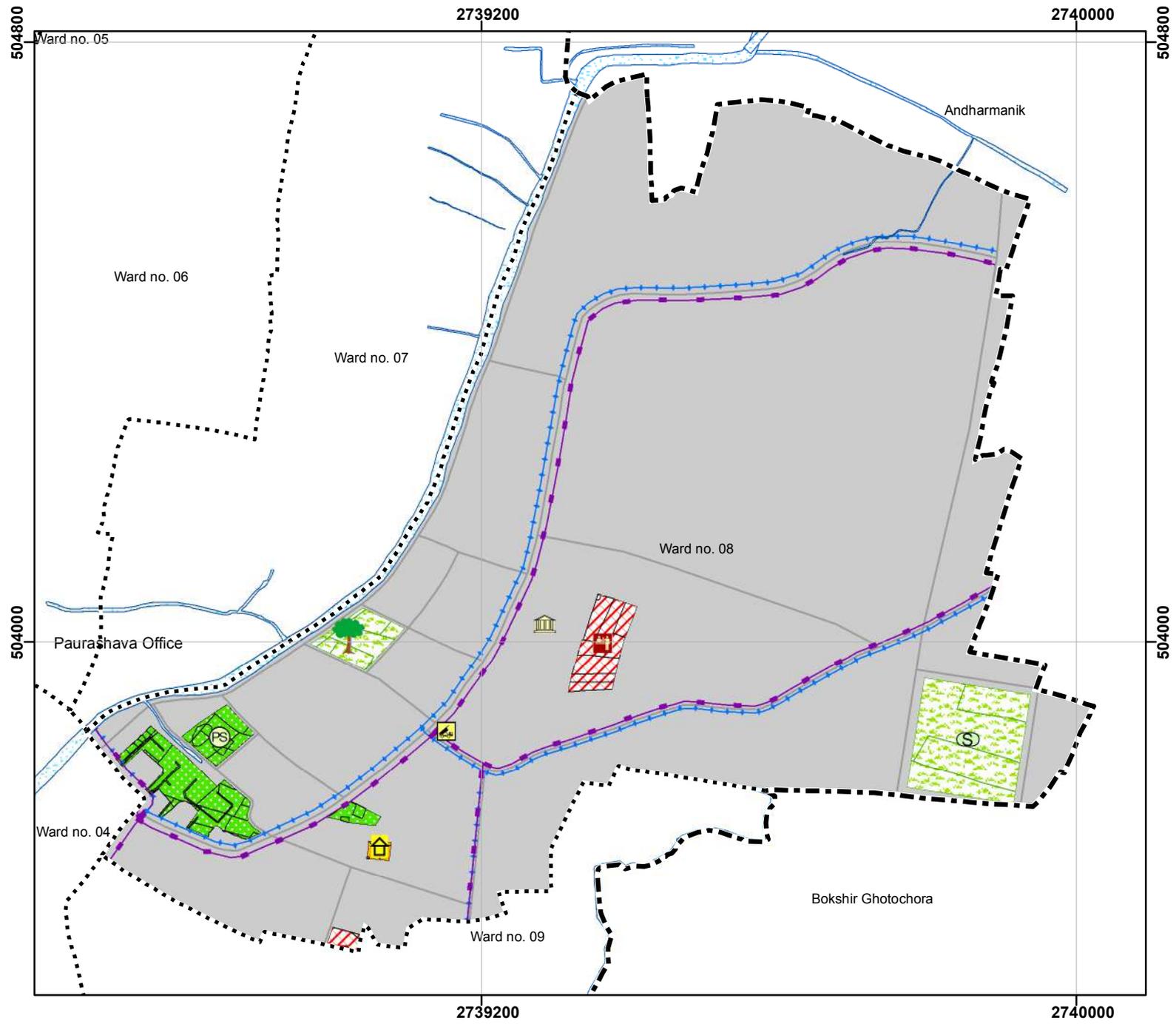
h. Utility Services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.06 acres (0.003% of the ward).

Following table and **Map- 14.24** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.8.

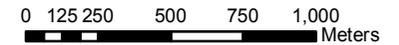
Table- 14.39: Proposed Urban Facilities of Ward No. 08

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Neighborhood Market	None	-	1	1.97
Community Center	None	-	1	Part of the ward center
Primary School	None	-	1	1.02
High School	1	2.55	None	-
Neighborhood Park	None	-	1	1.33
Stadium	None	-	1	5.32
Ward Center Complex	None	-	1	1.81
Waste Transfer Station	None	-	1	0.06



SCALE

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LEGEND

- | | |
|---------------------|--------------------------|
| Boundary Line | Proposed Utility Network |
| Paurashava Boundary | Gas Supply Network |
| Ward Boundary | |

Proposed Services

- | | |
|------------------------|----------------------|
| Bus Terminal | Neighbourhood Market |
| CNG/Rickshaw Stand | Neighbourhood Park |
| Central Cremation | Other School |
| Central Graveyard | Overhead Tank |
| Central Park | Passenger Shed |
| Cinema/Theater Hall | Playground |
| College | Police Box/Outpost |
| Cyclone Shelter | Police Station |
| Dumping Station | Post Office |
| Electric Sub-station | Primary School |
| Waste Transfer Station | Public Gathering |
| Filling Station | Resettlement Zone |
| Fire Service | Slaughtering House |
| Helipad | Super Market |
| High School | Sweepers Colony |
| Housing Estate | Telephone Exchange |
| Industrial Estate | Truck Terminal |
| Low Cost Housing | Upazila Hospital |
| Madrasa | Upazila Stadium |
| Neighbourhood Center | Vocational Institute |
| | Water Supply Station |
| | Wholesale Market |

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
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14.10 Ward Action Plan for Ward No. 09

14.10.1 Demography

Ward No. 09 is located at Dakkhin Bakshir Ghatichora mouza of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 1945 persons. Family size was over 4, sex ratio was 99, 99 males for 100 female. Population projection shows in 2031 the Ward will have a population of 3366 persons for the year 2031. For the same year, it will have a density of 35 persons per acre.

Table - 14.40: Population Statistics of Ward No. 09

Item	Year		
	2001	2011	2031
Area (acre)	93.08	93.08	93.08
Population	-	1945	3366
Density of Population (acre)		21	35

14.10.2 Critical Issues and Opportunities of the Ward

Ward No. 09 is one of the most problem stricken wards of the Paurashava. Following are the major problems and opportunities of the ward.

a. Critical Issues

i. Problems of Road Infrastructure

The ward is not served by adequate number of roads. The total length of roads in the ward is only 5.20 km. This length of roads can not serve the entire area. New road spaces being created on community efforts are usually very narrow. None of these roads is above 12 ft wide. Another problem of roads is that they are meandering in their layout. Due to unplanned development, roads do not have proper linkage. Due to missing links one has to travel long way to reach a nearby destination. All these will pose serious problems in movement when population rises in the ward. Quality of roads on average is not satisfactory though most of the roads are paved. Unpaved roads turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward does not have adequate drainage network serving the entire area and it has only 52 meters of drainage network. All the households do not have drainage outlet to discharge their waste water. Lack of drainage, though, is not a serious problem now but will emerge as a critical problem as density of population increases in future. It is a ward miserable from water logging problem. In future due to construction the net run off area will increase that will cause serious water logging at places. So, necessary arrangements will have to be made now to get rid of future drainage problems.

iii. Haphazard Development

Like all other urban areas, unplanned development is a typical characteristic of this ward. Land owners are building their houses and structures anywhere. There is no land use plan, no adherences to building constructions are observed. This is not only destroying the aesthetic of the area but also its livable environment.

iv. Water Supply

Like all other wards water supply is the most critical problem in this ward. Surface water is the only source of drinking and washing. When population will increase the existing ponds will be inadequate to supply adequate water for the local people that will lead to severe water crisis. More over, there are arrangements for proper maintenance of the ponds. There is likelihood that without proper maintenance caretaking the ponds might get polluted by unhygienic use of water that will endanger health of the local people.

v. Low Density of Population: Problem for Providing Infrastructure

Infrastructure development is not cost effective if the density of population remains very low. The cost of service line is the same for all sizes of population. So, if the population size is small more cost has to be incurred per head of population for providing infrastructure, which is not cost effective.

vi. Lack of Threshold Population for Business

The town possesses a very low level of population which is not adequate to run large retail business activities. This size of population will not help grow the local economy grow. Besides, the average income of the people is also very low which is not conducive to economic flourishing of the town. Higher the size of population more demand is created for goods and services leading to more economic activities and employment. No urban centre can flourish without adequate economic prosperity.

b. Development Opportunities

i. Low Density of Population

The present density of population in the ward is very low, only 21 persons /acre. From environmental point of view this of population can create a very livable environment for the area with respect to ventilation, use of road and other basic services.

ii. Excellent External Connectivity

Barisal is only two hours journey from Mathbaria. It takes about 1 and quarter hour to reach Pirojpur Sadar, the district headquarters. Jhalkathi, another district headquarters is also about 1 and half hour journey from Mathbaria.

iii. Potential for Small Scale Manufacturing

Cheap labour, availability of raw materials can help grow small scale manufacturing in this town. Furniture making as a processing industry may established in the town. Handicrafts of different kinds, small engineering can be developed here. This, however, would require local initiative. Local entrepreneurs may be provided with small capital to serve as incentive.

14.10.3 Ward Action Plan Proposals

14.10.3.1 Review of Existing Land Use

Study of existing land use of the ward reveals that the major land use goes to residential use and it is 45.91 acres which is 49.30% of the total ward. The second major land use is agriculture, occupying 30.32% (28.24 acres) of the ward. Besides, there is 10.91% waterbody, 2.07% commercial activity, 3.29% land under circulation network, 0.76% land under community facilities, 0.44% land under education & research, 2.29% land under government office, 0.15% land under manufacturing and processing activity, 0.22% land under mixed use, 0.19% land under non-government office and otherwise 0.05% of land is being used as service activity.

14.10.3.2 Proposed Land Use Zoning

i) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including existing ones and the residential land use proposed under the present master plan. In total this zone covers 53.52 (57.50%) acres of land delineated up to the year 2031 in Ward No. 09, considering standard provided by LGED.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

ii) Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails can be set up and function, without creating hazards to surrounding land uses. This zone has an area of 0.41 acres (0.44%) designated up to 2031.

iii) Community Facilities

Proposed plan suggests a community center under the proposed ward center complex to serve the whole ward.

iv) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. Admixture of land uses will allow flexibility of development, instead of restricting development. In ward no. 09 the consultant allocated 0.40 acres (0.42%) of land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 0.56 acres (0.60% of the ward area) that includes one new High School along with other existing educational facilities.

vi) Government Office

This zone covers all kinds of government offices in the town. The total area under this use has been earmarked as 3.80 acres (4.08%). The consultant also proposes a counsellor office and a police box/outpost under the proposed ward center complex in this ward.

vii) Agricultural Zone

At present Ward No. 09 has 45.91 acres of agricultural land. Therefore in future, demand for new residential area and other urban facilities will be high in this ward. To accommodate future facilities vast amount of existing agricultural land is converted into others landuse. This zone has area of 2.82 acres and it is only 3.03%.

viii) Waterbody

The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 6.65% of the total ward and it is 6.19 acres.

ix) Health Services

This category includes one new community clinic under the proposed ward center complex to serve the whole ward.

x) Transportation Facilities

The total area under this category has been estimated as 0.29 acres or 0.31% of the whole ward. In this ward consultant proposes a CNG/Rickshaw stand.

xi) Circulation Network

Existing and proposed road covers a total of 14.83 acres of land and it is about 15.93% of the whole ward.

xii) Utility Services

In existing landuse there is no utility service facility. The plan suggests a waste transfer station. The proposed land covers a total of 0.05 acres (0.06% of the ward).

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

xiii) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 1.41 acres of land for open space where they proposed one Neighborhood Park (1.02 acres) and a playground (0.40 acres).

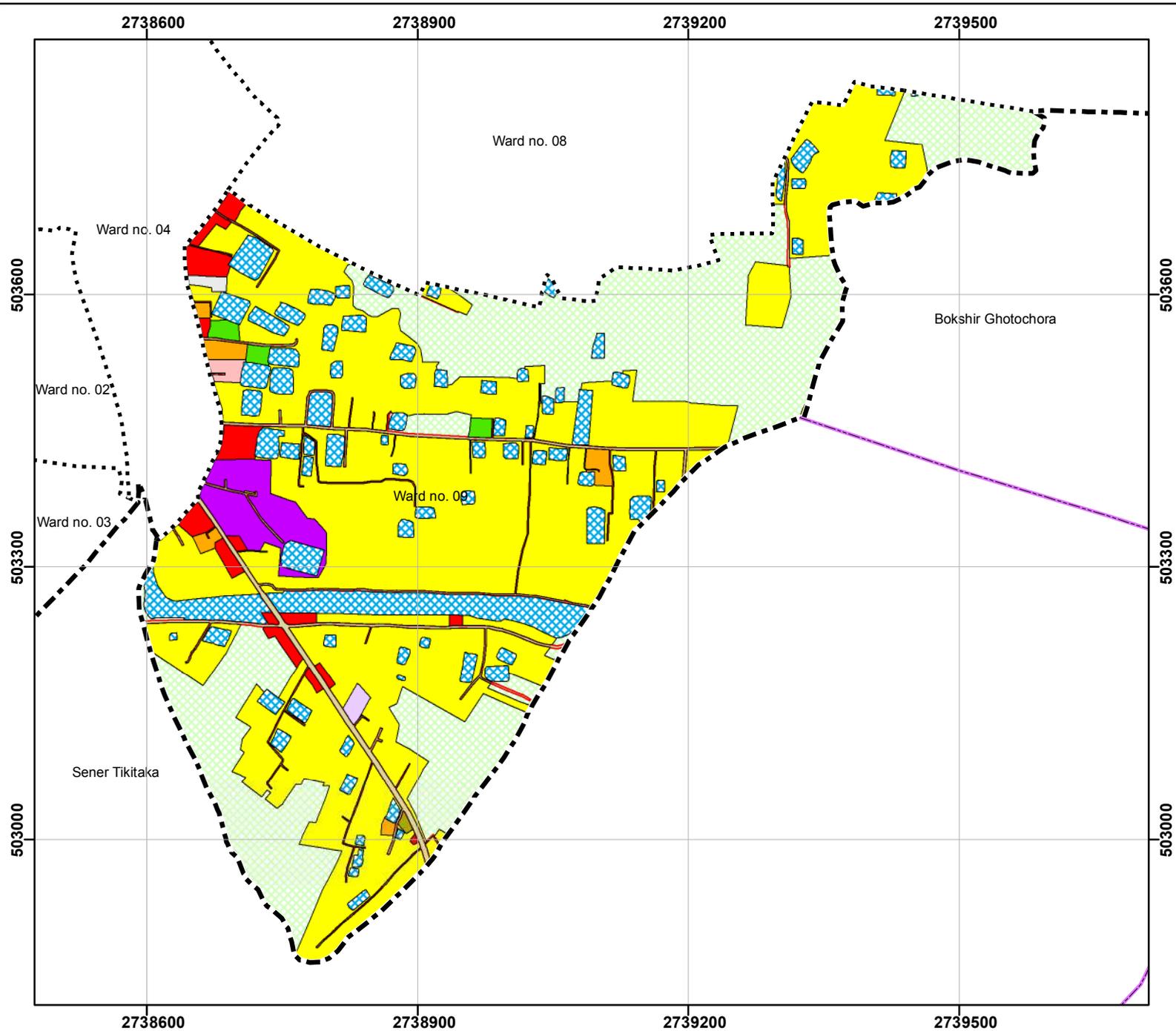
Map 14.25 shows the existing land use of Ward No. 09 while **Map- 14.26** shows the proposed landuse zoning of ward no. 09.

Table-14.41: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	28.24	30.32	2.82	3.03
Circulation Network	3.06	3.29	14.83	15.93
Commercial Zone	1.93	2.07	0.41	0.44
Education & Research Zone	0.41	0.44	0.56	0.60
Government Office	2.14	2.29	3.80	4.08
Mixed Use Zone	0.21	0.22	0.40	0.42
Open Space	0.00	0.00	1.41	1.52
Overlay Zone	0.00	0.00	0.00	0.00
Transportation Facilities	0.00	0.00	0.29	0.31
Urban Deferred	0.00	0.00	8.80	9.46
Urban Residential Zone	45.91	49.30	53.52	57.50
Utility Services	0.00	0.00	0.05	0.06
Waterbody	10.16	10.91	6.19	6.65
Community Service	0.71	0.76	0.00	0.00
Manufacturing and Processing Activity	0.14	0.15	0.00	0.00
Non Government Services	0.18	0.19	0.00	0.00
Service Activity	0.05	0.05	0.00	0.00
Total	93.08	100.00	93.08	100.00

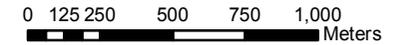
Map 14.25

Existing land use of Ward No.09



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LEGEND

Admin Point

- Paurashava Office
- Union Parishad Office
- Upazila Headquarter

Boundary Line

- Paurashava Boundary
- Ward Boundary

Existing Landuse

- Residential
- Agriculture
- Waterbody
- Educational Facilities
- Commercial
- Industrial
- Education and Research
- Community Service
- Service Activity
- Governmental Services
- Non Government Services
- Recreational Facilities
- Mixed Use
- Circulation Network
- Transport and Communication
- Forest
- Urban Green Space
- Vacant Land
- Miscellaneous/Others
- Restricted

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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

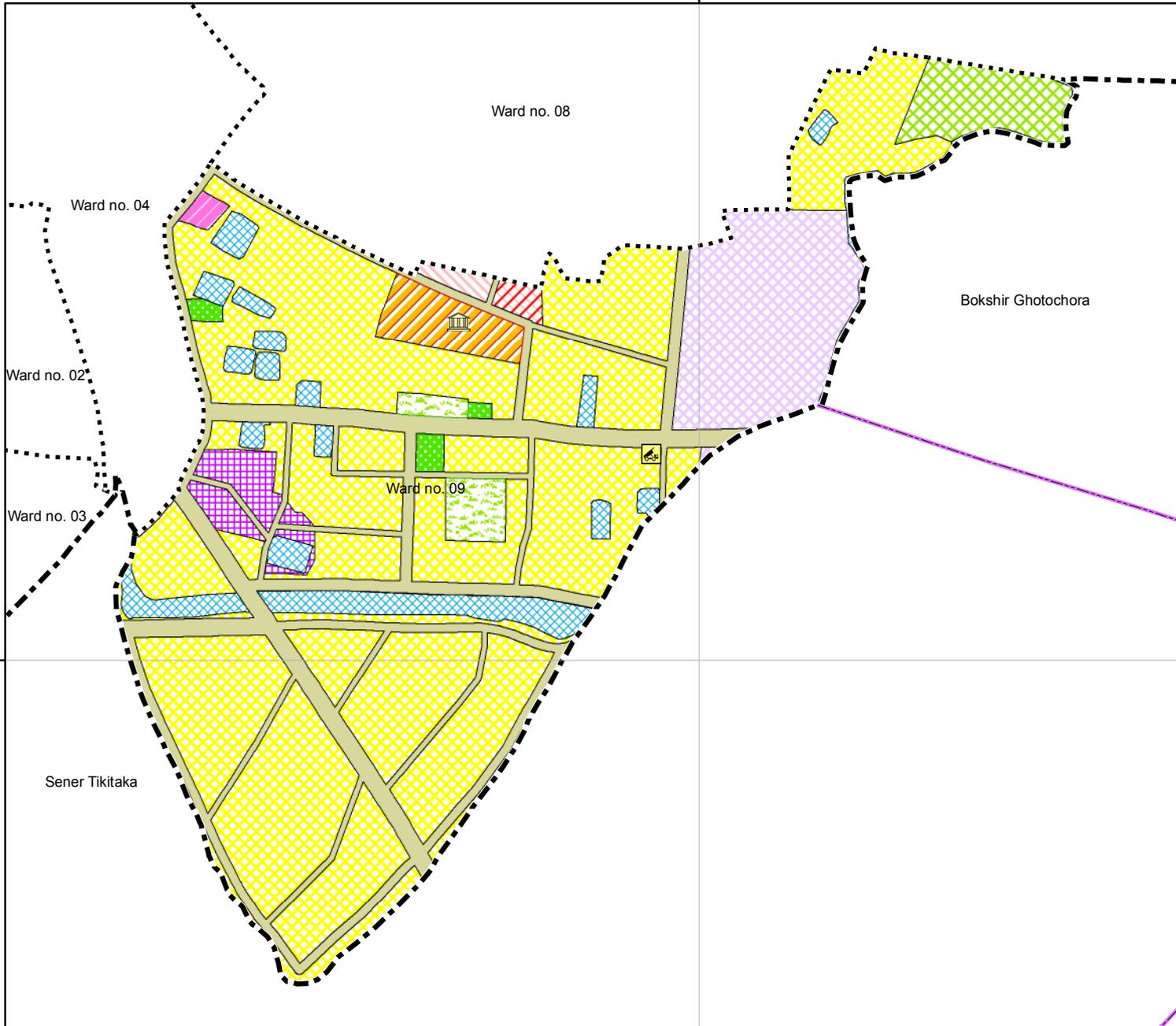
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No. 11 (Barisal Region)

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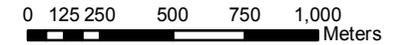


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LEGEND

- Planning Area Boundary
- Paurashava Boundary
- Ward Boundary

Major Services

- Bus Terminal
- Truck Terminal
- Central Graveyard
- Upazila Hospital
- Central Park
- Upazila Stadium
- Industrial Estate
- Paurashava Office
- Neighbourhood Center
- Upazila Headquarter
- Resettlement Zone
- Waste Transfer Station

Proposed Landuse

- Urban Residential Zone
- Rural Settlement
- Commercial Zone
- Mixed Use Zone
- General Industrial Zone
- Heavy Industrial Zone
- Government Office
- Education & Research
- Agricultural Zone
- Waterbody
- Open Space
- Recreational Facilities
- Circulation Network
- Transportation Facilities
- Utility Services
- Health Services
- Community Facilities
- Historical & Heritage Site
- Restricted Area
- Overlay Zone
- Urban Deferred
- Forest
- Beach
- Miscellaneous

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
Mathbaria Upazila, Pirojpur District



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Ward Action Plan

14.10.3.3 Proposed Circulation Network Development

About 5.73 km of circulation network has been proposed for this ward. There are 2.87 km. roads will be developed during the first phase (2011 – 2016). Following table shows the detail of roads to be developed 20 to 60 feet during the first phase.

Table- 14.42: Road Proposals for Phase 01

Proposed Road ID	Road Name	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
D_PP 5	Thana Road	Primary Road	138.31	60	Road Widening
D_PP 5	Thana Road	Primary Road	72.57	60	Road Widening
D_PP 6	Link Road	Primary Road	557.24	60	Road Widening
D_PP 8	Sadar Road	Primary Road	13.33	60	Road Widening
D_PS 37	Link Road	Secondary Road	289.27	30	Road Widening
D_PP 39		Primary Road	18.14	60	Road Widening
D_PP 39		Primary Road	136.82	60	Road Widening
D_PT 48		Tertiary Road	61.60	20	Road Widening
D_PT 49		Tertiary Road	7.99	20	Road Widening
D_PT 50		Tertiary Road	61.16	20	Road Widening
D_PS 58		Secondary Road	317.87	30	Road Widening
D_PP 59	Mathbaria-Pathorghata Road	Primary Road	345.06	60	Road Widening
D_PS 60		Secondary Road	373.87	40	Road Widening
D_PT 110		Tertiary Road	107.16	20	Road Widening
D_PT 124	Shapla Bazar Road	Tertiary Road	36.67	20	Road Widening
D_PT 124	Shapla Bazar Road	Tertiary Road	21.48	20	Road Widening
D_PT 134		Tertiary Road	117.93	20	Road Widening
D_PP 165	Thana Road	Primary Road	42.08	60	Road Widening
D_PP 204		Primary Road	155.40	60	Road Widening
Total			2873.95		

Besides roads, necessary bridges and culverts have to be developed and the existing culverts will make the proposed roads operable.

14.10.3.4 Drainage Development Plan

Presently Ward number 09 of Mathbaria has no drains. The plan proposes 6218 meters of new drains for ward no. 09. Out of these proposed drains, the whole network will be developed during the later phase.

Besides, it will be necessary to re-excavate the khals that serve as primary drains. The consultants have identified existing whole of the khals need to be re-excavated to allow smooth flow of Water through them.

14.10.3.5 Urban Services

a. Solid Waste Management

Solid waste management is a major urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also a major factor influencing the volume of solid waste. Population and the volume of waste in the town is yet to be large enough to become a problem for the city. But the present management system is not satisfactory and it might to lead to problem in future. In existing landuse there is no utility service facility. The plan suggests a waste transfer station with an area of 0.05 acres (0.06% of the ward). It is recommended that home collection system is introduced in the ward by creation of local CBOs. This will cause organized collection of waste and prevent indiscriminate littering.

Mathbaria Paurashava Master Plan: 2011-2031
Ward Action Plan

b. Water Supply

It is proposed to install a network based water supply system by purifying surface water. There is no existing water supply network within ward no. 09 and the consultant proposes 1808 meters of water supply lines will be developed in this ward running along all categories of roads. Among this water supply network, only 577 meter network will be developed during the first phase.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There will about 2082 meters of gas supply lines in this ward as a whole running along the roads. Among these, the whole network will be developed during the later phases.

d. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

e. Education Facility

There are two existing Primary School named as 59 No. Bakshir Ghotichora Govt. Primary School (0.10 acres) and Ghotichora School (0.17 acres) with few other institutions. The plan also proposes one new high school and to strengthen the capacity of existing educational institutions to serve the entire Paurashava as well as the ward.

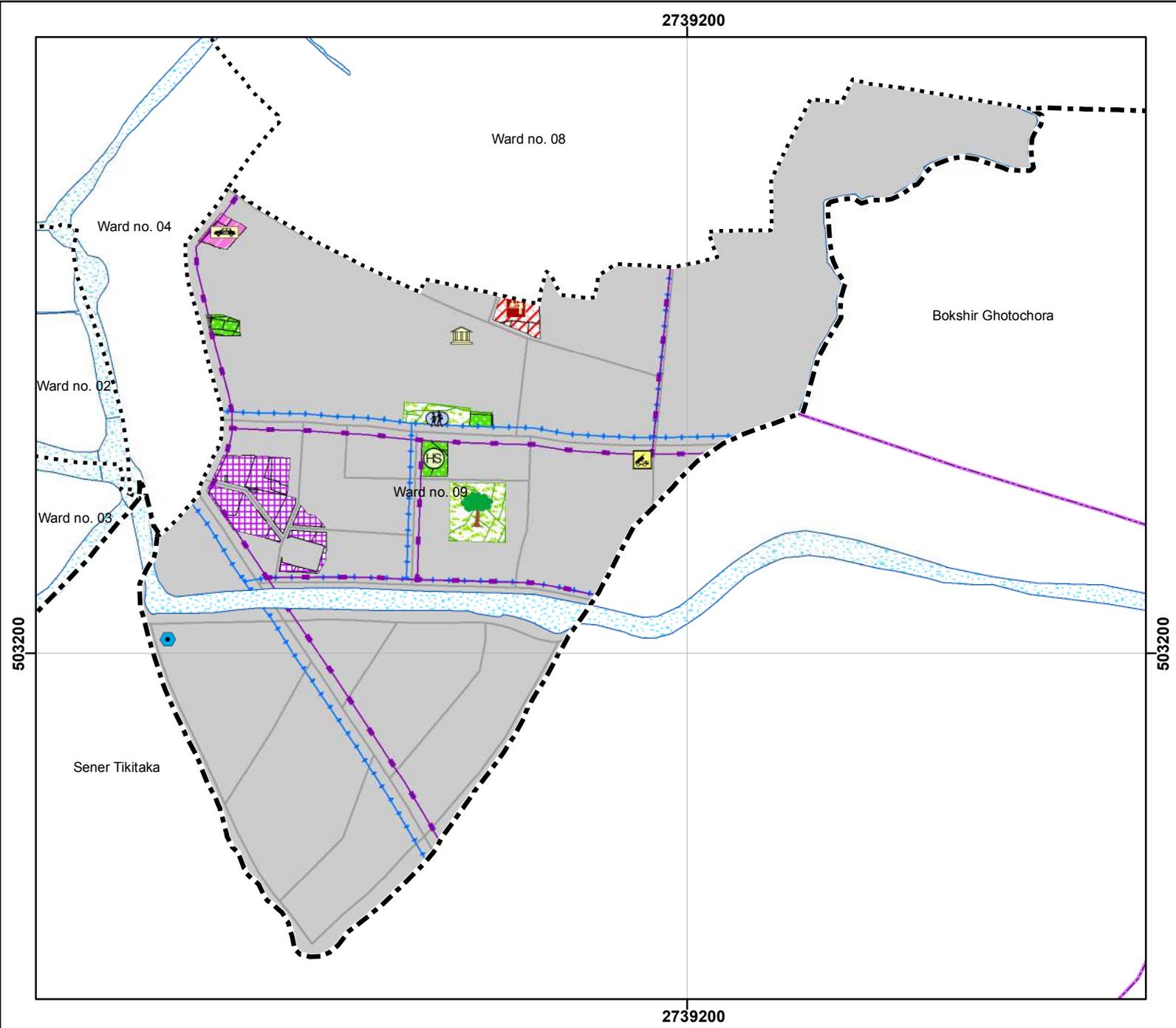
f. Recreational Facilities

There is no formal open space in this ward. The consultant proposes one Neighborhood Park (1.02 acres) and one playground (0.40 acre).

Following table and **Map 14.27** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.9.

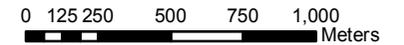
Table- 14.43: Proposed Urban Facilities of Ward No. 09

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Neighborhood market	None	-	1	0.41
Primary School	2	0.27	None	-
High School	None	-	1	0.28
Community Clinic	None	-	1	Part of ward center
Neighbourhood Park	None	-	1	1.02
Playground	None	-	1	0.40
CNG/Rickshaw Stand	None	-	1	0.29
Waste Transfer Station	None	-	1	0.05
Ward Center Complex	None	-	1	1.95



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LEGEND

- | | |
|---------------------|--------------------------|
| Boundary Line | Proposed Utility Network |
| Paurashava Boundary | Gas Supply Network |
| Ward Boundary | |

Proposed Services

- | | |
|------------------------|----------------------|
| Bus Terminal | Neighbourhood Market |
| CNG/Rickshaw Stand | Neighbourhood Park |
| Central Cremation | Other School |
| Central Graveyard | Overhead Tank |
| Central Park | Passenger Shed |
| Cinema/Theater Hall | Playground |
| College | Police Box/Outpost |
| Cyclone Shelter | Police Station |
| Dumping Station | Post Office |
| Electric Sub-station | Primary School |
| Waste Transfer Station | Public Gathering |
| Filling Station | Resettlement Zone |
| Fire Service | Slaughtering House |
| Helipad | Super Market |
| High School | Sweepers Colony |
| Housing Estate | Telephone Exchange |
| Industrial Estate | Truck Terminal |
| Low Cost Housing | Upazila Hospital |
| Madrasa | Upazila Stadium |
| Neighbourhood Center | Vocational Institute |
| | Water Supply Station |
| | Wholesale Market |

PREPARATION OF MASTER PLAN FOR MATHBARIA PAURASHAVA
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Chapter Fifteen

CONCLUSION

15.1 Conclusion

Preparation of the Paurashava development plan is not an end in itself; rather it is an attempt to the beginning of a phase of development of an undeveloped area aspiring for development. Planning is far easier than development. In a developing country like Bangladesh, execution of spatial development plan is really a challenging task for any local government that so vastly rely on the central government for development budget allocation. Amid a host of other priority problems, the central government is often helpless in providing resources for small town's development, where problems are considered less important than those in larger cities. Keeping this constraint in view the local urban governments in smaller towns should emphasise on enhancing the capacity of generating their own resources. Besides, avenues must be searched to recover costs of development from the beneficiaries either directly or indirectly. Direct recovery can be charging development charges or taxes in various forms. Indirectly people can be involved project planning and implementation. This approach of development will benefit in two ways, first, it will create belongingness among people about development of their own areas and second, it will save public money required for development. Land can be procured from land owners for construction of local standard roads. This kind of participatory approach to development would directly benefit the land owner. Without a strong planning section the plans will never come true. There must be some one to take care of the plans and development control effectively. Finally, the Paurashava must give due importance to this plan document to streamline its future development. It must follow the plan for any development, otherwise the plan will lose its credibility and one day it will turn into waste paper which will simply accentuate the town's problems.

Team Composition of Master Plan Preparation

A.1 Personnel of the Project Management Office (UTIDP, LGED)

SI No.	Name	Position
1	Md. Moslah Uddin	Project Director
2	Md. Manzurul Islam	Deputy Project Director
3	Syed Shahriar Amin	Urban Planner
4	Pulin Chandra Golder	Urban Planner
5	Ziaul Huq	Urban Planner
6	Md. Saifur Rahman	Junior Urban Planner
7	Md. Rakibul Hossain	Junior Urban Planner
8	Md. Saifur Rahman	Junior Urban Planner
9	Md. Rakibul Hossain	Junior Urban Planner

A.2 Personnel of the Consultancy Firm Sheltech Consultants (Pvt.) Ltd.

A. Key Personnel:

SI No.	Name	Position
1	Sultana Dilruba Aziz	Team Leader
2	Afsana M Kamal	Deputy Team Leader
3	Rukhsana Parveen	Urban Planner
4	Dr. Md. Altaf Hossain	Urban Planner
5	A.K.M. Mahfuzul Kabir	Demographer/Statistician
6	Dr. Santi Ranjan Hawlader	Urban Development Economist
7	Lipika Khan	Transport Planning Expert
8	Mohammed Iqbal Hossain	Municipal Engineer
9	Mohammad Ferozuddin	Architect Planner
10	Mohammad Quadiruzzaman	Environmental Analyst
11	Tripal Kumar Sen	GIS Specialist
12	Md. Hefzul Bari	Legal Expert

B. Supporting Staff:

SI No.	Name	Position
1	Mohammad Helal	Office Manager
2	M.A. Quayum	Computer Operator
3	Md. Jahangir Hossain	Computer Operator
4	Raihanul Islam	CAD Operator
5	Zakaria Ahmed	CAD Operator
6	ANM Shafiquil Alam	Surveyor
7	Aolad Hossain	Surveyor

Mathbaria

স্বাক্ষরিতঃ মে ১৩ ১৯৯৩

বাংলাদেশ গেজেট

২১৬০
১৯৯৩
২২/৫/৯৩অতিরিক্ত সংখ্যা
স্বাক্ষরিতঃ কর্তৃক প্রকাশিতঃ

স্বাক্ষরিতবার: মে ২৭, ১৯৯৩

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

জাতীয় সরকার প্যারী উন্নয়ন ও সমবায় মন্ত্রণালয়

জাতীয় সরকার বিভাগ

(পৌর-২ শাখা)

প্রজ্ঞাপন

তারিখ: ১১ই জ্যৈষ্ঠ ১৪০০/২৫শে মে ১৯৯৩

এস, স্বা. ও নং ৯৪-স্বা/৯৩-সেহেতু সরকার পিরোজপুর জেলার মঠবাড়ীয়া থানার নিম্ন উল্লিখিত শহর এলাকাসমূহকে পৌর এলাকা (নিউ-নিউনিউ) ঘোষণা করার প্রজ্ঞাপন করিয়াছে:

এবং সেহেতু সরকার গুজবিত ঘোষণার ব্যাপারে পরামর্শ বা আপত্তি আঁহান করিয়া Declaration and Alterations of Municipalities Rules, 1978 অনুসরণে উক্ত Rules বলিয়া উল্লিখিত, এর Rules 3 এর অধীন পাবলিক নোটিশ জারী করার জন্য ডেপুটি কমিশনারকে নির্দেশ প্রদান করিয়াছে এবং ডেপুটি কমিশনার উক্ত Rules মোতাবেক প্রয়োজনীয় ব্যবস্থা গ্রহণ করিয়া প্রতিবেদন দাখিল করিয়াছেন;

এবং সেহেতু সরকার প্রজ্ঞাপিত পৌর এলাকা ঘোষণার ব্যাপারে ডেপুটি কমিশনার এর উক্ত প্রতিবেদন বিবেচনা করিয়া নিম্ন উল্লিখিত শহর এলাকাসমূহকে পৌর এলাকা ঘোষণার অন্য চূড়ান্ত সিদ্ধান্ত গ্রহণ করিয়াছে:

সুতরাং, সেহেতু উক্ত Rules এর Rules 5 এ প্রদত্ত ক্ষমতাবলে সরকার নিম্ন উল্লিখিত শহর এলাকাসমূহকে অর্গানাই ১-৬-৯৩ তারিখ হইতে পৌর এলাকা ঘোষণা করিল, যথা মঠবাড়ীয়া নিউনিউনিউ নামে অভিহিত হইবে।

(১৭৩৭)

স্বাক্ষর: টাকা ১০০০

১৭৩৮

বাংলাদেশ গেজেট, অতিরিক্ত, মে ২৭, ১৯৯০

ভূমি

মঠবাড়িয়া

ক্রমিক নং	বীজার নাম	ইতিবিয়ন	কে, এন, নং	মাণ্ড নং
১।	উত্তর বিঠাবানী	মঠবাড়িয়া	৫৬	৪৬০২ হতে ৪৮০০ মাণ্ড পর্যন্ত।
২।	দক্ষিণ বিঠাবানী	ঐ	৫-৭ ৩৭	৩০০৭ হতে মজিবে ৩১৭৪, ৩৩২২ ও ৩৩৪০ হতে ৩৩৫২ মাণ্ড পর্যন্ত।
৩।	মঠবাড়িয়া	ঐ	২১ ১৬-১	৭০১ হতে ১৪৭৪ মাণ্ড ও ১৬০৩ হতে ১৭১০ পর্যন্ত।
৪।	বকশীর মটিচোরা	ঐ	২২ ১-৩	১৭০৭ হতে ২১৪৪ মাণ্ড পর্যন্ত।

রাষ্ট্রপতির আদেশক্রমে

মোঃ হাফিজুজ্জামান

উপ-সচিব (সী।)।

বাবির রহমান, উপ-নিয়ন্ত্রক, বাংলাদেশ সরকারী মুদ্রণালয়, ঢাকা কর্তৃক মুদ্রিত।
মোঃ আব্দুল রশীদ সরকার, উপ-নিয়ন্ত্রক, বাংলাদেশ ফার্মস ও প্রকালনী অফিস,
ভেনেশিয়া, ঢাকা কর্তৃক প্রকাশিত।

a. 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

Source: Compiled by the Consultants

Satellite Dish Antenna
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 Committee

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	Temporary Rescue Shed
Amusement and Recreation (Indoors)	Guest House
Funeral Services	Slaughter House
Art Gallery, Art Studio \ Workshop	Static Transformer Stations
Automobile Driving Academy	Tourist Home or Resort
Beauty and Body Service	Market (Bazar)
Billiard Parlor \ Pool Hall	Optical Goods Sales
Book or Stationery Store or Newsstand	Outdoor Café
Building Maintenance \ Cleaning Services, No Outside Storage	Outdoor Fruit and Vegetable Markets
Bus Passenger Shelter	Community Hall
Graveyard \ Cemetery	Neighborhood Co-Operative Office
Coffee Shop \ Tea Stall	Overhead Water Storage Tanks
Correctional Institution	Row House
Courier Service	Paints and Varnishes Store
Crematorium	Parking Lot
Plantation (Except Narcotic Plant)	Patio Homes
Furniture & Variety Stores	Photofinishing Laboratory
Emergency Shelter	Post Office
Energy Installation	Postal Facilities
Garages	Sports and Recreation Club
Garden Center or Retail Nursery	Tennis Club
Fire Brigade Station	Flood Management Structure
Police Station	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.

b. 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	Freight Transport Facility
Bank & Financial Institution	Police Box \ Barrack
Bicycle Assembly, Parts and Accessories	Fire \ Rescue Station
Blacksmith	Grocery Store
Bus Passenger Shelter	Household Appliance and Furniture Repair Service
Communication Tower Within Permitted Height	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
Sawmill, Chipping and Pallet Mill

Source: Compiled by the Consultants

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

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

Source: Compiled by the Consultants

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
Parking Lot
Parking Lot (Commercial)
Private Garages
Retail Shops Ancillary To Studio \ Workshop
Jute Mill

Restricted Uses

All uses except permitted and conditionally permitted uses.

c. 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
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
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.

d. 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.

e. 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
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)
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	Project Office
Agricultural Chemicals, Pesticides or Fertilizers Shop	Government Office
Amusement and Recreation (Indoors)	Hotel or Motel
Beauty and Body Service	Household Appliance and Furniture Repair Service
Broadcast Studio \ Recording Studio (No Audience)	Indoor Amusement Centers, Game Arcades
Building Maintenance \ Cleaning Services, No Outside Storage	Indoor Theatre
Building Material Sales or Storage (Indoors)	Lithographic or Print Shop
Graveyard \ Cemetery	Market (Bazar)
Coffee Shop \ Tea Stall	Health Office, Dental Laboratory, Clinic or Lab
Computer Maintenance and Repair	Musical Instrument Sales or Repair
Computer Sales & Services	Optical Goods Sales
Concert Hall, Stage Shows	Outdoor Café
Conference Center	Outdoor Fruit and Vegetable Markets
Construction Company	Painting and Wallpaper Sales
Construction, Survey, Soil Testing Firms	Paints and Varnishes
Cottage	Patio Homes
Counseling Services	Photofinishing Laboratory & Studio
Craft Workshop	Poultry
Crematorium	Printing, Publishing and Distributing
Plantation (Except Narcotic Plant)	Psychiatric Hospital
Cultural Exhibits and Libraries	Retail Shops Ancillary To Studio \ Workshop
Department Stores, Furniture & Variety Stores	Radio \ Television or T&T Station With Transmitter Tower
Drug Store or Pharmacy	Refrigerator or Large Appliance Repair
Energy Installation	Restaurant
Fitness Centre	Retail Shops \ Facilities
Flowers, Nursery Stock and Florist Supplies	Sporting Goods and Toys Sales
Freight Handling, Storage & Distribution	Sports and Recreation Club, Firing Range: Indoor
Freight Transport Facility	Telephone Exchanges
Gaming Clubs	Television, Radio or Electronics Repair (No Outside Storage)
Garages	
Garden Center or Retail Nursery	
Commercial Office	

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

f. 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
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
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.

g. 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
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
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.

h. 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.

i. 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

Source: Compiled by the Consultants

Woodlot
Zoo
Roadside Parking
Social Forestry
Memorial Structure

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

Source: Compiled by the Consultants

Outdoor Recreation Facilities
Outdoor Recreation, Commercial
Outdoor Sports and Recreation
Park Maintenance Facility
Retreat Center
Sports and Recreation Club, Firing Range: Indoor

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted.

j. 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

Source: Compiled by the Consultants

Utility Lines
Water Parks
Memorial Structure

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

k. 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.

মঠবাড়িয়া পৌরসভার খসড়া মহাপরিকল্পনার উপর চূড়ান্ত মতবিনিময় সভার কার্যবিবরণী

তারিখ: ২৭/০২/২০১৪

স্থান: মঠবাড়িয়া পৌরসভা

সময়: বিকাল ০৩:০০ ঘটিকায়

স্থানীয় সরকার প্রকৌশল অধিদপ্তর, মঠবাড়িয়া পৌরসভা ও শেলটেক বনস্যালাটেটস (প্রা:) লিমিটেড (পরামর্শক প্রতিষ্ঠান) এর যৌথ উদ্যোগে মঠবাড়িয়া পৌরসভার খসড়া মহাপরিকল্পনার উপর সম্মানিত মেয়র জনাব মো: রফি উদ্দিন আহমেদ এর সভাপতিত্বে বিগত ২৭ ফেব্রুয়ারি ২০১৪ ইং তারিখে এক মতবিনিময় সভা অনুষ্ঠিত হয়। উক্ত মতবিনিময় সভায় পৌরসভার কাউন্সিলরবৃন্দসহ স্থানীয় গণ্যমাণ্য ব্যক্তি-বর্গ, বিভিন্ন ইউনিয়নের চেয়ারম্যানগণ, বিভিন্ন সরকারি-বেসরকারি অধিদপ্তরের কর্মকর্তাবৃন্দ, স্থানীয় সরকার প্রকৌশল অধিদপ্তরের প্রতিনিধি এবং মহাপরিকল্পনা প্রণয়ন প্রকল্পে নিযুক্ত পরামর্শকবৃন্দ উপস্থিত ছিলেন।

সভার শুরুতে সম্মানিত মেয়র মহোদয় জনাব মো: রফি উদ্দিন আহমেদ উপস্থিত সকলকে শুভেচ্ছা জানিয়ে আনুষ্ঠানিকভাবে সভার কার্যক্রম শুরু করেন। পৌরসভার মহাপরিকল্পনা প্রণয়ন সংক্রান্ত কাজের উপর স্বাগত বক্তব্যে তিনি উল্লেখ করেন যে, পরিকল্পিতভাবে শহর গড়ে উঠলে একদিকে যেমন বাসযোগ্য উন্নত শহর গড়ে তোলা যাবে অন্যদিকে দেশের অর্থনীতি সমৃদ্ধ করা সম্ভব হবে। তিনি আরও উল্লেখ করেন যে আপামী (২০) বিশ বছরের উন্নয়ন দপিল এই মহাপরিকল্পনা। উক্ত পরিকল্পনা উপস্থিত সকলকে সুচিন্তিত মতামত প্রদানের জন্য আহ্বান করেন যাতে করে পরিকল্পনাটি আরও গঠনমূলক, বাস্তবসম্মত ও যুগোপযোগী হয়।

উপজেলা শহর অবকাঠামো উন্নয়ন প্রকল্পের পরিকল্পনাবিদ সৈয়দ শাহরিয়ার আমিন মহাপরিকল্পনার স্বয়ংসম্পূর্ণ ও যথাযথ বাস্তবায়নের জন্য সকলের সহযোগিতা কামনা করেন এবং তিনি বলেন যে সকলের মূল্যবান মতামত পরিকল্পনাকে আরো গঠনমূলক ও সমন্বয়যোগ্য করে তুলবে। তিনি উল্লেখ করেন, যে মহাপরিকল্পনা প্রণয়ন করা হচ্ছে জবিঘ্যতে তা যথাযথভাবে কার্যকর হলে মঠবাড়িয়া পৌরসভা একটি পরিকল্পিত বাসযোগ্য শহর হিসেবে আত্মপ্রকাশ করবে।

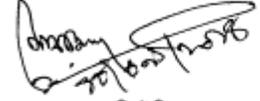
পরামর্শক প্রতিষ্ঠানের পক্ষ থেকে প্রফেসর ডঃ নূরুল ইসলাম নাজেম উপস্থিত সকলকে স্বাগত জানিয়ে Power Point Presentation এর খসড়া মহাপরিকল্পনা ও তার বক্তব্য তুলে ধরেন। তিনি কার্যক্রমসমূহ, উন্নয়নের সঙ্ঘবনাসমূহ ধাপে ধাপে বর্ণনা করেন। এরপর মহাপরিকল্পনার কোথায় কিভাবে প্রস্তাবনাসমূহ ওয়ার্ড ভিত্তিক দেওয়া হয়েছে সেসব বিষয় আলোচনা করেন। তিনি আরও উল্লেখ করেন যে, সকলের মতামতের জিজ্ঞাসে প্রস্তাবনাসমূহ দেওয়া হয়েছিল তা নিম্নরূপ:

Proposed Facility	Ward No.	Mouza Name	JL	Sheet	Plot No.	Area (acre)
Housing Estate		Andhar Manik			Detail survey is required*	45.73
Resettlement Zone		Andhar Manik			Detail survey is required*	16.98
Sweeper's Colony	-	Uttar Mithakhali			4638-4642	0.54
Neighborhood Market	8 & 9	Bokshir Ghotichora	022	03	1828-1830, 1882-1884, 1988, 1989, 1992, 1995, 1996	2.38
	2	Dakkhin Mithakhali	037	04	3849, 3862	0.28
	5, 6 & 7	Mathbaria	021	02	851, 852, 997, 1001-1003, 1014, 1127, 1145, 1146	1.86
	1	Uttar Mithakhali	066	07	4689-4693	0.56
Slaughtering House	2 & 4	Dakkhin Mithakhali	037	04	3920, 3949	0.04
Super Market	5	Mathbaria	021	02	1124-1127	0.10
Cow Hat		Dakkhin Mithakhali			Located at newly added Paurashava	4.42
General Industrial Zone		Mathbaria and Andharmanik			Detail survey on mouza map is required at revision phase*	51.22
Primary School	04	Mathbaria	021	02	1464-1467	0.49
	08	Bokshir Ghotichora	022	03	1916, 1917, 1935-1940	1.02

Proposed Facility	Ward No.	Mouza Name	JL	Sheet	Plot No.	Area (acre)
Housing Estate		Andhar Manik			Detail survey is required*	45.73
Resettlement Zone		Andhar Manik			Detail survey is required*	16.98
High School	01	Dakkhin Mithakhali	037	04	3069-3072	0.28
	05	Mathbaria	021	02	723, 725	0.07
	03	Dakkhin Mithakhali	037	04	3661-3663	0.67
	02	Dakkhin Mithakhali	037	04	3341-3343	0.58
	09	Bokshir Ghotichora	022	03	2105, 2106, 2108, 2109	0.28
Vocational Institute & Cyclone Shelter	01	Uttar Mithakhali	066	07	4722-4726, 4735, 4736	2.82
Central park	01	Uttar Mithakhali	066	07	4632-4633, 4655-4657, 4665-4668, 4700-4715	12.25
Neighbourhood Park	09	Bokshir Ghotichora	022	03	1993, 2108-2112, 2122, 2123, 2236	1.02
	03	Dakkhain Mithakhali	037	04	3447-3449	1.40
	02	Dakkhain Mithakhali	037	04	3361, 3365	0.76
	08	Bokshir Ghotichora	022	03	1897-1901, 2367-2370	1.33
	07	Mathbaria	021	02	1053-1056, 1060, 1061, 1103, 1104	0.66
	05	Mathbaria	021	02	1257-1259, 1404	0.29
	01	Dakkhain Mithakhali	037	04	3084	1.25
	06	Mathbaria	021	02	830, 831, 858, 859	0.63
	05	Mathbaria	021	02	1329, 1330	0.82
Playground	05	Mathbaria	021	02	1408-1412	0.91
	09	Bokshir Ghotichora	022	03	1997, 2102, 2104-2106	0.40
	02	Dakkhain Mithakhali	037	04	3359-3361, 3378	0.77
	07	Mathbaria	021	02	990, 991	0.39
	06	Mathbaria	021	02	839, 840	0.73
	04	Bokshir Ghotichora	022	03	1943, 2291-2294, 2338, 2339	1.64
Upazila Stadium	08	Bokshir Ghotichora	022	03	1856 - 1859	5.32
Bus & Truck Terminal		Uttar Mithakhali			Detail Survey required*	5.07
CNG/Rickshaw Stand		Dakkhin Mithakhali			Detail Survey required*	0.57
	01	Uttar Mithakhali	066	07	4757, 4797	0.23
	02	Dakkhin Mithakhali	037	04	3850, 3938	0.09
	06	Mathbaria	021	02	1112-1114	0.22
	07	Mathbaria	021	02	1038	0.09
Dumping Station	09	Bokshir Ghotichora	022	03	1944	0.25
Dumping Station	01	Uttar Mithakhali	066	07	4635, 4636, 4638-4643, 99999	1.99
Water Supply Station	07	Mathbaria	021	02	1012, 1021	0.40
Water Supply Station		Sener Tikikata			Detail Survey required*	19.46
Electric Sub-station		Mathbaria			Detail Survey required*	6.20
Central Cremation Ground	07	Mathbaria	021	02	899, 1036, 1037	0.10
Central Graveyard	07	Mathbaria	021	02	1025-1027, 1032, 1035, 1036, 1038	1.54
Ward Center Complex	01	Uttar Mithakhali	066	07	4683-4689, 4694-4696	1.37
	02	Dakkhin Mithakhali	37	04	3848-3849, 3862	1.03
	03	Dakkhin Mithakhali	37	04	3455, 3464-3478	5.70
	04	Mathbaria	021	02	1399, 14461449, 1460-1463	1.50
	05	Mathbaria	021	02	1280, 1281	0.89
	06	Mathbaria	021	02	851, 852, 949	1.71
	07	Mathbaria	021	02	1021, 1039	1.09

Proposed Facility	Ward No.	Mouza Name	JL	Sheet	Plot No.	Area (acre)
Housing Estate		Andhar Manik			Detail survey is required*	45.73
Resettlement Zone		Andhar Manik			Detail survey is required*	16.98
	08	Bokshir Ghotichora	022	03	1828, 1885, 1894	1.81
	09	Bokshir Ghotichora	022	03	1952, 1989, 1995, 1996, 1999, 2237, 2275, 2276	1.95

সমাপনি বক্তব্যে মেয়র মহোদয় পরামর্শক প্রতিষ্ঠানের পরিকল্পনাবিদগণকে এবং স্থানীয় সরকার প্রকৌশল অধিদপ্তরকে পৌরসভার মহাপরিকল্পনা প্রনয়নের জন্য পুনরায় ধন্যবাদ জ্ঞাপন করেন এবং সচ্ছব্য সকল দিকনির্দেশনাজগি সন্নিবেশিত করে যথাশীত্র সঙ্ঘব চূড়ান্ত মহাপরিকল্পনা প্রণয়ন করার জন্য অনুরোধ করেন। সভায় আর কোন আলোচনা না থাকায় তিনি সকলকে ধন্যবাদ জানিয়ে পৌরসভার স্বপ্ন বাস্তবায়নের আশা ব্যক্ত করে সভার কার্যক্রম সমাপ্তি ঘোষণা করেন।



(জনাব মো: রফি উদ্দিন আহমেদ)

মেয়র

মঠবাড়িয়া পৌরসভা

স্থানীয় সরকার প্রকৌশল অধিদপ্তর, ঢাকা-১২০৭
উপজেলা শহর অবকাঠামো উন্নয়ন প্রকল্প, প্যাকেজ-১১

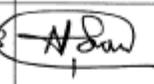
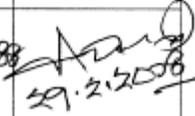
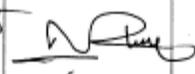
মঠবাড়িয়া পৌরসভার মহাপরিকল্পনার উপর চূড়ান্ত মতবিনিময় সভা
মঠবাড়িয়া পৌরসভা।

স্থান: মঠবাড়িয়া পৌরসভা। তারিখ: ২৭ ফেব্রুয়ারি, ২০১৪ খ্রিঃ; বিকাল ৩:০০ ঘটিকা

অংশগ্রহনকারীর তালিকা

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
১	মো: এফিজিউদ্দিন হোসেন			
২	মোঃ মাহবুবুল হক	নগর পরিচালকমন্ডল এম জি হুজি	০১৮১৭৬৭৬৪৪	
৩	মোঃ মাহবুবুল হক	মোঃ এফিজিউদ্দিন ২০ নং ২ নং সেক্টর ২৩৮ নং কলোনী	০১৭২৭৭৭২৭১৬	
৪	মোঃ মাহবুবুল হক	মোঃ মাহবুবুল হক সি. ওয়া, সি. বি	০১৭০২-১৪ ৭৮৪৭	
৫	মোঃ মাহবুবুল হক	সি. ওয়া, সি. বি	০১৭৪১৩৭৭৬৬৭	
৬	মোঃ মাহবুবুল হক			
৭	মোঃ মাহবুবুল হক	সি. ওয়া, সি. বি	০১৭২৭-৫২১৪৩১	
৮	মোঃ মাহবুবুল হক	সি. ওয়া, সি. বি	০১৭২৪৪৩০৬৭	
৯	মোঃ মাহবুবুল হক	সি. ওয়া, সি. বি	০১৭২০০৬ ৫৩৭৬	
১০	মোঃ মাহবুবুল হক	সি. ওয়া, সি. বি	০১৭২১৬৬৬ ১৭৬	
১১	মোঃ মাহবুবুল হক	সি. ওয়া, সি. বি	০১৭১৪৪ ১৩৩০/১	

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
১২	শ্রীমান ২০২৫-০০- রাজীদ	সচিব সিআইআ (লিওস)	০২৭২৭৭০০০	স্বাক্ষর ২০/২/১৮
১৩	কারবালিন গ	আইসিআই (লিওস) আইসিআই	০১৭৫৭৫৫৫৫৫	কারবালিন
১৪	মোক্তা: কবি সুলতান	সিআইআই (লিওস)	০১৭২৫০০৬২৭৫	কবি
১৫	মোক্তা: কবি সুলতান	সিআইআই (লিওস)	০১৭১৬৫৫৫৫	কবি
১৬	ডাঃ আব্দুল হক	সিআইআই (লিওস) সিআইআই	০১৭২৪০০০৫৫	স্বাক্ষর ২৯/২/১৮
১৭	ডাঃ সুলতান ২য়	সিআইআই (লিওস)	০১৭২৫০০৬২৭৫	স্বাক্ষর
১৮	ডাঃ মোস্তাফিজ	সিআইআই (লিওস)	০১৭১৬৫৫৫৫	স্বাক্ষর
১৯	ডাঃ আমজাদ	সিআইআই (লিওস)	০১৭৫৭৫৫৫৫	স্বাক্ষর
২০	ডাঃ কামাল হোসেন	সিআইআই (লিওস)	০১৭৫৫৫৫৫৫	স্বাক্ষর ২০/২/১৮
২১	ডাঃ বি. এম. ২০২৫-০০-০০	সিআইআই (লিওস)	০১৭২৫০০৬২৭৫	স্বাক্ষর
২২	ডাঃ মোস্তাফিজ	সিআইআই (লিওস)	০১৭১৭৭০৫৭৭	স্বাক্ষর ২৯/০২/২০১৮
২৩	ডাঃ হাফিজ	সিআইআই (লিওস)	০১৭১১০৬০৬৫	স্বাক্ষর ২৯/০২/১৮
২৪	ডাঃ মোস্তাফিজ	সিআইআই (লিওস)	০১৭১৬৫৫৫৫	স্বাক্ষর ২৯/২/১৮
২৫	ডাঃ সুলতান	সিআইআই (লিওস)	০১৭২৫০০৬২৭৫	স্বাক্ষর

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
২৬	মো: খুরুল ইসলাম	কুলাল প্রকল্পে সহঃ প্রকল্প পরিচালক	01715653908	
২৭	মঞ্জুর কানী সাহেব	সংরক্ষিত সড়ক বিভাগে	017237-55580	মঞ্জুর কানী
২৮	তাহেরুল মেহর	সংরক্ষিত সড়ক বিভাগে	01727521890	Jalim 27.2.14
২৯	সাহেবুল হক	সংরক্ষিত সড়ক বিভাগে	01716306920	সাহেবুল হক 29.2.14
৩০	আব্দুল হুসেইন	নির্বাহী প্রকল্প পরিচালক	01718-302288	 29.2.14
৩১	ম. কামিলুল হক	সংরক্ষিত সড়ক বিভাগে	0172255210	 27.2.14
৩২	ফ. আমিনুল হক	সংরক্ষিত সড়ক বিভাগে / SCPL	01819262012	
৩৩	নূরুল ইসলাম নাহিদ	Team leader SCPL	01819234025	
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ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
৪০	ডাঃ আব্দুল হক	আইসিআর -	০১৭২২৫৫৬৬০৬	আব্দুল হক
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Annexure- E: Proposed Road Inventory

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PS 1	ER 1	SBB	Semipucca	5	30	Phase 01	Secondary Road	Road Widening	193.52
PP 2	ER 2	Mohila College Road	Pucca	12	60	Phase 01	Primary Road	Road Widening	2084.79
PP 3	ER 3	Hospital Road	Pucca	12	60	Phase 01	Primary Road	Road Widening	616.37
PP 4	ER 4		Pucca	15	60	Phase 01	Primary Road	Road Widening	108.42
PP 5	ER 5	Thana Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	216.70
PP 6	ER 6	Link Road	Pucca	10	60	Phase 01	Primary Road	Road Widening	686.10
PT 7	ER 7	Link Road	Semipucca	10	20	Phase 01	Tertiary Road	Road Widening	214.10
PP 8	ER 8	Sadar Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	89.31
PP 9	ER 9	Link Road	Pucca	12	60	Phase 01	Primary Road	Road Widening	373.48
PT 10	ER 10	College Road	Pucca	10	20	Phase 01	Tertiary Road	Road Widening	249.06
PS 11	ER 11		Semipucca	8	30	Phase 01	Secondary Road	Road Widening	175.46
PS 12	ER 12		Pucca	5	30	Phase 01	Secondary Road	Road Widening	54.11
PT 13	ER 13		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	286.37
PT 14	ER 14		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	27.03
PT 15	ER 15		Semipucca	10	20	Phase 01	Tertiary Road	Road Widening	129.88
PT 16	ER 16		Pucca	5	20	Phase 01	Tertiary Road	Road Widening	197.93
PP 17	ER 17	Marukhali Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	1091.34
PT 18	ER 18		Semipucca	6	20	Phase 01	Tertiary Road	Road Widening	411.33
PP 19	ER 19	Merukhali Road	Pucca	12	60	Phase 01	Primary Road	Road Widening	495.35
PP 20	ER 20	Link Road	Pucca	13	60	Phase 01	Primary Road	Road Widening	456.64
PT 21	ER 21		Pucca	7	20	Phase 01	Tertiary Road	Road Widening	208.74
PT 22	ER 22		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	161.68
PT 23	ER 23		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	81.57

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PT 24	ER 24		Semipucca	5	20	Phase 01	Tertiary Road	Road Widening	4.25
PT 25	ER 25		Pucca	7	20	Phase 01	Tertiary Road	Road Widening	184.44
PT 26	ER 26		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	160.96
PT 27	ER 27		Semipucca	8	20	Phase 01	Tertiary Road	Road Widening	169.49
PT 28	ER 28		Semipucca	10	20	Phase 01	Tertiary Road	Road Widening	54.36
PT 29	ER 29		Pucca	12	20	Phase 01	Tertiary Road	Road Widening	149.99
PS 30	ER 30		Pucca	13	40	Phase 01	Secondary Road	Road Widening	169.27
PS 31	ER 31		Pucca	12	40	Phase 01	Secondary Road	Road Widening	146.99
PT 32	ER 32		Pucca	15	20	Phase 01	Tertiary Road	Road Widening	102.55
PS 33	ER 33		Pucca	12	30	Phase 01	Secondary Road	Road Widening	265.91
PS 34	ER 34		Pucca	8	30	Phase 01	Secondary Road	Road Widening	47.53
PS 35			Pucca	10	30	Phase 02	Secondary Road	Link Road	64.94
PT 36	ER 36		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	119.15
PS 37	ER 37	Link Road	Semipucca	3	30	Phase 01	Secondary Road	Road Widening	289.27
PP 38	ER 38	Sadar Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	182.50
PP 39	ER 39		Pucca	12	60	Phase 01	Primary Road	Road Widening	205.19
PP 40	ER 40		Semipucca	12	60	Phase 01	Primary Road	Road Widening	808.66
PT 41	ER 41		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	117.72
PP 42	ER 42	Khan Shaheb Hatimali Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	114.05
PT 43	ER 43		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	51.06
PS 44	ER 44	Lap Pati Road	Pucca	12	30	Phase 01	Secondary Road	Road Widening	326.67
PT 45	ER 45		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	55.06
PT 46	ER 46		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	111.09
PT 47	ER 47		Semipucca	12	20	Phase 01	Tertiary Road	Road Widening	76.31

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PT 48	ER 48		Semipucca	4	20	Phase 01	Tertiary Road	Road Widening	61.60
PT 49	ER 49		Semipucca	5	20	Phase 01	Tertiary Road	Road Widening	120.85
PT 50	ER 50		Pucca	5	20	Phase 01	Tertiary Road	Road Widening	61.16
PP 51	ER 51		Pucca	10	60	Phase 01	Primary Road	Road Widening	276.34
PT 52	ER 52		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	115.75
PP 53	ER 53		Pucca	10	60	Phase 01	Primary Road	Road Widening	985.72
PT 54	ER 54		Semipucca	4	20	Phase 01	Tertiary Road	Road Widening	176.78
PS 55	ER 55		Semipucca	12	40	Phase 01	Secondary Road	Road Widening	1949.24
PT 56	ER 56		Pucca	7	20	Phase 01	Tertiary Road	Road Widening	118.58
PS 57	ER 57		Semipucca	10	40	Phase 01	Secondary Road	Road Widening	416.25
PS 58	ER 58		Pucca	10	30	Phase 01	Secondary Road	Road Widening	944.72
PP 59	ER 59	Mathbaria-Pathorghata Road	Pucca	20	60	Phase 01	Primary Road	Road Widening	685.78
PS 60	ER 60		Katcha	7	40	Phase 01	Secondary Road	Road Widening	568.60
PP 61	ER 61	Mathbaria Pirojpur Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	740.53
PP 62	ER 62	Mathbaria Pirojpur Road	Pucca	12	80	Phase 01	Primary Road	Road Widening	902.76
PS 63	ER 63		Pucca	5	30	Phase 01	Secondary Road	Road Widening	121.95
PT 64	ER 64		Semipucca	8	20	Phase 01	Tertiary Road	Road Widening	351.60
PT 65	ER 65		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	125.81
PP 66	ER 66		Pucca	6	60	Phase 01	Primary Road	Road Widening	92.28
PS 67	ER 67		Semipucca	4	40	Phase 01	Secondary Road	Road Widening	181.09
PS 68	ER 68		Pucca	12	40	Phase 01	Secondary Road	Road Widening	213.14
PT 69	ER 69	Phatema Chpowdhury Road	Pucca	8	20	Phase 01	Tertiary Road	Road Widening	323.99
PT 70	ER 70		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	187.35
PT 71	ER 71		Pucca	12	20	Phase 01	Tertiary Road	Road Widening	115.17

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PS 72	ER 72	Munsibari Bari Road	Pucca	10	40	Phase 01	Secondary Road	Road Widening	3783.58
PS 73	ER 73	Momenia Road	Pucca	6	40	Phase 01	Secondary Road	Road Widening	652.02
PS 74	ER 74	Gwoli Para Road	Pucca	6	40	Phase 01	Secondary Road	Road Widening	361.03
PT 75	ER 75		Semipucca	5	20	Phase 01	Tertiary Road	Road Widening	27.01
PT 76	ER 76		Semipucca	6	20	Phase 01	Tertiary Road	Road Widening	174.73
PP 77	ER 77	Ataher Ali Road	Pucca	10	60	Phase 01	Primary Road	Road Widening	492.82
PS 78	ER 78		Pucca	12	40	Phase 01	Secondary Road	Road Widening	43.12
PS 79	ER 79		Semipucca	12	40	Phase 02	Secondary Road	Road Widening	1722.78
PT 80	ER 80		Pucca	5	20	Phase 02	Tertiary Road	Road Widening	269.65
PS 81	ER 81	Bathmore Taltola	Pucca	12	40	Phase 02	Secondary Road	Road Widening	2442.00
PS 82	ER 82		Pucca	12	40	Phase 02	Secondary Road	Road Widening	344.77
PS 83	ER 83		Pucca	8	40	Phase 02	Secondary Road	Road Widening	496.93
PP 84	ER 84		Pucca	8	60	Phase 02	Primary Road	Road Widening	165.50
PT 85	ER 85	Link Road	Katcha	5	20	Phase 01	Tertiary Road	Road Widening	546.21
PT 86	ER 86		Semipucca	12	20	Phase 01	Tertiary Road	Road Widening	98.50
PT 87	ER 87		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	70.99
PS 88	ER 88		Pucca	12	30	Phase 01	Secondary Road	Road Widening	179.57
PS 89	ER 89		Pucca	8	30	Phase 01	Secondary Road	Road Widening	163.31
PS 90	ER 90		Pucca	8	40	Phase 02	Secondary Road	Road Widening	52.83
PT 91	ER 91		Semipucca	5	20	Phase 01	Tertiary Road	Road Widening	154.24
PS 92	ER 92		Pucca	12	40	Phase 01	Secondary Road	Road Widening	170.73
PT 93	ER 93		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	88.60
PT 94	ER 94		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	84.15
PT 95	ER 95		Pucca	15	20	Phase 01	Tertiary Road	Road Widening	37.42
PT 96	ER 96		Pucca	10	20	Phase 01	Tertiary Road	Road Widening	43.02

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PS 97	ER 97		Pucca	12	40	Phase 01	Secondary Road	Road Widening	228.28
PS 98	ER 98		Pucca	12	40	Phase 02	Secondary Road	Road Widening	718.96
PP 99	ER 99		Katcha	8	60	Phase 02	Primary Road	Road Widening	263.13
PS 100	ER 100		Pucca	8	40	Phase 02	Secondary Road	Road Widening	414.24
PS 101	ER 101		Katcha	10	40	Phase 02	Secondary Road	Road Widening	279.90
PT 102	ER 102		Pucca	8	20	Phase 02	Tertiary Road	Road Widening	249.35
PS 103	ER 103		Semipucca	6	40	Phase 02	Secondary Road	Road Widening	84.63
PT 104	ER 104		Semipucca	8	20	Phase 01	Tertiary Road	Road Widening	379.36
PP 105	ER 105		Pucca	6	60	Phase 01	Primary Road	Road Widening	371.81
PS 106	ER 106		Semipucca	6	40	Phase 01	Secondary Road	Road Widening	234.68
PS 107	ER 107		Pucca	8	40	Phase 01	Secondary Road	Road Widening	95.46
PS 108	ER 108		Pucca	5	30	Phase 01	Secondary Road	Road Widening	88.39
PT 109	ER 109		Semipucca	6	20	Phase 01	Tertiary Road	Road Widening	70.26
PT 110	ER 110		Semipucca	5	20	Phase 01	Tertiary Road	Road Widening	107.16
PP 111	ER 111	Link Road	Semipucca	10	60	Phase 01	Primary Road	Road Widening	82.33
PT 112	ER 112		Pucca	8	20	Phase 02	Tertiary Road	Road Widening	243.66
PS 113	ER 113		Semipucca	8	40	Phase 01	Secondary Road	Road Widening	169.56
PT 114	ER 114		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	153.58
PT 115	ER 115	Arambagh Road	Pucca	10	20	Phase 01	Tertiary Road	Road Widening	350.86
PS 116	ER 116		Pucca	10	40	Phase 01	Secondary Road	Road Widening	98.51
PS 117	ER 117		Pucca	10	40	Phase 01	Secondary Road	Road Widening	186.77
PT 118	ER 118		Pucca	12	20	Phase 01	Tertiary Road	Road Widening	372.49
PP 119	ER 119	Jatio Net Mohi Uddin Ahamed	Pucca	15	60	Phase 01	Primary Road	Road Widening	273.72
PS 120	ER 120		Pucca	8	40	Phase 01	Secondary Road	Road Widening	377.33

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PS 121	ER 121		Pucca	12	40	Phase 01	Secondary Road	Road Widening	38.42
PS 122	ER 122		Katcha	10	40	Phase 02	Secondary Road	Road Widening	253.91
PT 123	ER 123		Semipucca	5	20	Phase 02	Tertiary Road	Road Widening	75.73
PT 124	ER 124	Shapla Bazar Road	Pucca	12	20	Phase 01	Tertiary Road	Road Widening	174.45
PT 125	ER 125		Semipucca	5	20	Phase 01	Tertiary Road	Road Widening	105.65
PS 126	ER 126		Pucca	8	30	Phase 01	Secondary Road	Road Widening	176.84
PT 127	ER 127		Pucca	12	20	Phase 01	Tertiary Road	Road Widening	212.06
PT 128	ER 128		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	38.99
PP 129	ER 129	Marukhali Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	189.47
PP 130	ER 130	Marukhali Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	72.08
PS 131				0	40	Phase 03	Secondary Road	New Road	168.96
PT 132				0	20	Phase 02	Tertiary Road	Link Road	263.16
PT 133				0	20	Phase 02	Tertiary Road	Link Road	181.69
PT 134	ER 134			0	20	Phase 01	Tertiary Road	Road Widening	117.93
PT 135				0	20	Phase 03	Tertiary Road	New Road	138.93
PS 136				0	30	Phase 02	Secondary Road	New Road	192.47
PT 137				0	20	Phase 02	Tertiary Road	Link Road	257.05
PS 138				0	40	Phase 03	Secondary Road	New Road	404.84
PT 139				0	20	Phase 03	Tertiary Road	New Road	200.34
PT 140				0	20	Phase 03	Tertiary Road	New Road	206.69
PS 141				0	30	Phase 03	Secondary Road	New Road	1405.29
PP 142	ER 142			7	60	Phase 01	Primary Road	Road Widening	670.49
PP 143				0	60	Phase 02	Primary Road	New Road	221.21
PS 144	ER 144	Farajibari Road	Pucca	7	40	Phase 01	Secondary Road	Road Widening	335.32
PS 145	ER 145		Pucca	10	40	Phase 01	Secondary Road	Road Widening	1841.69

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PS 146	ER 146	North Collage Para Road	Pucca	0	30	Phase 01	Secondary Road	Road Widening	359.45
PP 147				0	60	Phase 03	Primary Road	Link Road	339.11
PT 148				0	20	Phase 02	Tertiary Road	Link Road	109.76
PS 149				0	30	Phase 03	Secondary Road	New Road	576.58
PP 150				0	60	Phase 03	Primary Road	New Road	416.61
PP 151		Proposed Bypass Road		0	60	Phase 03	Primary Road	New Road	441.84
PS 152				0	30	Phase 03	Secondary Road	New Road	326.04
PS 153	ER 153		Pucca	0	30	Phase 01	Secondary Road	Road Widening	217.01
PT 154	ER 154		Semipucca	8	20	Phase 01	Tertiary Road	Road Widening	128.69
PP 155				0	60	Phase 03	Primary Road	New Road	624.32
PS 156				0	40	Phase 03	Secondary Road	New Road	1938.03
PT 157	ER 157		Pucca	0	20	Phase 02	Tertiary Road	Road Widening	287.48
PS 158	ER 158		Semipucca	6	30	Phase 02	Secondary Road	Road Widening	429.12
PS 159				0	30	Phase 03	Secondary Road	New Road	240.24
PS 160				0	30	Phase 03	Secondary Road	New Road	466.97
PS 161				0	30	Phase 02	Secondary Road	New Road	155.95
PT 162				0	20	Phase 02	Tertiary Road	New Road	93.34
PS 163				0	40	Phase 02	Secondary Road	New Road	160.82
PT 164	ER 164		Pucca	8	20	Phase 01	Tertiary Road	Road Widening	152.12
PP 165	ER 165	Thana Road	Pucca	15	60	Phase 01	Primary Road	Road Widening	61.03
PT 166	ER 166			0	20	Phase 01	Tertiary Road	Road Widening	100.37
PS 167				0	30	Phase 03	Secondary Road	New Road	1814.33
PS 168				0	30	Phase 03	Secondary Road	New Road	144.47
PT 169				0	20	Phase 03	Tertiary Road	New Road	113.27
PS 170	ER 170		Pucca	15	40	Phase 01	Secondary Road	Road Widening	44.58

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PS 171				0	40	Phase 02	Secondary Road	New Road	78.41
PT 172				0	20	Phase 02	Tertiary Road	New Road	85.50
PP 173		Proposed Bypass Road		0	60	Phase 02	Primary Road	New Road	252.39
PT 174				0	20	Phase 02	Tertiary Road	New Road	266.24
PS 175				0	40	Phase 03	Secondary Road	New Road	621.52
PT 176				0	20	Phase 03	Tertiary Road	New Road	129.29
PS 177				0	30	Phase 03	Secondary Road	New Road	135.13
PT 178				0	20	Phase 03	Tertiary Road	New Road	231.37
PS 179				0	40	Phase 02	Secondary Road	New Road	340.08
PT 180				0	20	Phase 02	Tertiary Road	New Road	67.31
PT 181				0	20	Phase 02	Tertiary Road	Link Road	410.84
PT 182				0	20	Phase 03	Tertiary Road	New Road	131.67
PT 183				0	20	Phase 01	Tertiary Road	New Road	39.67
PT 184				0	20	Phase 01	Tertiary Road	New Road	36.20
PT 185				0	20	Phase 01	Tertiary Road	New Road	39.41
PT 186				0	20	Phase 02	Tertiary Road	New Road	245.78
PT 187				0	20	Phase 02	Tertiary Road	Link Road	117.03
PS 188				0	30	Phase 03	Secondary Road	New Road	319.26
PS 189				0	30	Phase 03	Secondary Road	New Road	245.98
PS 190				0	30	Phase 03	Secondary Road	New Road	267.81
PT 191				0	20	Phase 03	Tertiary Road	New Road	122.31
PP 192				0	60	Phase 03	Primary Road	New Road	865.87
PT 193				0	20	Phase 03	Tertiary Road	New Road	152.00
PT 194	ER 194			0	20	Phase 01	Tertiary Road	Road Widening	149.28
PT 195	ER 195			0	20	Phase 01	Tertiary Road	Road Widening	184.75

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PT 196				0	20	Phase 02	Tertiary Road	New Road	124.08
PS 197				0	30	Phase 03	Secondary Road	New Road	179.42
PT 198				0	20	Phase 02	Tertiary Road	Link Road	190.87
PS 199				0	30	Phase 02	Secondary Road	New Road	181.22
PT 200	ER 200	Farazibari Road	Pucca	7	20	Phase 01	Tertiary Road	Road Widening	61.84
PT 201	ER 201	Phatema Chpowdhury Road	Pucca	8	20	Phase 01	Tertiary Road	Road Widening	155.59
PT 202				0	20	Phase 03	Tertiary Road	New Road	204.72
PP 203		Proposed Bypass Road		0	60	Phase 03	Primary Road	New Road	541.10
PP 204	ER 204		Pucca	10	60	Phase 01	Primary Road	Road Widening	166.31
PP 205	ER 205	Shafa Road	Pucca	12	60	Phase 01	Primary Road	Road Widening	1924.58
PP 206				0	60	Phase 02	Primary Road	Link Road	129.98
PP 207	ER 207		Semipucca	4	60	Phase 01	Primary Road	Road Widening	82.58
PP 208	ER 208		Semipucca	5	60	Phase 01	Primary Road	Road Widening	624.00
PP 209	ER 209		Pucca	5	60	Phase 01	Primary Road	Road Widening	162.42
PP 210				0	60	Phase 01	Primary Road	New Road	224.51
PT 211				0	20	Phase 02	Tertiary Road	New Road	242.65
PT 212				0	20	Phase 02	Tertiary Road	New Road	73.85
PT 213				0	20	Phase 02	Tertiary Road	New Road	119.76
PT 214				0	20	Phase 02	Tertiary Road	New Road	169.32
PT 215				0	20	Phase 02	Tertiary Road	New Road	155.97
PT 216	ER 216	Mohila College Road	Pucca	12	20	Phase 01	Tertiary Road	Road Widening	1308.56
PP 217				0	60	Phase 03	Primary Road	New Road	1434.70
PS 218	ER 218			0	40	Phase 03	Secondary Road	Road Widening	1042.05
PP 219		Proposed Bypass Road		0	100	Phase 03	Primary Road	New Road	4453.26

Proposed Road ID	Existing ID	Road Name	Existing Type	Existing Width (Ft)	Proposed RoW (Ft)	Phasing	Proposed Road Type	Proposed Status	Length (m)
PP 220	ER 220	Proposed Bypass Road		0	60	Phase 01	Primary Road	Road Widening	164.86
PS 221				0	30	Phase 02	Secondary Road	New Road	399.45
PS 222	ER 222			0	30	Phase 02	Secondary Road	Road Widening	172.71
PS 223				0	30	Phase 02	Secondary Road	New Road	263.49
PT 224	ER 224			0	20	Phase 02	Tertiary Road	Road Widening	185.46
PT 225	ER 225			0	20	Phase 02	Tertiary Road	Road Widening	197.91
PT 226				0	20	Phase 02	Tertiary Road	New Road	209.63
PT 227				0	20	Phase 02	Tertiary Road	New Road	112.83
PS 228				0	40	Phase 02	Secondary Road	New Road	484.50
PP 229				0	60	Phase 03	Primary Road	New Road	1330.68
PP 230				0	60	Phase 03	Primary Road	New Road	499.03
PP 62	ER 231	Mathbaria Pirojpur Road	Pucca	12	60	Phase 01	Primary Road	Road Widening	762.19
PP 59	ER 232	Mathbaria-Pathorghata Road	Pucca	20	80	Phase 01	Primary Road	Road Widening	295.33

Annexure- F: Proposed Road Inventory

Table: Proposals of New Tertiary Drains in Mathbaria Paurashava

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 2	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	426.71
D_PT 3	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	234.17
D_PT 4	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	233.79
D_PT 5	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	477.60
D_PT 6	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	325.43
D_PT 7	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	132.37
D_PT 9	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	139.67
D_PT 10	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	141.49
D_PT 12	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	431.29
D_PT 13	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	167.43
D_PT 14	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	154.86
D_PT 15	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	167.31
D_PT 16	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	129.68
D_PT 17	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	166.65
D_PT 18	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	168.11
D_PT 19	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	58.45
D_PT 20	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	58.23
D_PT 21	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	101.47
D_PT 22	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	154.47
D_PT 23	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	103.24
D_PT 24	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	154.59
D_PT 25	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	118.50
D_PT 26	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	102.86
D_PT 27	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	520.80
D_PT 28	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	535.76
D_PT 30	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	478.08
D_PT 32	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	127.48
D_PT 33	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	180.97
D_PT 36	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.97
D_PT 37	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.53
D_PT 41	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	306.20
D_PT 44	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	312.35
D_PT 46	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	64.32
D_PT 49	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.30
D_PT 50	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	243.98
D_PT 55	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	100.66
D_PT 56	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	56.23
D_PT 57	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	96.79
D_PT 60	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	342.77
D_PT 62	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	126.77

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 63	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	165.66
D_PT 65	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	137.68
D_PT 66	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	31.33
D_PT 68	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	31.43
D_PT 69	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	113.39
D_PT 71	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	97.07
D_PT 72	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	115.48
D_PT 77	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	184.03
D_PT 78	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	201.12
D_PT 79	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	69.72
D_PT 80	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	25.21
D_PT 82	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	114.38
D_PT 83	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	25.39
D_PT 84	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	115.00
D_PT 85	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	94.04
D_PT 89	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	114.32
D_PT 91	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	135.11
D_PT 92	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	199.44
D_PT 93	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	136.15
D_PT 95	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	114.49
D_PT 96	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	113.98
D_PT 97	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	139.84
D_PT 98	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	262.70
D_PT 99	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	141.94
D_PT 100	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	193.77
D_PT 101	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	209.92
D_PT 102	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	106.91
D_PT 103	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	83.31
D_PT 104	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	167.87
D_PT 105	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	116.97
D_PT 106	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	123.00
D_PT 107	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	165.90
D_PT 108	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	115.43
D_PT 109	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	143.36
D_PT 110	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	142.76
D_PT 111	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	93.92
D_PT 112	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	110.07
D_PT 113	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	53.08
D_PT 114	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	307.62
D_PT 115	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	103.67
D_PT 116	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	101.63
D_PT 117	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	119.16
D_PT 118	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	304.57

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 119	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	178.68
D_PT 120	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	225.49
D_PT 121	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	70.95
D_PT 122	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	229.88
D_PT 123	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	76.35
D_PT 124	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	121.59
D_PT 125	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	117.64
D_PT 126	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	139.44
D_PT 127	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	182.11
D_PT 128	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	112.75
D_PT 129	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	59.45
D_PT 130	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	143.73
D_PT 131	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	137.56
D_PT 132	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	289.29
D_PT 133	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	41.65
D_PT 134	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	52.76
D_PT 135	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	291.60
D_PT 136	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	300.14
D_PT 137	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	244.04
D_PT 138	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	116.15
D_PT 139	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	58.91
D_PT 140	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	114.89
D_PT 141	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	207.33
D_PT 142	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	203.65
D_PT 143	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	178.44
D_PT 144	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	56.68
D_PT 146	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	53.88
D_PT 147	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	141.75
D_PT 148	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	155.25
D_PT 149	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	105.57
D_PT 150	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	104.81
D_PT 151	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	134.91
D_PT 152	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	167.04
D_PT 153	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	93.11
D_PT 154	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	310.28
D_PT 155	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	92.33
D_PT 156	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	160.80
D_PT 157	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	157.71
D_PT 159	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	149.96
D_PT 160	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	165.21
D_PT 164	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	170.96
D_PT 166	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	271.30
D_PT 168	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	194.73

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed Depth (m)	Length (m)
D_PT 172	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	92.10
D_PT 173	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	195.33
D_PT 174	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	110.77
D_PT 175	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	92.58
D_PT 177	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	172.90
D_PT 184	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	79.66
D_PT 186	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	81.43
D_PT 188	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	103.59
D_PT 190	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	119.45
D_PT 191	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	118.15
D_PT 192	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	367.81
D_PT 194	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	365.64
D_PT 198	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	113.23
D_PT 199	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	123.51
D_PT 204	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	292.18
D_PT 205	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	141.45
D_PT 206	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	77.69
D_PT 208	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	108.53
D_PT 209	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	110.32
D_PT 212	Tertiary Drain	Phase 02	1.50 - 2.50	0.64 - 1.00	53.56
D_PT 214	Tertiary Drain	Phase 01	1.50 - 2.50	0.64 - 1.00	166.66
D_PT 307	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	387.98
D_PT 308	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	393.04
D_PT 309	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	240.42
D_PT 310	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	235.67
D_PT 311	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	146.22
D_PT 312	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	146.14
D_PT 313	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	160.51
D_PT 314	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	161.67
D_PT 315	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	969.15
D_PT 316	Tertiary Drain	Phase 03	1.50 - 2.50	0.64 - 1.00	983.71
Total					27705.95

Table: Proposals of New Secondary Drains in Mathbaria Paurashava

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed DeD_PTh (m)	Length (m)
D_PS 1	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1246.28
D_PS 8	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	336.21
D_PS 11	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	267.48
D_PS 29	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	986.90
D_PS 31	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	990.59
D_PS 34	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	299.90
D_PS 35	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	307.72
D_PS 38	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	2687.91
D_PS 39	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	430.69
D_PS 40	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	466.18
D_PS 42	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1144.40
D_PS 43	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	456.23
D_PS 45	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	343.26
D_PS 47	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	265.14
D_PS 48	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	150.14
D_PS 51	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	180.29
D_PS 52	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	178.36
D_PS 53	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	306.28
D_PS 54	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	302.84
D_PS 58	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1606.45
D_PS 59	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	367.04
D_PS 61	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	343.18
D_PS 64	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	369.18
D_PS 67	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	118.10
D_PS 70	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	76.43
D_PS 73	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	422.79
D_PS 74	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	163.76
D_PS 75	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1280.25
D_PS 76	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	166.30
D_PS 81	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	416.20
D_PS 86	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	615.69
D_PS 87	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1610.46
D_PS 88	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1392.11
D_PS 90	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	605.57
D_PS 94	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1549.11
D_PS 145	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	157.43
D_PS 158	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	164.22
D_PS 161	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	473.65
D_PS 162	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	173.60
D_PS 163	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	474.81
D_PS 165	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	444.99

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed DeD_PTh (m)	Length (m)
D_PS 167	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	229.84
D_PS 169	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	339.23
D_PS 170	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	442.23
D_PS 171	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	165.27
D_PS 176	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	297.32
D_PS 178	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	125.48
D_PS 179	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	365.91
D_PS 180	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	612.86
D_PS 181	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	626.09
D_PS 182	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	368.31
D_PS 183	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	161.34
D_PS 185	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	261.59
D_PS 187	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	357.91
D_PS 189	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	276.99
D_PS 193	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	142.66
D_PS 195	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	385.37
D_PS 196	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	143.99
D_PS 197	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	326.57
D_PS 200	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	203.09
D_PS 201	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	301.98
D_PS 202	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	193.51
D_PS 203	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	307.40
D_PS 207	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	838.16
D_PS 210	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	166.02
D_PS 211	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	167.36
D_PS 213	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	95.62
D_PS 215	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	111.38
D_PS 216	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	138.96
D_PS 285	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1108.28
D_PS 286	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1096.53
D_PS 287	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	435.55
D_PS 288	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	439.40
D_PS 289	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	169.82
D_PS 290	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	151.43
D_PS 291	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	280.59
D_PS 292	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	281.08
D_PS 293	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	106.42
D_PS 294	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	1091.19
D_PS 295	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	233.21
D_PS 296	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	235.81
D_PS 297	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1605.99
D_PS 298	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1617.01

Proposed ID	Proposed Type	Phasing	Proposed Width (m)	Proposed DeD_PTh (m)	Length (m)
D_PS 299	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	539.04
D_PS 300	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	578.97
D_PS 301	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	975.81
D_PS 302	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	282.53
D_PS 303	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	315.48
D_PS 304	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	337.51
D_PS 305	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1928.77
D_PS 306	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	1952.42
D_PS 317	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	403.93
D_PS 318	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	164.31
D_PS 319	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	252.87
D_PS 320	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	259.58
D_PS 321	Secondary Drain	Phase 02	2.35 - 3.35	1.124 - 2.124	1916.40
D_PS 322	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	297.97
D_PS 323	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	215.29
D_PS 324	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	675.73
D_PS 325	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	675.29
D_PS 326	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	672.99
D_PS 327	Secondary Drain	Phase 01	2.35 - 3.35	1.124 - 2.124	686.05
D_PS 328	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	4401.15
D_PS 329	Secondary Drain	Phase 03	2.35 - 3.35	1.124 - 2.124	4473.41
Total					63348.37

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Baksir Ghatichora	022	03	1861	Ward no. 09	0.02
Khal	Baksir Ghatichora	022	03	1861	Ward no. 09	0.13
Khal	Baksir Ghatichora	022	03	1861	Ward no. 09	0.02
Khal	Baksir Ghatichora	022	03	1861	Ward no. 09	0.04
Khal	Dakkhin Mithakhali	37	04	3573	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3574	Ward no. 03	0.30
Khal	Dakkhin Mithakhali	37	04	3577	Ward no. 03	0.17
Khal	Dakkhin Mithakhali	37	04	3576	Ward no. 03	0.20
Khal	Dakkhin Mithakhali	37	04	3578	Ward no. 03	0.84
Khal	Dakkhin Mithakhali	37	04	3579	Ward no. 03	0.65
Khal	Dakkhin Mithakhali	37	04	3581	Ward no. 03	0.38
Khal	Dakkhin Mithakhali	37	04	3583	Ward no. 03	0.06
Khal	Dakkhin Mithakhali	37	04	3575	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3276	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3862	Ward no. 03	0.86
Khal	Dakkhin Mithakhali	37	04	3829	Ward no. 03	0.04
Khal	Dakkhin Mithakhali	37	04	3428	Ward no. 03	0.04
Khal	Dakkhin Mithakhali	37	04	3433	Ward no. 03	0.06
Khal	Dakkhin Mithakhali	37	04	3434	Ward no. 03	0.11
Khal	Dakkhin Mithakhali	37	04	3863	Ward no. 03	0.12
Khal	Dakkhin Mithakhali	37	04	3828	Ward no. 03	0.44
Khal	Dakkhin Mithakhali	37	04	3434	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3435	Ward no. 03	0.11
Khal	Dakkhin Mithakhali	37	04	3444	Ward no. 03	0.16
Khal	Dakkhin Mithakhali	37	04	3437	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3480	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3489	Ward no. 03	0.06
Khal	Dakkhin Mithakhali	37	04	3490	Ward no. 03	0.11
Khal	Dakkhin Mithakhali	37	04	3492	Ward no. 03	0.16
Khal	Dakkhin Mithakhali	37	04	3497	Ward no. 03	0.12
Khal	Dakkhin Mithakhali	37	04	3500	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3503	Ward no. 03	0.04
Khal	Dakkhin Mithakhali	37	04	3501	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3502	Ward no. 03	0.02
Khal	Dakkhin Mithakhali	37	04	3507	Ward no. 03	0.10
Khal	Dakkhin Mithakhali	37	04	3512	Ward no. 03	0.12
Khal	Dakkhin Mithakhali	37	04	3523	Ward no. 03	0.05
Khal	Dakkhin Mithakhali	37	04	3514	Ward no. 03	0.11
Khal	Dakkhin Mithakhali	37	04	3517	Ward no. 03	0.45
Khal	Dakkhin Mithakhali	37	04	3573	Ward no. 03	0.09
Khal	Dakkhin Mithakhali	37	04	3574	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3526	Ward no. 03	0.05
Khal	Dakkhin Mithakhali	37	04	3496	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3515	Ward no. 03	0.09
Khal	Dakkhin Mithakhali	37	04	3516	Ward no. 03	0.22
Khal	Dakkhin Mithakhali	37	04	3513	Ward no. 03	0.16
Khal	Dakkhin Mithakhali	37	04	3522	Ward no. 03	0.02
Khal	Dakkhin Mithakhali	37	04	3572	Ward no. 03	0.09
Khal	Dakkhin Mithakhali	37	04	3505	Ward no. 03	0.02
Khal	Dakkhin Mithakhali	37	04	3504	Ward no. 03	0.05
Khal	Dakkhin Mithakhali	37	04	3506	Ward no. 03	0.04
Khal	Dakkhin Mithakhali	37	04	3508	Ward no. 03	0.21
Khal	Dakkhin Mithakhali	37	04	3488	Ward no. 03	0.18
Khal	Dakkhin Mithakhali	37	04	3487	Ward no. 03	0.14
Khal	Dakkhin Mithakhali	37	04	3445	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3276	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3793	Ward no. 03	0.04
Khal	Dakkhin Mithakhali	37	04	3436	Ward no. 03	0.08
Khal	Dakkhin Mithakhali	37	04	3862	Ward no. 02	1.07
Khal	Dakkhin Mithakhali	37	04	3829	Ward no. 02	0.03
Khal	Dakkhin Mithakhali	37	04	3428	Ward no. 02	0.04
Khal	Dakkhin Mithakhali	37	04	3433	Ward no. 02	0.06
Khal	Dakkhin Mithakhali	37	04	3434	Ward no. 02	0.10

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Dakkhin Mithakhali	37	04	3434	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3435	Ward no. 02	0.13
Khal	Dakkhin Mithakhali	37	04	3444	Ward no. 02	0.07
Khal	Dakkhin Mithakhali	37	04	3437	Ward no. 02	0.11
Khal	Dakkhin Mithakhali	37	04	3489	Ward no. 02	0.06
Khal	Dakkhin Mithakhali	37	04	3490	Ward no. 02	0.10
Khal	Dakkhin Mithakhali	37	04	3492	Ward no. 02	0.16
Khal	Dakkhin Mithakhali	37	04	3495	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3497	Ward no. 02	0.03
Khal	Dakkhin Mithakhali	37	04	3494	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3496	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3488	Ward no. 02	0.16
Khal	Dakkhin Mithakhali	37	04	3487	Ward no. 02	0.11
Khal	Dakkhin Mithakhali	37	04	3445	Ward no. 02	0.10
Khal	Dakkhin Mithakhali	37	04	3276	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3793	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3436	Ward no. 02	0.05
Khal	Dakkhin Mithakhali	37	04	3863	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.41
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.21
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.05
Khal	Dakkhin Mithakhali	37	04	3862	Ward no. 03	0.11
Khal	Dakkhin Mithakhali	37	04	3863	Ward no. 03	0.02
Khal	Dakkhin Mithakhali	37	04	3872	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3858	Ward no. 02	0.06
Khal	Dakkhin Mithakhali	37	04	3854	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3856	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3872	Ward no. 02	0.21
Khal	Baksir Ghatichora	022	03	2078	Ward no. 09	0.00
Khal	Baksir Ghatichora	022	03	2079	Ward no. 09	0.02
Khal	Baksir Ghatichora	022	03	2084	Ward no. 09	0.04
Khal	Baksir Ghatichora	022	03	2235	Ward no. 09	0.15
Khal	Baksir Ghatichora	022	03	2128	Ward no. 09	0.21
Khal	Baksir Ghatichora	022	03	2081	Ward no. 09	0.02
Khal	Baksir Ghatichora	022	03	2080	Ward no. 09	0.29
Khal	Baksir Ghatichora	022	03	2083	Ward no. 09	0.21
Khal	Baksir Ghatichora	022	03	2242	Ward no. 09	0.03
Khal	Baksir Ghatichora	022	03	2127	Ward no. 09	0.20
Khal	Baksir Ghatichora	022	03	2088	Ward no. 09	0.17
Khal	Baksir Ghatichora	022	03	2113	Ward no. 09	0.29
Khal	Baksir Ghatichora	022	03	2089	Ward no. 09	0.11
Khal	Baksir Ghatichora	022	03	2090	Ward no. 09	0.18
Khal	Baksir Ghatichora	022	03	2092	Ward no. 09	0.01
Khal	Baksir Ghatichora	022	03	2091	Ward no. 09	0.13
Khal	Baksir Ghatichora	022	03	2033	Ward no. 09	0.18
Khal	Baksir Ghatichora	022	03	2032	Ward no. 09	0.22
Khal	Baksir Ghatichora	022	03	2035	Ward no. 09	0.17
Khal	Baksir Ghatichora	022	03	2030	Ward no. 09	0.14
Khal	Baksir Ghatichora	022	03	2031	Ward no. 09	0.03
Khal	Baksir Ghatichora	022	03	2029	Ward no. 09	0.02
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 04	0.00
Khal	Baksir Ghatichora	022	03	2026	Ward no. 04	0.01
Khal	Baksir Ghatichora	022	03	2256	Ward no. 04	0.00
Khal	Baksir Ghatichora	022	03	2024	Ward no. 04	0.02
Khal	Dakkhin Mithakhali	37	04	3872	Ward no. 04	0.10
Khal	Dakkhin Mithakhali	37	04	3854	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3853	Ward no. 02	0.05
Khal	Dakkhin Mithakhali	37	04	3937	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3933	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3929	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3928	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3919	Ward no. 02	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Dakkhin Mithakhali	37	04	3949	Ward no. 02	0.26
Khal	Dakkhin Mithakhali	37	04	3930	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3872	Ward no. 02	0.17
Khal	Dakkhin Mithakhali	37	04	3902	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3901	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3949	Ward no. 02	0.11
Khal	Dakkhin Mithakhali	37	04	3920	Ward no. 02	0.02
Khal	Mathbaria	021	03	1791	Ward no. 02	0.10
Khal	Dakkhin Mithakhali	37	04	3372	Ward no. 02	0.02
Khal	Dakkhin Mithakhali	37	04	3370	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 02	0.33
Khal	Dakkhin Mithakhali	37	04	3363	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 02	0.17
Khal	Baksir Ghatichora	022	03	1940	Ward no. 08	0.04
Khal	Baksir Ghatichora	022	03	1938	Ward no. 08	0.00
Khal	Baksir Ghatichora	022	03	1941	Ward no. 08	0.01
Khal	Baksir Ghatichora	022	03	1939	Ward no. 08	0.00
Khal	Baksir Ghatichora	022	03	2362	Ward no. 08	0.02
Khal	Baksir Ghatichora	022	03	2362	Ward no. 08	0.00
Khal	Mathbaria	021	03	1789	Ward no. 08	0.12
Khal	Baksir Ghatichora	022	03	2364	Ward no. 08	0.09
Khal	Baksir Ghatichora	022	03	2365	Ward no. 08	0.08
Khal	Mathbaria	021	02	1045	Ward no. 08	0.06
Khal	Baksir Ghatichora	022	03	2366	Ward no. 08	0.06
Khal	Baksir Ghatichora	022	03	2367	Ward no. 08	0.07
Khal	Baksir Ghatichora	022	03	2368	Ward no. 08	0.05
Khal	Baksir Ghatichora	022	03	2369	Ward no. 08	0.05
Khal	Baksir Ghatichora	022	03	2370	Ward no. 08	0.07
Khal	Baksir Ghatichora	022	03	2371	Ward no. 08	0.04
Khal	Baksir Ghatichora	022	03	2373	Ward no. 08	0.01
Khal	Baksir Ghatichora	022	03	2372	Ward no. 08	0.03
Khal	Baksir Ghatichora	022	03	2374	Ward no. 08	0.04
Khal	Baksir Ghatichora	022	03	2375	Ward no. 08	0.03
Khal	Baksir Ghatichora	022	03	2376	Ward no. 08	0.03
Khal	Baksir Ghatichora	022	03	2377	Ward no. 08	0.03
Khal	Baksir Ghatichora	022	03	2378	Ward no. 08	0.00
Khal	Baksir Ghatichora	022	03	2379	Ward no. 08	0.02
Khal	Baksir Ghatichora	022	03	2380	Ward no. 08	0.00
Khal	Mathbaria	021	02	931	Ward no. 08	0.00
Khal	Mathbaria	021	02	930	Ward no. 08	0.00
Khal	Mathbaria	021	02	929	Ward no. 08	0.00
Khal	Mathbaria	021	02	1017	Ward no. 08	1.12
Khal	Mathbaria	021	02	889	Ward no. 08	0.01
Khal	Baksir Ghatichora	022	03	2403	Ward no. 08	0.00
Khal	Baksir Ghatichora	022	03	2362	Ward no. 08	0.00
Khal	Mathbaria	021	03	1789	Ward no. 07	0.10
Khal	Baksir Ghatichora	022	03	2364	Ward no. 07	0.03
Khal	Baksir Ghatichora	022	03	2365	Ward no. 07	0.01
Khal	Mathbaria	021	02	1045	Ward no. 07	0.09
Khal	Baksir Ghatichora	022	03	2366	Ward no. 07	0.00
Khal	Baksir Ghatichora	022	03	2368	Ward no. 07	0.00
Khal	Baksir Ghatichora	022	03	2369	Ward no. 07	0.00
Khal	Baksir Ghatichora	022	03	2371	Ward no. 07	0.01
Khal	Baksir Ghatichora	022	03	2373	Ward no. 07	0.00
Khal	Baksir Ghatichora	022	03	2372	Ward no. 07	0.00
Khal	Mathbaria	021	02	1041	Ward no. 07	0.00
Khal	Mathbaria	021	02	1040	Ward no. 07	0.62
Khal	Mathbaria	021	02	995	Ward no. 07	0.17
Khal	Mathbaria	021	02	994	Ward no. 07	0.02
Khal	Mathbaria	021	02	993	Ward no. 07	0.03
Khal	Mathbaria	021	02	932	Ward no. 07	0.04
Khal	Mathbaria	021	02	931	Ward no. 07	0.05
Khal	Mathbaria	021	02	930	Ward no. 07	0.03
Khal	Mathbaria	021	02	929	Ward no. 07	0.02

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Mathbaria	021	02	928	Ward no. 07	0.07
Khal	Mathbaria	021	02	927	Ward no. 07	0.04
Khal	Mathbaria	021	02	898	Ward no. 07	0.02
Khal	Mathbaria	021	02	897	Ward no. 07	0.00
Khal	Mathbaria	021	02	896	Ward no. 07	0.00
Khal	Mathbaria	021	02	889	Ward no. 07	0.05
Khal	Mathbaria	021	02	888	Ward no. 07	0.02
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 01	0.07
Khal	Mathbaria	021	02	1404	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 05	0.00
Khal	Mathbaria	021	02	1404	Ward no. 05	0.09
Khal	Mathbaria	021	02	1414	Ward no. 05	0.04
Khal	Mathbaria	021	02	1413	Ward no. 05	0.00
Khal	Mathbaria	021	02	1357	Ward no. 05	0.01
Khal	Mathbaria	021	02	1356	Ward no. 05	0.01
Khal	Mathbaria	021	02	1355	Ward no. 05	0.01
Khal	Mathbaria	021	02	1353	Ward no. 05	0.00
Khal	Mathbaria	021	02	1352	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 05	0.00
Khal	Mathbaria	021	02	1404	Ward no. 05	0.49
Khal	Baksir Ghatichora	022	03	2286	Ward no. 04	0.07
Khal	Dakkhin Mithakhali	37	04	3949	Ward no. 04	0.33
Khal	Baksir Ghatichora	022	03	2295	Ward no. 04	0.07
Khal	Baksir Ghatichora	022	03	2288	Ward no. 04	0.06
Khal	Dakkhin Mithakhali	37	04	3872	Ward no. 04	0.02
Khal	Dakkhin Mithakhali	37	04	3901	Ward no. 04	0.02
Khal	Dakkhin Mithakhali	37	04	3901	Ward no. 04	0.00
Khal	Mathbaria	021	03	1791	Ward no. 04	0.11
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 04	0.00
Khal	Mathbaria	021	02	1404	Ward no. 04	0.21
Khal	Mathbaria	021	03	1772	Ward no. 04	0.00
Khal	Mathbaria	021	03	1771	Ward no. 04	0.00
Khal	Mathbaria	021	03	1770	Ward no. 04	0.00
Khal	Mathbaria	021	03	1769	Ward no. 04	0.00
Khal	Mathbaria	021	03	1768	Ward no. 04	0.00
Khal	Mathbaria	021	03	1767	Ward no. 04	0.00
Khal	Mathbaria	021	03	1766	Ward no. 04	0.01
Khal	Mathbaria	021	03	1765	Ward no. 04	0.00
Khal	Mathbaria	021	03	1764	Ward no. 04	0.00
Khal	Mathbaria	021	03	1761	Ward no. 04	0.01
Khal	Mathbaria	021	03	1760	Ward no. 04	0.01
Khal	Mathbaria	021	03	1759	Ward no. 04	0.01
Khal	Mathbaria	021	03	1758	Ward no. 04	0.02
Khal	Mathbaria	021	03	1756	Ward no. 04	0.02
Khal	Mathbaria	021	03	1757	Ward no. 04	0.02
Khal	Mathbaria	021	03	1754	Ward no. 04	0.00
Khal	Mathbaria	021	03	1789	Ward no. 04	0.41
Khal	Mathbaria	021	03	1789	Ward no. 04	0.00
Khal	Dakkhin Mithakhali	37	04	3084	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4691	Ward no. 01	0.04
Khal	Uttar Mithakhali	066	07	4690	Ward no. 01	0.07
Khal	Dakkhin Mithakhali	37	04	3036	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3035	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3059	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3060	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	4682	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4689	Ward no. 01	0.10
Khal	Uttar Mithakhali	066	07	4679	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4684	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4680	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4678	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4685	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	4662	Ward no. 01	0.02

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Uttar Mithakhali	066	07	99999	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3070	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3071	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3034	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3085	Ward no. 01	0.16
Khal	Dakkhin Mithakhali	37	04	3084	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4691	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3069	Ward no. 01	0.08
Khal	Dakkhin Mithakhali	37	04	3085	Ward no. 01	0.06
Khal	Dakkhin Mithakhali	37	04	3085	Ward no. 05	0.00
Khal	Uttar Mithakhali	066	07	4802	Ward no. 01	0.00
Khal	Mathbaria	021	02	1251	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4801	Ward no. 01	0.02
Khal	Mathbaria	021	02	1225	Ward no. 01	0.00
Khal	Mathbaria	021	02	1224	Ward no. 01	0.10
Khal	Uttar Mithakhali	066	07	4731	Ward no. 01	0.03
Khal	Uttar Mithakhali	066	07	4730	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4691	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3085	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4803	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4802	Ward no. 05	0.00
Khal	Mathbaria	021	02	1252	Ward no. 05	0.02
Khal	Mathbaria	021	02	1251	Ward no. 05	0.01
Khal	Mathbaria	021	02	1225	Ward no. 05	0.07
Khal	Mathbaria	021	02	1206	Ward no. 05	0.02
Khal	Mathbaria	021	02	1205	Ward no. 05	0.02
Khal	Mathbaria	021	02	1207	Ward no. 05	0.05
Khal	Mathbaria	021	02	1204	Ward no. 05	0.01
Khal	Mathbaria	021	02	708	Ward no. 05	0.01
Khal	Mathbaria	021	02	707	Ward no. 05	0.00
Khal	Mathbaria	021	02	706	Ward no. 05	0.00
Khal	Mathbaria	021	02	705	Ward no. 05	0.01
Khal	Mathbaria	021	02	704	Ward no. 05	0.01
Khal	Mathbaria	021	02	703	Ward no. 05	0.01
Khal	Dakkhin Mithakhali	37	04	3085	Ward no. 05	0.00
Khal	Uttar Mithakhali	066	07	4803	Ward no. 05	0.01
Pond	Baksir Ghatichora	022	03	1958	Ward no. 08	0.37
Pond	Baksir Ghatichora	022	03	1957	Ward no. 08	0.04
Pond	Baksir Ghatichora	022	03	2341	Ward no. 08	0.09
Pond	Baksir Ghatichora	022	03	2340	Ward no. 08	0.25
Pond	Baksir Ghatichora	022	03	1940	Ward no. 08	0.02
Pond	Baksir Ghatichora	022	03	1941	Ward no. 08	0.02
Pond	Baksir Ghatichora	022	03	1956	Ward no. 08	0.01
Pond	Baksir Ghatichora	022	03	1963	Ward no. 08	0.01
Pond	Baksir Ghatichora	022	03	1966	Ward no. 08	0.00
Pond	Baksir Ghatichora	022	03	1962	Ward no. 08	0.02
Pond	Baksir Ghatichora	022	03	1961	Ward no. 08	0.05
Pond	Baksir Ghatichora	022	03	1960	Ward no. 08	0.14
Pond	Baksir Ghatichora	022	03	1940	Ward no. 08	0.00
Pond	Baksir Ghatichora	022	03	2226	Ward no. 09	0.09
Pond	Baksir Ghatichora	022	03	2010	Ward no. 09	0.00
Pond	Baksir Ghatichora	022	03	2230	Ward no. 09	0.26
Pond	Baksir Ghatichora	022	03	2101	Ward no. 09	0.00
Pond	Baksir Ghatichora	022	03	2095	Ward no. 09	0.00
Pond	Baksir Ghatichora	022	03	2000	Ward no. 09	0.16
Pond	Baksir Ghatichora	022	03	2261	Ward no. 09	0.01
Pond	Baksir Ghatichora	022	03	2006	Ward no. 09	0.12
Pond	Baksir Ghatichora	022	03	2002	Ward no. 09	0.02
Pond	Baksir Ghatichora	022	03	2215	Ward no. 09	0.08
Pond	Baksir Ghatichora	022	03	2006	Ward no. 09	0.00
Pond	Baksir Ghatichora	022	03	2092	Ward no. 09	0.17
Pond	Baksir Ghatichora	022	03	2091	Ward no. 09	0.15
Pond	Dakkhin Mithakhali	37	04	3822	Ward no. 03	0.09
Pond	Dakkhin Mithakhali	37	04	3823	Ward no. 03	0.29

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Pond	Dakkhin Mithakhali	37	04	3419	Ward no. 02	0.16
Pond	Dakkhin Mithakhali	37	04	3418	Ward no. 02	0.01
Pond	Dakkhin Mithakhali	37	04	3357	Ward no. 02	0.00
Pond	Dakkhin Mithakhali	37	04	3350	Ward no. 02	0.00
Pond	Dakkhin Mithakhali	37	04	3358	Ward no. 02	0.17
Pond	Dakkhin Mithakhali	37	04	3352	Ward no. 02	0.00
Pond	Dakkhin Mithakhali	37	04	3341	Ward no. 02	0.14
Pond	Dakkhin Mithakhali	37	04	3340	Ward no. 02	0.08
Pond	Dakkhin Mithakhali	37	04	3276	Ward no. 03	0.00
Pond	Dakkhin Mithakhali	37	04	3750	Ward no. 03	0.00
Pond	Dakkhin Mithakhali	37	04	3749	Ward no. 03	0.16
Pond	Dakkhin Mithakhali	37	04	3415	Ward no. 02	0.01
Pond	Dakkhin Mithakhali	37	04	3416	Ward no. 02	0.02
Pond	Dakkhin Mithakhali	37	04	3355	Ward no. 02	0.23
Pond	Dakkhin Mithakhali	37	04	3416	Ward no. 02	0.25
Pond	Dakkhin Mithakhali	37	04	3417	Ward no. 02	0.00
Pond	Baksir Ghatichora	022	03	2133	Ward no. 09	0.21
Pond	Baksir Ghatichora	022	03	1991	Ward no. 09	0.01
Pond	Baksir Ghatichora	022	03	1911	Ward no. 08	0.01
Pond	Baksir Ghatichora	022	03	1904	Ward no. 08	0.24
Pond	Mathbaria	021	02	1117	Ward no. 05	0.63
Pond	Mathbaria	021	02	1116	Ward no. 05	0.11
Pond	Mathbaria	021	02	1130	Ward no. 05	0.14
Pond	Mathbaria	021	02	1129	Ward no. 05	0.00
Pond	Mathbaria	021	02	1131	Ward no. 05	0.48
Pond	Mathbaria	021	03	1624	Ward no. 06	0.00
Pond	Mathbaria	021	03	1606	Ward no. 06	0.01
Pond	Mathbaria	021	03	1619	Ward no. 06	0.00
Pond	Mathbaria	021	03	1607	Ward no. 06	0.40
Pond	Mathbaria	021	03	1608	Ward no. 06	0.02
Pond	Mathbaria	021	03	1618	Ward no. 06	0.02
Pond	Mathbaria	021	02	1063	Ward no. 07	0.33
Pond	Mathbaria	021	02	1064	Ward no. 07	0.03
Pond	Mathbaria	021	02	1012	Ward no. 07	0.42
Pond	Uttar Mithakhali	066	07	4660	Ward no. 01	0.01
Pond	Uttar Mithakhali	066	07	4650	Ward no. 01	0.07
Pond	Uttar Mithakhali	066	07	4649	Ward no. 01	0.19
Pond	Uttar Mithakhali	066	07	4645	Ward no. 01	0.00
Pond	Uttar Mithakhali	066	07	4661	Ward no. 01	0.01
Pond	Uttar Mithakhali	066	07	4641	Ward no. 01	0.01
Pond	Uttar Mithakhali	066	07	4640	Ward no. 01	0.03
Pond	Uttar Mithakhali	066	07	4639	Ward no. 01	0.03
Pond	Uttar Mithakhali	066	07	4638	Ward no. 01	0.07
Pond	Uttar Mithakhali	066	07	4720	Ward no. 01	0.00
Pond	Uttar Mithakhali	066	07	4736	Ward no. 01	0.23
Pond	Uttar Mithakhali	066	07	4701	Ward no. 01	0.04
Pond	Uttar Mithakhali	066	07	4703	Ward no. 01	0.24
Pond	Uttar Mithakhali	066	07	4704	Ward no. 01	0.00
Pond	Uttar Mithakhali	066	07	4702	Ward no. 01	0.17
Pond	Uttar Mithakhali	066	07	4707	Ward no. 01	0.51
Pond	Uttar Mithakhali	066	07	4706	Ward no. 01	0.03
Pond	Uttar Mithakhali	066	07	4707	Ward no. 01	0.17
Pond	Dakkhin Mithakhali	37	04	3161	Ward no. 01	0.00
Pond	Dakkhin Mithakhali	37	04	3159	Ward no. 01	0.01
Pond	Dakkhin Mithakhali	37	04	3160	Ward no. 01	0.02
Pond	Dakkhin Mithakhali	37	04	3166	Ward no. 01	0.19
Pond	Mathbaria	021	02	1399	Ward no. 04	0.14
Pond	Mathbaria	021	02	1449	Ward no. 04	0.07
Pond	Mathbaria	021	02	1395	Ward no. 05	0.00
Pond	Mathbaria	021	02	1394	Ward no. 05	0.05
Pond	Mathbaria	021	02	1390	Ward no. 05	0.06
Pond	Mathbaria	021	03	1660	Ward no. 04	0.12
Pond	Mathbaria	021	03	1660	Ward no. 04	0.08
Pond	Mathbaria	021	02	1338	Ward no. 05	0.13

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Pond/Ditch	Mathbaria	021	02	947	Ward no. 06	0.58
Pond	Mathbaria	021	02	735	Ward no. 05	0.01
Pond	Mathbaria	021	02	762	Ward no. 05	0.46
Pond	Mathbaria	021	02	719	Ward no. 05	0.00
Pond	Mathbaria	021	02	716	Ward no. 05	0.08
Pond	Mathbaria	021	02	721	Ward no. 05	0.00
Pond	Mathbaria	021	02	722	Ward no. 05	0.11
Pond	Mathbaria	021	02	832	Ward no. 06	0.09
Pond	Mathbaria	021	02	836	Ward no. 06	0.00
Pond	Uttar Mithakhali	066	07	4757	Ward no. 01	0.12
Pond	Uttar Mithakhali	066	07	4739	Ward no. 01	0.26
Pond	Uttar Mithakhali	066	07	4738	Ward no. 01	0.13
Pond	Mathbaria	021	02	1473	Ward no. 05	0.05
Pond	Mathbaria	021	02	1282	Ward no. 05	0.07
Pond	Mathbaria	021	02	1283	Ward no. 05	0.09
Pond/Ditch	Mathbaria	021	02	1144	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3133	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3132	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3132	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3131	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3128	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3126	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3125	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3121	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3112	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3095	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3087	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3069	Ward no. 01	0.03
Khal	Dakkhin Mithakhali	37	04	3102	Ward no. 01	0.00
Khal	Mathbaria	021	02	1351	Ward no. 05	0.01
Khal	Mathbaria	021	02	1350	Ward no. 05	0.04
Khal	Mathbaria	021	02	1337	Ward no. 05	0.02
Khal	Mathbaria	021	02	1336	Ward no. 05	0.08
Khal	Mathbaria	021	02	1335	Ward no. 05	0.01
Khal	Mathbaria	021	02	1328	Ward no. 05	0.02
Khal	Mathbaria	021	02	1327	Ward no. 05	0.00
Khal	Mathbaria	021	02	1326	Ward no. 05	0.01
Khal	Mathbaria	021	02	1299	Ward no. 05	0.02
Khal	Mathbaria	021	02	1298	Ward no. 05	0.04
Khal	Mathbaria	021	02	1289	Ward no. 05	0.04
Khal	Mathbaria	021	02	1288	Ward no. 05	0.01
Khal	Mathbaria	021	02	1287	Ward no. 05	0.02
Khal	Mathbaria	021	02	1274	Ward no. 05	0.04
Khal	Mathbaria	021	02	1271	Ward no. 05	0.04
Khal	Mathbaria	021	02	1270	Ward no. 05	0.01
Khal	Mathbaria	021	02	1264	Ward no. 05	0.02
Khal	Mathbaria	021	02	1263	Ward no. 05	0.01
Khal	Mathbaria	021	02	1260	Ward no. 05	0.01
Khal	Dakkhin Mithakhali	37	04	3085	Ward no. 05	0.01
Khal	Uttar Mithakhali	066	07	4803	Ward no. 05	0.00
Khal	Mathbaria	021	02	1326	Ward no. 05	0.00
Khal	Mathbaria	021	02	1299	Ward no. 05	0.00
Pond	Dakkhin Mithakhali	37	04	3385	Ward no. 02	0.25
Pond	Dakkhin Mithakhali	37	04	3396	Ward no. 02	0.04
Pond	Dakkhin Mithakhali	37	04	3395	Ward no. 02	0.02
Pond	Dakkhin Mithakhali	37	04	3384	Ward no. 02	0.00
Pond	Dakkhin Mithakhali	37	04	3379	Ward no. 02	0.25
Pond	Dakkhin Mithakhali	37	04	3378	Ward no. 02	0.01
Pond	Dakkhin Mithakhali	37	04	3322	Ward no. 02	0.23
Pond	Dakkhin Mithakhali	37	04	3825	Ward no. 03	0.03
Pond	Dakkhin Mithakhali	37	04	3826	Ward no. 03	0.17
Pond	Dakkhin Mithakhali	37	04	3806	Ward no. 03	0.11
Pond	Dakkhin Mithakhali	37	04	3804	Ward no. 03	0.15
Pond	Dakkhin Mithakhali	37	04	3481	Ward no. 03	0.10

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Pond	Dakkhin Mithakhali	37	04	3480	Ward no. 03	0.13
Ditch	Mathbaria	021	02	957	Ward no. 06	0.06
Ditch	Mathbaria	021	02	959	Ward no. 06	0.03
Ditch	Mathbaria	021	02	958	Ward no. 06	0.00
Pond	Mathbaria	021	02	1143	Ward no. 05	0.00
Pond	Mathbaria	021	02	1152	Ward no. 05	0.01
Pond	Mathbaria	021	02	1154	Ward no. 05	0.29
Pond	Mathbaria	021	02	1155	Ward no. 05	0.06
Pond	Mathbaria	021	02	1156	Ward no. 05	0.17
Pond	Mathbaria	021	02	1083	Ward no. 06	0.08
Pond	Mathbaria	021	02	1082	Ward no. 06	0.08
Pond	Mathbaria	021	02	1074	Ward no. 06	0.33
Pond	Mathbaria	021	02	1075	Ward no. 06	0.38
Pond	Mathbaria	021	02	1076	Ward no. 06	0.44
Pond	Mathbaria	021	02	970	Ward no. 06	0.05
Pond	Mathbaria	021	02	1128	Ward no. 05	0.03
Pond	Mathbaria	021	02	1127	Ward no. 05	0.55
Pond	Mathbaria	021	02	1145	Ward no. 05	0.04
Pond	Mathbaria	021	02	1118	Ward no. 05	0.03
Pond	Mathbaria	021	02	1119	Ward no. 05	0.05
Pond	Mathbaria	021	02	1120	Ward no. 05	0.10
Pond	Mathbaria	021	02	1121	Ward no. 05	0.09
Pond	Mathbaria	021	02	1099	Ward no. 06	0.17
Pond	Mathbaria	021	02	1105	Ward no. 06	0.03
Pond	Mathbaria	021	02	1101	Ward no. 06	0.11
Pond	Mathbaria	021	02	1010	Ward no. 07	0.04
Pond	Mathbaria	021	02	1009	Ward no. 07	0.09
Pond	Mathbaria	021	02	975	Ward no. 07	0.00
Pond	Mathbaria	021	02	971	Ward no. 07	0.00
Pond	Baksir Ghatichora	022	03	2129	Ward no. 09	0.10
Pond	Baksir Ghatichora	022	03	2126	Ward no. 09	0.02
Pond	Baksir Ghatichora	022	03	2132	Ward no. 09	0.00
Pond	Baksir Ghatichora	022	03	2133	Ward no. 09	0.07
Pond	Baksir Ghatichora	022	03	1875	Ward no. 09	0.15
Pond	Baksir Ghatichora	022	03	1905	Ward no. 08	0.12
Pond	Baksir Ghatichora	022	03	1904	Ward no. 08	0.20
Pond	Baksir Ghatichora	022	03	1904	Ward no. 08	0.15
Pond	Baksir Ghatichora	022	03	1902	Ward no. 08	0.04
Pond	Baksir Ghatichora	022	03	1893	Ward no. 08	0.04
Pond	Baksir Ghatichora	022	03	1894	Ward no. 08	0.16
Pond	Mathbaria	021	03	1603	Ward no. 06	0.31
Pond	Mathbaria	021	03	1604	Ward no. 06	0.00
Pond	Mathbaria	021	03	1603	Ward no. 06	0.02
Pond	Mathbaria	021	02	1449	Ward no. 04	0.14
Pond	Mathbaria	021	02	1066	Ward no. 07	0.07
Pond	Mathbaria	021	02	1067	Ward no. 07	0.09
Pond	Mathbaria	021	02	1032	Ward no. 07	0.01
Pond	Mathbaria	021	02	1031	Ward no. 07	0.14
Pond	Mathbaria	021	02	1035	Ward no. 07	0.00
Pond	Mathbaria	021	02	1030	Ward no. 07	0.03
Pond	Mathbaria	021	02	1063	Ward no. 07	0.21
Pond	Mathbaria	021	02	1064	Ward no. 07	0.00
Khal	Mathbaria	021	03	1617	Ward no. 06	0.00
Khal	Mathbaria	021	03	1618	Ward no. 06	0.02
Khal	Mathbaria	021	03	1611	Ward no. 06	0.01
Khal	Mathbaria	021	03	1793	Ward no. 06	0.01
Khal	Mathbaria	021	03	1609	Ward no. 06	0.02
Khal	Mathbaria	021	03	1610	Ward no. 06	0.01
Khal	Mathbaria	021	02	1040	Ward no. 07	0.00
Khal	Mathbaria	021	02	1033	Ward no. 07	0.01
Khal	Mathbaria	021	02	1053	Ward no. 07	0.00
Khal	Mathbaria	021	03	1613	Ward no. 07	0.02
Khal	Mathbaria	021	02	1054	Ward no. 07	0.02
Khal	Mathbaria	021	03	1612	Ward no. 07	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Mathbaria	021	02	1056	Ward no. 07	0.00
Khal	Mathbaria	021	02	1059	Ward no. 07	0.02
Khal	Mathbaria	021	02	1055	Ward no. 07	0.05
Khal	Mathbaria	021	02	1032	Ward no. 07	0.06
Khal	Mathbaria	021	02	1062	Ward no. 07	0.01
Khal	Mathbaria	021	02	899	Ward no. 07	0.00
Khal	Mathbaria	021	02	1032	Ward no. 07	0.01
Khal	Mathbaria	021	02	1035	Ward no. 07	0.00
Khal	Mathbaria	021	02	1030	Ward no. 07	0.00
Pond	Dakkhin Mithakhali	37	04	3411	Ward no. 02	0.17
Pond	Dakkhin Mithakhali	37	04	3834	Ward no. 02	0.00
Pond	Mathbaria	021	03	1686	Ward no. 04	0.00
Pond	Mathbaria	021	03	1680	Ward no. 04	0.00
Pond	Mathbaria	021	03	1683	Ward no. 04	0.23
Pond	Baksir Ghatichora	022	03	2234	Ward no. 09	0.09
Pond	Baksir Ghatichora	022	03	2021	Ward no. 09	0.05
Pond	Baksir Ghatichora	022	03	2000	Ward no. 09	0.03
Pond	Baksir Ghatichora	022	03	2021	Ward no. 09	0.02
Pond	Baksir Ghatichora	022	03	2020	Ward no. 09	0.11
Pond	Baksir Ghatichora	022	03	2233	Ward no. 09	0.01
Pond	Baksir Ghatichora	022	03	2000	Ward no. 09	0.02
Pond	Baksir Ghatichora	022	03	2096	Ward no. 09	0.04
Pond	Baksir Ghatichora	022	03	2097	Ward no. 09	0.02
Pond	Baksir Ghatichora	022	03	2101	Ward no. 09	0.09
Pond	Baksir Ghatichora	022	03	2002	Ward no. 09	0.18
Pond	Baksir Ghatichora	022	03	1956	Ward no. 08	0.14
Pond	Baksir Ghatichora	022	03	1966	Ward no. 08	0.01
Pond	Baksir Ghatichora	022	03	1955	Ward no. 08	0.28
Pond	Baksir Ghatichora	022	03	1981	Ward no. 08	0.01
Pond	Baksir Ghatichora	022	03	1956	Ward no. 08	0.27
Pond	Baksir Ghatichora	022	03	1967	Ward no. 08	0.02
Pond	Baksir Ghatichora	022	03	1951	Ward no. 08	0.08
Pond	Baksir Ghatichora	022	03	1954	Ward no. 08	0.09
Pond	Baksir Ghatichora	022	03	1955	Ward no. 08	0.00
Pond	Baksir Ghatichora	022	03	1954	Ward no. 08	0.03
Pond	Baksir Ghatichora	022	03	1955	Ward no. 08	0.32
Pond	Baksir Ghatichora	022	03	1950	Ward no. 08	0.29
Pond	Baksir Ghatichora	022	03	1951	Ward no. 08	0.24
Pond	Baksir Ghatichora	022	03	1949	Ward no. 08	0.04
Pond	Baksir Ghatichora	022	03	1946	Ward no. 08	0.00
Pond	Baksir Ghatichora	022	03	1953	Ward no. 08	0.48
Pond	Baksir Ghatichora	022	03	1947	Ward no. 08	0.02
Pond	Baksir Ghatichora	022	03	1945	Ward no. 08	0.00
Pond	Baksir Ghatichora	022	03	1948	Ward no. 08	0.03
Pond	Baksir Ghatichora	022	03	1954	Ward no. 08	0.59
Pond	Baksir Ghatichora	022	03	1943	Ward no. 08	0.01
Ditch	Mathbaria	021	02	966	Ward no. 06	0.11
Ditch	Mathbaria	021	02	1159	Ward no. 06	0.05
Pond	Mathbaria	021	02	1159	Ward no. 06	0.17
Pond	Mathbaria	021	02	1160	Ward no. 06	0.05
Pond	Mathbaria	021	02	1177	Ward no. 06	0.01
Ditch	Mathbaria	021	02	1176	Ward no. 06	0.00
Ditch	Mathbaria	021	02	1175	Ward no. 06	0.00
Pond	Baksir Ghatichora	022	03	2234	Ward no. 09	0.11
Pond	Baksir Ghatichora	022	03	2021	Ward no. 09	0.09
Khal	Baksir Ghatichora	022	03	2295	Ward no. 04	0.24
Khal	Baksir Ghatichora	022	03	2298	Ward no. 04	0.01
Khal	Baksir Ghatichora	022	03	2296	Ward no. 04	0.02
Khal	Baksir Ghatichora	022	03	2297	Ward no. 04	0.03
Khal	Baksir Ghatichora	022	03	2319	Ward no. 04	0.00
Khal	Baksir Ghatichora	022	03	2288	Ward no. 04	0.14
Khal	Baksir Ghatichora	022	03	2318	Ward no. 04	0.01
Khal	Baksir Ghatichora	022	03	2336	Ward no. 04	0.00
Khal	Mathbaria	021	03	1789	Ward no. 04	0.01

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Ditch	Baksir Ghatichora	022	03	2095	Ward no. 09	0.05
Ditch	Baksir Ghatichora	022	03	2094	Ward no. 09	0.11
Ditch	Baksir Ghatichora	022	03	2022	Ward no. 09	0.01
Ditch	Mathbaria	021	02	964	Ward no. 06	0.08
Ditch	Mathbaria	021	02	1177	Ward no. 06	0.00
Ditch	Mathbaria	021	02	918	Ward no. 07	0.02
Ditch	Mathbaria	021	02	917	Ward no. 07	0.15
Khal	Mathbaria	021	02	703	Ward no. 05	0.00
Khal	Mathbaria	021	02	726	Ward no. 05	0.02
Khal	Mathbaria	021	02	727	Ward no. 05	0.01
Pond	Mathbaria	021	02	1217	Ward no. 05	0.09
Pond	Mathbaria	021	02	1218	Ward no. 05	0.08
Pond	Mathbaria	021	02	1154	Ward no. 05	0.00
Pond	Mathbaria	021	02	1155	Ward no. 05	0.03
Pond	Mathbaria	021	02	1156	Ward no. 05	0.11
Pond	Mathbaria	021	02	1162	Ward no. 05	0.03
Pond	Mathbaria	021	02	1164	Ward no. 05	0.20
Pond	Mathbaria	021	02	1165	Ward no. 05	0.00
Pond	Mathbaria	021	02	1114	Ward no. 06	0.01
Pond	Mathbaria	021	02	1099	Ward no. 06	0.01
Pond	Mathbaria	021	02	1115	Ward no. 06	0.13
Pond	Mathbaria	021	02	1112	Ward no. 06	0.23
Pond	Mathbaria	021	02	1113	Ward no. 06	0.50
Khal	Mathbaria	021	02	1450	Ward no. 04	0.05
Pond	Mathbaria	021	02	1380	Ward no. 05	0.02
Pond	Mathbaria	021	02	1381	Ward no. 05	0.03
Pond	Mathbaria	021	02	1387	Ward no. 05	0.02
Pond	Mathbaria	021	02	1379	Ward no. 05	0.03
Pond	Mathbaria	021	02	1388	Ward no. 05	0.00
Pond	Mathbaria	021	02	1378	Ward no. 05	0.00
Pond	Mathbaria	021	02	1127	Ward no. 05	0.00
Pond	Mathbaria	021	02	1143	Ward no. 05	0.02
Pond	Mathbaria	021	02	1145	Ward no. 05	0.10
Pond	Mathbaria	021	02	1144	Ward no. 05	0.45
Pond	Mathbaria	021	02	1150	Ward no. 05	0.14
Pond	Mathbaria	021	02	1151	Ward no. 05	0.10
Pond	Mathbaria	021	02	1152	Ward no. 05	0.47
Pond	Mathbaria	021	02	1154	Ward no. 05	0.17
Pond	Mathbaria	021	02	1155	Ward no. 05	0.01
Khal	Mathbaria	021	02	1167	Ward no. 05	0.03
Khal	Mathbaria	021	02	1228	Ward no. 05	0.02
Khal	Mathbaria	021	02	1168	Ward no. 05	0.00
Khal	Mathbaria	021	02	1169	Ward no. 05	0.00
Khal	Mathbaria	021	02	1227	Ward no. 05	0.01
Khal	Mathbaria	021	02	1170	Ward no. 05	0.01
Khal	Mathbaria	021	02	1171	Ward no. 05	0.01
Khal	Mathbaria	021	02	1172	Ward no. 05	0.01
Khal	Mathbaria	021	02	1223	Ward no. 05	0.02
Khal	Mathbaria	021	02	1211	Ward no. 05	0.00
Khal	Mathbaria	021	02	1207	Ward no. 05	0.00
Khal	Mathbaria	021	02	1207	Ward no. 05	0.00
Khal	Mathbaria	021	02	1255	Ward no. 05	0.01
Pond	Mathbaria	021	02	1128	Ward no. 05	0.02
Pond	Mathbaria	021	02	1124	Ward no. 05	0.10
Ditch	Mathbaria	021	02	1293	Ward no. 05	0.03
Ditch	Mathbaria	021	02	1292	Ward no. 05	0.00
Ditch	Mathbaria	021	02	1282	Ward no. 05	0.00
Ditch	Mathbaria	021	02	1281	Ward no. 05	0.19
Khal	Dakkhin Mithakhali	37	04	3111	Ward no. 01	0.05
Khal	Dakkhin Mithakhali	37	04	3109	Ward no. 01	0.03
Pond	Uttar Mithakhali	066	07	4738	Ward no. 01	0.07
Pond	Uttar Mithakhali	066	07	4737	Ward no. 01	0.10
Khal	Dakkhin Mithakhali	37	04	3087	Ward no. 01	0.01
Pond	Uttar Mithakhali	066	07	4658	Ward no. 01	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Pond	Uttar Mithakhali	066	07	4656	Ward no. 01	0.02
Pond	Uttar Mithakhali	066	07	4657	Ward no. 01	0.21
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3338	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 02	0.06
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Pond	Dakkhin Mithakhali	37	04	3851	Ward no. 02	0.53
Pond	Dakkhin Mithakhali	37	04	3850	Ward no. 02	0.00
Khal	Mathbaria	021	02	1294	Ward no. 05	0.03
Khal	Mathbaria	021	02	1295	Ward no. 05	0.01
Khal	Mathbaria	021	02	1293	Ward no. 05	0.02
Khal	Mathbaria	021	02	1292	Ward no. 05	0.04
Pond	Dakkhin Mithakhali	37	04	3819	Ward no. 03	0.10
Pond	Dakkhin Mithakhali	37	04	3863	Ward no. 03	0.05
Pond	Dakkhin Mithakhali	37	04	3633	Ward no. 03	0.01
Pond	Dakkhin Mithakhali	37	04	3636	Ward no. 03	0.05
Pond	Dakkhin Mithakhali	37	04	3635	Ward no. 03	0.03
Pond	Dakkhin Mithakhali	37	04	3637	Ward no. 03	0.01
Pond	Dakkhin Mithakhali	37	04	3638	Ward no. 03	0.00
Pond	Dakkhin Mithakhali	37	04	3634	Ward no. 03	0.01
Pond	Dakkhin Mithakhali	37	04	3540	Ward no. 03	0.12
Pond	Dakkhin Mithakhali	37	04	3614	Ward no. 03	0.13
Pond	Dakkhin Mithakhali	37	04	3607	Ward no. 03	0.07
Pond	Dakkhin Mithakhali	37	04	3607	Ward no. 03	0.17
Pond	Dakkhin Mithakhali	37	04	3688	Ward no. 03	0.25
Pond	Dakkhin Mithakhali	37	04	3727	Ward no. 03	0.02
Pond	Dakkhin Mithakhali	37	04	3729	Ward no. 03	0.03
Pond	Dakkhin Mithakhali	37	04	3734	Ward no. 03	0.07
Pond	Dakkhin Mithakhali	37	04	3730	Ward no. 03	0.08
Pond	Dakkhin Mithakhali	37	04	3718	Ward no. 03	0.39
Pond	Dakkhin Mithakhali	37	04	3727	Ward no. 03	0.12
Pond	Dakkhin Mithakhali	37	04	3719	Ward no. 03	0.03
Pond	Dakkhin Mithakhali	37	04	3742	Ward no. 03	0.01
Pond	Dakkhin Mithakhali	37	04	3750	Ward no. 03	0.00
Pond	Dakkhin Mithakhali	37	04	3718	Ward no. 03	0.02
Pond	Dakkhin Mithakhali	37	04	3752	Ward no. 03	0.11
Pond	Dakkhin Mithakhali	37	04	3749	Ward no. 03	0.11
Pond	Dakkhin Mithakhali	37	04	3754	Ward no. 03	0.00
Pond	Dakkhin Mithakhali	37	04	3753	Ward no. 03	0.00
Khal	Uttar Mithakhali	066	07	4776	Ward no. 01	0.04
Khal	Uttar Mithakhali	066	07	4777	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4778	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4779	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4803	Ward no. 01	0.01
Pond	Mathbaria	021	02	1163	Ward no. 05	0.00
Pond	Mathbaria	021	02	1164	Ward no. 05	0.21
Pond	Mathbaria	021	02	1165	Ward no. 05	0.02
Pond	Mathbaria	021	02	736	Ward no. 05	0.03
Pond	Mathbaria	021	02	737	Ward no. 05	0.04
Pond	Mathbaria	021	02	761	Ward no. 05	0.06
Pond	Baksir Ghatichora	022	03	2131	Ward no. 09	0.14
Pond	Baksir Ghatichora	022	03	2132	Ward no. 09	0.01
Pond	Mathbaria	021	02	805	Ward no. 06	0.03
Pond	Mathbaria	021	02	806	Ward no. 06	0.03
Pond	Mathbaria	021	02	802	Ward no. 06	0.01
Pond	Mathbaria	021	02	807	Ward no. 06	0.01
Pond	Mathbaria	021	02	808	Ward no. 06	0.00
Pond	Mathbaria	021	02	806	Ward no. 06	0.05
Pond	Mathbaria	021	02	807	Ward no. 06	0.03
Pond	Mathbaria	021	02	808	Ward no. 06	0.01
Khal	Mathbaria	021	02	993	Ward no. 07	0.00
Khal	Mathbaria	021	02	932	Ward no. 07	0.00
Khal	Mathbaria	021	02	992	Ward no. 07	0.02

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Mathbaria	021	02	933	Ward no. 07	0.00
Khal	Dakkhin Mithakhali	37	04	3164	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3122	Ward no. 01	0.03
Khal	Dakkhin Mithakhali	37	04	3123	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3124	Ward no. 01	0.00
Pond	Dakkhin Mithakhali	37	04	3367	Ward no. 02	0.24
Pond	Dakkhin Mithakhali	37	04	3397	Ward no. 02	0.29
Pond	Dakkhin Mithakhali	37	04	3395	Ward no. 02	0.07
Khal	Mathbaria	021	02	1428	Ward no. 05	0.00
Khal	Mathbaria	021	02	1427	Ward no. 05	0.01
Khal	Mathbaria	021	02	1426	Ward no. 05	0.01
Khal	Mathbaria	021	02	1425	Ward no. 05	0.01
Khal	Mathbaria	021	02	1424	Ward no. 05	0.01
Pond	Mathbaria	021	02	1429	Ward no. 04	0.02
Pond	Mathbaria	021	02	1447	Ward no. 04	0.16
Pond	Mathbaria	021	02	1403	Ward no. 04	0.04
Khal	Mathbaria	021	03	1681	Ward no. 04	0.01
Khal	Mathbaria	021	03	1683	Ward no. 04	0.00
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.05
Khal	Dakkhin Mithakhali	37	04	3670	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3672	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3703	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3704	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3709	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3795	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3796	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3806	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3813	Ward no. 03	0.11
Khal	Dakkhin Mithakhali	37	04	3818	Ward no. 03	0.30
Khal	Dakkhin Mithakhali	37	04	3817	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3804	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	3.91
Khal	Dakkhin Mithakhali	37	04	3824	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3629	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3776	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3821	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3794	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3810	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3811	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3825	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3824	Ward no. 03	0.10
Khal	Dakkhin Mithakhali	37	04	3826	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3827	Ward no. 03	0.21
Khal	Dakkhin Mithakhali	37	04	3828	Ward no. 03	0.06
Khal	Dakkhin Mithakhali	37	04	3820	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3821	Ward no. 03	0.08
Pond	Dakkhin Mithakhali	37	04	3039	Ward no. 01	0.12
Pond	Dakkhin Mithakhali	37	04	3043	Ward no. 01	0.02
Pond	Dakkhin Mithakhali	37	04	3038	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3090	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3077	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4651	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4647	Ward no. 01	0.03
Khal	Uttar Mithakhali	066	07	4646	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	4642	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	4643	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3105	Ward no. 01	0.03
Khal	Dakkhin Mithakhali	37	04	3099	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3101	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3100	Ward no. 01	0.02
Khal	Dakkhin Mithakhali	37	04	3099	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3098	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3448	Ward no. 03	0.02

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Dakkhin Mithakhali	37	04	3444	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3778	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3777	Ward no. 03	0.31
Khal	Dakkhin Mithakhali	37	04	3443	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3781	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3448	Ward no. 03	0.00
Khal	Baksir Ghatichora	022	03	1712	Ward no. 08	0.01
Khal	Baksir Ghatichora	022	03	2224	Ward no. 08	0.04
Khal	Mathbaria	021	02	897	Ward no. 07	0.00
Khal	Mathbaria	021	02	896	Ward no. 07	0.00
Khal	Mathbaria	021	02	1017	Ward no. 07	0.00
Khal	Mathbaria	021	02	910	Ward no. 07	0.01
Khal	Mathbaria	021	02	909	Ward no. 07	0.00
Khal	Mathbaria	021	02	908	Ward no. 07	0.00
Khal	Mathbaria	021	02	907	Ward no. 07	0.00
Khal	Mathbaria	021	02	900	Ward no. 07	0.02
Khal	Mathbaria	021	02	901	Ward no. 07	0.02
Khal	Mathbaria	021	02	903	Ward no. 07	0.00
Khal	Mathbaria	021	02	896	Ward no. 07	0.00
Khal	Mathbaria	021	02	895	Ward no. 07	0.00
Khal	Mathbaria	021	02	1017	Ward no. 07	0.00
Khal	Mathbaria	021	02	860	Ward no. 07	0.00
Khal	Mathbaria	021	02	886	Ward no. 07	0.02
Khal	Mathbaria	021	02	884	Ward no. 07	0.00
Khal	Mathbaria	021	02	882	Ward no. 07	0.01
Khal	Mathbaria	021	02	880	Ward no. 07	0.01
Khal	Mathbaria	021	02	881	Ward no. 07	0.01
Khal	Mathbaria	021	02	883	Ward no. 07	0.00
Khal	Mathbaria	021	02	879	Ward no. 07	0.01
Khal	Mathbaria	021	02	878	Ward no. 07	0.00
Khal	Mathbaria	021	02	877	Ward no. 07	0.01
Khal	Dakkhin Mithakhali	37	04	3069	Ward no. 01	0.00
Khal	Uttar Mithakhali	066	07	4644	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4643	Ward no. 01	0.01
Khal	Uttar Mithakhali	066	07	4638	Ward no. 01	0.07
Khal	Uttar Mithakhali	066	07	4636	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	99999	Ward no. 01	0.61
Khal	Dakkhin Mithakhali	37	04	3686	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3659	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3653	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3545	Ward no. 03	0.10
Khal	Dakkhin Mithakhali	37	04	3691	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3723	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3545	Ward no. 03	0.00
Khal	Mathbaria	021	02	836	Ward no. 06	0.00
Khal	Mathbaria	021	02	835	Ward no. 06	0.08
Khal	Mathbaria	021	02	789	Ward no. 06	0.00
Khal	Mathbaria	021	02	835	Ward no. 05	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.01
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 02	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.01
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 02	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.01
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.01
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.01
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.05
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.05
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.02
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.02
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.06
Pond	Dakkhin Mithakhali	37	04	3812	Ward no. 03	0.07
Pond	Dakkhin Mithakhali	37	04	3814	Ward no. 03	0.01
Pond	Dakkhin Mithakhali	37	04	3811	Ward no. 03	0.08
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	1.75
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	5.88
Khal	Uttar Mithakhali			0	Uttar Mithakhali	2.36
Khal	Mathbaria			0	Mathbaria	0.30
Khal	Andharmanik			0	Andharmanik	0.07
Khal	Andharmanik			0	Andharmanik	1.59
Khal	Andharmanik			0	Andharmanik	0.45
Khal	Andharmanik			0	Andharmanik	0.55
Khal	Andharmanik			0	Andharmanik	0.00
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	2.10
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.32
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.50
Pond/Ditch	Uttar Mithakhali			0	Uttar Mithakhali	0.41
Pond/Ditch	Uttar Mithakhali			0	Uttar Mithakhali	0.23
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.14
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.13
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	2.34
Pond/Ditch	Mathbaria			0	Mathbaria	0.13
Pond/Ditch	Andharmanik			0	Andharmanik	2.46
Pond/Ditch	Baksir Ghatichora			0	Baksir Ghatichora	0.00
Pond/Ditch	Andharmanik			0	Andharmanik	0.46
Pond/Ditch	Baksir Ghatichora			0	Baksir Ghatichora	0.20
Pond/Ditch	Baksir Ghatichora			0	Baksir Ghatichora	0.14
Pond/Ditch	Baksir Ghatichora			0	Baksir Ghatichora	0.10
Pond/Ditch	Baksir Ghatichora			0	Baksir Ghatichora	0.63
Pond/Ditch	Mathbaria			0	Mathbaria	0.68
Pond/Ditch	Baksir Ghatichora			0	Baksir Ghatichora	0.00
Khal	Baksir Ghatichora			0	Baksir Ghatichora	1.29
Khal	Baksir Ghatichora			0	Baksir Ghatichora	0.03
Khal	Baksir Ghatichora			0	Baksir Ghatichora	1.31
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.24
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.25
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.72
Khal	Mathbaria			0	Mathbaria	0.01
Khal	Uttar Mithakhali			0	Uttar Mithakhali	1.76
Pond/Ditch	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.72
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	3.25
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	5.39
Reservoier	Dakkhin Mithakhali			0	Dakkhin Mithakhali	17.49
Reservoier	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.25
Khal	Sener Tikitaka			0	Sener Tikitaka	3.30
Khal	Sener Tikitaka			0	Sener Tikitaka	1.39
Khal	Baksir Ghatichora	022	03	1861	Ward no. 09	0.18
Khal	Baksir Ghatichora	022	03	1861	Ward no. 09	0.19
Khal	Dakkhin Mithakhali	37	04	3370	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3949	Ward no. 02	0.00
Khal	Baksir Ghatichora	022	03	2375	Ward no. 08	0.00
Khal	Mathbaria	021	02	899	Ward no. 07	0.01
Khal	Dakkhin Mithakhali	37	04	3949	Ward no. 04	0.00
Khal	Dakkhin Mithakhali	37	04	3920	Ward no. 04	0.01
Khal	Dakkhin Mithakhali	37	04	3901	Ward no. 04	0.03
Khal	Mathbaria	021	03	1780	Ward no. 04	0.00
Khal	Mathbaria	021	03	1779	Ward no. 04	0.00
Khal	Mathbaria	021	03	1778	Ward no. 04	0.00
Khal	Mathbaria	021	03	1789	Ward no. 04	0.43
Khal	Dakkhin Mithakhali	37	04	3949	Ward no. 04	0.02
Khal	Mathbaria	021	03	1762	Ward no. 04	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Mathbaria	021	03	1789	Ward no. 04	0.00
Khal	Mathbaria	021	02	1207	Ward no. 05	0.00
Khal	Mathbaria	021	02	1207	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3598	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3596	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3598	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3597	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3596	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3595	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3121	Ward no. 01	0.07
Khal	Dakkhin Mithakhali	37	04	3119	Ward no. 01	0.04
Khal	Dakkhin Mithakhali	37	04	3118	Ward no. 01	0.00
Khal	Mathbaria	021	02	1166	Ward no. 05	0.00
Khal	Mathbaria	021	02	1167	Ward no. 05	0.00
Khal	Mathbaria	021	02	1166	Ward no. 05	0.00
Khal	Mathbaria	021	02	1167	Ward no. 05	0.00
Khal	Mathbaria	021	02	1167	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3148	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3152	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3156	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3151	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3150	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3146	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3145	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3143	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3155	Ward no. 01	0.04
Khal	Dakkhin Mithakhali	37	04	3174	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3157	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3167	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3169	Ward no. 01	0.03
Khal	Dakkhin Mithakhali	37	04	3174	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3173	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3167	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3170	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3171	Ward no. 01	0.01
Khal	Dakkhin Mithakhali	37	04	3585	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3587	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3595	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3595	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3596	Ward no. 03	0.06
Khal	Dakkhin Mithakhali	37	04	3657	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3618	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3620	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3619	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3617	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3627	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3612	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3602	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3598	Ward no. 03	0.05
Khal	Dakkhin Mithakhali	37	04	3646	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3629	Ward no. 03	1.14
Khal	Dakkhin Mithakhali	37	04	3609	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3621	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3628	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3631	Ward no. 03	0.00
Khal	Mathbaria	021	02	835	Ward no. 05	0.09
Khal	Mathbaria	021	02	788	Ward no. 05	0.00
Khal	Mathbaria	021	02	741	Ward no. 05	0.00
Khal	Mathbaria	021	02	742	Ward no. 05	0.00
Khal	Mathbaria	021	02	713	Ward no. 05	0.00
Khal	Mathbaria	021	02	1190	Ward no. 05	0.00
Khal	Mathbaria	021	02	837	Ward no. 05	0.00
Khal	Mathbaria	021	02	835	Ward no. 05	0.26
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 02	0.03

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Pond	Baksir Ghatichora	022	03	1955	Ward no. 08	0.00
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 03	0.20
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 03	0.08
Khal	Dakkhin Mithakhali	37	04	3858	Ward no. 02	0.01
Khal	Dakkhin Mithakhali	37	04	3858	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 02	0.18
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 02	0.10
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.09
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.20
Khal	Dakkhin Mithakhali	37	04	3819	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3819	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3862	Ward no. 02	0.07
Khal	Dakkhin Mithakhali	37	04	3862	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3863	Ward no. 02	0.00
Khal	Dakkhin Mithakhali	37	04	3863	Ward no. 02	0.00
Khal	Mathbaria	021	02	1404	Ward no. 02	0.00
Khal	Mathbaria	021	02	1404	Ward no. 02	0.00
Khal	Mathbaria	021	02	1404	Ward no. 02	0.00
Khal	Mathbaria	021	02	1404	Ward no. 02	0.00
Khal	Mathbaria	021	02	1404	Ward no. 02	0.00
Khal	Mathbaria	021	02	1040	Ward no. 08	0.07
Khal	Mathbaria	021	02	1040	Ward no. 08	0.00
Khal	Mathbaria	021	02	1040	Ward no. 08	0.02
Khal	Mathbaria	021	02	1040	Ward no. 08	0.06
Khal	Mathbaria	021	02	1040	Ward no. 08	0.01
Khal	Baksir Ghatichora	022	03	2384	Ward no. 08	0.01
Khal	Baksir Ghatichora	022	03	2384	Ward no. 08	0.02
Khal	Baksir Ghatichora	022	03	2370	Ward no. 07	0.00
Khal	Baksir Ghatichora	022	03	2370	Ward no. 07	0.00
Khal	Mathbaria	021	02	1018	Ward no. 07	0.03
Khal	Mathbaria	021	02	1018	Ward no. 07	0.00
Khal	Mathbaria	021	02	1017	Ward no. 07	0.35
Khal	Mathbaria	021	02	1017	Ward no. 07	0.29
Khal	Mathbaria	021	02	899	Ward no. 07	0.01
Khal	Mathbaria	021	02	899	Ward no. 07	0.00
Khal	Mathbaria	021	03	1762	Ward no. 04	0.00
Khal	Mathbaria	021	03	1762	Ward no. 04	0.00
Khal	Uttar Mithakhali	066	07	4681	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	4681	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3069	Ward no. 01	0.64
Khal	Dakkhin Mithakhali	37	04	3069	Ward no. 01	0.29
Khal	Dakkhin Mithakhali	37	04	3069	Ward no. 01	0.52
Khal	Mathbaria	021	02	701	Ward no. 01	0.01
Khal	Mathbaria	021	02	701	Ward no. 01	0.07
Khal	Mathbaria	021	02	701	Ward no. 01	0.14
Khal	Uttar Mithakhali	066	07	4803	Ward no. 01	0.02
Khal	Uttar Mithakhali	066	07	4803	Ward no. 01	0.09
Khal	Uttar Mithakhali	066	07	4803	Ward no. 01	0.08
Khal	Uttar Mithakhali	066	07	4803	Ward no. 01	0.07
Khal	Uttar Mithakhali	066	07	4801	Ward no. 05	0.00
Khal	Uttar Mithakhali	066	07	4801	Ward no. 05	0.00
Khal	Mathbaria	021	02	1224	Ward no. 05	0.00
Khal	Mathbaria	021	02	1224	Ward no. 05	0.00
Khal	Mathbaria	021	02	835	Ward no. 05	0.00
Khal	Mathbaria	021	02	835	Ward no. 05	0.00
Khal	Mathbaria	021	02	702	Ward no. 05	0.00
Khal	Mathbaria	021	02	702	Ward no. 05	0.00
Khal	Mathbaria	021	02	701	Ward no. 05	0.03
Khal	Mathbaria	021	02	701	Ward no. 05	0.14
Khal	Mathbaria	021	02	701	Ward no. 05	0.08
Khal	Mathbaria	021	02	701	Ward no. 05	0.00
Khal	Uttar Mithakhali	066	07	4803	Ward no. 05	0.00
Khal	Uttar Mithakhali	066	07	4803	Ward no. 05	0.04
Pond	Dakkhin Mithakhali	37	04	3802	Ward no. 03	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Pond	Dakkhin Mithakhali	37	04	3802	Ward no. 03	0.01
Pond/Ditch	Mathbaria	021	02	1127	Ward no. 05	0.01
Pond/Ditch	Mathbaria	021	02	1127	Ward no. 05	0.01
Pond/Ditch	Mathbaria	021	02	1145	Ward no. 05	0.05
Pond/Ditch	Mathbaria	021	02	1145	Ward no. 05	0.05
Khal	Dakkhin Mithakhali	37	04	3133	Ward no. 01	0.03
Khal	Dakkhin Mithakhali	37	04	3133	Ward no. 01	0.03
Khal	Dakkhin Mithakhali	37	04	3103	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3103	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 01	0.41
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 01	0.13
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 01	0.01
Khal	Mathbaria	021	02	1404	Ward no. 01	0.18
Khal	Mathbaria	021	02	1404	Ward no. 01	0.00
Khal	Mathbaria	021	02	1404	Ward no. 01	0.15
Khal	Mathbaria	021	02	1323	Ward no. 05	0.00
Khal	Mathbaria	021	02	1323	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 05	0.00
Khal	Dakkhin Mithakhali	37	04	3104	Ward no. 05	0.00
Khal	Mathbaria	021	02	1404	Ward no. 05	0.36
Khal	Mathbaria	021	02	1404	Ward no. 05	0.10
Khal	Mathbaria	021	02	1404	Ward no. 05	0.06
Khal	Mathbaria	021	02	1323	Ward no. 05	0.00
Khal	Mathbaria	021	02	1323	Ward no. 05	0.00
Khal	Mathbaria	021	02	1060	Ward no. 07	0.05
Khal	Mathbaria	021	02	1060	Ward no. 07	0.00
Pond	Baksir Ghatichora	022	03	1955	Ward no. 08	0.01
Pond	Baksir Ghatichora	022	03	1955	Ward no. 08	0.00
Ditch	Mathbaria	021	02	1177	Ward no. 06	0.00
Ditch	Mathbaria	021	02	1177	Ward no. 06	0.03
Ditch	Mathbaria	021	02	1177	Ward no. 06	0.00
Khal	Mathbaria	021	02	1040	Ward no. 04	0.00
Khal	Mathbaria	021	02	1040	Ward no. 04	0.00
Ditch	Mathbaria	021	02	916	Ward no. 07	0.02
Ditch	Mathbaria	021	02	916	Ward no. 07	0.00
Khal	Mathbaria	021	02	1166	Ward no. 05	0.00
Khal	Mathbaria	021	02	1166	Ward no. 05	0.00
Khal	Mathbaria	021	02	1222	Ward no. 05	0.02
Khal	Mathbaria	021	02	1222	Ward no. 05	0.03
Pond	Uttar Mithakhali	066	07	4661	Ward no. 01	0.04
Pond	Uttar Mithakhali	066	07	4661	Ward no. 01	0.03
Pond	Uttar Mithakhali	066	07	4661	Ward no. 01	0.02
Pond	Dakkhin Mithakhali	37	04	3755	Ward no. 03	0.00
Pond	Dakkhin Mithakhali	37	04	3755	Ward no. 03	0.01
Pond	Mathbaria	021	02	1446	Ward no. 04	0.00
Pond	Mathbaria	021	02	1446	Ward no. 04	0.00
Khal	Dakkhin Mithakhali	37	04	3705	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3705	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3819	Ward no. 03	0.34
Khal	Dakkhin Mithakhali	37	04	3819	Ward no. 03	0.03
Khal	Dakkhin Mithakhali	37	04	3443	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3443	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3447	Ward no. 03	0.01
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3864	Ward no. 03	0.00
Khal	Mathbaria	021	02	902	Ward no. 07	0.00
Khal	Mathbaria	021	02	902	Ward no. 07	0.03
Khal	Dakkhin Mithakhali	37	04	3629	Ward no. 03	1.01
Khal	Dakkhin Mithakhali	37	04	3629	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3658	Ward no. 03	0.00

Mathbaria Paurashava Master Plan: 2011-2031

Annexure- G: Plot Scheduling of Water Retention Area

Type	Mouza Name	JL No	Sheet No	Plot No	Ward No	Acre
Khal	Dakkhin Mithakhali	37	04	3658	Ward no. 03	0.01
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Missing Link	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.00
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.20
Khal	Dakkhin Mithakhali			0	Dakkhin Mithakhali	0.10
Khal	Mathbaria			0	Mathbaria	0.03
Khal	Mathbaria			0	Mathbaria	0.01
Khal	Mathbaria			0	Mathbaria	0.00
Khal	Mathbaria			0	Mathbaria	1.23
Khal	Uttar Mithakhali			0	Uttar Mithakhali	1.15
Khal	Uttar Mithakhali			0	Uttar Mithakhali	0.01
Khal	Uttar Mithakhali			0	Uttar Mithakhali	0.00
Khal	Uttar Mithakhali			0	Uttar Mithakhali	0.14
Khal	Uttar Mithakhali			0	Uttar Mithakhali	0.12
Khal	Uttar Mithakhali			0	Uttar Mithakhali	0.04
Khal	Dakkhin Mithakhali	37	04	3144	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3144	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3144	Ward no. 01	0.00
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.07
Khal	Dakkhin Mithakhali	37	04	3362	Ward no. 01	0.10
Khal	Dakkhin Mithakhali	37	04	3610	Ward no. 03	0.00
Khal	Dakkhin Mithakhali	37	04	3610	Ward no. 03	0.00
Khal	Mathbaria	021	02	1191	Ward no. 05	0.00
Khal	Mathbaria	021	02	1191	Ward no. 05	0.00
Khal	Sener Tikitaka			0	Sener Tikitaka	0.27
Khal	Sener Tikitaka			0	Sener Tikitaka	0.08