Government of the People's Republic of Bangladesh

Local Government Division

Ministry of Local Government, Rural Development & Cooperatives

MULADI 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

MULADI 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

MULADI PAURASHAVA

MULADI, BARISAL

MULADI PAURASHAVA MASTER PLAN: 2011-2031

Published by:

MULADI PAURASHAVA

Supported by Upazila Towns Infrastructure Development Project (UTIDP) of

Local Government Engineering Department (LGED) under

Local Government Division

Consultant :

Sheltech Consultants (Pvt.) Ltd.
1/E/2 Paribagh (Mazar Road), Shahbagh, Dhaka-1000
in association with
Design Planning and Management Consultants Ltd.

Copyright: Muladi Paurashava
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, Muladi 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 Muladi Paurashava.

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

(Mr. Safiquzzaman Rubel)
Mayor
Muladi 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 Muladi 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.

Muladi Paurashava is the main town of Muladi Upazila of Barisal district. Muladi upazila of Barisal zila was declared as Muladi Paurashava on 2001. Muladi Paurashava is a A-Class Paurashava and covers 9 partial mouzas. Muladi upazila of Barisal zila was declared as Muladi Paurashava on 25th January, 2001. Muladi Paurashava is an A-Class Paurashava and covers 9 mouzas. The Paurashava is bounded on the north by Damuddya upazila, on the west by Mehendiganj and Hizla upazila, on the south by Barisal Sadar and Babuganj Upazila and on the west by Gauranadi upazila. Muladi is small Paurashava with a population of 20,490 (BBS 2011) with 67.83% of the total land still under agricultural use. In next 20 years, as projections show, the density of population will reach only 05 persons per acre. It has moderate level of economic activities and economic potentials to flourish as an urban centre in near future.

For the preparation of master plan, an area of 4768.54 acres (19.30 sq. km.) consider as Planning area and Structure Plan area also.

According to the Census Year 2011, 20490 populations are living in the planning area with gross density 4 persons per acre and it will be 25884 (according to the medium growth rate) in 2031 with gross density over 5 persons per acre.

In the Paurashava, agriculture occupies 2810.57 acres and residential and circulation network occupy 292.85 acres and 48.22 acres of land respectively. An area of 919.26 acres is covered with water bodies.

In total, 81.02 km. existing roads are in the Paurashava and more 62.64 km. roads have been proposed for efficient accessibility of the Paurashava. In the Paurashava, existing length of the pucca drain is 61.10 meter and more 150.72 km. drain is being added as a proposal out of which 90.30 km. will be developed as secondary drain and 60.42 km. will be developed as tertiary drain. Existing canals and river will act as primary drain.

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 10 to 12 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.

Muladi Paurashava bears rural influences and agriculture is the major source of income. Average monthly income per household is Tk.6000. 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 Muladi 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.

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.

Table of Contents

Preface i
Executive Summary iii
Table of Contents v
List of Tables xii
List of Figures xiii
List of Maps xiv
List of Abbreviations and Acronyms xv
List of Local Term xvi
List of Technical Terms xvi

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 of the Structure Plan 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 13
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 15
3.1.8.3 Parking 17
3.1.8.4 Footpath 17
3.1.8.5 Waterway 17
3.1.8.6 Drainage System 17
3.1.8.7 Waste Management Logistics 18
3.1.9 Environmental Issues 19
3.1.10 Population 21
3.1.11 Paurashava Institutional Capacity 23
3.1.11.1 Human Resource Management: Allocated Manpower 23
3.1.11.2 Annual Income 24
3.1.11.3 Paurashava Own Property 24
3.1.11.4 Paurashava Town Planning Capacity 24

3.1.12 Urban Growth Area 25
3.1.13 Catchments Area 25
3.1.14 Existing Land Use 25
3.1.15 Paurashava's Functional Linkage with the Regional and National Network 26
3.1.16 Role of Agencies for Different Sectoral Activities 27
3.2 Development Problems of the Paurashava 27
3.2.1 Physical Infrastructure Problems 27
3.2.2 Socio-economic Problems 28
3.2.3 Environment 29

Chapter Four: Projection of Future Growth by 2031
4.1 Introduction 30
4.2 Projection of Population 30
4.3 Identification of future economic Opportunities 32
4.4 Projection of Land use 33
4.4.1 Estimation of Residential Land Requirement 33
4.4.2 Estimation of Land for Business 33
4.4.3 Estimation of Land for General Industry 33
4.4.4 Estimation of Land for Commercial Use 34
4.4.5 Education & Research 34
4.4.6 Health Services 35
4.4.7 Open Space 35
4.4.8 Transportation Facilities 35
4.4.9 Government Offices 36
4.4.10 Community Facilities 36
4.4.11 Utility Services 37

Chapter Five: Review of Policy, Law and Regulation
5.1 Introduction 38
5.2 Review of Relevant National Policies 38
5.2.1 National Land Use Policy 2001 38
5.2.2 National Housing Policy, 1993 39
5.2.3 Population Policy 2004 42
5.2.4 Transportation Policy 44
5.2.5 National Environment Policy 1992 47
5.2.6 Industrial Policy 2005 49
5.2.7 National Tourism Policy 50
5.2.8 Agriculture Policy 51
5.2.9 Urban Forest Policy 52
5.2.10 Urban Land Management Policy 53
5.2.11 Health Policy 54
5.2.12 National Urbanization Policy 55
5.2.13 Rural Development Policy 55
5.2.14 Strength and Weaknedd of Existing Policies 56
5.3 Plan and Progames 56
5.3.1 National Plan for Disaster Management 56
5.3.2 National Plan of Action for Persons with Disabilities (PWDs) as well as Autism 57
5.4 Act and Ordinance 58
5.4.1 Loca Government (Paurashava) Act 2009 58
5.4.2 Act for Preservation of Natural Water Reservoir, Open Space, 2000 62
5.4.3 Acquisition and Requisition of Immovable Property Ordinance, 1982 62
5.4.4 Brick Burning (Control) Ordinance, 1989 62
5.4.5 Rural Electrification Board Ordinance, 1977 62
5.4.6 Public Health (Emergency Provisions) Ordinance, 1944 63
5.4.7 Conservation of Environment Act, 1995 63
5.4.8 Land Development for Private Housing Project Act, 2004 63
5.5 Review of Relevant Laws and Regulations 63
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 63

Paurashavas of Bangladesh
5.5.2 Bangladesh National Building Code (BNBC) 1993 64
5.5.3 The Building Construction Act 1952 64

Chapter Six: Critical Planning Issues
6.0 Introduction 66
6.1 Transport 66
6.1.1 Traffic Conflict 66
6.1.2 Unplanned and Narrow Roads 66
6.2 Environment 66
6.2.1 Drainage Problem 66
6.2.2 Waste Management 67
6.2.3 Water Supply 67
6.3 Land Use Control 67
6.4 Disaster 67

Chapter Seven: Landuse Zoning Policies and Development Strategies
7.1 Background Study 68
7.2 Structure Plan Zones 68
7.3 Strategy to achieve the targets of Optimum and Organised Use and Creation of Congenial Urban Habitable Environment 69
7.4 Policies for Socio-economic Sector 72
7.4.1 Population 72
7.4.2 Economic Development and Employment Generation 72
7.4.3 Housing and Slum Improvement 73
7.4.4 Social Amenities and Community Facilities 74
7.5 Physical Infrastructure Sector 75
7.5.1 Transport 75
7.5.2 Utility Services 76
7.6 Environmental Issues 76
7.6.1 Natural Resources 77

Chapter Eight: Implementation Issue
8.0 Introduction 78
8.1 Institutional Capacity Building of the Paurashava 78
8.1.1 Human Resource Management 78
8.1.1.1 Staff Training 78
8.1.1.2 Lack of Automation 78
8.1.1.3 Short of Paurashava Town Planning Capacity 78
8.1.2 Legal Aspects 81
8.1.3 Good Governance in Legal Provisions 81
8.1.4 Financial Issues 81
8.1.4.1 Governance in Muladi Paurashava 81
8.1.4.2 Revenue Management 82
8.1.4.3 Paurashava's Financial Capacity and Plan Execution 82
8.1.5 Plan Execution Monitoring and Evaluation 82
8.1.6 Updating of Plans 82
8.2 Resource Mobilization 83

Part B: Urban Area Plan

Chapter Nine: Urban Area Plan
9.1 Introduction 84
9.1.1 Goal and Objectives 84
9.1.2 Methodology and Approach to Planning 84
9.1.3 Area Delineation of Urban Area Plan 85
9.1.4 Content and Form of Urban Area Plan 86

Chapter Ten: Land Use Plan
10.1 Introduction 88
10.2 Existing and Estimated Future Land Use 88

10.2.1 Existing Land Use Types and Patterns 88
10.2.2 Estimated Future Land Use 90
10.3 Land Use Zoning and Development Control 93
10.3.1 Land Use Zoning 94
10.3.2 Land Use Zone Classification 94
10.4 Plan Implementation Strategy 111
10.4.1 Land Development Regulations to Implement the Land Use Plan 111
10.4.2 Implementation, Monitoring and Evaluation of the Land Use Plan 112
10.5 Land Use Permit 114

Chapter Eleven: Transportation and Traffic Management Plan
11.0 Introduction 116
11.1 Approach and Methodology 116
11.2 Assessment of Existing Conditions of Transportation Facilities 117
11.2.1 Exiting Road Network 117
11.2.2 Mode of Transport 119
11.2.3 Intensity of Traffic Volume 119
11.2.4 Level of Service: Degree of Traffic Congestion and Delay 119
11.2.5 Facilities for Pedestrians 120
11.2.6 Analysis of Existing Deficiencies 120
11.2.6.1 Roadway Capacity Deficiencies 120
11.2.6.2 Operational Safety, Signal and other Deficiencies 120
11.2.7 Condition of Rail/Water/Air Transport 121
11.3 Future Projections 121
11.3.1 Travel Demand Forecasting for Next 20 Yeas 121
11.3.2 Transportation Network 121
11.3.3 Future Traffic Volume and Level of Service 121
11.4 Transportation Development Plan 122
11.4.1 Plan for Road Network Development 123
11.4.1.1 Road Network Plan 123
11.4.1.2 Proposal for Improvement of the Existing Road Networks 126
11.4.1.3 Proposals for new roads 128
11.4.2 Plan for Transportation Facilities 128
11.4.2.1 Proposals for Transportation Facilities 128
11.4.2.2 Parking and Terminal Facilities 128
11.4.2.3 Development of Facilities for Pedestrians, Bicycles and Rickshaws 134
11.4.2.4 Other Transportation Facilities 134
11.5 Transportation System Management Strategy (TSM) 137
11.5.1 Strategies for Facility Operations 137
11.5.2 Strategies for Traffic Flow and Safety 137
11.5.3 Strategies for Traffic Management 138
11.6 Plan Implementation 139
11.6.1 Regulations to Implement the Transportation Plan 139
11.6.2 Implementation, Monitoring, Evaluation and Coordination of the Plan 140

Chapter Twelve: Drainage and Environmental Management Plan
A. DRAINAGE PLAN
12.0 Introduction 143
12.1 Objectives 143
12.1.2 Methodology and Approach to Planning 143
12.2 Existing of Drainage Network 144
12.2.1 Existing Drainage System/Network 144
12.2.1.1 Man Made Drainage System in Muladi Paurashava 144
12.2.1.2 Natural Drainage System in Muladi Paurashava 144
12.2.1.3 Problems of Drainage 144
12.2.1.4 Opportunities of Resolving Drainage Problems 145
12.2.2 Appraisal of Local Topography 145
12.2.3 Demand for Drains 146

12.3 Plans for Drainage Management and Flood Control 146
12.3.1 Plan for Drain Network Development 146
12.3.1.1 Drainage Network Plan 146
12.3.1.2 Proposal for Improvement of the Existing Drain Networks 150
12.3.1.3 Proposals for New Drains 151
List of Infrastructure measures for Drainage and Flood Control Network 165
12.4 Plan Implementation Strategies 167
12.4.1 Regulations to implement the Drainage and Flood Plan 167
12.4.2 Implementation, Monitoring, Evaluation and Coordination of the Plan 167

B. ENVIRONMENTAL MANAGEMENT PLAN

12.5 Introduction 170
12.5.1 Objectives 170
12.5.2 Methodology and Approach to Environmental Study 170
12.6 Existing Environmental Conditions 170
12.6.1 Geology, Soil and Sub-soil Conditions 170
12.6.2 Climate 170
12.6.3 Temperature 170
12.6.4 Humidity 171
12.6.5 Rainfall 171
12.6.6 Wind Directions 173
12.6.7 Hydrology 173
12.6.8 Solid Waste and Garbage Disposal 175
12.6.9 Pollutions 175
12.6.10 Natural Calamities and Localized Hazards 176
12.6.11 Identifying Major Areas of Threat and Risk 177
12.7 Plans for Environmental Management and Pollution Control 177
12.7.1 Proposals for Environmental Issues 177
12.7.1.1 Solid Waste Management 177
12.7.1.2 Ground Water Pollution 178
12.7.1.3 Surface Water Pollution 178
12.7.1.4 Prevention of Encroachment if Natural Khals 178
12.7.1.5 Open Space Promotion 179
12.7.1.6 Fire hazard 179
12.7.1.7 Pollution Protection Proposals 179
12.7.2 Natural Calamities and Hazard Mitigation Proposals 180
12.7.2.1 Protection Plan Addressing Natural Calamities 180
12.7.2.2 Protection Plan Addressing Regular Hazards 180
12.7.2.3 Protection Plan Addressing Encroachment & Other Relevant Issues 180
12.7.3 Plan Implementation Strategies 180
12.7.3.1 Regulations to Implement the Drainage and Flood Plan 180
12.7.3.2 Implementation, Monitoring, Evaluation and Coordination of the Plan 181

Chapter Thirteen: Urban Basic Service Development Plan

13.0 Introduction 183
13.1 Basic Urban Services Development Plan 183
13.1.1 Water Supply 183
13.1.2 Gas Supply 184
13.1.3 Sanitation 186
13.1.4 Solid Waste Management 186
13.1.5 Electricity 188
13.1.6 Telecommunication 189

Part C: Ward Action Plan

Chapter Fourteen: Ward action Plan

14.1 Introduction 190
14.2 Ward Action Plan for Ward No. 01 193
14.2.1 Demography 193
14.2.2 Critical Issues and Opportunities of the Ward 193
14.2.3 Ward Action Plan Proposals 194
14.2.3.1 Review of Existing Land Use 194
14.2.3.2 Proposed Land Use Zoning 194
14.2.3.3 Proposed Circulation Network Infrastructure Development 199
14.2.3.4 Drainage Development Plan 199
14.2.3.5 Urban Services 199
14.3 Ward Action Plan for Ward No. 02 202
14.3.1 Demography 202
14.3.2 Critical Issues and Opportunities of the Ward 202
14.3.3 Ward Action Plan Proposals 203
14.3.3.1 Review of Existing Land Use 203
14.3.3.2 Proposed Land Use Zoning 203
14.3.3.3 Proposed Circulation Network Infrastructure Development 207
14.3.3.4 Drainage Development Plan 207
14.3.3.5 Urban Services 208
14.4 Ward Action Plan for Ward No. 03 210
14.4.1 Demography 210
14.4.2 Critical Issues and Opportunities of the Ward 210
14.4.3 Ward Action Plan Proposals 211
14.4.3.1 Review of Existing Land Use 211
14.4.3.2 Proposed Land Use Zoning 211
14.4.3.3 Proposed Circulation Network Infrastructure Development 216
14.4.3.4 Drainage Development Plan 217
14.4.3.5 Urban Services 217
14.5 Ward Action Plan for Ward No. 04 220
14.5.1 Demography 220
14.5.2 Critical Issues and Opportunities of the Ward 220
14.5.3 Ward Action Plan Proposals 221
14.5.3.1 Review of Existing Land Use 221
14.5.3.2 Proposed Land Use Zoning 221
14.5.3.3 Proposed Circulation Network Infrastructure Development 226
14.5.3.4 Drainage Development Plan 227
14.5.3.5 Urban Services 229
14.6 Ward Action Plan for Ward No. 05 232
14.6.1 Demography 232
14.6.2 Critical Issues and Opportunities of the Ward 232
14.6.3 Ward Action Plan Proposals 233
14.6.3.1 Review of Existing Land Use 233
14.6.3.2 Proposed Land Use Zoning 233
14.6.3.3 Proposed Circulation Network Infrastructure Development 2237
14.6.3.4 Drainage Development Plan 237
14.6.3.5 Urban Services 239
14.7 Ward Action Plan for Ward No. 06 241
14.7.1 Demography 241
14.7.2 Critical Issues and Opportunities of the Ward 241
14.7.3 Ward Action Plan Proposals 242
14.7.3.1 Review of Existing Land Use 242
14.7.3.2 Proposed Land Use Zoning 242
14.7.3.3 Proposed Circulation Network Infrastructure Development 247
14.7.3.4 Drainage Development Plan 247
14.7.3.5 Urban Services 248

14.8 Ward Action Plan for Ward No. 07 251
14.8.1 Demography 251
14.8.2 Critical Issues and Opportunities of the Ward 251
14.8.3 Ward Action Plan Proposals 252
14.8.3.1 Review of Existing Land Use 252
14.8.3.2 Proposed Land Use Zoning 252
14.8.3.3 Proposed Circulation Network Infrastructure Development 257
14.8.3.4 Drainage Development Plan 257
14.8.3.5 Urban Services 259
14.9 Ward Action Plan for Ward No. 08 262
14.9.1 Demography 262
14.9.2 Critical Issues and Opportunities of the Ward 262
14.9.3 Ward Action Plan Proposals 263
14.9.3.1 Review of Existing Land Use 263
14.9.3.2 Proposed Land Use Zoning 263
14.9.3.3 Proposed Circulation Network Infrastructure Development 268
14.9.3.4 Drainage Development Plan 268
14.9.3.5 Urban Services 268
14.10 Ward Action Plan for Ward No. 09 271
14.10.1 Demography 271
14.10.2 Critical Issues and Opportunities of the Ward 271
14.10.3 Ward Action Plan Proposals 272
14.10.3.1 Review of Existing Land Use 272
14.10.3.2 Proposed Land Use Zoning 272
14.10.3.3 Proposed Circulation Network Infrastructure Development 277
14.10.3.4 Drainage Development Plan 277
14.10.3.5 Urban Services 278

Chapter Fifteen: Conclusion
15.1 Conclusion 280

ANNEXURE
Annex-A Team Composition of Master Plan Preparation
Annex-B Paurashava Gazette
Annex-C Permitted Land Use
Annex-D Meeting Minutes
Annex-E Proposed Road Inventory
Annex-F Proposed Drain Inventory
Annex-G Mouza Schedule of Waterbody
Annex-H
1. Structure Plan Map
2. Land Use Plan Map
3. Transportation and Traffic Management Plan
4. Drainage and Environmental Management Plan

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 Muladi Paurashava	23
Table-3.4	Agencies Responsible for Sectoral Activities	27
Table-4.1	Population Projection with Medium Growth Rate for Muladi Up to 2031	31
Table-4.2	Population Projection with High Growth Rate for Muladi Up to 2030	31
Table-4.3	Gross population density of some areas	31
Table-4.4	Estimation of Housing Land Requirement	33
Table-4.5	Estimation of Land Requirement for General Industries	34
Table-4.6	Estimation of Land Requirement for Commerce and Shopping	34
Table-4.7	Estimation of Land Requirement for Education Facilities	34
Table-4.8	Estimation of Land Requirement for Health Services	35
Table-4.9	Estimation of Land Requirement for Open Space	35
Table-4.10	Estimation of Land Requirement for Transportation Facilities	36
Table-4.11	Estimation of Land Requirement for Administration	36
Table-4.12	Estimation of Land Requirement for Community Facilities	36
Table-4.13	Estimation of Land Requirement for Utilities	37
Table-5.1	Passenger Car Unit (pcu) Conversion factors for non-urban roads	45
Table-5.2	Design applications	45
Table-5.3	Existing and Recommended design lives	45
Table-5.4	Functions in brief prescribed in the Local Govt. (Paurashava) Act, 2009	59
Table-7.1	Structure Plan zone wise area distribution	69
Table 9.1	Urban Area Plan Coverage	85
Table 9.2	Mouza Sheduling for Urban Area Plan	85
Table10.1	Existing Land Use of the Planning Area (Existing Paurashava Area)	88
Table10.2	Existing and Proposed Landuse within Muladi Paurashava	93
Table10.3	New Development proposal for Urban Residential	102
Table10.4	New Development proposal for Commercial Activities	102
Table10.5	New Development proposal for Industry	103
Table10.6	Proposed location of the Ward Center Complex in the project area	103
Table10.7	New Development proposal for Education & Research	104
Table10.8	New Development Proposal for Open Space	106
Table10.9	New Development proposal for Transportation Facilities	107
Table10.10	New Development proposal for Utility Services	107
Table10.11	New Development proposal for Community Facilities	108
Table11.1	Proposal for Road Standard in the Project area	122
Table11.2	Major Road Proposal for Muladi Paurashava	123
Table11.3	Summary of new road proposal in Muladi Paurashava	128
Table11.4	Estimation of Land Requirement for Transportation Facilities	128
Table12.1	Proposals of New Tertiary Drains in Muladi Paurashava	151
Table12.2	Proposals of New Secondary Drains in Muladi Paurashava	159
Table13.1	Proposed water supply network in Muladi	183
Table13.2	Proposed gas supply network in Muladi	185
Table14.1	Population Statistics of Ward No. 01	193
Table14.2	Existing and Proposed Land Uses	195
Table14.3	Road Proposals for Phase 01	199
Table14.4	Proposed Drainage Development Plan Proposals for phase 01	199
Table14.5	Utility Services Development Proposals for Ward 01 (Phase 01)	199
Table14.6	Proposed Urban Services for Ward No. 01	200
Table14.7	Population Statistics of Ward No. 02	202
Table14.8	Existing and Proposed Land Uses	204
Table14.9	Road Proposals for Phase 01	207
Table14.10	Proposed Drainage Development Plan Proposals for phase 01	207
Table14.11	Proposed Urban Services for Ward No. 02	208
Table14.12	Population Statistics of Ward No. 03	210
Table14.13	Existing and Proposed Land Uses	213
Table14.14	Road Proposals for Phase 01	216
Table14.15	Proposed Urban Services for Ward No. 03	218
Table14.16	Population Statistics of Ward No. 04	220

Table	Table Title	Page
Table14.17	Existing and Proposed Land Uses	222
Table14.18	Road Proposals for Phase 01	226
Table14.19	Proposed Drainage Development Plan Proposals	227
Table14.20	Proposal of Urban Services for Ward No. 04	230
Table14.21	Population Statistics of Ward No. 05	232
Table14.22	Existing and Proposed Land Uses	234
Table14.23	Road Proposals for Phase 01	237
Table14.24	Proposed Drainage Development Plan Proposals	237
Table14.25	Proposal of Urban Services for Ward No. 05	239
Table14.26	Population Statistics of Ward No. 06	241
Table14.27	Existing and Proposed Land Uses	244
Table14.28	Road Proposals for Phase 01	247
Table14.29	Proposed Drainage Development Plan Proposals	247
Table14.30	Proposal of Urban Services for Ward No. 06	249
Table14.31	Population Statistics of Ward No. 07	251
Table14.32	Existing and Proposed Land Uses	254
Table14.33	Road Proposals for Phase 01	257
Table14.34	Proposed Drainage Development Plan Proposals	258
Table14.35	Proposal of Urban Facilities for Ward No. 07	260
Table14.36	Population Statistics of Ward No. 08	262
Table14.37	Existing and Proposed Land Uses	264
Table14.38	Road Proposals for Phase 01	268
Table14.39	Proposed Urban Facilities of Ward No. 08	269
Table14.40	Population Statistics of Ward No. 09	271
Table14.41	Existing and Proposed Land Uses	273
Table14.42	Road Proposals for Phase 01	277
Table14.43	Proposed Urban Facilities of Ward No. 09	278

LIST OF FIGURES

Figure	Figure Title	Page
Figure-8.1	Scope of Work for Planning Division	80
Figure-11.1	Primary Road with 80 ft RoW	125
Figure-11.2	Primary Road with 60 ft RoW	125
Figure-11.3	Secondary Road with 40 ft RoW	125
Figure-11.4	Access/Local Road with 20 ft RoW	126
Figure-11.5	Typical Layout of a Bus & Turck Terminal	130
Figure-11.6	Parking Angle and Minimum Aisle Width	133
Figure-11.7	On-Street Space Used for Various Parking Positions	134
Figure-12.1	Earthen Primary Drain	147
Figure-12.2	Typical RCC Primary Drain	148
Figure-12.3	A Typical Secondary Drain	148
Figure-12.4	A Typical Tertiary Drain	149
Figure-12.5	Plot and Block Drain	149
Figure-12.6	A Schematic Diagram showing flow directions from Tertiary drains to Outfall	150
Figure-12.7	Bridge and Culvert	150
Figure-12.8	A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion	150
Figure-12.9	Monthly Average Temperature (2000-2010)	171
Figure12.10	Year wise Average Temperature (2000-2010)	171
Figure12.11	Monthly Average Humidity (%) for the year 2000-2010	171
Figure12.12	Rain Fall Data of Several Years	171
Figure12.13	Wind Speed Data of Several Years in Pirojpur	173
Figure12.14	Cyclone Hit in different years over Muladi Paurashava	176

LIST OF MAPS

Map	Map Title	Page
Map-1.1	Location of Muladi Paurashava	6
Map-2.1	Structure Plan Landuse policy map of Muladi Paurashava	10
Map-3.1	Circulation Network of Muladi Paurashava	16
Map-3.2	Location of water bodies including drainage network	20
Map-9.1	Urban Area Map	87
Map-10.1	Urban area map with existing landuse pattern of Muladi Paurashava	89
Map-10.2	Location of proposed Ward Centre Complexes in Muladi Paurashava	105
Map-10.3	Urban area map with proposed landuse pattern of Muladi Paurashava	110
Map-11.1	Proposed and existing Circulation network of Muladi Paurashava	118
Map-11.2	Proposed and existing and proposed terminals and stands / stoppages of Muladi Paurashava	136
Map-12.1	Topographic map of Muladi Paurashava	146
Map-12.2	Detailed drainage network plan of Muladi Paurashava	166
Map-12.3	Mean Annual Rainfall (mm) of Bangladesh	172
Map-12.4	General wind speed throughout Bangladesh	174
Map-13.1	Proposed linear service network in Muladi Paurashava	187
Map-14.1	Existing land use of Ward No.01	197
Map-14.2	Proposed landuse zoning of ward no. 01	198
Map-14.3	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 1	201
Map-14.4	Existing land use of Ward No.2	205
Map-14.5	Proposed landuse zoning of ward no. 02	206
Map-14.6	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 2	209
Map-14.7	Existing land use of Ward No.03	214
Map-14.8	Proposed landuse zoning of ward no. 03	215
Map-14.9	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 3	219
Map14.10	Existing land use of Ward No.04	224
Map14.11	Proposed landuse zoning of ward no. 04	225
Map14.12	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 4	231
Map14.13	Existing land use of Ward No.05	235
Map14.14	Proposed landuse zoning of ward no. 05	236
Map14.15	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 5	240
Map14.16	Existing land use of Ward No.06	245
Map14.17	Proposed landuse zoning of ward no. 06	246
Map14.18	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 6	250
Map14.19	Existing land use of Ward No.07	255
Map14.20	Proposed landuse zoning of ward no. 07	256
Map14.21	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 7	261
Map14.22	Existing land use of Ward No.08	266
Map14.23	Proposed landuse zoning of ward no. 08	267
Map14.24	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 8	270
Map14.25	Existing land use of Ward No.09	275
Map14.26	Proposed landuse zoning of ward no. 09	276
Map14.27	Proposed Urban services, Drains, Water and Gas Supply Networks of Ward 9	279

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

Part A. Structure Plan

Chapter- One
INTRODUCTION

1.1 Introduction

In Bangladesh the average urban growth rate between 1961 to 1981 was 8%, which has currently risen 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 322. 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 and 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 217 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 Muladi 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 Muladi Paurashava Master Plan are:

a. Find out development issues and potentials of the Muladi 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 Muladi 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 of the people in general and poor and the disadvantaged groups in particular, 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 Muladi 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 Muladi 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 Muladi 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;
- educational 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 to undertaken the following major activities for preparation of the Muladi 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 Muladi 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.

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 19.30 sq. km or 4768.54 acres of land that includes existing Paurashava area (4146.45 acres or 16.78 sq. km) and additional possible extended area at the east of present Paurashava area (total 622.09 acres or 2.52 sq. km.). Map-1.1 shows the location of Muladi 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.

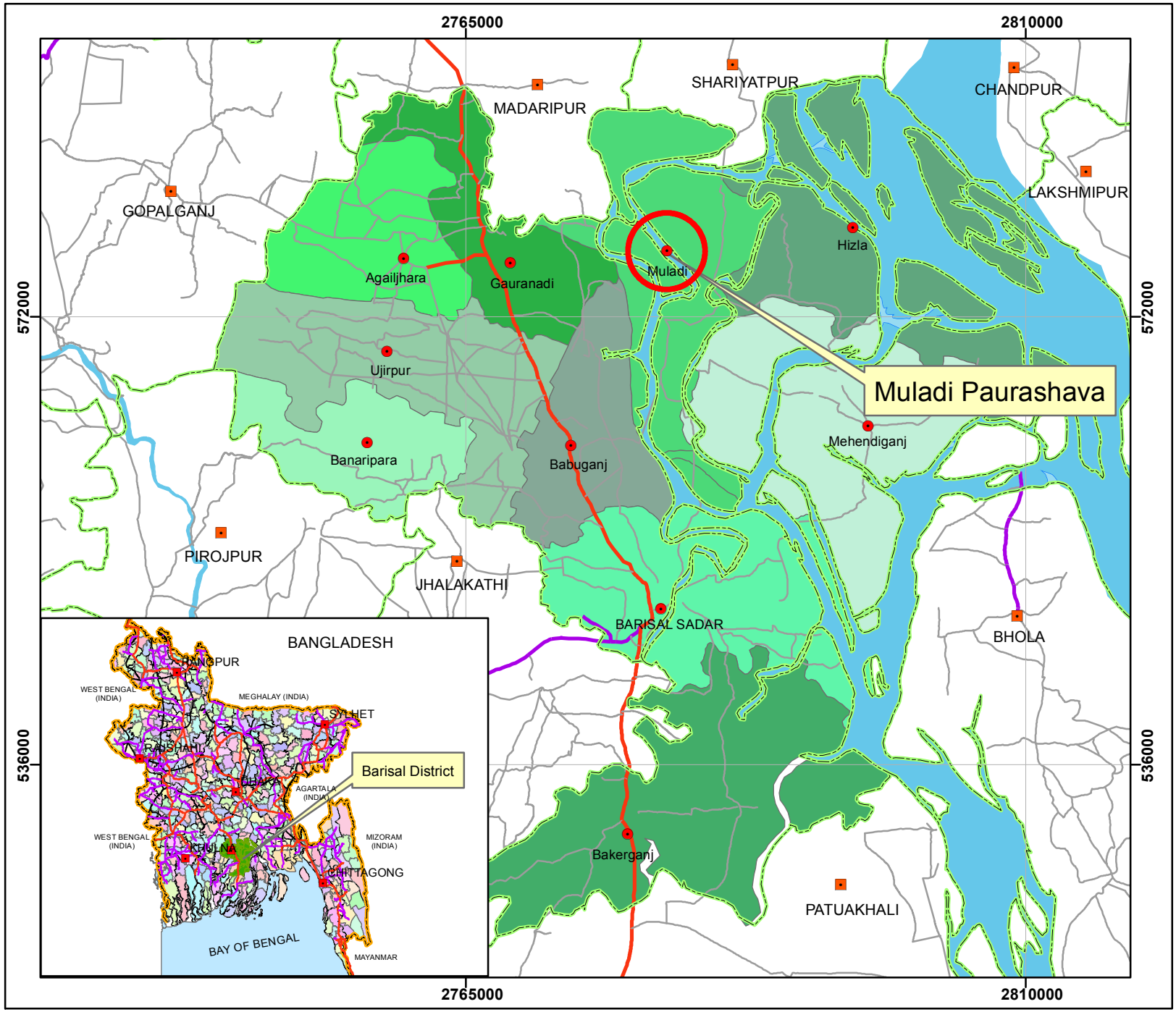
e. Transportation Planning

For making a comprehensive transportation plan for Muladi 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 Muladi 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 Muladi 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.

Map 1.1 | **Location Map of Muladi Paurashava**



SCALE

1:440,000

0 125 250 500 750 1,000 Meters

LEGEND

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

UPAZILA NAME

- Agailjhara
- Babuganj
- Bakerganj
- Banaripara
- Barisal
- Gaurnadi
- Hizla
- Mehendiganj
- Muladi
- Ujirpur

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

SHELTECH CONSULTANTS (PVT.) LTD.

1/E/2 (2nd floor), Paribag (Mazar Road), Shahbagh,
Dhaka-1000, BANGLADESH
Phone : 880-2-9611171
Facsimile : 880-2-9611172
E-mail: scpl.mail@gmail.com

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).

Muladi upazila of Barisal zila was declared as Muladi Paurashava on 25th January, 2001. Muladi Paurashava is an **A-Class** Paurashava and covers 9 mouzas. The Paurashava is bounded on the north by Damuddya upazila, on the west by Mehendiganj and Hizla upazila, on the south by Barisal Sadar and Babuganj Upazila and on the west by Gauranadi upazila.

2.2 Philosophy of the Master Plan

The philosophy behind Muladi 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 Muladi 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 priorities 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.

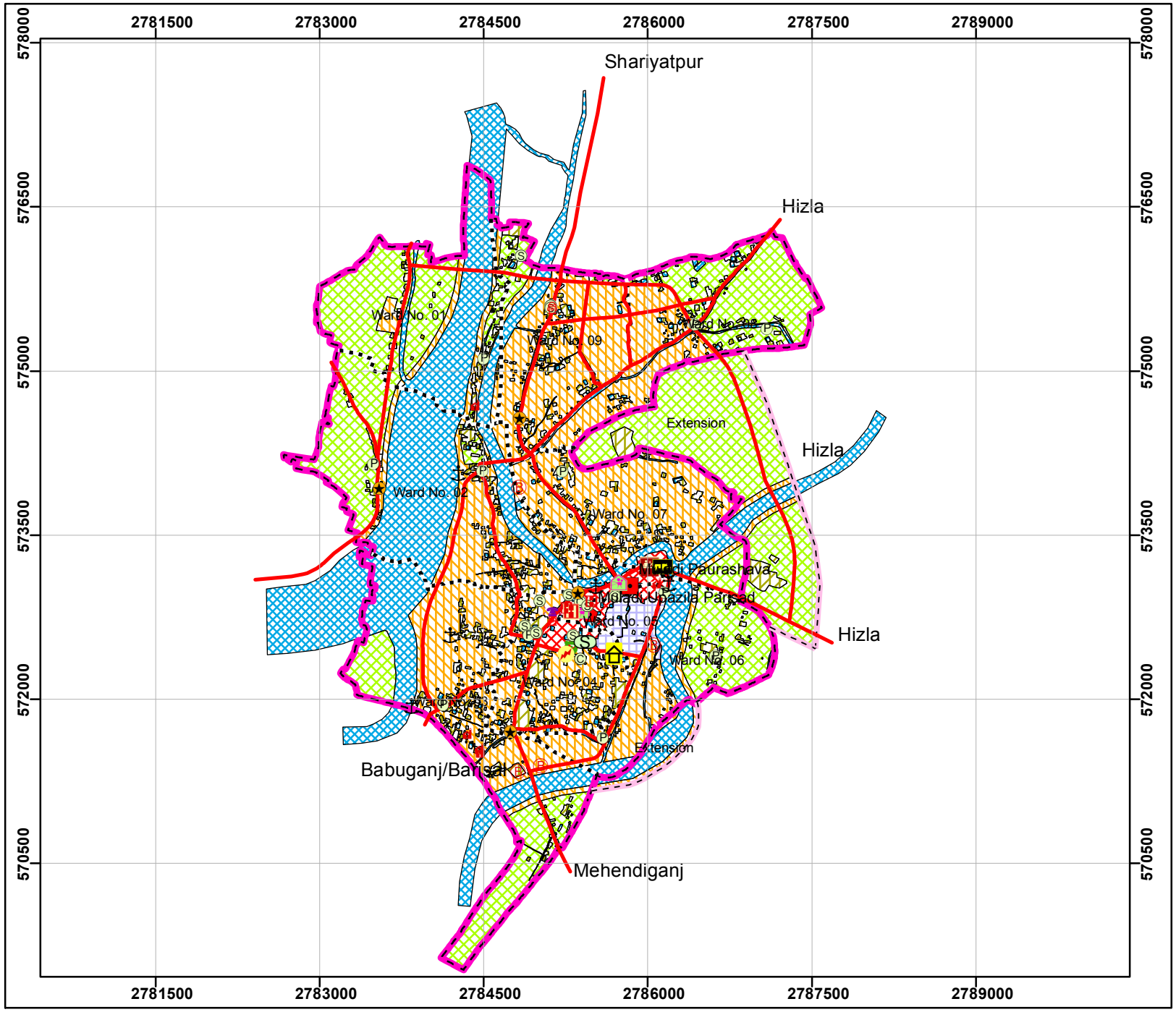
2.4.4 The Style and Format of Structure Plan

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

The total area of Muladi Structure Plan Area is 19.30 sq. km or 4768.54 acres of land that includes existing Paurashava area (4146.45 acres or 16.78 sq. km) and additional possible extended area at the east of present Paurashava area (total 622.09 acres or 2.52 sq. km.). **Map- 2.1** shows the structure plan land use policy map of Muladi Paurashava and all the 9 wards of the Paurashava

including other extended area covered by the Structure Plan area. A composite structure plan area policy map presented in **Annexure**.

Map 2.1 | **Structure Plan policy Zoning map of Muladi Paurashava**



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

Structure Plan Zones

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

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

SHELTECH CONSULTANTS (PVT.) LTD.

1/E/2 (2nd floor), Paribag (Mazar Road), Shahbagh,
Dhaka-1000, BANGLADESH
Phone : 880-2-9611171
Facsimile : 880-2-9611172
E-mail: scpl.mail@gmail.com

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 Muladi Paurashava.

3.1.1 Societal

Following societal characteristic features have been identified in Muladi town.

Small Number of Migrated Families

In the town, about 99% households were found to be the permanent living there since birth, while only 1% migrated to the town from various places, mostly from by greater Barisal.

Population Growth Lower than National Average

The annual urban population growth rate of Muladi Paurashava is 1.00% (BBS 2011) and by this time the population was 20490. In the year 2031, the population of Muladi Paurashava will be 26530 with the growth rate of 1.30%.

High Income Level

At Muladi Paurashava, about 71.57% of the households' incomes are within the range of Tk. 3500.00 – Tk.10, 000.00 per month. Further, 10.54% of the household have income per month below Tk. 3500.00; 4.15% Tk. 10,001.00 - Tk. 12,000.00 and 13.74% above Tk. 12,000.00. It can be seen that there are different types of income groups of people living at Muladi Paurashava area. It can be seen that people of different income groups are living at Muladi Paurashava area.

In terms of spatial distribution, i.e., by Wards, it is observed in Ward No-1, the highest concentration of the households' income (82.22%) is within the range of Tk.3500.00 - Tk.10000.00 per month, in Ward2 68.97% Tk. 3500.00 – Tk. 10,000.00 per month, in Ward 3 75.86% Tk. 3500.00 - Tk.10000.00 and 80% 3500.00 - Tk.10000.00 per month, in Ward 4, 70.27% Tk. 3500.00 – Tk. 10,000.00 per month, in Ward No. 5, 66.67% Tk. 3500.00 – Tk. 10,000.00 per month, in Ward 6, 57.58% Tk. 3500.00 - Tk.10,000.00 per month, in Ward 7, 70.73% Tk. 3500.00 - Tk.10, 000.00 per month, in Ward No. 8 and in Ward 9 43% Tk. Above 12000.00 per month. It seems that most of the rich people live in Ward No. 9.

Higher Education Rate but Low level of Education

About 33.82% of the people have passed VI to X, 35.21% passed Classes1 to V, 10.98 % have level of education SSC and 3.85 % are HSC passed. About 10.54% people are completely illiterate. In case of obtaining SSC degree, 12.58 % of the males passed SSC and 8.66% of the females.

It has been observed that the literacy rate (62.6%) of Muladi Paurashava is satisfactory with compared to Barisal Zila and National level for both male and female. In order to increase literacy

rate at Muladi Paurashava there is need for establishment of more educational facilities at different levels of education. It is evident that 0.15% of the females have obtained postgraduate degree whereas 0.75% of the males are obtained postgraduate degree. Illiteracy rate shows far more dissimilarities between men and women.

High Dependency Rate

Muladi Paurashava has a high level of dependency rate. Socio-economic survey reveals that only about 29% 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 5.80%. 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 are about 65% of people who are directly or indirectly dependent.

Working Force

There is about 80% of total population who are belongs to working group as per working force between 16 to 55 age at Muladi Paurashava and remaining about 20% of population lies under nonworking group. The situation of Muladi 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 39.03% of the total existing population. This means that, there is a very low level of working force in Muladi and it is alarming.

Household Size smaller than National Average

The survey found that the average household size in the Paurashava is 4.42, which is smaller than the national average of 4.44. The range of household size varies from 1 to 11.

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 (13.12%) which was followed by Service (4.73%), agriculture labor (5.07%) etc.

It is evident from the sample survey that, around 13.12% of the respondents are engaged in business activities (large business 1.26% and small business 11.86%). The scenario reveals that 4.73% as office workers both government and semi-government including employees in private offices. Agriculture with allied farming seems to be the third major occupation (5.07%).

From the sample survey, it can be surmised that, small business is the dominant occupation in all wards of the Paurashava. Farming / agricultural domination is found in four Wards (Ward No. 1, 7, 8 and 9). 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, Gouranadi, Babuganj, Barisal Sadar depriving Muladi. 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 15.32 acres of land consisting 0.37% of the total Paurashava area. In total, 25 industrial establishments are found in the Paurashava. All are light industries. Industries are one kind of dominating land use. This category includes saw mili, rice mill, husking mill, brickfield, oil mill and Hatcheries.

3.1.4 Commerce

Muladi Paurashava plying its role as a growth centers for its surrounding areas and there are a good number of retail as well as for wholesale markets, hat and bazaars. The retailers mostly collect their goods from Babuganj, Mehediganj and Barisal 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.

3.1.5 Agriculture

In Muladi Paurashava 5.05% of the male income earners are engaged in farming (farmers and farm laborers) occupation, though 67.83% 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 Barisal Sadar and other nearby upazilas , 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 6.93% in Muladi Paurashava. Among the male income earners, over 21.11% are engaged in trading, 9.70% are

day laborer of agricultural activities, about 0.85% work in government or autonomous institutions, 6.29% are in private services (Table-3.1). In case of female members, the scenario of income earning activities is so poor. About 47% of the female members are housewives.

Table-3.1: Occupation of the Family Members

Main Occupation	Paurashava As a whole	%
Govt. Officer	9	0.57
Other Govt. employee	66	4.16
Teaching	15	0.95
Farming/Agriculture	80	5.05
Large Business	20	1.26
Small Business	82	37.96
Private Service	188	11.86
Skilled Labour	33	2.08
Unskilled Labour	17	1.07
Unemployed/Retired	107	6.75

Source: Socio-economic Survey, 2012

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.

About 71.57% of the households fall within the income range between Tk.3500-10000. Of the surveyed households 10.54% have monthly income of below Tk. 3500 that means these households are living below poverty level. Only 13.74% 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.

3.1.8 Physical Infrastructure

Muladi Paurashava is a medium Paurashava (about 16.76 sq. km. according to the physical feature survey). There is a unique opportunity of growth of the Muladi 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 Muladi Paurashava town generally depends on the road pattern of the Paurashava. Muladi 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-south. 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 66.22 acres of land (circulation network and transportation facilities combinedly). The highest amount of road coverage is found in the Ward No. 3 (7.42 acres of the network).

3.1.8.1 Existing Road Network

The physical feature survey of Muladi of 2011 and 2012 has identified a total of 81.02 km of road within the Paurashava. Among them, ward 6 has highest road length(11.87 km) whereas ward no 1 has lowest length of road 4.47m). Besides, the Paurashava has 55 bridge/culverts including wooden or bamboo built pools.

Muladi is a small newly growing urban centre that has grown out of almost nothing. There only one major road leading to Muladi town. A number of other roads pass through the town to different growth centers 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 Muladi bazaar. The five roads coming from three different directions meet together at the zero point near the Muladi bazar.

3.1.8.2 Traffic and Transport Infrastructure

Bus Terminal

There are no formal bus and tempo terminal at Muladi from which the buses start for different destinations. Total number of traffic generation is not mentionable. That's why without the Muladi Bazar area, in the whole Paurashava the traffic congestion problem is not severe. Buses generally go to Barisal Sadar.

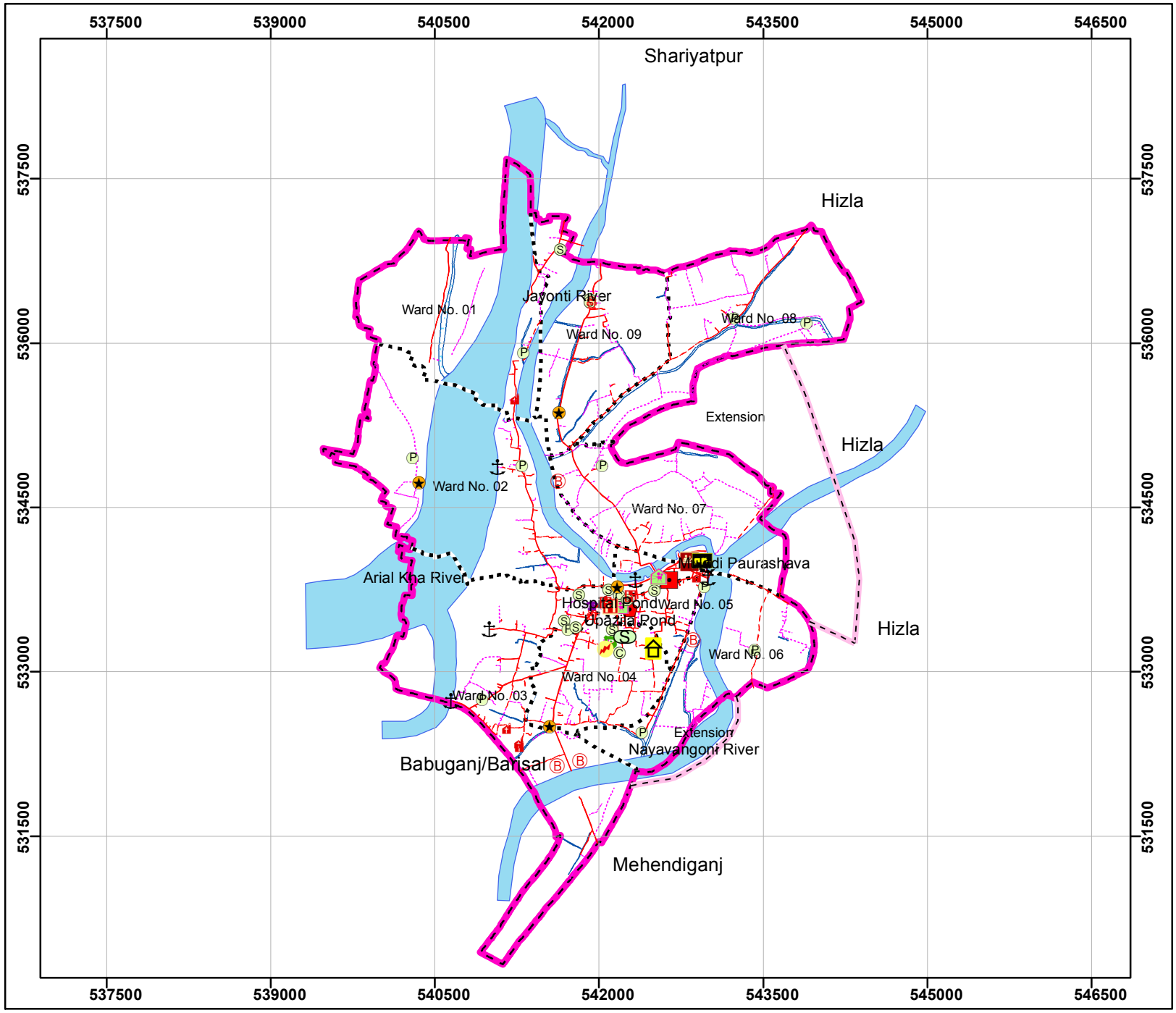
Truck Terminal

As a small town, the economic activity is slight low in Muladi 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, 40-50 CNG driven auto-rickshaws operate daily from Muladi on different routes from Muladi. Trips generate, when these require. The auto rickshaws operate from 0' point of Muladi.

Map 3.1 Circulation Network (Existing) of Muladi Paurashava



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

Existing Road

- Katcha
- Pucca
- Semipucca
- River
- Khal

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Non-motorized Traffic

The non-motorized traffic operating in the town are, bicycle, rickshaw, push cart, van and school van. Paurashava offers license for the non-motorized transports. The current number of non-motorized traffic in the town is about 400 that include rickshaw, rickshaw van, bicycle and push cart. These include both registered and unregistered non-motorized vehicles in the town. It is clear that, the numbers of the registered NMT is too 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.

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-motorized 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, Muladi, footpaths are usually absent, as it is given least priority in development activities.

3.1.8.5 Waterway

Muladi Paurashava comprises of a river namely Arial Kha, Jayanti and Nayavangoni River which encloses about 769.92 acre of the Paurashava area covering all wards except ward no. 08. These river passes through the middle of the ward. The river serves as primary drainage and is connected with the canals/khals at the Muladi Paurashava. 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. Muladi Paurashava comprises of a river namely Arial Kha, Jayanti and Nayavangoni River which encloses about 769.92 acre of the Paurashava area covering all wards except ward no. 08. These river passes through the middle of the ward. The river serves as primary drainage and is connected with the canals/khals at the Muladi Paurashava. About 61.97 acres land is devoted for canal purpose which is used for primary drainage at Muladi Paurashava.

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, Muladi Paurashava is

responsible to provide drainage system to carry out the domestic as well as storm water. Muladi Paurashava has only a total of 63.10 m 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 detrains 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 river, 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 Arial Kha river and other khals that pass as spider web through the Paurashava. Most of the 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 Muladi town has only a few dustbins to collect solid waste. The garbage is carried by one garbage trucks and the waste is dumped in ditches and waterbodies within and outside the city. Most of the people throw their garbage here and there and especially dump to the river, canal and khal which cause serious environmental pollution and also sometimes clogged the existing

drainage network. From the field survey it is also found that there is no clinical waste management system. 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 Muladi 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 Muladi bazaar going and return people.

Water Pollution

There is large number of ponds in the area, numbering about 405. They serve as important sources of water supply for the local inhabitants and pure drinking water source is the main problem for Muladi Paurashava. **Map- 3.2** shows the location of water bodies including drainage network in the Paurashava. Ground water contains Iron and Arsenic (Source: DPHE, Muladi, 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

Muladi 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 Muladi 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 few vehicular traffic and a very small number of populations. So it is free from noise pollution.

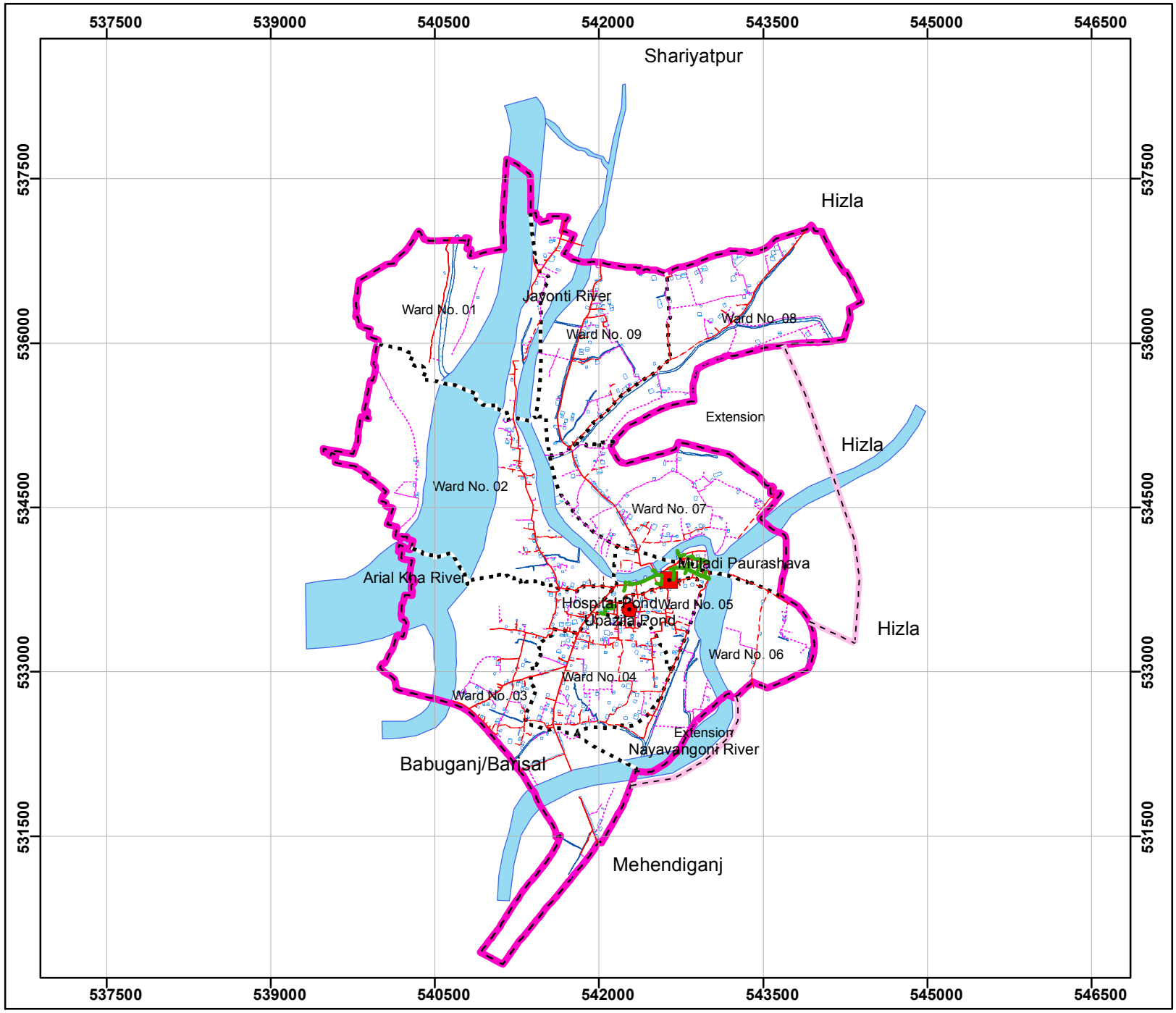
Fire Hazard

Muladi 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.

Map 3.2 Location of Waterbodies Including Drainage Network



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield
- Existing Drain

Existing Road

- Katcha
- Pucca
- Semipucca
- River
- Khal
- Pond/Ditch

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

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	534.24	232	511	580	1091
2	745.78	444	988	1040	2028
3	746.16	639	1434	1528	2962
4	265.56	685	1667	1599	3266
5	83.15	499	1043	1090	2133
6	432.89	844	2018	1694	3712
7	459.28	489	1138	1152	2290
8	461.75	323	671	750	1421
9	417.65	373	745	842	1587
Total	**4146.45**	**4528**	**10215**	**10275**	**20490**

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

Age and Sex Structure

From the field survey it is found that about 42.1% of all the households' members irrespective of sexes of Muladi Paurashava are within the age group of 26 – 57 years which is followed by 27.6% within the age group of 16 – 25 years and 19.1% within the age group of 6 – 15 years. It is noticed that economically active population that is within the age group of 26 – 57 years are prominent and they are in need of having job opportunities at the Paurashava level.

Again, 39.3 % of the male households' members of Muladi Paurashava are within the age group of 26 –57 years which is followed by 5.6% within the age group of above 57 years. It signifies that the economically active population that is within the age group of 26 – 57 years is in need of having job opportunities at Muladi town.

Further, 46.2% of all the female households' members of Muladi Paurashava are within the age group of 16 – 25 years which is followed by 25.3 % within the age group of 26–57 years and 5.1% within the age group of above 57 years. This also illustrates that the economically active female population that is within the age group of 26 – 57 years significant.

Moreover, about 59% of the people of Muladi Paurashava are male and the rest of the people are female.

Household Size

Average size of households of Muladi Paurashava is 4.42. This indicates the culture of having small nuclear families which shows urban life characteristics.

Marital Status

About 40.6% of the total Male people are unmarried and 59.4% are married at Muladi Paurashava whereas in the Female population 25.8% are unmarried and 74.2% are married. (Source: BBS - 2011)

Population Growth Rate and Density

Muladi is one of the largest Upazila of Barisal Zila. Growth rate is parallel compared to other Paurashava of Barisal. Growth Rate of Muladi Paurashava is calculated on the basis of total

Upazila population over the year 1991-2001. On the basis of population 1991-2001 of Muladi Upazila, annual population growth rate of Muladi Paurashava is 1.0026%.

Muladi planning area is a moderate-density area with respect to both national and district density. Population density is highest at ward no. 5 and lowest at ward no 1. The average population density of Muladi Planning area is 991 person /sq.km.

Migration Pattern: Duration of Stay in the Town

Survey report depict at Muladi Paurashava about 0.92% of the total households come from other places.

As far as the duration of migration of the households is concerned, majority (66.10%) of the households have come during 1990-2000 to Muladi Paurashava area and the rest 33.9% have come after 2000. Notably, in Ward no. 2, 3, and 4 of Muladi Paurashava migratory households are mainly concentrated.

The most common reason of the in-migration of the households to Muladi Paurashava is workplace (about 49.15%). Moreover, better education facilities, river erosion and business have also significant contribution behind migration.

Education

About 33.82% of the people have passed VI to X, 35.21% passed Classes1 to V, 10.98 % have level of education SSC and 3.85 % are HSC passed. About 10.54% people are completely illiterate. In case of obtaining SSC degree, 12.58 % of the males passed SSC and 8.66% of the females.

In order to increase literacy rate at Muladi Paurashava there is need for establishment of more educational facilities at different levels of education. It is evident that 0.15% of the females have obtained postgraduate degree whereas 0.75% of the males are obtained postgraduate degree. Illiteracy rate shows far more dissimilarities between men and women.

20.61% of the people living in Ward No. 9 are illiterate followed by 10.37% in Ward No.1 and 12.82% in Ward No. 3. About 8.28% of the people living in Ward No.2 are graduates and in ward No. 4, 7, and 9 there are no graduates at all. There are also variation in the level of education at SSC level, 19.75%, 17.56% and 12.57% of the people living in Ward No. 2, Ward No. 4 and Ward No. 5 respectively are SSC passed.

It has been observed that the literacy rate (62.6%) of Muladi Paurashava is satisfactory with compared to Barisal Zila and National level for both male and female. Table 5.1.8 shows the comparison of literacy rate of Muladi Paurashava with Barisal Zila and National Level.

Religion

It is seen that 80.8 % of the households' religion is Islam, and the rest 19.2% of the people are practicing Hinduism at Muladi Paurashava. This information relating to the religion structure is very much important in context of providing religious services and facilities for the households living in the town. During the field survey, no Buddhist and Christian households are identified.

Income and Expenditure

At Muladi Paurashava, about 71.57% of the households' incomes are within the range of Tk. 3500.00 – Tk.10, 000.00 per month. Further, 10.54% of the household have income per month below Tk. 3500.00; 4.15% Tk. 10,001.00 - Tk. 12,000.00 and 13.74% above Tk. 12,000.00. It can be seen that there are different types of income groups of people living at Muladi Paurashava area. It can be seen that people of different income groups are living at Muladi Paurashava area.

Here are also variations in the level of expenditure of the households which is very much co-related with the households' level of income. About 50.48 % of the households spent within the range of Tk. 5001.00 – Tk. 10,000.00 per month which is followed by 37.70% Tk. 2500.00 – Tk. 5000.00 per month. It is also noticeable that about 0.96% of the households' expenditure is above Tk. 20,000.00 per month.

Since Muladi 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. 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.

3.1.11 Paurashava Institutional Capacity

3.1.11.1 Human Resource Management: Allocated Manpower/Organogram

Muladi 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 Muladi Paurashava it is found that there is a gap between the standard manpower and existing manpower.

Existing Manpower of the Paurashava

Existing Manpower of Muladi 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

Existing Manpower of Muladi Paurashava has presented in **Table 3.3**.

Table-3.3: Existing Manpower of Muladi Paurashava

Departments	Present labor force
1. Administrative Section	1
2. General Section	5
3. Accounts Section	1
4. Assessment Section	1
5. Tax collection section	2
6. Engineering section	2
7. Health Department	1
Total	**13**

Source: Muladi 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 lacke 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 Muladi Paurashava there are three sections of income generation and expenditure. They are:

1. Revenue
2. Development
3. Project

The analyses of Muladi 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 Muladi Paurashava, on an average in each financial year about a significant percentage of income comes from this source.

It has been observed that the revenue of Paurashava has sharply increased in the financial year of 2009-2010. However, a drop of income was observed in the financial years2008-9 and 2011-12. This may be because of the terrible cyclone that destroyed the economy of this region in 2007.

Holding Tax Collection

Holding Tax Collection is one of the important sources of revenue of Muladi 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 full-fledged 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.

The proposed organogram of the Planning cell may be as above (every section will be supported by other supporting staffs).

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 Muladi Upazila. Commercial development is already expanding along with the major roads. The existing growth agglomerations along potential core area accommodate mostly the residential areas. Specially for getting advantage of high lands, residential areas developed on these areas that are accelerating growth of the Paurashava on the central part. Besides, care should be given on undesirable encroachment of the agricultural lands which is one of the economic sources of planning area.

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 Muladi 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 Muladi 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 16 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 landuse 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 agricultural (2810.57 acres) which is 67.83% of the total Paurashava land. The second major land use is residential occupying about 7.07% (292.85 acres). Besides, there is about 22.19% water body, about 1.16% circulation network, about 0.49% commercial activities and rest of the lands are being used for education, community service, government services, manufacturing or industry, NGO activities, service activity.

Residential

Residential use includes urban housing, rural homestead/settlement, flats, Government Quarters, mess/boarding 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.

From the land use survey it has been observed that about 292.85 acres areas are used by residential purposes. From the land use survey it has been also observed that ward no 4 has highest amount of Residential land. Lowest concentration of residential land use is at ward no. 01.

Commercial

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. Land use survey result shows that about 20.28 acre lands are in commercial use at Muladi Planning Area. It could easily be said that ward no 6, 3 and 7 are the commercial zone of the planning area. Lowest concentration of commercial area is at ward no. 1, 9, 8 and 5.

Agricultural

Agricultural land use includes paddy field, cropland, grazing land, horticulture, orchard, etc. It is the predominant land use of Muladi Paurashava comprising about 2810.62 acre of the total study area. Major portion of this land use exist at ward no 3 and lowest portion is at ward no. 5. Every ward located within the study area has more or less agricultural land use.

Waterbodies

There are two launch terminals at the Muladi Paurashava. Launch terminal is located at north western part of Muladi Paurashava. Water transport network of Muladi Paurashava has significant importance in carrying both people and goods. Launch and trawler are used for carrying both passenger and commodity frequently. About 22.19% (919.26 acres) land is used as water body including river, khal/cannal, pond and ditches.

Transport and Related Use

This category covers an area of 48.40 acres of land or 1.17% of the Planning Area. The highest amount of road coverage is found in the Ward No. 3 (7.34 acres). Ward No. 1 (2.58 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 7.69 acres of land comprising 0.19% 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 2.01 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. Muladi Paurashava is linked with Dhaka through Barisal. The existing road of this route is narrow and tortuous to Barisal.

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 Barisal 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 Muladi 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, Muladi 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 Thana More, Paurashava More, and Hospital 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 Muladi. Only a minor accident occurs sometimes in Muladi. 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 following the problem of narrow road width of traffic movement when the town grows and density of population increases in future. 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.

3.2.2 Socio-economic Problems

The Muladi 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 about 11 % 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

Muladi Paurashava has a high level of dependency rate. Socio-economic survey reveals that only about 29% 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 5.80%. 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 are about 65% of people who are directly or indirectly dependent.

c. Low level of Working Force

There is about 80% of total population who are belongs to working group as per working force between 16 to 55 age at Muladi Paurashava and remaining about 20% of population lies under nonworking group. The situation of Muladi 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 39.03% of the total existing population. This means that, there is a very low level of working force in Muladi and it is alarming.

d. Urban Poverty

Field survey shows that about 10.54% of household of Muladi are living below the poverty level that is their monthly income is less than tk 3500 . 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. There are good numbers of households who earn Tk.12000+ per month. Tk.3500-10000 income group is dominant income group in the Paurashava (71.57%).

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 river and 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, so no comment is passed about the standard of the service. There is no formal dumping ground and formal solid waste management system of Muladi Paurashava authority. So no comment is passed about the standard of the service.

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 Muladi Paurashava.

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 Muladi.

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.

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

Pn = Po (1+ r)^n where,
Po = the base year population,
Pn = the projected year population,
n = time period,
r = annual growth rate.

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 Muladi Paurashava has been estimated upto the year 2031 with a five year interval. We have made two projections with two different growth rates- 1.00 and 1.30 as presented in Table-4.1 and Table-4.2 respectively. For planning purpose the projection based on 1.00 as growth rate will be considered so that the data has been generated from BBS, 2011.

Table 4.1: Population Projection with Medium Growth Rate for Muladi Up to 2031

Ward No.	Projected Population at Different Years				
	2011	2016	2021	2026	2031
1	1091	1,776	1,894	2,021	2,155
2	2028	3,896	4,156	4,433	4,729
3	2962	1,921	2,050	2,186	2,332
4	3266	2,201	2,347	2,504	2,671
5	2133	1,330	1,419	1,514	1,615
6	3712	936	998	1,065	1,136
7	2290	3,514	3,748	3,998	4,265
8	1421	2,865	3,056	3,259	3,477
9	1587	2,886	3,079	3,284	3,503
Total	**20,490**	**21,325**	**22,748**	**24,265**	**25,884**

Annual growth rate is 1.00 (BBS 2011)

Table 4.2: Population Projection with High Growth Rate for Muladi Up to 2031

Ward No.	Projected Population at Different Years				
	2011	2016	2021	2026	2031
1	1091	1,164	1,241	1,324	1,413
2	2028	2,163	2,308	2,462	2,626
3	2962	3,160	3,370	3,595	3,835
4	3266	3,484	3,716	3,964	4,229
5	2133	2,275	2,427	2,589	2,762
6	3712	3,960	4,224	4,506	4,806
7	2290	2,443	2,606	2,780	2,965
8	1421	1,516	1,617	1,725	1,840
9	1587	1,693	1,806	1,926	2,055
Total	**20,490**	**21,857**	**23,315**	**24,870**	**26,530**

Annual growth rate 1.30, estimated by Consultant

For planning purpose, the projection based on medium growth rate that is 1.00 has been taken. The projection has been generated from BBS, 2011. The existing population of Muladi Paurashava is 20490 in 2011 within an area of 4146.45 acres. With an annual growth rate of 1.00 the forecasted population of Muladi Paurashava will be 25,884 in the year 2031. The gross density of the area will be 05 ppa (person per acre). Due to the maximum concentration of residence in Ward no. 05**,** the density of population will also be higher (26 ppa) in this zone.

Table- 4.3: Gross population density of some areas

Ward No.	Area (Acre)	Population	Density /Acre
1	534.24	1091	2
2	745.78	2028	3
3	746.16	2962	4
4	265.56	3266	12

Ward No.	Area (Acre)	Population	Density /Acre
5	83.15	2133	26
6	432.89	3712	9
7	459.28	2290	5
8	461.75	1421	3
9	417.65	1587	4
Total	4146.45	20490	5

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

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 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 Muladi, 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 Muladi 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. Organized 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 20,490 as per growth rate of 1.30%. This gives a gross density of 5 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 25,884 in the year 2031 will be 388.26 acres. But survey of existing land use has identified 292.85 acres of land currently under housing use with a medium density of population. The consultant, therefore, retrains the existing housing land for the population of the Paurashava in 2031.

Table- 4.4: 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	25,884	258.84 acres	292.85	95.41
Real Estate (Public/Private)	200 person/acre		129.42 acres		
Total		**25,884**	**388.26 acre**	**292.85**	**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 Muladi Paurashava. The current land under business/trading use is only 20.28 acres including bazaar, retail shops and business areas beyond the Paurashava. Considering a small annual increase in business activities each year, on average about 0.40 acres of additional land will be added to the existing commercial land use every year. So, there will be an increase of 8.21 acres by the year 2031 (20 years). Adding the current land (20.28 acres) under commercial use to the additional land the total land under business will be 28.47 acres in 2031.

4.4.3 Estimation of Land for General Industry

According to approved planning standard the total land for industries comes to 64.71 acres with 38.83 acres for small scale industries and 25.88 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 64.71 acres and the existing landuse of this purpose is 15.32 acres. So 49.39 acres of additional land will be required.

Table- 4.5: 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	38.83	0.00	38.83
Cottage/ agro-based	1.00 acres /1000 population	25.88	15.32	10.56
Total		**64.71**	**15.32**	**49.39**

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 Muladi Paurashava. The current land under commercial use is only 20.26 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- 4.6: 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	2.59	20.26	8.21
Retail sale Market	1.0 cres/ 1000 population	25.88		
Total		**28.47**	**20.26**	**8.21**

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 28.47 acres. The extra land requirement will stands at 8.21 acres.

4.4.5 Education & Research

Estimation of land according to standard indicates there will be a land requirement of 47.53 acres to accommodate educational facilities by the year 2031. If we deduct the already available 13.91 acres of existing land uses under various education facilities there will be need of additional 33.62 acres of land for education facilities.

Table- 4.7: 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	1.29		33.62
Primary School/ kindergarten	2.00 acres/5000 population	10.35		
Secondary/High School	5.00 acres/ 20,000 population	6.47		

College	10.00 acres/20,000 population	12.94	13.91	
Vocational Training Centre	5 - 10 acres / Upazila	10.00		
Other	5.00 acres/ 20,000 population	6.47		
Total		**47.53**	**13.91**	**33.62**

4.4.6 Health Services

There already exists an Upazila health complex. The total area under health facilities in Muladi is only 2.01 acres. Estimation shows 20 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 Muladi. In future, as the population and density increases, additional 23.17 acres demand for health services (health centre/maternity clinic) will be required.

Table- 4.8: 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	20.00	2.01	23.17
Health centre/ Maternity clinic	1.00 acre/ 5,000 population	5.18		
Total		**25.18**	**2.01**	**23.17**

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 66.94 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex.

Table- 4.9: 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 population	3.88	3.67	63.27
Park	acre /1000 population	25.88		
Neighborhood park	1.00 acre /1000 population	25.88		
Stadium/ sports complex	5 – 10 acres/ Upazila HQ	10.00		
Total		**66.94**	**3.67**	**63.27**

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- 4.10: 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	1.29	0.06	3.18
Truck terminal	0.50 acre /20,000 population	0.65		
Launch/Steamer terminal	0.25 acre /one baby taxi/tempo stand	1.29		
Total		**3.24**	**0.06**	**3.18**

4.4.9 Government Offices

Muladi 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- 4.11: 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	5.35	19.96
Paurashava Office	3 – 5 acres	3.00		
Police Station	3 – 5 acres/ Upazila HQ	3.00		
Police Box/outpost	1.00 acre/ per box	2 x 1.00 = 2.00		
Fire Station	1.00 acre/ 20,000 Pop^{n}	1.54		
Post office	0.5 acre / 20,000 Pop^{n}	0.77		
Total		**25.31**	**5.35**	**19.96**

4.4.10 Community Facilities

For various community facilities, the land requirement has been fixed at 2.84 acres. Details are presented in following table (**Table-4.12**).

Table- 4.12: 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	0.65	5.94	*
Eidgah/Graveyard	1.0 acre/ 20,000 population	2.58	4.67	**
Community centre	1.00 acre / 20,000 population	1.29	0.00	1.29
Central Graveyard	1 acre/ 20,000 Population	1.55	0.00	1.55
Total		**6.07**	**--**	**2.84**

*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 1.29 acres for water supply installations, like, pump stations and other establishments related to water supply; 1.29 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 0.25 acre. So there will be need for 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 4.00 acres for final disposal of the solid waste. For power sub supply, an electric substation has been earmarked. For this purpose, 1.29 acres of land is required as per standard supplied by PMO. The total land requirement under this category is 10.77 acres. Please see **Table-4.13** for details.

Table- 4.13: 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	1.29	0.00	1.29
Gas Distribution Station	1.00 acre/20,000 population	1.29	0.00	1.29
Solid waste disposal site	5 – 10 acres/Upazila HQ	4.00	0.00	4.00
Waste Transfer Station	0.25 acres/per waste transfer station	2.25	0.00	2.25
Power sub-station	1 acre/20,000 population	1.29	0.00	1.29
Telephone Exchange	0.5 acre/20,000 population	0.65	0.00	0.65
Total		**10.77**	**0.00**	**10.77**

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 Muladi 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 Muladi 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 Artcle-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 top 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 shelter less 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 Muladi 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 up gradation 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 up gradation, 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 realize 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 panned 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		
Auto Rickshaw	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			Recommended Design		
	Cumulative Million ESA's	Typical Expected Design Life (Years)	New Class	Design Type	Desiggn 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, read 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 emphasized 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 favorable 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 lime 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 labor 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 Muladi 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 labor 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 access 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 dieses. Such concept will be included with different programs.
- The services delivering by the health centers to the patient should be standard and a printed guideline on standard, monitoring and evaluation will be given to those health centers.
- A Health Services Reforms Body will be formed based on the Health and Population Sector Strategy. This Body will responsible for infrastructural reformation, employment, development planning and implementation of human resources relevant with the health activities and development of carrier of workforces.

5.2.12 National Urbanization 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 county 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.
	Site development schemes	Where a master plan has been drawn up and approved by the government, no owner of lands exceeding such area as may be specified in this behalf in the master plan shall develop the site or erect a building or any plot of land covered by the provisions of a site development scheme sectioned to area in the prescribed manner. Among other matters, a site development scheme may provide for- (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	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 country contained in any law, no compensation shall be payable for such demolition.
Building construction	Building construction and re-construction	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.
	Completion of construction and change, etc.	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

Major activity	Specific functions	Functions in brief
		Paurashava may demolish the building and the demolishing cost may be incurred from the building owner.
	Building control	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 be 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. If a building is in dangerous condition, or otherwise unfit for human habitation, the Paurashava may prohibit the occupation of such building till it has been 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, matalled, 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

Major activity	Specific functions	Functions in brief
		plate, or without the previous permission of the Paurashava, remove the same.
	Street lighting	The Paurashava shall take such measures as may be necessary for the proper lighting of the public streets and other public places vesting in the Paurashava.
	Street watering	The Paurashava shall take such measures as may be necessary for the watering of public streets for the comfort and convenience of the public, and for this purpose, maintain such vehicles, staff and other apparatus necessary.
	Traffic control	The Paurashava shall make such arrangements for the control and regulation of traffic necessary to prevent danger and ensure the safety, convenience and comfort of the public.
	Public vehicles	No person shall keep or let for hire or drive or propel within the limits of the Paurashava any public vehicle other than a 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

Major activity	Specific functions	Functions in brief
		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 complicacy.
2. Enforcement of the act has not been effective. Despite prevalence of the act, rampant violation goes unabated.
3. Most urban centres di nit 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 or 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 Muladi 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 cites with huge traffic population. Sources of Muladi 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 Muladi Paurashava do not face traffic conflicts. As because Muladi is a remote southern Paurashava and traffic flow specially motorized traffic flow is very low. From traffic volume survey at Muladi Paurashava it is found that all the major link roads have Level of Service A. That means Muladi 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. Te 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 31.17% of the total road length is pucca roads, which is an example of good work done by the Paurashava. At Muladi Paurashava the width of most roads are less than 10 feet. These roads are not capable to serve an Upazila town like Muladi. 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. 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.

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 Muladi Bazar area and North of Upazila Complex and Muladi 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 Muladi Paurashava. Most of the people threw 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 Muladi 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 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.

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 Muladi. 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
LAND USE ZONING POLICIES AND DEVELOPMENT STRATIGIES

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. 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 2031.

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 Muladi Structure Plan is 19.30 sq. km or 4768.54 acres of land that includes existing Paurashava area (4146.45 acres or 16.78 sq. km) and recently extended and additional possible extended area at the east of present Paurashava area (total 622.09 acres or 2.52 sq. km.). The policy zone wise detail area of Muladi will be as following table.

Table- 7.1: Structure Plan zone wise area distribution

Policy Zoning	Area in Acre	%
Agriculture	1575.06	33.04
Core Area	99.92	2.10
Fringe Area	59.20	1.24
New Urban Area	1729.13	36.28
Peripheral Area	356.01	7.47
Waterbody	949.22	19.88
Total	4768.54	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 Paurashvas 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 constriction 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, and 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. Emphasize 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 centers 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 a 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 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 the most 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 grassroots level population control program emphasizing more on grassroots level family planning workers services with effective delivery of birth control services.

Policy:

Item	Executing Agency
Population Policy/1: Declare population as one of the most critical sectors of national development	✓ Ministry of Planning, ✓ Ministry of Health and Family Planning
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.	
Population Policy/2: Put more efforts and resources in raising the level of education.	✓ Ministry of Planning, ✓ Ministry of Health and Family Planning, ✓ Ministry of Education.
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.	
Population Policy/3: Create well paid and well train grassroots level family planning workers for motivational work.	✓ Ministry of Planning, ✓ Ministry of Health and Family Planning,
Justification: Grassroots level workers can give door to door motivational services and distribute birth control materials in a better way. To get good services they must be well paid and efficient.	

7.4.2 Economic Development and Employment Generation

There is about 70% of total population who are belongs to working group as per working force between 16 to 55 age at Muladi Paurashava and remaining about 30% of population lies under non-working group. The situation of Muladi Paurashava is that most of the female population belongs to unemployed. This is about 41% of total populations who are female and lies between non working groups.

Population projection at a growth rate of 1.00% shows that the size of the population, who will come to the working force, will be 21200 including the students and housewives by 2031 (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 Muladi 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 Muladi 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 Gauranadi, babuganj and Mehendiganj and larger towns, like, Patuakhali, Gopalganj, Sariyatpur, Madaripur 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
Economic Policy/1: Provide bank loans on easy terms to attract prospective investors in the SME sector.	✓ Ministry of Industries. ✓ Ministry of Commerce.
Justification: Easy loans would encourage and attract prospective investors for investment in small scale industries.	
Economic Policy/2: Take measures to channelize remittance to value adding productive sectors.	✓ Ministry of Industries. ✓ Ministry of Commerce.
Justification: Larger amount of remittance is being diverted to land purchase, which is considered as the safest investment. This huge capital may be channelized to productive sectors to help create more employment.	
Economic Policy/3: Arrange entrepreneurship training programmes for prospective investors.	✓ Ministry of Industries. ✓ Ministry of Commerce.
Justification: There are many potential investors who are ignorant of the ways and means of investment and operating an enterprise, The training can help them get educated in these lines.	

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 Muladi region live abroad. They could use this opportunity to utilize their huge amount of idle remittance to channelize in the productive sector. The Paura 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 industrialized, housing is yet to become a problem here. Spontaneous house building is common in Muladi. There is still shortage of dwelling unit in Muladi. Considering the annual growth rates of household and dwelling unit mentioned in BBS 2011, the demand for housing unit will be 5883 in 2031 (for detail, please see sub-section 5.7.5.2 of chapter 5 of Muladi 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 Muladi, 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 Muladi 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 - Muladi 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 - Muladi Paurashava

7.4.4 Social Amenities and Community Facilities

Social amenities and community facilities include, education facilities, health facilities and 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
Policy-Amenity/1: Procurement of khas and other public land for park, playfield, community centre.	- Ministry of LGRD - Muladi Paurashava
Justification: Since above facilities are non-revenue earning, they should be procured at least cost.	
Policy-Amenity/2: 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.	- Ministry of LGRD - Muladi Paurashava

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
Policy-Transport/1: Development of efficient inter-city road network with standard roads.	- Roads and Highways Department (RHD).
Justification: Increased inter-city mobility will increase business transactions and generate investment and employment.	
Policy-Transport/2: Promotion of efficient road transport facilities between urban centres.	- Bangladesh Road - Transport Authority (BRTA). Deputy Commissioner, Pirojpur.
Justification: Not only that communication is needed between urban centres, but to attract transport movement emphasis must be laid on quality of roads built.	
Policy-Transport/3:	- Muladi Paurashava.

Development of local road network through participatory approach.	- Local Government Engineering Department (LGED).
Justification: Development of roads will involve huge cost. Participatory development will enable cost sharing, which will reduce cost of road construction substantially.	

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

7.6 Environmental Issues

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

Chapter-Eight
IMPLEMENTATION ISSUES

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 mobilization

8.1 Institutional Capacity Building of the Paurashava

8.1.1 Human Resource Management

Muladi 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.

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 sometimes failing 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 failed 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. Muladi 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.

Proposed 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 its' 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 its' 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:

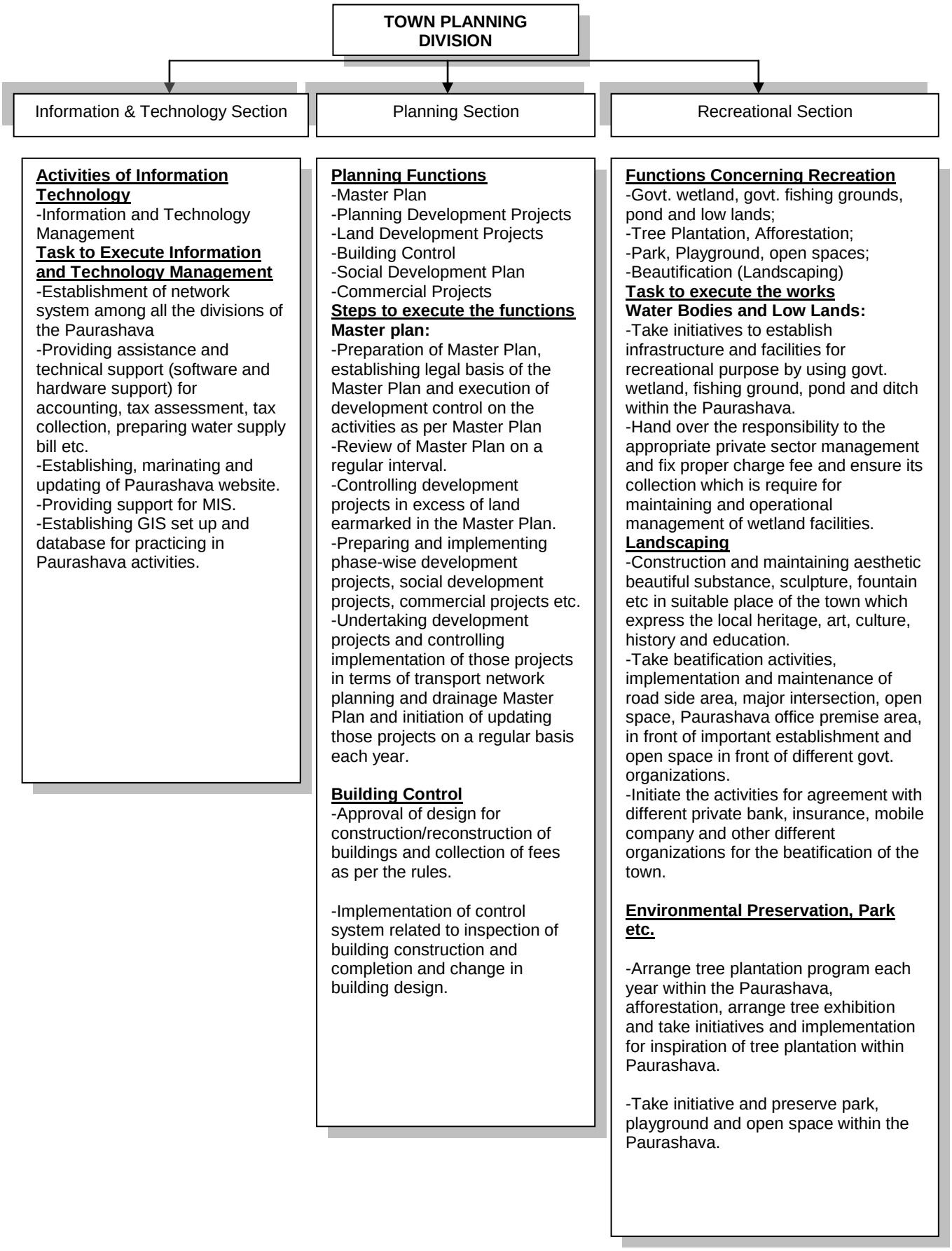


Fig 8.1: Scope of Work for Planning Division

Distribution of Plans Including Report

The approved plans and report must me 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.

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 Upzila.

8.1.4 Financial Issues

8.1.4.1 Governance in Muladi 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 Muladi 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 lacke 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 prince focus of Paurashava financial governance is to establish automotive 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 automotive 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 easily, but also has freed the citizens for paying bribe, and hassle.

It has been observed that the revenue of Paurashava has sharply increased in the financial year of 2009-2010. However, a drop of income was observed in the financial years2008-9 and 2011-12. This may be because of the terrible cyclone that destroyed the economy of this region in 2007. 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 Muladi 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.

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, Muladi 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 2012-2013. 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 Muladi. 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 Muladi 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.

Part B. Urban Area Plan

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 Muladi 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. Landuse 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

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 Muladi 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 19.30 sq. km or 4768.54 acres of land that includes existing Paurashava area (4146.45 acres or 16.78 sq. km) and additional possible extended area at the east of present Paurashava area (total 622.09 acres or 2.52 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

Muladi Paurashava Urban Area Plan	Area	
	Sq. km	Acre
Urban Area Plan Coverage	19.30	4768.54
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** and **9.2** and again in **Map-9.1.**

Table- 9.2: Mouza Sheduling for Urban Area Plan

No.	Mouza Name	J.L.No.	Sheet No.
1	Baro Madhob rayer Char	075	01 and 02
2	Char Gudghata	061	00
3	Dakshin Galai Bhanga	056	00
4	Mahish Gudi	063	00
5	Muladi	072	00

6	Paschim Char Pattani Vanga	073	00
7	Char Decree	062	01, 02 and 03
8	Ikar Khola	095	01 and 02
9	Tera Char	071	01
10	East of Muladi Paurashava*		

* Policy Area extension proposed by Paurashava and 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.

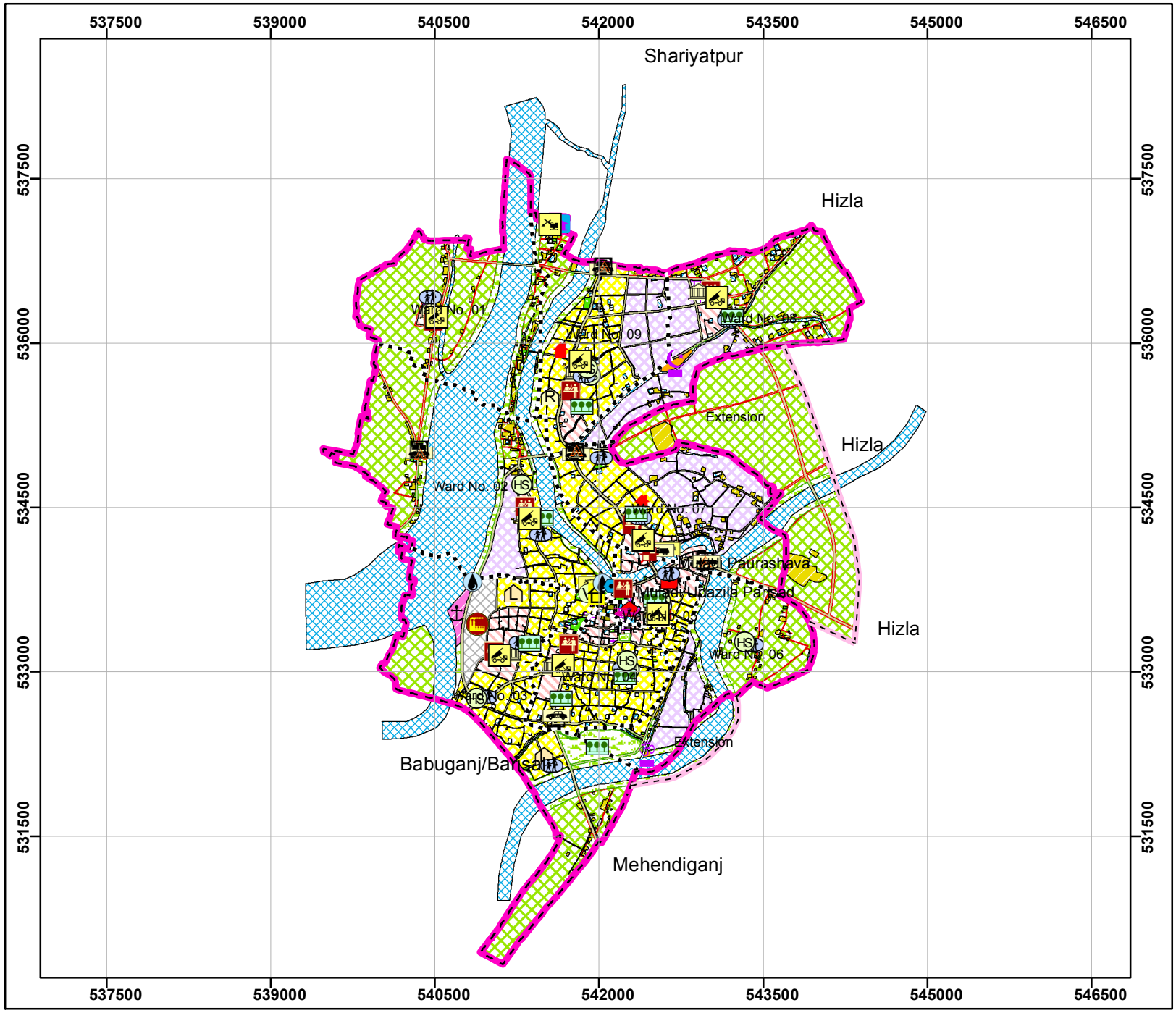
Chapter- 10 of the report covers the Land Use Plan. The Land Use Plan identifies approaches of planning, existing and projected land use and proposed land use. Requirement of land for different purposes, land use zoning and plan implementation strategies are also included here.

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 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.

Map 9.1 Urban Area Map with Major Road & Services of Muladi Paurashava



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

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, 67.83% of the total Paurashava land is still under agriculture. **Map- 10.1** shows the urban area map with existing land use pattern of Muladi Paurashava.

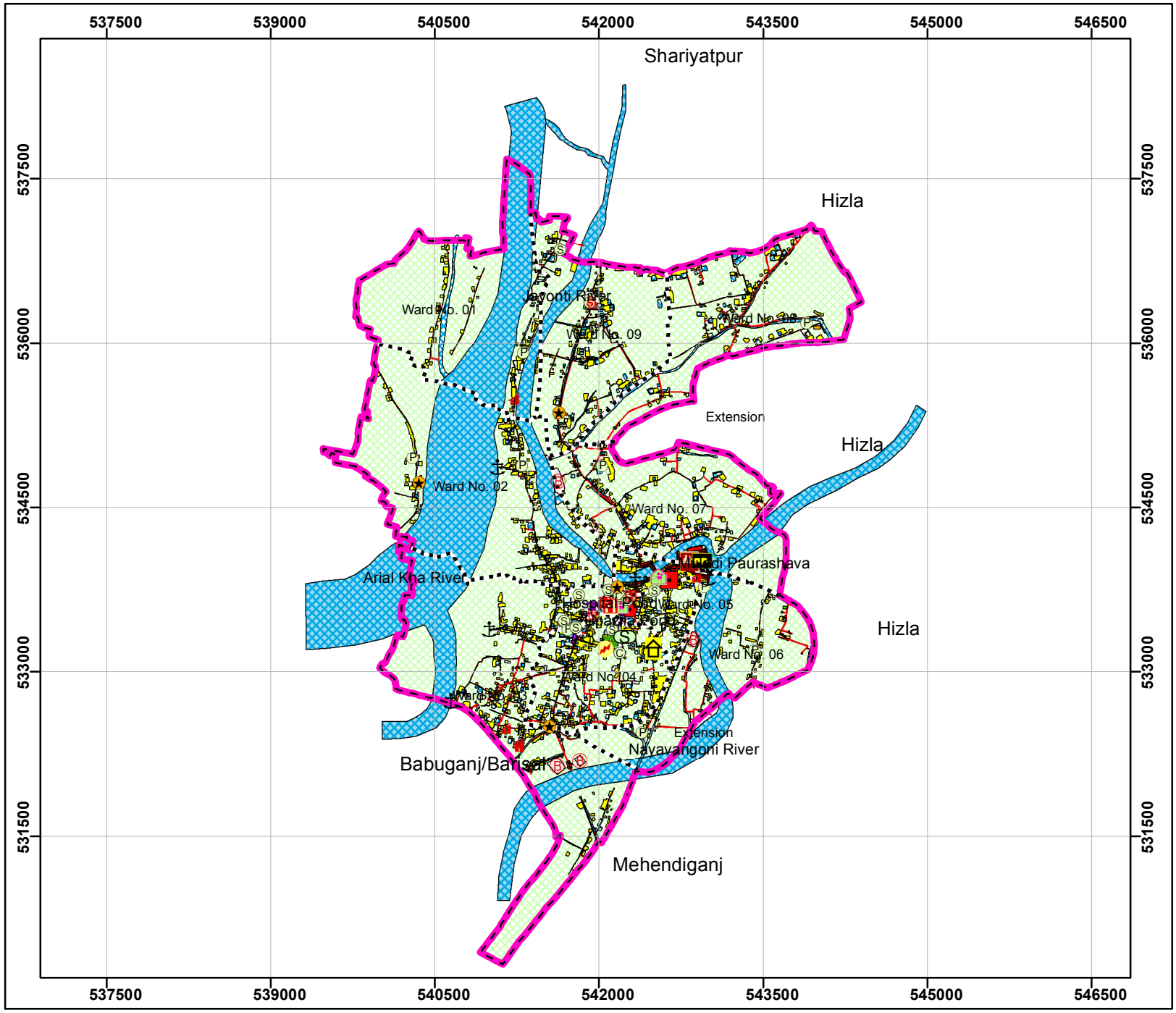
Table-10.1: Existing Land Use of the Planning Area

Sl. no	Land use Category	Area (Acre)	%
1.	Agricultural	2810.57	67.83
2.	Circulation Network	48.22	1.16
3.	Commercial	20.26	0.49
4.	Community Facilities	7.69	0.19
5.	Educational	13.91	0.34
6.	Governmental Service	5.35	0.13
7.	Industrial	15.32	0.37
8.	Mixed Use	1.26	0.03
9.	NGO	0.57	0.01
10.	Recreational Facilities	2.11	0.05
11.	Residential	292.85	7.07
12.	Restricted	0.1	0.00
13.	Service Activity	2.01	0.05
14.	Transport & Communication	0.18	0.00
15.	Urban Green Space	3.67	0.09
16.	Water bodies	919.26	22.19
Total		**4146.45**	**100**

***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 agriculture (67.83%). The second major land use is residential, and it occupies 7.07% (292.85 acres) of the Paurashava area. Besides, there is 22.19% waterbody, 1.16% circulation network, and 0.49% commercial activities and other 1.26% of lands are being used for education, urban green space, recreational facilities etc.

Map 10.1 | **Urban area map with existing landuse pattern of Muladi Paurashava**



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

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.

b. Estimation of Urban Residential Land Requirement

The present population of the planning area is 20,490 (2011) as per growth rate of 1.30%. This gives a net density of 68 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 (25884) in the year 2031 will be 388.26 acres including 129.42 acres of public and private real estate. But survey of existing land use has identified 292.85 acres of land currently under housing use with a density of population (about 68 persons/acre). The consultant, therefore, proposed housing land (851.62 acres) for the population of the Paurashava in 2031.

Muladi 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 Muladi Paurashava. The current land under business/trading use is only 20.26 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.

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 Muladi having population of 20000 to 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 28.47 acres (including 2.43 acres of wholesale market). The extra land requirement will stands at 8.21 acres.

d. Mixed-use

Existing land under this use is 1.26 acres (0.03%). 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 64.71 acres with 36.40 acres for small scale industries and 25.88 acres for cottage and agro based industries. At present there is 15.32 acres land used for industrial purpose. So 49.39 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 47.53 acres to accommodate educational facilities by the year 2031. If the consultant deducts the already available 13.91 acres of existing land uses under various education facilities there will be need of additional 33.62 acres of land for education facilities. For detail information, please see **sub-section 4.4.5** of Chapter- 4.

g. Health Services

At present there exists a health complex within the Paurashava premise. 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 Muladi. 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 5.18 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 66.94 acres. The facilities include, play field/ground, parks of various categories and stadium/sport complex.

i. Circulation Network

In the Paurashava, 48.22 acres (1.16%) 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 (most 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 3.24 acres of land where there is about 0.18 acres of existing land under such facilities. So an additional 3.18 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

Muladi Paurashava has an own office building. There is also Upazila Complex in Muladi and the consultant considers that no additional land is required other than the present Paurashava and upazila office building and the consultant requires no further land for this purpose.

l. Community Facility

For various community facilities, the land requirement has been fixed at 11.47 acres. The existing coverage area of Mosque/Church/Temple exceeds the standard requirement. There is about 7.68 acres of land for community facility purpose in Muladi 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 Muladi 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 1.29 acres for water supply installations, like, pump stations and other establishments related to water supply; 1.55 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 0.25 acre. So there will be need for 2.25 acres for 9 transfer stations. A dumping site will be developed over an area of 4.00 acres for final disposal of the solid waste. For power sub supply, an electric substation has been earmarked. For this purpose, 1.29 acres of land is required as per standard supplied by PMO. The total land requirement under this category is 10.47 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 Muladi except Mamun Cinema Hall. Recreation facility (cinema/theater hall) requires a total of 1.55 acres of land as per standard supplied by PMO.

o. Agriculture

Existing total area under agricultural use is 2810.57 acres and it is the 67.83% of the total Paurashava area. After implementation of the Urban Area Plan up to the year 2031, it will be reduced to 1498.81 acres and it will become only 31.44% of the Paurashava area during the end of the plan period.

p. Rural Settlement

Most of the Upazila level towns in Bangladesh, including Muladi, 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 115.85 acres of land or 2.43% 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 470.68 (9.87% 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 919.26 acres which is about 22.19% of the Paurashava area. Arial Kha, Jayanti and Nayavangoni river and other few small khals have flown all over the Paurashava area as spider web. More or less, all of the wards have significant amount of water bodies. Total 936.59 acres (19.65% of the total 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 Muladi Paurashava and following **table- 10.2** shows the existing and proposed Landuse within Muladi Paurashava**.**

Table- 10.2: Existing and Proposed Landuse within Muladi Paurashava

Sl No.	Landuse Category	Existing Landuse		Proposed Landuse	
		Area (Acre)	%	Area (Acre)	%
1	Agricultural Zone	2810.57	67.83	1039.22	25.06
2	Circulation Network	48.22	1.16	336.93	8.13
3	Commercial Zone	20.26	0.49	26.78	0.65
4	Community Facilities	5.69	0.19	14.04	0.34
5	Education & Research Zone	13.91	0.34	28.88	0.70
6	Government Office	5.35	0.13	35.46	0.86
7	Health Services	2.01	0.77	2.51	0.06
8	Mixed Use Zone	1.26	0.03	171.67	4.14
9	Open Space	0.00	0.00	268.83	6.48
10	Miscellaneous	0.00	0.00	0.29	0.01
11	Recreational Facilities	2.11	0.05	0.45	0.01
12	Rural Settlement	0.00	0.00	86.75	2.09
13	Transportation Facilities	0.18	0.00	16.07	0.39
14	Urban Deferred	0.00	0.00	468.39	11.30
15	Urban Residential Zone	292.85	7.07	730.49	17.62
16	Utility Services	0.00	0.00	6.17	0.15
17	Waterbody	919.26	22.19	870.29	20.99
18	General Industrial Zone	15.32	0.37	43.11	1.04
19	Restricted Area	0.00	0.00	0.10	0.00
20	Non-Government Services	0.57	0.01	0.00	0.00
21	Urban Green Space	3.67	0.09	0.00	0.00
Total		**4146.45**	**100**	**4146.45**	**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 land use 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 Muladi Paurashava Master Plan and the **last 5** will not be applicable for Muladi. 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**.

Following is a short description recommended land use zones. The whole urban area (19.30 sq.km.) will be discussed but the plot scheduling will be presented only for the existing Paurashava area. The other area (proposed extension area recommended by the consultant and Paurashava), 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.

1) Urban Residential Zone

Urban residential zone refers to all categories of urban residential areas, including exiting ones and the residential land use proposed under the present master plan. This includes single family housing or multi-family residential. Zoning for residential use will permit some services. It will permit high density land use. In total this zone covers 730.49 acres (15.32% 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- 10.3: New Development proposal for Urban Residential

Type of Facilities	Mouza Name	Plot No.	Area (acre)
Housing Estate 1	Char Decree	2177-2183,2191,2359-2362, 2365-2370,2383-2405, 2451-2526, 2535-2439, 2545-2671, 2680, 2690-2707, 2941-2952	42.38
Housing Estate 2	Char Decree	139-143, 146-196, 265, 1431,1432, 1438-1470, 1504, 1934, 1947-1972	26.34
Resettlement Zone	Char Gudghata	1551, 264-273,289,291-293,1427-1431,1470-1490, 1484-1490, 1496-1502, 1504, 1971-1998, 2001-2003, 2039,2040, 3520	16.53
Low cost housing Estate	Baro Madhob rayer Char	60, 25-78, 84, 116-126, 130-145, 147-154, 2424,2433-2440, 2447,2450, 2530-2568, 2570-2575,2580-2583, 2666,2667,2978,3541	44.84
Sweepers Colony	Dakshin Galai Bhanga	378-413, 414	1.69
Total			**131.78**

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 115.43 acres (2.42% 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 26.78 acres (0.56% 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- 10.4: New Development proposal for Commercial Activities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Neighborhood Market	1	Mahish Gudi _63_00	269, 270, 275,276, 279-281, 284,285, 618	1.89
	2	Tera Char _71_01	1352-1354, 1359, 1495-1498	1.54
	3	Tera Char _71_02	2958-2962, 3018,3019,3024,3028	3.22
	4	Muladi _72_00	124,154,315,316,318-323	0.57
	5	Tera Char _71_03	4240-4244, 4311, 4312, 4314	0.52
	7	Char Decree_62_02	2354-2359, 2397, 2522-2534, 2439-2542, 2671	2.58
	8	Char Decree_62_01	916-919, 926-928, 930-934, 952-954	3.16
	9	Char Decree_62_01	1419, 1420, 1423-1425, 1507-1513	4.89
Super Market	6	Tera Char _71_03	4102, 4111, 4114-4121	0.46
Total				**18.83**

4) Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Muladi, 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 171.67 acres (3.60% 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 15.32 acres (0.37% 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 (Tera Char mouza) has been proposed on an area of 43.11 acres of land (0.90% 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- 10.5: New Development proposal for Industry

Type of Facilities	Mouza Name	Plot No.	Area (acre)
General Industrial Zone	Tera Char _71_02	2177, 2228, 2235-2316, 2424, 2428-2437, 2567-2578, 2624-2958, 3028-3041, 3156-3158, 3175-3188, 3200, 3542	43.11

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 35.46 acres (0.74% of the urban area) that include existing and proposed land uses.

One of the major tactics/strategies of the current master plan preparation is to emphasize on ward based development. For this purpose, '**Ward 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.

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 Muladi 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)
h. Waste Transfer Station

Table-10.6: Proposed location of the Ward Center Complex in the project area

Sl No.	Ward No.	Mouza Name	J. L. No	Sheet No.	Plot No.	Area (Acre)
01	Ward no. 01	Mahish Gudi	63	00	264, 267-271, 275, 618	3.27
02	Ward no. 02	Tera Char	71	01	1493-1503	2.34
03	Ward no. 03	Tera Char	71	02	3455, 3464-3478	4.30
04	Ward no. 04	Muladi	72	00	2963-2965, 2969-2972	2.47

05	Ward no. 05	Tera Char	71	03	4237-4241,4312, 4314,4316	1.47
07	Ward no. 07	Char Decree	62	02	2397, 2571-2591,2671	2.25
08	Ward no. 08	Char Decree	62	01	903-928, 937, 938	5.63
09	Ward no. 09	Char Decree	62	01	1381-1391, 1419, 1819	3.90
Total						**25.63**

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 28.88 acres (0.61% of the urban plan area) that includes existing, newly proposed land uses and expanding land for existing educational institutions. 5 new primary schools (ward no. 1, 4, 5 8 & 9) and 5 High Schools at ward no. 02, 03 04, 06 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).

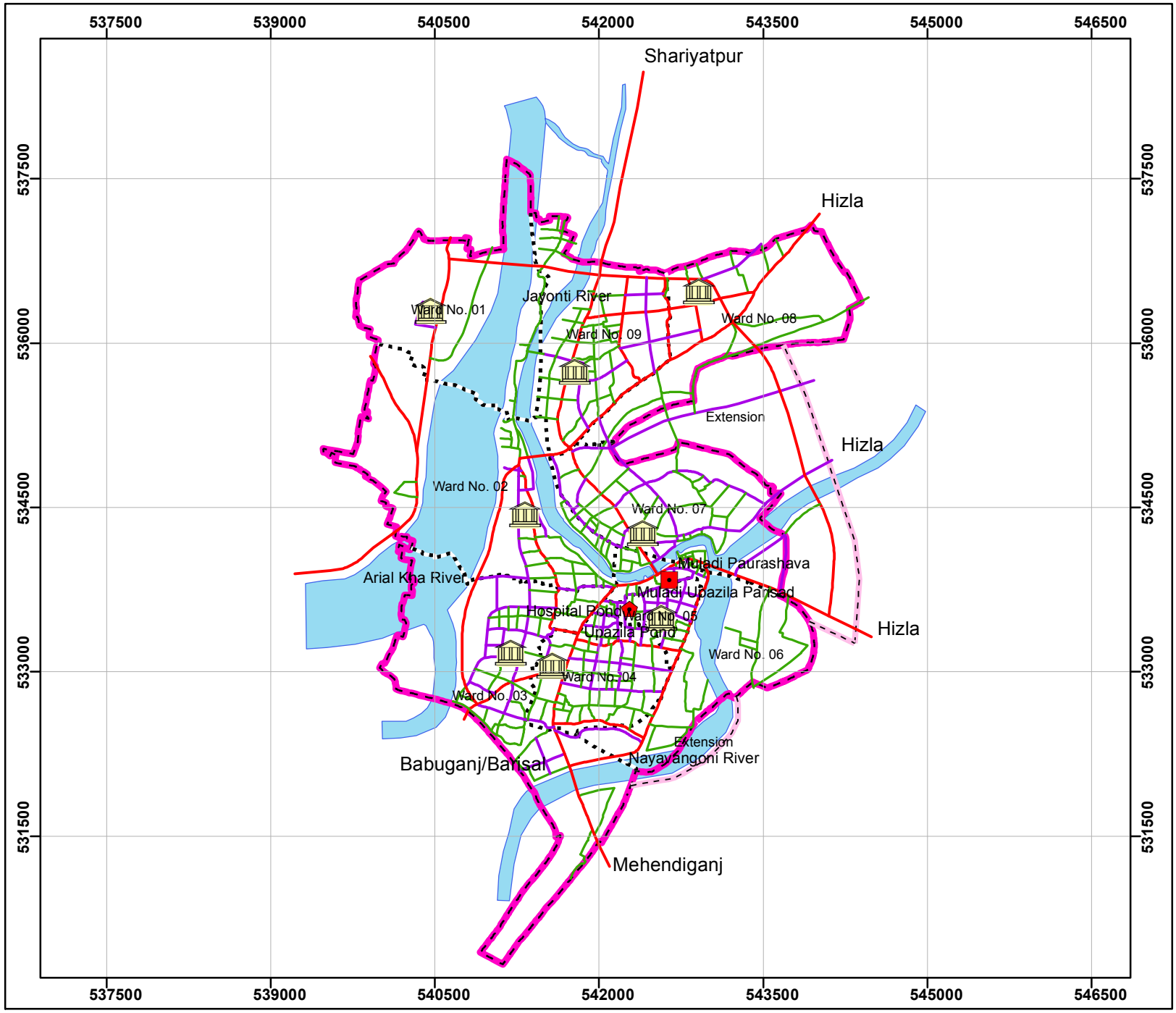
Table- 10.7: New Development proposal for Educational Facilities

Type of Facilities	Mouza Name	Plot No.	Area (acre)
Primary School	Char Decree 062 01	1367, 1368, 1392-1395, 1397-1401, 1418, 1419	1.11
	Muladi 072 00	316-318, 321-323, 327, 330, 331	0.99
	Tera Char 071 03	4263-4267	0.39
	Char Gudghata 061 00	256-258, 285	0.38
High School	Char Decree 062 01	1367, 1370-1374, 1386, 1387	1.20
	Muladi 072 00	99, 100, 316, 317, 331, 332	1.18
	Paschim Char Pattani Vanga 073 00	130, 134, 135, 141	1.02
	Tera Char 071 01	1314-1316, 1331, 1333, 1334, 1336-1340	1.47
	Tera Char 071 02	3133, 3137, 3138, 3140	0.69
Vocational Institute	Tera Char 071 02	2818-2826, 2836	6.62
	Tera Char 071 03	4135, 4137, 4138	4.89
Total			**19.94**

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 are presented in **Table-A.17, ANNEX-C** and conditional uses as listed in **Table-A.18, ANNEX-C**. The total area will stand at 1497.25 acres (31.40% of the urban plan area) after the urban area plan is implemented within 2031.

Map 10.2 | **Location of proposed Ward (Neighbourhood) Centre Complexes in Muladi Paurashava**



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- BND_Pourashava
- BND_Ward
- Ward Center
- Primary Road
- Secondary Road
- Tertiary Road
- River

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

9) Waterbody

919.26 acres or 22.19% of the existing Paurashava (938.19 acres or 19.67% 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 at 306.50 acres (6.43% 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- 10.8: New Development Proposal for Open Space

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Central park	03	Baro Madhob Rayer Char 075 01	1-23, 155-172, 179, 180, 187, 188, 410-413	17.52
	06	Ikar Khola 095 02	99999	24.11
Neighbourhood Park	02	Tera Char 071 01	1436, 1437, 1444-1446, 1482, 1484-1489, 1847	1.90
	03	Muladi 72 00	185-188, 190	1.08
	04	Muladi 72 00	496, 497, 500-503	1.17
	05	Tera Char 071 03	4253, 4255, 4256, 4258, 4262, 4263, 4266, 4359, 4360	0.71
	07	Char Decree 62 02	2514-2517, 2523-2528, 2543, 2544	1.22
	08	Char Decree 62 01	1186, 1189, 1191, 1192, 1195	0.21
	09	Char Decree 62 01	1528-1530, 1539	1.07
Playground	01	Mahish Gudi 063 00	259, 260, 262-265, 639, 640	2.51
	02	Tera Char 071 01	1472-1480, 1482, 1790, 1791	0.99
	03	Baro Madhob Rayer Char 075 01	144-147, 149	1.87
		Muladi 072 00	186, 192	0.70
		Tera Char 071 02	3047, 3128, 3134-3136	0.41
	04	Muladi 072 00	315, 316, 318	1.23
	05	Tera Char 071 03	4244, 4266, 4267	0.50
	06	Paschim Char Pattani Vanga 073 00	130, 134, 135, 141	1.14
		Tera Char 071 03	4065, 4079, 4081-4083, 4090, 4280	0.32
	07	Char Decree 062 02	2138, 2151-2153, 2514, 2523, 2527, 2539-2547, 2551-2554	1.76
	08	Char Decree 062 01	1176-1181	0.47

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
	09	Char Decree 062 01	1368-1370, 1387, 1391-1393, 1419	1.07
Upazila Stadium	04	Muladi 072 00	55-57, 82-84	1.45
Total				**63.41**

11) Circulation Network

In total 336.93 acres or 8.13% of the existing Paurashava area (including 48.22 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 366.65 acres or 7.69% 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 Muladi Paurashava. Hence, a Bus and Truck Terminal has been proposed as multi modal terminal for Muladi Paurashava located at Ward 07 with other 4 CNG/Rickshaw stand at different locations of the Paurashava. Following table shows the plot schedule for Transportation Facilities zone.

Table- 10.9: New Development proposal for Transportation Facilities

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Bus Terminal	07	Char Decree 062 02	2605, 2610, 2611, 2616, 2905, 3408, 3414-3417	1.49
Truck Terminal	07	Char Decree 062 02	2905, 3408, 3414, 3415	0.99
Helipad	05	Muladi 072 00	30, 36, 37	0.26
CNG/Rickshaw Stand	02	Tera Char 071 01	218, 224	0.48
	09	Char Decree 062 01	374-376	0.38
	04	Muladi 072 00	555	0.25
	07	Char Decree 062 02	2136, 2200, 2905, 2918	0.55
Total				**4.40**

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 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. A dumping site will be developed over an area of 3.48 acres for final disposal of the solid waste proposed at the Paurashava (Dakshin Galai Bhanga Mouza). Following table shows the plot schedule of proposed utility services proposed for Muladi Paurashava.

Table- 10.10: New Development proposal for Utility Services

Type of Facilities	Ward No.	Mouza Name	Plot No.	Area (acre)
Waste Dumping Ground	09	Dakshin Galai Bhanga 056 00	366-378, 417	3.48
Water Supply Station	02	Tera Char 071 03	4027-4030, 4125, 4127-4132	1.70
Overhead Tank	09	Char Decree 062 01	1354, 1372-1375, 1386	0.14

Treatment Plant	03	Tera Char 071 02	2316	0.39
Waste Transfer Station	01	Mahish Gudi 063 00	269, 275, 276	0.06
	02	Tera Char 071 01	1493, 1494	0.08
	03	Tera Char 071 02	2962, 3018	0.04
	04	Muladi 072 00	165, 170	0.05
	05	Tera Char 071 03	4238, 4239	0.04
	07	Char Decree 062 02	2588	0.07
	08	Char Decree 062 01	954	0.08
	09	Char Decree 062 01	1376, 1380	0.03
Total				**6.16**

14) Restricted Area

At present there remains a power station with an area of 0.10 acre located in Muladi mouza which is act as a restricted area. So, no new restricted area has been proposed.

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 2.51 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 private hospitals/health centres and diagnostic centres in Muladi. There are also one permanent and other twelve temporary EPI Vaccination centres in Muladi 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 14.04 acres (including existing and proposed) designated up to 2031 and it covers about only 0.29% 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- 10.11: New Development proposal for Community Facilities

Type of Facilities	Ward No.	M ouza Name	Plot No.	Area (acre)
Central Graveyard	08	Char Decree 62 01	609, 628, 630-644, 650, 651, 729-733, 741, 742, 837, 1256-1260, 1262, 1266-1283	4.85

17) Recreational Area

Muladi Paurashava has a lack of formal recreational facilities both on active and passive. It has only a cinema hall at ward number 6. The total existing recreational area in Muladi Paurashava is only 0.11 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 468.49 acres or 9.82% of the urban plan 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.

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***

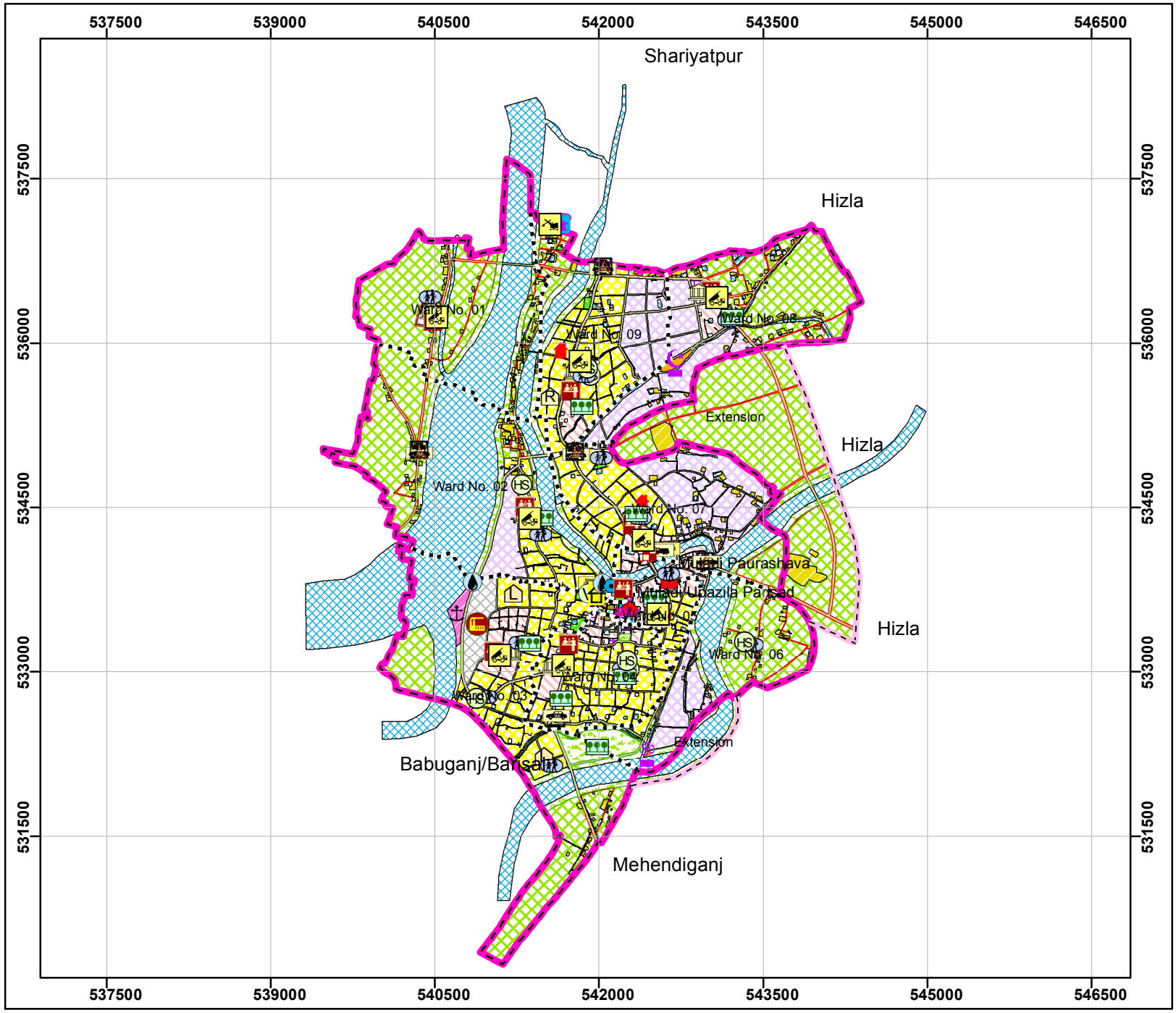
Some existing open spaces, water bodies, etc. are delineated as overlay sites in order to protect them in consideration of their future need. These places are meant exclusively for sports and recreation.

- ***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 Landuse Map in **Annexure** shows the urban area map with proposed landuse pattern of Muladi Paurashava.

Map 10.3 | **Urban area map with proposed landuse pattern of Muladi Paurashava**



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

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.

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

Plan Monitoring

The 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 wining 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 Muladi 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 ‘Hospital Mor’ of the town as well as ‘Paurashava Mor’. An origin-destination (O-D) survey was also conducted at three seleced point named Muladi Bazar, Launch Ghat and Bus stand area, 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 Muladi 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 Exiting Road Network

According to the Paurashava sources, the length of total roads in the Paurashava is 81.02 km. The physical feature survey of Muladi of 2011 and 2012 has identified a total of 81.02 km of road within the Paurashava, among them; ward 6 has highest road length (11.87 k m) whereas ward 5 has lowest length of road (4.26 k.m.). Besides, the Paurashava has 55 bridge/culverts.

Muladi is a small newly growing urban centre that has grown out of almost nothing. Three roads coming from three different directions meet at Hospital more. The same situation exists for Paurashava mor. These two intersections are the major points of existing transportation network. The routes coming from different places are,

- Babuganj
- Mehediganj
- Lanch ghat
- Hospital mor and
- Upazilla Health Complex area.

In case of Paurashava mor Molla Bazar Road coms form the south direction, Bazar road comes from north direction and in west direction Girls school road. In case of Hospital mor, Bazar road comes from the north-east direction, Molla Bazar Road form south west direction and upazilla road comes from south east direction. 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 these two points of the town. 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 Muladi Paurashava while a detailed road inventory (proposed) has been enclosed in **ANNEXURE- E.**

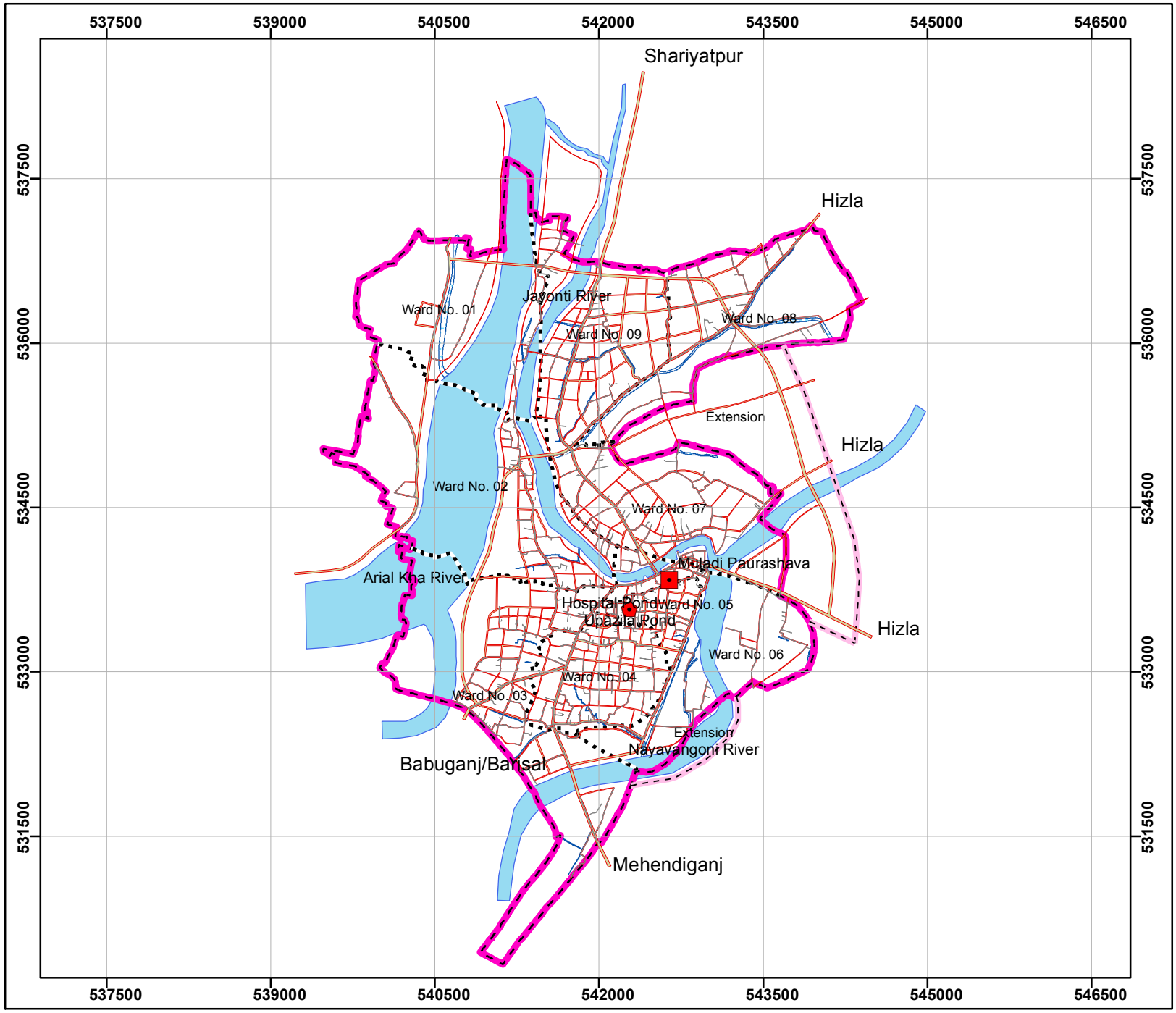
Railway Network

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

Waterway network

Water transport network of Muladi Paurashava has great importance in both carrying people and goods. There is two Launch ghat named Muladi purba bazar launch ghat and Monshagonj launch ghat within the Muladi Paurashava area. Water transport network of Muladi Paurashava is the main mode of transport. It has significant importance in carrying goods. Trawler and boat are mainly used for carrying both passenger and commodity frequently.

Map 11.1 | **Proposed and Existing Road Network of Muladi Paurashava**



SCALE
1:50,000
0 125 250 500 750 1,000 Meters

Legend

- Paurashava Office
- Upazila Headquarter
- Extension Boundary
- Paurashava Boundary
- Ward Boundary
- Existing Road
- Proposed Road
- Canal
- River

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

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 Muladi 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.

Surveyed Intersection	Sl. No	Name of the Intersections /Road Section	Peak Hour	Peak Hour Traffic Volume		Motorized		Non-Motorized	
			Time Period	Vehicle No.	PCUs**	No.	%	No.	%
Hospital More	1	Upazila Road	8.00 - 12.00	384	245.3	51	13.3	333	86.7
			16.00 – 20.00	369	253.4	34	9.2	335	90.8
			Total	**753**	**498.7**	**85**	**11.3**	**668**	**88.7**
	2	Moklesur Rahman Road	8.00 - 12.00	295	199.5	42	14.2	253	85.8
			16.00 – 20.00	427	281.7	52	12.2	375	87.8
			Total	**722**	**481.2**	**94**	**13.0**	**628**	**87.0**
	3	G. C Road	8.00 - 12.00	543	340.7	115	21.2	428	78.8
			16.00 – 20.00	438	289.5	73	16.7	365	83.3
			Total	**981**	**630.2**	**188**	**19.2**	**793**	**80.8**
Paurashava More	4	Molla Bazar Road (to North)	8.00 - 12.00	457	310.2	66	14.4	391	85.6
			16.00 – 20.00	516	309.3	61	11.8	455	88.2
			Total	**973**	**619.5**	**127**	**13.1**	**846**	**86.9**
	5	Molla Bazar Road (to South)	8.00 - 12.00	545	396.6	75	13.8	470	86.2
			16.00 – 20.00	581	391.3	105	18.1	476	81.9
			Total	**1126**	**787.9**	**180**	**16.0**	**946**	**84.0**
	6	Girls School Road	8.00 - 12.00	147	88.4	31	21.1	116	78.9
			16.00 – 20.00	137	77.4	43	31.4	94	68.6
			Total	**284**	**165.8**	**74**	**26.1**	**210**	**73.9**

Source: Traffic and Transport Management Survey, 2012

***Peak hour has been considered from 8.00-12.00 and 16.00-20.00
***Off- Peak hour has been considered from 6.00-8.00, 12.00-16.00 and 20.00-24.00

11.2.4 Level of Service: Degree of Traffic Congestion and Delay

Generally intersections are the traffic conflicting points but intersections at Muladi Paurashava do not face traffic conflicts. As because Muladi is a remote southern Paurashava and traffic flow specially motorized traffic flow is very low. From traffic volume survey at Muladi Paurashava it is found that all the major link roads have Level of Service A. That means Muladi 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, Muladi 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. Abou 50 % of the total road length is katcha roads, which is an example of poor work done by the Paurashava. As physical feature survey shows, majority 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 Muladi. 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. The households of Muladi Paurashava face some communication problems in their daily life such as narrow road problem, and every year, two roads called G. C road and Mohish Gadi Road face erosion problem due to overflow of adjacent khal. During survey local people demand a permanent solution of this problem. 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 Muladi Paurashava do not face traffic conflicts. As because Muladi is a remote southern Paurashava and traffic flow specially motorized traffic flow is very low. From traffic volume survey at Muladi Paurashava it is found that all the major link roads have Level of Service A. That means Muladi 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, Muladi 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 Muladi to maintain manual traffic system. So the traffic operation and road safety are yet to become important traffic issues.

11.2.7 Condition of Rail/Water/Air Transport

Railway Network

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

Waterway network

Water transport network of Muladi Paurashava has great importance in both carrying people and goods. There is two Launch ghat named Muladi purba bazar launch ghat and Monshagonj launch ghat within the Muladi Paurashava area.

Air Transport

There is no air transport facility in Muladi.

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 work out 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 20490 (2011) and after 20 years it will be 25884 (2031). Highest PCU/hr. is about 787 at Molla Bazar 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.

Table 11.1: Proposal for Road Standard in the Project area

Road Category	Recommended RoW by UTIDP	Modified RoW by Consultant
Paurashava primary roads	150 – 100 Feet	80 – 60 Feet
Paurashava secondary roads	100 – 60 Feet	40 – 30 Feet
Paurashava local roads	40 – 20 Feet	<30 Feet

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

The consultant has reviewed the proposed road standard for a small Paurashava town like Muladi. For this purpose, RoW with 60 ft and above will consider as primary road, RoW within 30 ft and below 60 ft will consider as secondary road and less than 30 ft to 20 ft will consider as tertiary and access road.

The standard considers here is given by the UTIDP, LGED to draw the transportation development plan. Following are the suggested planning standards for road network development. These road hierarchies are proposed based on the functional linkage of the road of Muladi Paurashava.

Neighborhood and Local Road

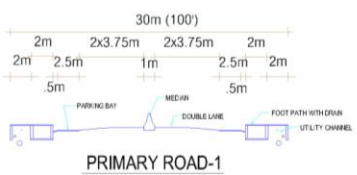
All neighborhoods (mahallah) Roads ROW may be in between 20 ft. to 30 ft wide depending on their functions.

Standard Road Design

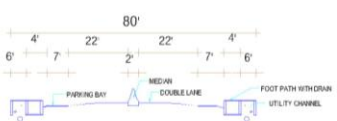
All urban roads should have flexible pavements. The road intersection should be designed to allow easy movement of vehicles. At bridge, the road design should provide for an adequate sight distance and a smooth riding**.**

Functions of Roads

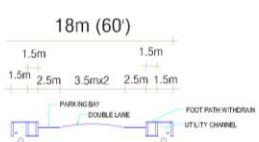
Each category of road has its particular functions to perform. **Access Road** carries traffic from buildings to the **collector Road** and collector Road carry traffic to the **major Road** and vice versa. In reality, however, it is almost impossible to maintain this hierarchical use of Roads except in an entirely planned area. However, functions will not be dependent on the Road width, rather on the location of the Road, surrounding land use and the link it is providing or the volume of traffic it is carrying. Thus an 80 feet wide secondary road can become a major road due to its strategic location and the purpose it is serving.



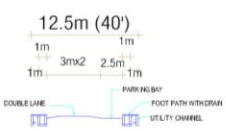
PRIMARY ROAD-1



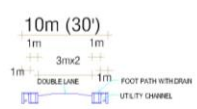
SECONDARY ROAD - 1



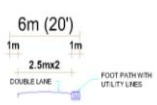
SECONDARY ROAD - 2



SECONDARY ROAD - 3



ACCESS ROAD - 1



ACCESS ROAD -2

11.4.1 Plan for Road Network Development

11.4.1.1 Road Network Plan

The three roads coming from three different directions meet at Thana mor. Another similar situation is seen in Paurashava mor. In case of Paurashava mor Molla Bazar Road coms form the south direction, Bazar road comes from north direction and in west direction Girls school road. In case of Hospital mor, Bazar road comes from the north-east direction, Molla Bazar Road form south west direction and upazilla road comes from south east direction. 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 the mentioned above two major intersections of the town. 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 (Bazar road) is not sufficient to support all the traffic passes this road which causes serious traffic congestion at these points. Most dense and multi-storied structures are situated in this road. Location of Muladi 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 both by widening and improving the surface condition of the roads. To avoid huge pressure of traffic coming from different locations on Muladi core area, one bypass roads has proposed in Muladi proposed from the starting point of the existing Paurashava (east side of Paurashava near Nayavangoni River) and will be connected with Patharghata road (at the North direction of Arial Kha river). 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. Map-11.1** shows the proposed and existing road network of Muladi Paurashava.

Table 11.2: Major Road Proposal for Muladi Paurashava

Road ID	Road Name	Existing Width (Ft)	Proposed Width (Ft)	Length (Meter)	Proposal	Phasing
8	Road-14	12	80	4614.98	Widening	Phase 01
192	Proposed Bypass Road	0	80	4352.67	New Road	Phase 04
150	Road-349	12	60	2817.95	Widening	Phase 03
197	Walkway	0	10	2587.27	New Road	Phase 03
219		0	60	2342.30	New Road	Phase 02
221		0	10	2092.17	New Road	Phase 02
223		0	10	1996.76	New Road	Phase 02
152	Mohish Godi Road	8	60	1990.45	Widening	Phase 03
176	Road-412	8	40	1959.98	Widening	Phase 04
37	G.C. Road	8	60	1924.17	Widening	Phase 01
75	Road-154	8	80	1644.03	Widening	Phase 01
203		0	40	1547.42	New Road	Phase 02
366		0	60	1387.59	New Road	Phase 03
235		0	40	1367.96	New Road	Phase 02
19	Road-37	8	20	1335.64	Widening	Phase 03
187	Road-436	8	60	1277.70	Widening	Phase 03
195	Walkway	0	10	1253.44	New Road	Phase 02
17	Road-34	8	60	1229.52	Widening	Phase 01
153	Road-354	8	20	1193.20	Widening	Phase 03

Road ID	Road Name	Existing Width (Ft)	Proposed Width (Ft)	Length (Meter)	Proposal	Phasing
95	Road-212	16	80	1092.94	Widening	Phase 01
100	Road-224	8	60	957.17	Widening	Phase 02
76	Road-155	8	20	947.32	Widening	Phase 03
266		0	40	940.57	New Road	Phase 02
373	Road-406	10	80	939.23	Widening	Phase 01
130	Road-293	8	40	921.91	Widening	Phase 03
193	Walkway	0	20	907.89	New Road	Phase 02
132	Bazar Road	16	60	883.25	Widening	Phase 01
347		0	30	875.54	New Road	Phase 02
332		0	40	872.61	New Road	Phase 03
168	Road-393	8	20	862.50	Widening	Phase 03
44	Upazila Road	10	40	857.65	Widening	Phase 01
43	Mollar Bazar Road	16	80	836.71	Widening	Phase 01
61	Road-122	8	40	815.61	Widening	Phase 01
33	Road-63	8	20	811.58	Widening	Phase 02
287		0	20	800.06	New Road	Phase 02
20	Road-38	8	20	791.38	Widening	Phase 03
201		0	40	781.07	New Road	Phase 02
348		0	60	767.87	New Road	Phase 02
331		0	40	751.93	New Road	Phase 03
202	Road-300	8	40	747.43	Widening	Phase 01
102	Road-228	8	20	744.93	Widening	Phase 03
77	Road-157	8	20	739.77	Widening	Phase 03
326		0	20	726.56	New Road	Phase 02
145	Road-329	6	20	703.53	Widening	Phase 03
204		0	20	680.76	New Road	Phase 02
281	G.C. Road	8	30	656.56	Widening	Phase 01
129	Road-292	8	40	653.64	Widening	Phase 03
194	Walkway	0	10	643.76	New Road	Phase 02
206		0	60	638.03	New Road	Phase 02
216		0	40	634.01	New Road	Phase 03
89	Bir Muktizoodha Moklesur Rahman Road	8	20	618.49	Widening	Phase 01
337		0	40	616.05	New Road	Phase 02
209		0	40	610.66	New Road	Phase 02

****** length greater than 600 m are incorporate here

Paurashava Primary Road

Molla Bazar Road, is the existing primary road and is maintained by Roads & Highways Department (RHD). One proposed bypass roads, a few internal roads are proposed as Primary roads. Total length of primary roads within Muladi is 38.2 km with 60 - 80 ft RoW.

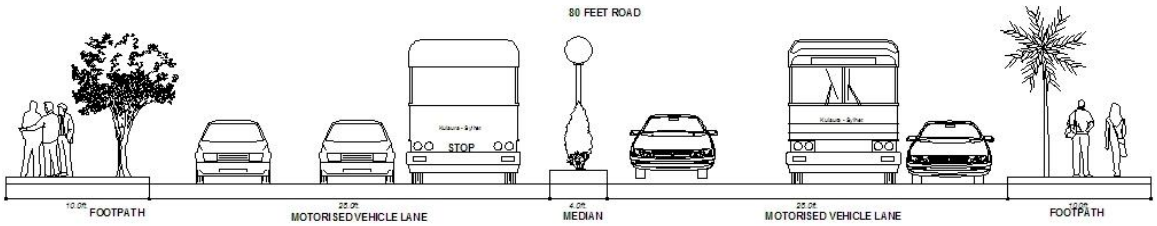


Figure 11.1: Primary Road with 80 ft RoW

Total 27.06 km primary road need to be widened 60 to 80 feet RoW and the rest 11.16 km primary road will be newly constructed to RoW 60 - 80 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.

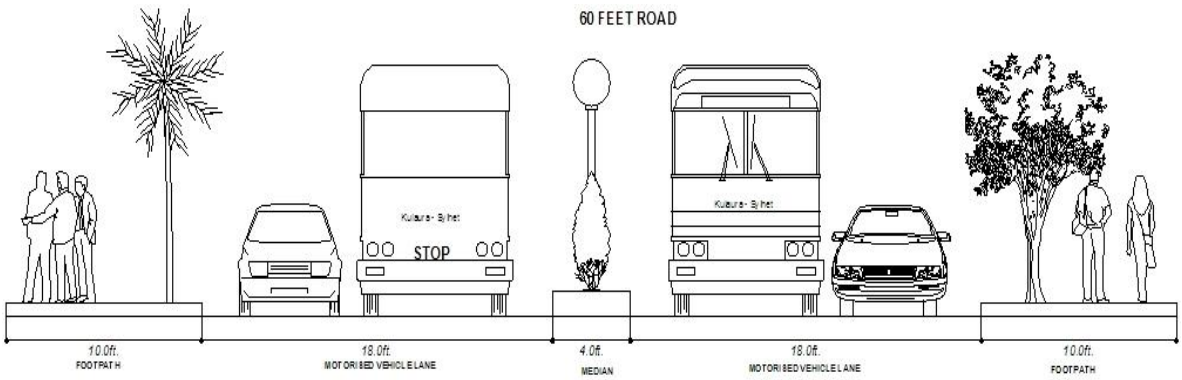


Figure 11.2: Primary Road with 60 ft RoW.

Paurashava Secondary Road

Total secondary road is 35.3 with 40 and 30 ft RoW within Paurashava area. Among this roads, 14.9 km secondary road will be widen to RoW 30 - 40 feet and rest 20.2 km will be newly constructed to RoW 30 - 40 feet. **Figure 11.3** shows the layout design of primary road with 40 ft RoW.

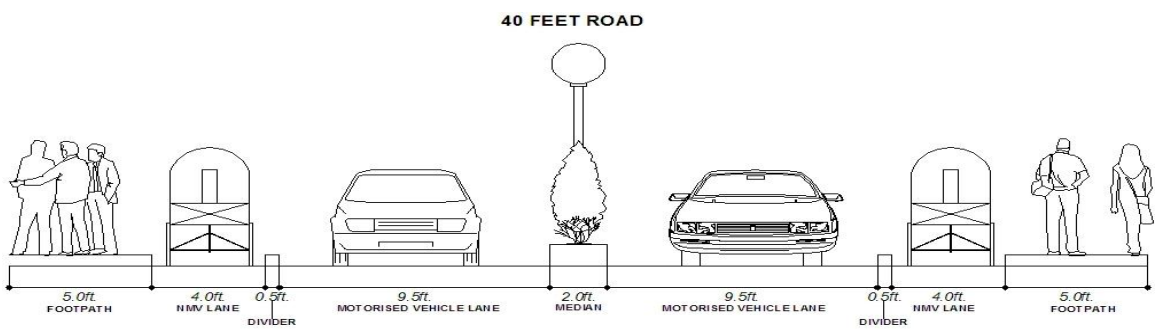


Figure 11.3: Secondary Road with 40 ft RoW.

Paurashava Tertiary Road

Total tertiary road is 56.2 km within Paurashava area with RoW 20 ft. will be developed during the project period. A total of 21.28 km. tertiary road are newly proposed for the existing Paurashava and the rest 34.9 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

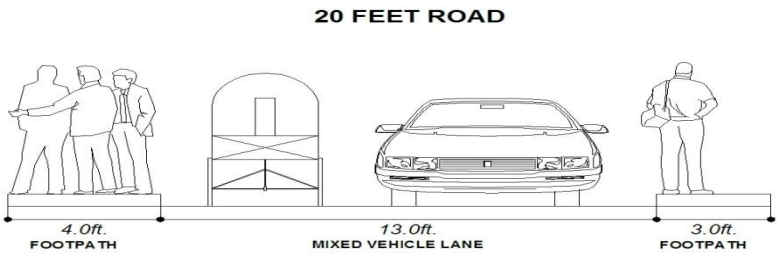


Figure 11.4: Access/Local Road with 20 ft RoW.

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.

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.
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 62.4 km new road of different width has been proposed within the entire Paurashava area in the transport development plan. The highest 21.3 km (34.13%) tertiary new road is proposed with 20 ft right of way (RoW), which will function as Tertiary road, the second highest 14.1 km (22.60%) road is proposed with 40 feet right of way (RoW) and the rest 27 km (43.28%) new road is proposed with 10, 30, 60 and 80 ft RoW. **Table 11.3** shows the summary of new road proposal.

Table 11.3: Summary of new road proposal in Muladi Paurashava

RoW (in ft)	Length (in meter)	Length (in km)	Percentage (%)	Road Type
10	9780.95	9.8	15.69	Walkway
20	21281.44	21.3	34.10	Tertiary Road
30	6073.04	6.1	9.77	Secondary Road
40	14125.72	14.1	22.57	Secondary Road
60	3659.90	3.66	5.86	Primary Road
80	7500.21	7.5	12.01	Primary Road
Total	**62421.26**	**62.46**	**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 Requirement (acre)	Existing Land (acre)	Additional Land Requirement by 2031 (acre)
Bus terminal	1 acre /20,000 population	1.29	0.00	1.29
Truck terminal	0.50 acre /20,000 population	0.65	0.00	0.65
Launch/Steamer terminal	1.00 acre/20,000 population	1.29	0.06	1.23
Baby taxi/ tempo stand	0.25 acre /one baby taxi/tempo stand	-	0.00	-
Rickshaw/van stand	0.25 acre /one baby taxi/tempo stand	-	0.00	-
Passenger Shed	0.25 acre /one baby taxi/tempo stand	-	0.00	-
Total		**3.24**	**0.18**	**3.18**

11.4.2.2 Parking and Terminal Facilities

Bus Terminal

There is no formal bus terminal in Muladi but has one informal bus stands in Muladi. Buses are currently operates on Molla Bazar route only. In future, there will need a formal bus and truck terminal in Muladi hence the consultant has been proposed a bus and truck terminal as multimodal transport facility. The proposed Bus and Truck Terminal for Muladi Paurashava is located beside

new proposed road (Ward no 7) on 2.48 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 Muladi 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 Muladi with bus terminal as multimodal terminal facility. Following **Figure- 11.5** presents a typical layout of a Bus & Truck Terminal

Railway Station

There remains no rail line and station in Muladi Paurashava. As the Paurashava is located in Barisal region which is cress-crossed by river and water body, there remains a little scope for railway service in future.

Tempo Stand

According to the Paurashava source there is no formal tempo or Rickshaw stand in Muladi 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: Muladi Bazaar, Hospital mor and Paurashava premise. That's why these areas become the busiest places of Muladi. The consultant proposes to formally develop some new tempo stands.

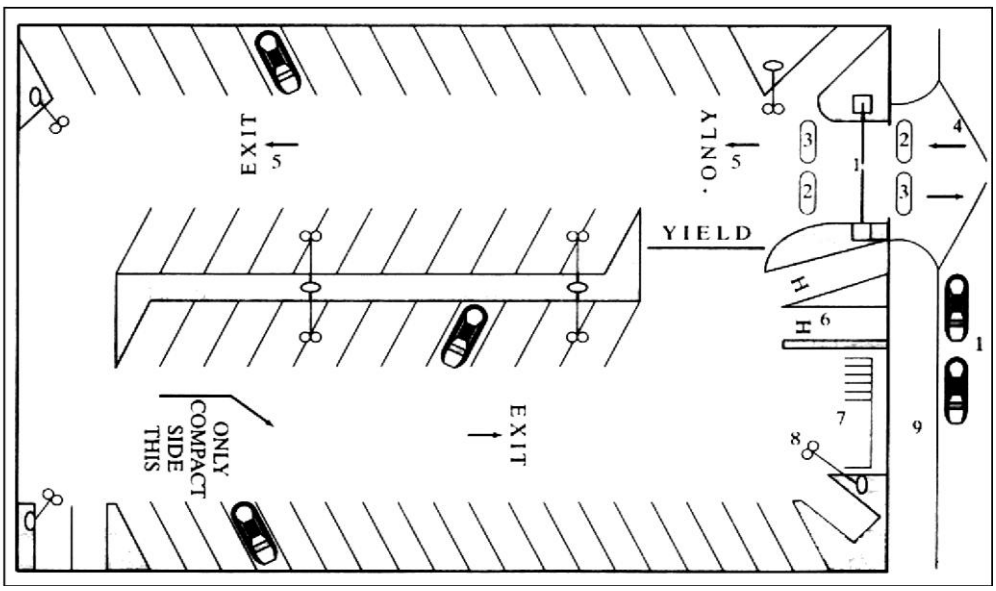


Figure- 11.5: Typical Layout of a Bus & Truck Terminal

CNG/Auto-rickshaw/Easy Bike/Rickshaw Stand

According to the Paurashava source there is no formal CNG/Rickshaw stand in Muladi 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 5 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. As Muladi is a small Paurashava so no additional bus stoppage has been proposed but several numbers of rickshaw or tempo stands have been proposed up to 2031.

Filling Station

There is no filling station in Muladi. No additional land is proposed for the filling station purpose but it can be facilitated within the bus or truck terminal premises.

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.

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 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.

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

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

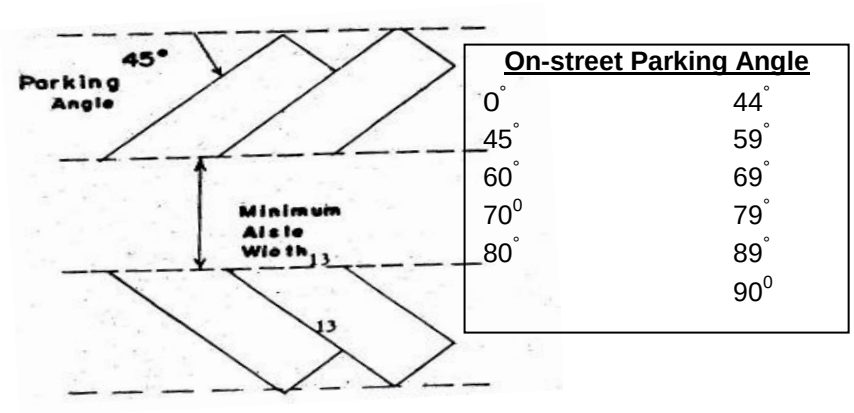


Figure- 11.6: Parking Angle and Minimum Aisle Width

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 m^2
- Business & Mercantile — 1 space if more than 5,000 m^2
- Industrial — 1 space for every 300 m^2
- Storage — 1 space if more than 1,000 m^2

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.

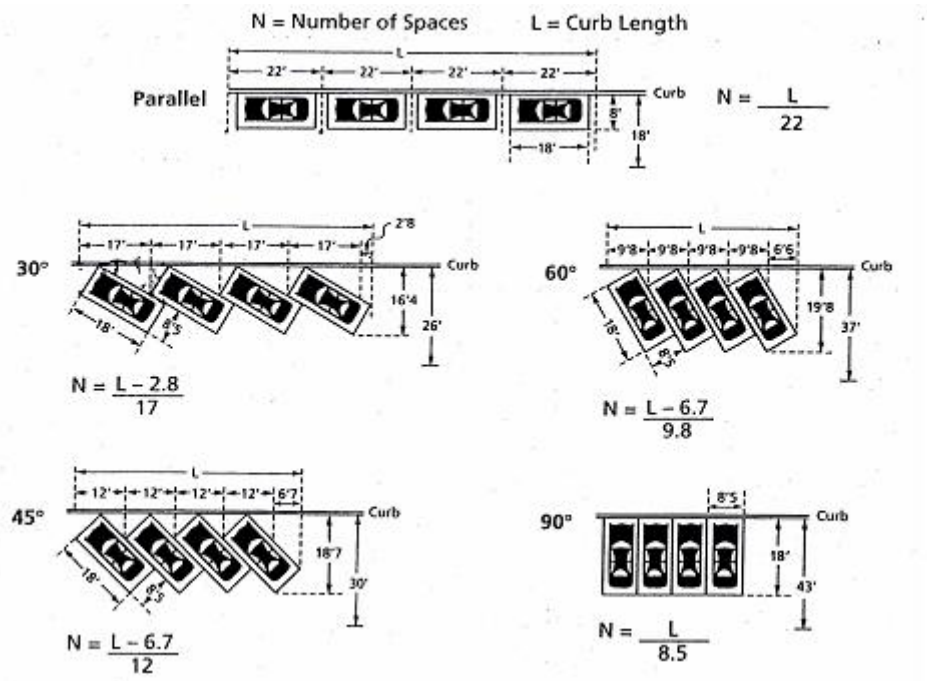


Figure- 11.7: On-Street Space Used for Various Parking Positions

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.

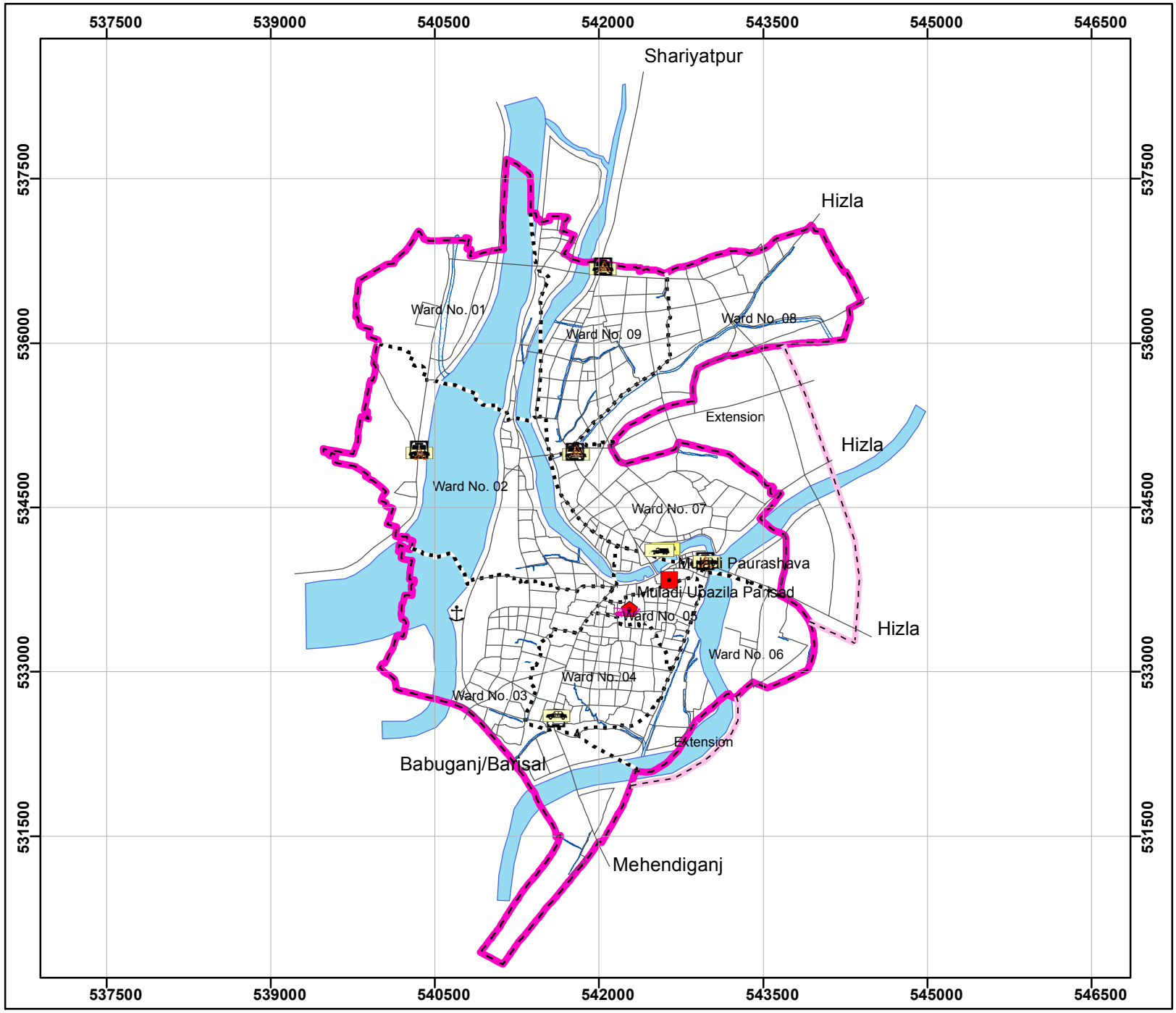
- ***Enforcement of Traffic Rules and Regulations***

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

- ***Grade Separation***

Grade Separation is one kind of traffic management system. The consultant proposed one new bypass roads in this Paurashava to avoid the traffic congestion in Hospital Mor intersection and Muladi bazar intersection.

Map 11.2 | **Proposed and existing terminals, stands/stoppages of Muladi Paurashava**



SCALE
1:50,000
0 125 250 500 750 1,000 Meters

Legend

- Paurashava Office
- Upazila Headquarter
- Extension Boundary
- Paurashava Boundary
- Ward Boundary
- Proposed Road
- Canal
- River
- Passenger Shed
- Helipad
- Ferry Ghat
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
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 Muladi 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 Muladi 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(1*a*) 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(1*a*) 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 efficiently of the urban land market would make, more private land available to urban households;
- would pass much of the development costs for local infrastructure to the private sector and land market mechanisms;
- would increase in land for development without large cash outlays by government to purchase land for development schemes; and
- would keep provision of land for community facilities virtually no cost to government.

Plan Monitoring

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

that the requirement for regular updating of the Transportation and Traffic Management Plan be made a legal requirement.

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

Evaluation

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

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

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

Co-ordination

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

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

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

In spontaneous areas, while all out people's co-operation is needed for project implementation; there will also be some elements of negotiation. Negotiation will be particularly needed in case of road widening projects. It will be a crucial task for Paurashava to convince the affected people to give up their land for road use. Efforts should be made to convince the land owners on the ground of enhancement of property value due to road widening. In case people refuse to offer land free of cost necessary arrangements may have to be made for payment of compensation. This process of negotiation will be very critical, cumbersome and time consuming, and therefore, has to be handled with utmost care and patience. The best results can be accrued only by wining people's confidence. In case the authority fails to get peoples co-operation they should exercise power of compulsory acquisition of land through Acquisition of Requisition of Immovable Property Ordinance, 1982. Attempts may be made to engage NGOs / CBOs / RHD / LGED to work as catalysts in negotiation.

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 Muladi Paurashava.

12.2.1 Existing Drainage System/Network

12.2.1.1 Man Made Drainage System in Muladi Paurashava

Paurashava is responsible for drainage management including their construction and maintenance. There is no hierarchical drainage network in Muladi 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 : 61.10 m

12.2.1.2 Natural Drainage System in Muladi 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 Arial Kha, Jayanti and Nayavangoni River which are the nearest rivers from Muladi Paurashava and meets with Bay of Bengal. down to south. Existing natural khals act 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- 1532 Area : 290.89 Acres
- Natural drainage : Area : 831.89 Acres

Muladi Paurashava has approximately 14 km of khals (41.32 acres) including irrigation canal and borrow pit. In addition, there is also 1532 numbers of ponds and ditches covering an area of about 290.89 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 Muladi Bazar area. During the concentrated heavy rainfall the effect of inadequate drainage become visible.

Muladi Paurashava suffers from the shortfall of funding to provide sufficient drainage system as well as its proper operation and maintenance. Only few 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. Muladi 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.

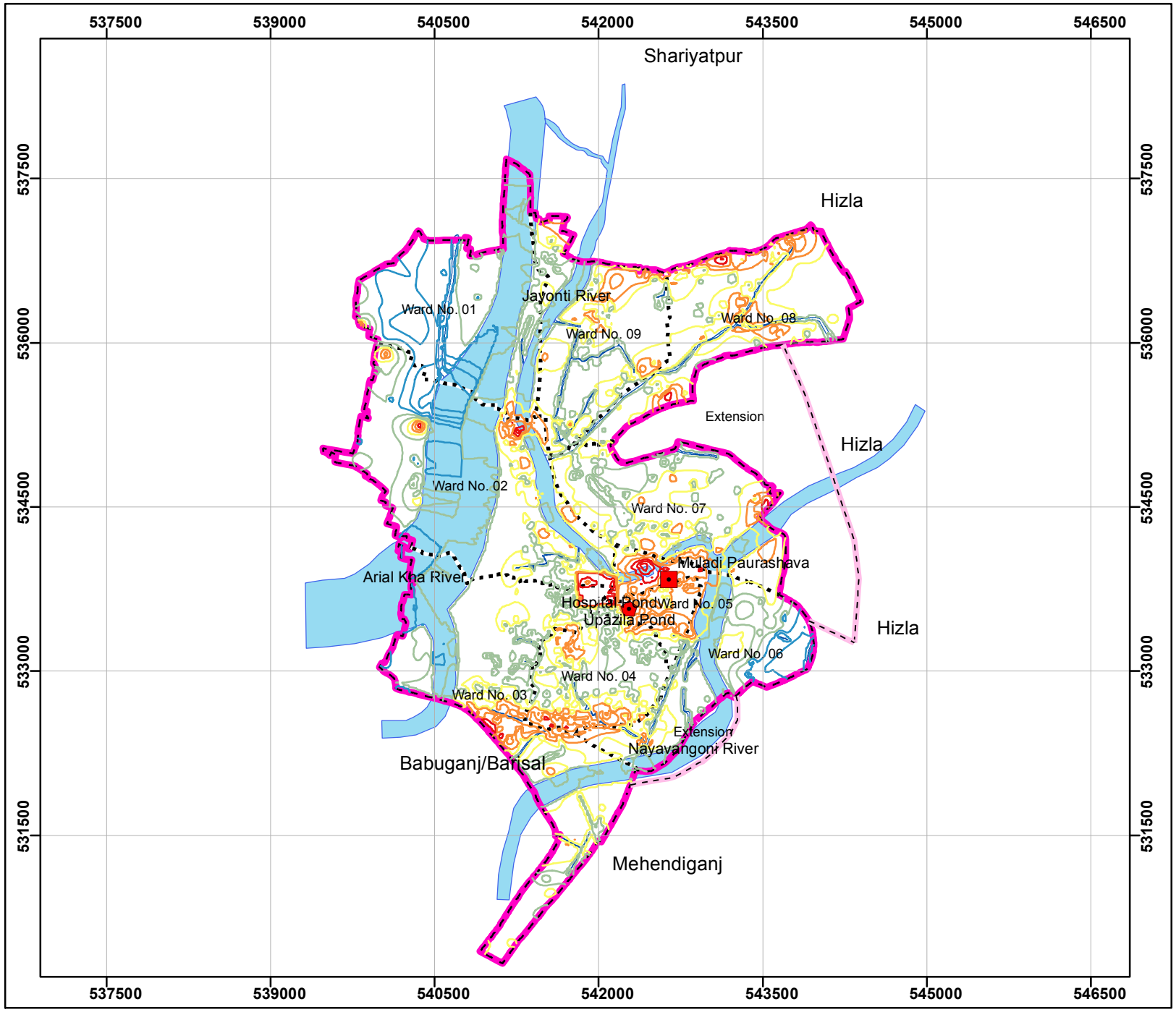
12.2.2 Appraisal of Local Topography

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. The height of the road varies from 4 meter to 7 meter compared to the adjacent lands.

Muladi Paurashava is located at in the South central (SC) region. Basically, the Muladi Paurashava area has flat with moderately high land at its central part. Total 2951 nos. spot values were collected for the study area. The lowest spot height is -2.16m and the highest spot height is 16.36 m. Average height of land of the Paurashava area is 7.56 m.

From the survey, it is observed that ward no 1, 2, 7, 8 and 9 have undulated land where as the land of other wards (centre part as ward no. 3, 4 and 5 are less undulated. 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 Muladi Paurashava.

Map 12.1 Topographic Map of Muladi Paurashava



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- BND_Extension
- BND_Pourashava
- BND_Ward
- River

Contour Label (mPWD)

- 2.700000 - 3.600000
- 3.600001 - 4.200000
- 4.200001 - 4.500000
- 4.500001 - 5.100000
- 5.100001 - 6.000000

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL 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 Muladi Paurashava 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 Muladi 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.

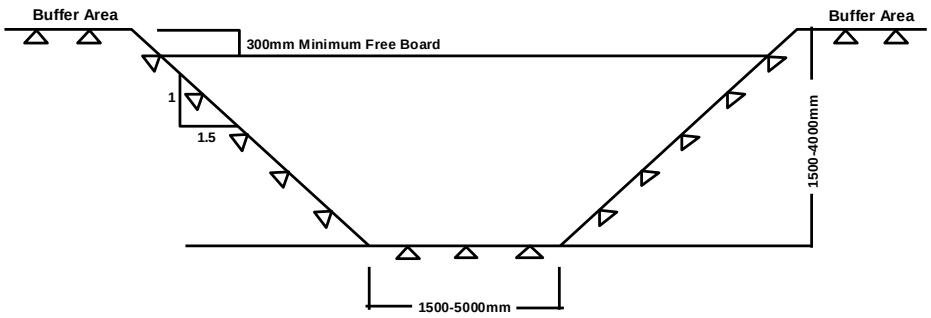
12.3.1 Plan for Drain Network Development

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.

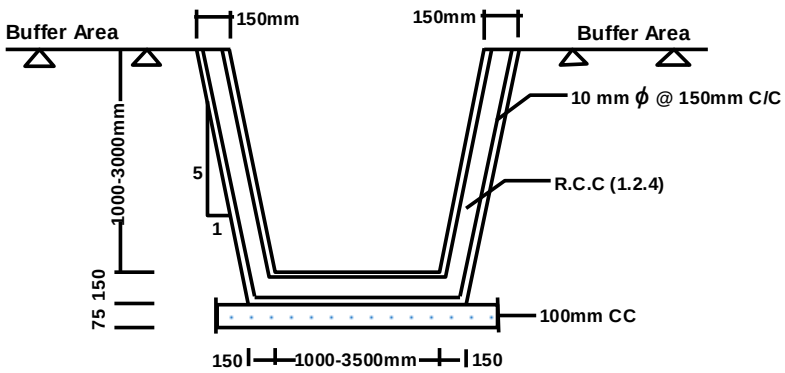
Primary Drain

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:



A Typical Earthen Primary Drain (Dimensions in mm)

Figure 12.1: Earthen Primary Drain

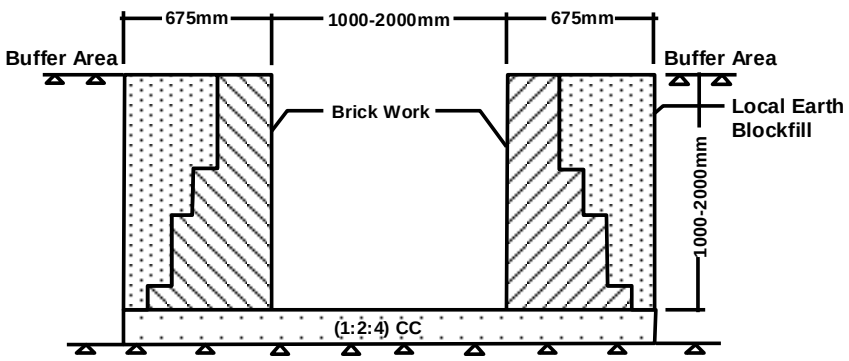


A Typical RCC Primary Drain (Dimensions in mm)

Figure 12.2: Typical RCC Primary Drain

Secondary Drain

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

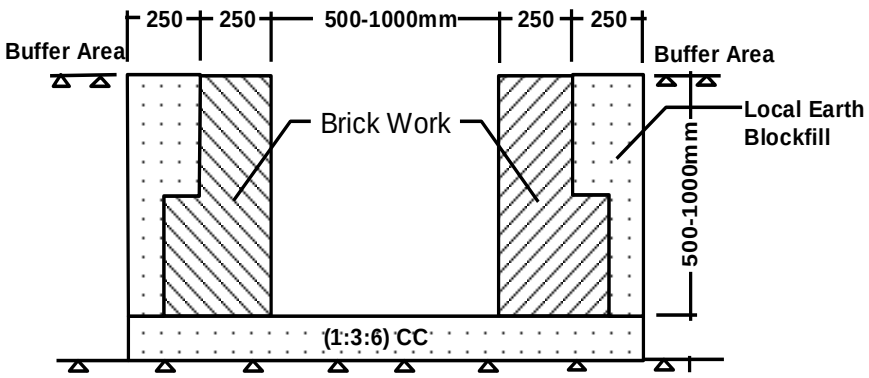


A Typical Secondary Drain (Dimensions in mm)

Figure 12.3: A Typical Secondary Drain

Tertiary Drain

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



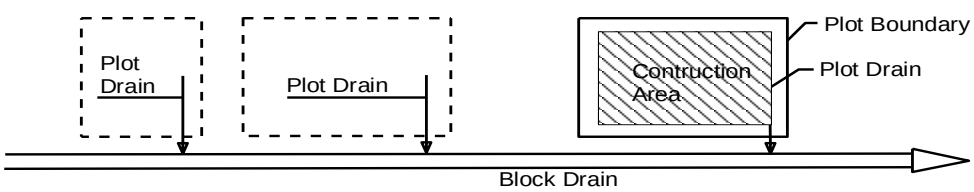
A Typical Tertiary Drain (Dimensions in mm)

Figure 12.4: A Typical Tertiary Drain

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

Plot Drains

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



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.

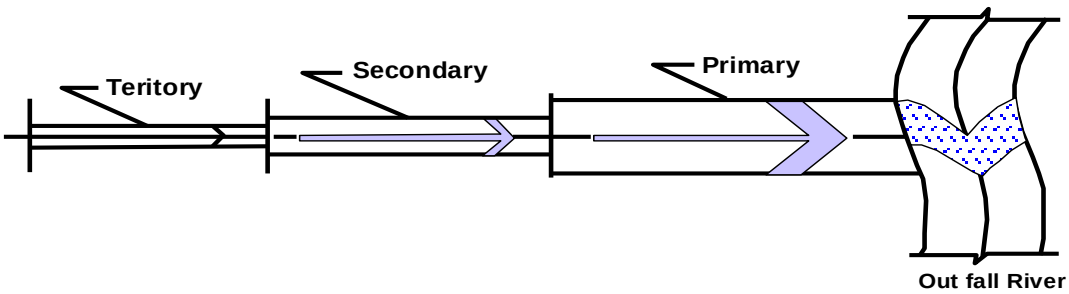


Figure 12.6: A Schematic Diagram showing flow directions from Tertiary drains to Outfall

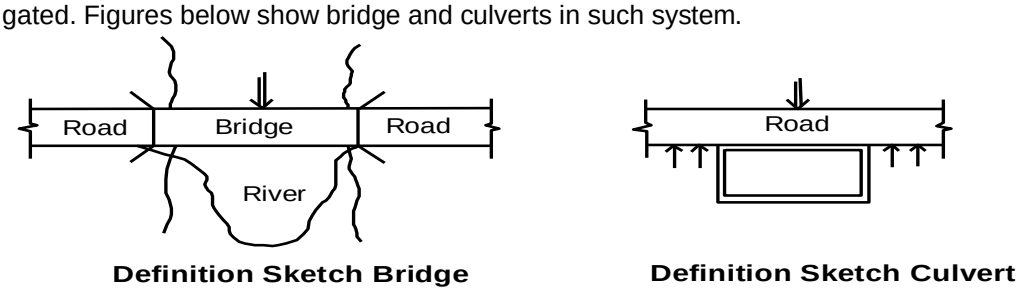
Other Drainage Related Infrastructures

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

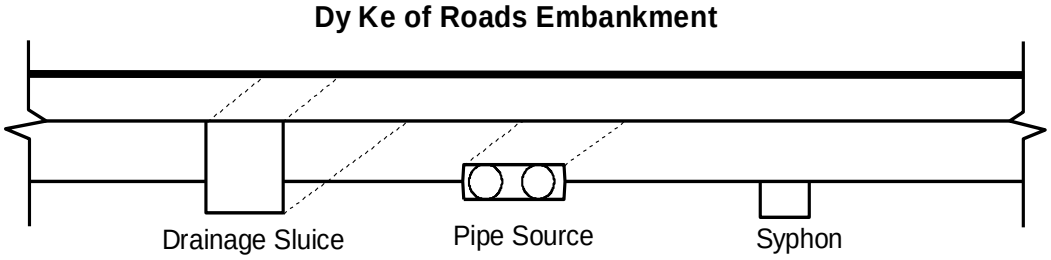


Figure 12.8: A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion.

12.3.1.2 Proposal for Improvement of the Drain Networks

Paurashava has only 61.10 m drainage network and all are pucca. This drainage network serves mainly Muladi 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. 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 60.42 km. **Table-12.1** shows the proposals of new tertiary drains.

Table- 12.1: Proposals of New Tertiary Drains in Muladi Paurashava

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
183	Tertiary Drain	274.72	1.50 - 2.50	0.64 - 1.00	Phase 01
184	Tertiary Drain	182.86	1.50 - 2.50	0.64 - 1.00	Phase 01
185	Tertiary Drain	198.90	1.50 - 2.50	0.64 - 1.00	Phase 01
186	Tertiary Drain	135.91	1.50 - 2.50	0.64 - 1.00	Phase 01
187	Tertiary Drain	190.91	1.50 - 2.50	0.64 - 1.00	Phase 01
188	Tertiary Drain	135.06	1.50 - 2.50	0.64 - 1.00	Phase 01
189	Tertiary Drain	186.00	1.50 - 2.50	0.64 - 1.00	Phase 01
190	Tertiary Drain	102.39	1.50 - 2.50	0.64 - 1.00	Phase 01
191	Tertiary Drain	183.77	1.50 - 2.50	0.64 - 1.00	Phase 01
192	Tertiary Drain	212.85	1.50 - 2.50	0.64 - 1.00	Phase 01
193	Tertiary Drain	237.84	1.50 - 2.50	0.64 - 1.00	Phase 01
194	Tertiary Drain	65.84	1.50 - 2.50	0.64 - 1.00	Phase 01
195	Tertiary Drain	237.96	1.50 - 2.50	0.64 - 1.00	Phase 01
196	Tertiary Drain	74.45	1.50 - 2.50	0.64 - 1.00	Phase 01
197	Tertiary Drain	281.85	1.50 - 2.50	0.64 - 1.00	Phase 01
198	Tertiary Drain	27.13	1.50 - 2.50	0.64 - 1.00	Phase 01
199	Tertiary Drain	84.02	1.50 - 2.50	0.64 - 1.00	Phase 01
200	Tertiary Drain	36.40	1.50 - 2.50	0.64 - 1.00	Phase 01
201	Tertiary Drain	46.48	1.50 - 2.50	0.64 - 1.00	Phase 01
202	Tertiary Drain	92.94	1.50 - 2.50	0.64 - 1.00	Phase 01
203	Tertiary Drain	89.45	1.50 - 2.50	0.64 - 1.00	Phase 01
204	Tertiary Drain	88.27	1.50 - 2.50	0.64 - 1.00	Phase 01
205	Tertiary Drain	171.48	1.50 - 2.50	0.64 - 1.00	Phase 01
206	Tertiary Drain	119.13	1.50 - 2.50	0.64 - 1.00	Phase 01
207	Tertiary Drain	150.44	1.50 - 2.50	0.64 - 1.00	Phase 01
208	Tertiary Drain	100.97	1.50 - 2.50	0.64 - 1.00	Phase 01
209	Tertiary Drain	129.88	1.50 - 2.50	0.64 - 1.00	Phase 01
210	Tertiary Drain	143.02	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
211	Tertiary Drain	204.08	1.50 - 2.50	0.64 - 1.00	Phase 01
212	Tertiary Drain	343.30	1.50 - 2.50	0.64 - 1.00	Phase 01
213	Tertiary Drain	84.12	1.50 - 2.50	0.64 - 1.00	Phase 01
214	Tertiary Drain	49.55	1.50 - 2.50	0.64 - 1.00	Phase 01
215	Tertiary Drain	71.76	1.50 - 2.50	0.64 - 1.00	Phase 01
216	Tertiary Drain	51.48	1.50 - 2.50	0.64 - 1.00	Phase 01
217	Tertiary Drain	67.55	1.50 - 2.50	0.64 - 1.00	Phase 01
218	Tertiary Drain	68.54	1.50 - 2.50	0.64 - 1.00	Phase 01
219	Tertiary Drain	83.30	1.50 - 2.50	0.64 - 1.00	Phase 01
220	Tertiary Drain	66.43	1.50 - 2.50	0.64 - 1.00	Phase 01
221	Tertiary Drain	153.50	1.50 - 2.50	0.64 - 1.00	Phase 01
222	Tertiary Drain	202.14	1.50 - 2.50	0.64 - 1.00	Phase 01
223	Tertiary Drain	398.22	1.50 - 2.50	0.64 - 1.00	Phase 01
224	Tertiary Drain	139.93	1.50 - 2.50	0.64 - 1.00	Phase 01
225	Tertiary Drain	165.14	1.50 - 2.50	0.64 - 1.00	Phase 01
226	Tertiary Drain	113.83	1.50 - 2.50	0.64 - 1.00	Phase 01
227	Tertiary Drain	30.61	1.50 - 2.50	0.64 - 1.00	Phase 01
228	Tertiary Drain	149.55	1.50 - 2.50	0.64 - 1.00	Phase 01
229	Tertiary Drain	199.28	1.50 - 2.50	0.64 - 1.00	Phase 01
230	Tertiary Drain	115.52	1.50 - 2.50	0.64 - 1.00	Phase 01
231	Tertiary Drain	279.34	1.50 - 2.50	0.64 - 1.00	Phase 01
232	Tertiary Drain	193.45	1.50 - 2.50	0.64 - 1.00	Phase 01
233	Tertiary Drain	137.38	1.50 - 2.50	0.64 - 1.00	Phase 01
234	Tertiary Drain	124.41	1.50 - 2.50	0.64 - 1.00	Phase 01
235	Tertiary Drain	85.14	1.50 - 2.50	0.64 - 1.00	Phase 01
236	Tertiary Drain	321.75	1.50 - 2.50	0.64 - 1.00	Phase 01
237	Tertiary Drain	215.46	1.50 - 2.50	0.64 - 1.00	Phase 01
238	Tertiary Drain	120.59	1.50 - 2.50	0.64 - 1.00	Phase 01
239	Tertiary Drain	329.04	1.50 - 2.50	0.64 - 1.00	Phase 01
240	Tertiary Drain	223.49	1.50 - 2.50	0.64 - 1.00	Phase 01
241	Tertiary Drain	68.93	1.50 - 2.50	0.64 - 1.00	Phase 01
242	Tertiary Drain	25.46	1.50 - 2.50	0.64 - 1.00	Phase 01
243	Tertiary Drain	118.09	1.50 - 2.50	0.64 - 1.00	Phase 01
244	Tertiary Drain	51.45	1.50 - 2.50	0.64 - 1.00	Phase 01
245	Tertiary Drain	96.71	1.50 - 2.50	0.64 - 1.00	Phase 01
246	Tertiary Drain	64.77	1.50 - 2.50	0.64 - 1.00	Phase 01
247	Tertiary Drain	60.10	1.50 - 2.50	0.64 - 1.00	Phase 01
248	Tertiary Drain	79.92	1.50 - 2.50	0.64 - 1.00	Phase 01
249	Tertiary Drain	189.74	1.50 - 2.50	0.64 - 1.00	Phase 01
250	Tertiary Drain	259.37	1.50 - 2.50	0.64 - 1.00	Phase 01
251	Tertiary Drain	111.60	1.50 - 2.50	0.64 - 1.00	Phase 01
252	Tertiary Drain	176.59	1.50 - 2.50	0.64 - 1.00	Phase 02
253	Tertiary Drain	97.29	1.50 - 2.50	0.64 - 1.00	Phase 01
254	Tertiary Drain	87.06	1.50 - 2.50	0.64 - 1.00	Phase 01
255	Tertiary Drain	139.83	1.50 - 2.50	0.64 - 1.00	Phase 01
256	Tertiary Drain	182.86	1.50 - 2.50	0.64 - 1.00	Phase 01
257	Tertiary Drain	35.53	1.50 - 2.50	0.64 - 1.00	Phase 01
258	Tertiary Drain	177.16	1.50 - 2.50	0.64 - 1.00	Phase 02
259	Tertiary Drain	105.44	1.50 - 2.50	0.64 - 1.00	Phase 01
260	Tertiary Drain	62.69	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
261	Tertiary Drain	98.67	1.50 - 2.50	0.64 - 1.00	Phase 01
262	Tertiary Drain	97.65	1.50 - 2.50	0.64 - 1.00	Phase 02
263	Tertiary Drain	174.93	1.50 - 2.50	0.64 - 1.00	Phase 01
264	Tertiary Drain	139.23	1.50 - 2.50	0.64 - 1.00	Phase 01
265	Tertiary Drain	107.40	1.50 - 2.50	0.64 - 1.00	Phase 01
266	Tertiary Drain	117.64	1.50 - 2.50	0.64 - 1.00	Phase 02
267	Tertiary Drain	74.07	1.50 - 2.50	0.64 - 1.00	Phase 02
268	Tertiary Drain	185.68	1.50 - 2.50	0.64 - 1.00	Phase 02
269	Tertiary Drain	142.14	1.50 - 2.50	0.64 - 1.00	Phase 02
270	Tertiary Drain	286.21	1.50 - 2.50	0.64 - 1.00	Phase 01
271	Tertiary Drain	266.09	1.50 - 2.50	0.64 - 1.00	Phase 02
272	Tertiary Drain	97.10	1.50 - 2.50	0.64 - 1.00	Phase 01
273	Tertiary Drain	218.43	1.50 - 2.50	0.64 - 1.00	Phase 01
274	Tertiary Drain	293.25	1.50 - 2.50	0.64 - 1.00	Phase 01
275	Tertiary Drain	47.06	1.50 - 2.50	0.64 - 1.00	Phase 01
276	Tertiary Drain	137.66	1.50 - 2.50	0.64 - 1.00	Phase 01
277	Tertiary Drain	193.01	1.50 - 2.50	0.64 - 1.00	Phase 01
278	Tertiary Drain	202.21	1.50 - 2.50	0.64 - 1.00	Phase 01
279	Tertiary Drain	41.21	1.50 - 2.50	0.64 - 1.00	Phase 01
280	Tertiary Drain	71.78	1.50 - 2.50	0.64 - 1.00	Phase 01
281	Tertiary Drain	352.00	1.50 - 2.50	0.64 - 1.00	Phase 02
282	Tertiary Drain	154.30	1.50 - 2.50	0.64 - 1.00	Phase 02
283	Tertiary Drain	115.90	1.50 - 2.50	0.64 - 1.00	Phase 02
284	Tertiary Drain	115.90	1.50 - 2.50	0.64 - 1.00	Phase 01
285	Tertiary Drain	22.03	1.50 - 2.50	0.64 - 1.00	Phase 01
286	Tertiary Drain	138.92	1.50 - 2.50	0.64 - 1.00	Phase 01
287	Tertiary Drain	215.86	1.50 - 2.50	0.64 - 1.00	Phase 02
288	Tertiary Drain	127.40	1.50 - 2.50	0.64 - 1.00	Phase 01
289	Tertiary Drain	330.49	1.50 - 2.50	0.64 - 1.00	Phase 02
290	Tertiary Drain	124.65	1.50 - 2.50	0.64 - 1.00	Phase 02
291	Tertiary Drain	187.36	1.50 - 2.50	0.64 - 1.00	Phase 02
292	Tertiary Drain	177.27	1.50 - 2.50	0.64 - 1.00	Phase 02
293	Tertiary Drain	181.51	1.50 - 2.50	0.64 - 1.00	Phase 02
294	Tertiary Drain	143.66	1.50 - 2.50	0.64 - 1.00	Phase 02
295	Tertiary Drain	155.69	1.50 - 2.50	0.64 - 1.00	Phase 01
296	Tertiary Drain	85.07	1.50 - 2.50	0.64 - 1.00	Phase 01
297	Tertiary Drain	67.49	1.50 - 2.50	0.64 - 1.00	Phase 02
298	Tertiary Drain	73.66	1.50 - 2.50	0.64 - 1.00	Phase 01
299	Tertiary Drain	259.13	1.50 - 2.50	0.64 - 1.00	Phase 01
300	Tertiary Drain	23.13	1.50 - 2.50	0.64 - 1.00	Phase 01
301	Tertiary Drain	29.22	1.50 - 2.50	0.64 - 1.00	Phase 01
302	Tertiary Drain	85.82	1.50 - 2.50	0.64 - 1.00	Phase 02
303	Tertiary Drain	256.93	1.50 - 2.50	0.64 - 1.00	Phase 01
304	Tertiary Drain	495.69	1.50 - 2.50	0.64 - 1.00	Phase 02
305	Tertiary Drain	50.89	1.50 - 2.50	0.64 - 1.00	Phase 01
306	Tertiary Drain	325.54	1.50 - 2.50	0.64 - 1.00	Phase 02
307	Tertiary Drain	354.30	1.50 - 2.50	0.64 - 1.00	Phase 02
308	Tertiary Drain	172.85	1.50 - 2.50	0.64 - 1.00	Phase 01
309	Tertiary Drain	250.34	1.50 - 2.50	0.64 - 1.00	Phase 01
310	Tertiary Drain	237.39	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
311	Tertiary Drain	261.02	1.50 - 2.50	0.64 - 1.00	Phase 02
312	Tertiary Drain	172.41	1.50 - 2.50	0.64 - 1.00	Phase 02
313	Tertiary Drain	337.98	1.50 - 2.50	0.64 - 1.00	Phase 02
314	Tertiary Drain	235.49	1.50 - 2.50	0.64 - 1.00	Phase 02
315	Tertiary Drain	213.23	1.50 - 2.50	0.64 - 1.00	Phase 02
316	Tertiary Drain	143.20	1.50 - 2.50	0.64 - 1.00	Phase 01
317	Tertiary Drain	128.33	1.50 - 2.50	0.64 - 1.00	Phase 01
318	Tertiary Drain	76.42	1.50 - 2.50	0.64 - 1.00	Phase 01
319	Tertiary Drain	80.62	1.50 - 2.50	0.64 - 1.00	Phase 01
320	Tertiary Drain	419.64	1.50 - 2.50	0.64 - 1.00	Phase 02
321	Tertiary Drain	67.30	1.50 - 2.50	0.64 - 1.00	Phase 01
322	Tertiary Drain	98.13	1.50 - 2.50	0.64 - 1.00	Phase 01
323	Tertiary Drain	74.48	1.50 - 2.50	0.64 - 1.00	Phase 01
324	Tertiary Drain	174.69	1.50 - 2.50	0.64 - 1.00	Phase 01
325	Tertiary Drain	107.68	1.50 - 2.50	0.64 - 1.00	Phase 02
326	Tertiary Drain	221.38	1.50 - 2.50	0.64 - 1.00	Phase 01
327	Tertiary Drain	274.47	1.50 - 2.50	0.64 - 1.00	Phase 01
328	Tertiary Drain	107.46	1.50 - 2.50	0.64 - 1.00	Phase 01
329	Tertiary Drain	192.31	1.50 - 2.50	0.64 - 1.00	Phase 01
330	Tertiary Drain	241.69	1.50 - 2.50	0.64 - 1.00	Phase 01
331	Tertiary Drain	137.28	1.50 - 2.50	0.64 - 1.00	Phase 01
332	Tertiary Drain	211.95	1.50 - 2.50	0.64 - 1.00	Phase 01
333	Tertiary Drain	182.60	1.50 - 2.50	0.64 - 1.00	Phase 01
334	Tertiary Drain	99.87	1.50 - 2.50	0.64 - 1.00	Phase 01
335	Tertiary Drain	180.90	1.50 - 2.50	0.64 - 1.00	Phase 01
336	Tertiary Drain	211.18	1.50 - 2.50	0.64 - 1.00	Phase 01
337	Tertiary Drain	157.98	1.50 - 2.50	0.64 - 1.00	Phase 01
338	Tertiary Drain	237.98	1.50 - 2.50	0.64 - 1.00	Phase 01
339	Tertiary Drain	64.47	1.50 - 2.50	0.64 - 1.00	Phase 01
340	Tertiary Drain	241.87	1.50 - 2.50	0.64 - 1.00	Phase 01
341	Tertiary Drain	75.20	1.50 - 2.50	0.64 - 1.00	Phase 01
342	Tertiary Drain	266.44	1.50 - 2.50	0.64 - 1.00	Phase 01
343	Tertiary Drain	21.46	1.50 - 2.50	0.64 - 1.00	Phase 01
344	Tertiary Drain	84.01	1.50 - 2.50	0.64 - 1.00	Phase 01
345	Tertiary Drain	37.65	1.50 - 2.50	0.64 - 1.00	Phase 01
346	Tertiary Drain	46.50	1.50 - 2.50	0.64 - 1.00	Phase 01
347	Tertiary Drain	97.83	1.50 - 2.50	0.64 - 1.00	Phase 01
348	Tertiary Drain	92.58	1.50 - 2.50	0.64 - 1.00	Phase 01
349	Tertiary Drain	88.33	1.50 - 2.50	0.64 - 1.00	Phase 01
350	Tertiary Drain	172.68	1.50 - 2.50	0.64 - 1.00	Phase 01
351	Tertiary Drain	172.24	1.50 - 2.50	0.64 - 1.00	Phase 01
352	Tertiary Drain	120.94	1.50 - 2.50	0.64 - 1.00	Phase 01
353	Tertiary Drain	152.43	1.50 - 2.50	0.64 - 1.00	Phase 01
354	Tertiary Drain	99.58	1.50 - 2.50	0.64 - 1.00	Phase 01
355	Tertiary Drain	127.28	1.50 - 2.50	0.64 - 1.00	Phase 01
356	Tertiary Drain	141.19	1.50 - 2.50	0.64 - 1.00	Phase 01
357	Tertiary Drain	205.17	1.50 - 2.50	0.64 - 1.00	Phase 01
358	Tertiary Drain	330.05	1.50 - 2.50	0.64 - 1.00	Phase 01
359	Tertiary Drain	85.09	1.50 - 2.50	0.64 - 1.00	Phase 01
360	Tertiary Drain	47.88	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
361	Tertiary Drain	71.47	1.50 - 2.50	0.64 - 1.00	Phase 01
362	Tertiary Drain	52.29	1.50 - 2.50	0.64 - 1.00	Phase 01
363	Tertiary Drain	70.10	1.50 - 2.50	0.64 - 1.00	Phase 01
364	Tertiary Drain	69.24	1.50 - 2.50	0.64 - 1.00	Phase 01
365	Tertiary Drain	88.31	1.50 - 2.50	0.64 - 1.00	Phase 01
366	Tertiary Drain	66.62	1.50 - 2.50	0.64 - 1.00	Phase 01
367	Tertiary Drain	156.60	1.50 - 2.50	0.64 - 1.00	Phase 01
368	Tertiary Drain	203.85	1.50 - 2.50	0.64 - 1.00	Phase 01
369	Tertiary Drain	400.20	1.50 - 2.50	0.64 - 1.00	Phase 01
370	Tertiary Drain	139.77	1.50 - 2.50	0.64 - 1.00	Phase 01
371	Tertiary Drain	165.89	1.50 - 2.50	0.64 - 1.00	Phase 01
372	Tertiary Drain	113.56	1.50 - 2.50	0.64 - 1.00	Phase 01
373	Tertiary Drain	182.56	1.50 - 2.50	0.64 - 1.00	Phase 01
374	Tertiary Drain	150.70	1.50 - 2.50	0.64 - 1.00	Phase 01
375	Tertiary Drain	198.74	1.50 - 2.50	0.64 - 1.00	Phase 01
376	Tertiary Drain	123.61	1.50 - 2.50	0.64 - 1.00	Phase 01
377	Tertiary Drain	285.06	1.50 - 2.50	0.64 - 1.00	Phase 01
378	Tertiary Drain	193.48	1.50 - 2.50	0.64 - 1.00	Phase 01
379	Tertiary Drain	136.32	1.50 - 2.50	0.64 - 1.00	Phase 01
380	Tertiary Drain	120.67	1.50 - 2.50	0.64 - 1.00	Phase 01
381	Tertiary Drain	84.76	1.50 - 2.50	0.64 - 1.00	Phase 01
382	Tertiary Drain	321.51	1.50 - 2.50	0.64 - 1.00	Phase 01
383	Tertiary Drain	200.40	1.50 - 2.50	0.64 - 1.00	Phase 01
384	Tertiary Drain	236.91	1.50 - 2.50	0.64 - 1.00	Phase 01
385	Tertiary Drain	63.77	1.50 - 2.50	0.64 - 1.00	Phase 01
386	Tertiary Drain	23.05	1.50 - 2.50	0.64 - 1.00	Phase 01
387	Tertiary Drain	114.53	1.50 - 2.50	0.64 - 1.00	Phase 01
388	Tertiary Drain	46.89	1.50 - 2.50	0.64 - 1.00	Phase 01
389	Tertiary Drain	96.41	1.50 - 2.50	0.64 - 1.00	Phase 01
390	Tertiary Drain	67.93	1.50 - 2.50	0.64 - 1.00	Phase 01
391	Tertiary Drain	53.62	1.50 - 2.50	0.64 - 1.00	Phase 01
392	Tertiary Drain	79.57	1.50 - 2.50	0.64 - 1.00	Phase 01
393	Tertiary Drain	189.08	1.50 - 2.50	0.64 - 1.00	Phase 01
394	Tertiary Drain	90.94	1.50 - 2.50	0.64 - 1.00	Phase 01
395	Tertiary Drain	254.22	1.50 - 2.50	0.64 - 1.00	Phase 01
396	Tertiary Drain	112.08	1.50 - 2.50	0.64 - 1.00	Phase 01
397	Tertiary Drain	160.25	1.50 - 2.50	0.64 - 1.00	Phase 02
398	Tertiary Drain	103.23	1.50 - 2.50	0.64 - 1.00	Phase 01
399	Tertiary Drain	86.58	1.50 - 2.50	0.64 - 1.00	Phase 01
400	Tertiary Drain	136.79	1.50 - 2.50	0.64 - 1.00	Phase 01
401	Tertiary Drain	190.43	1.50 - 2.50	0.64 - 1.00	Phase 01
402	Tertiary Drain	41.58	1.50 - 2.50	0.64 - 1.00	Phase 01
403	Tertiary Drain	103.45	1.50 - 2.50	0.64 - 1.00	Phase 01
404	Tertiary Drain	62.70	1.50 - 2.50	0.64 - 1.00	Phase 01
405	Tertiary Drain	99.59	1.50 - 2.50	0.64 - 1.00	Phase 01
406	Tertiary Drain	892.49	1.50 - 2.50	0.64 - 1.00	Phase 02
407	Tertiary Drain	426.67	1.50 - 2.50	0.64 - 1.00	Phase 02
408	Tertiary Drain	234.77	1.50 - 2.50	0.64 - 1.00	Phase 02
409	Tertiary Drain	176.33	1.50 - 2.50	0.64 - 1.00	Phase 01
410	Tertiary Drain	99.33	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
411	Tertiary Drain	268.46	1.50 - 2.50	0.64 - 1.00	Phase 02
412	Tertiary Drain	147.68	1.50 - 2.50	0.64 - 1.00	Phase 01
413	Tertiary Drain	107.68	1.50 - 2.50	0.64 - 1.00	Phase 01
414	Tertiary Drain	120.18	1.50 - 2.50	0.64 - 1.00	Phase 02
415	Tertiary Drain	73.86	1.50 - 2.50	0.64 - 1.00	Phase 02
416	Tertiary Drain	117.64	1.50 - 2.50	0.64 - 1.00	Phase 02
417	Tertiary Drain	139.47	1.50 - 2.50	0.64 - 1.00	Phase 02
418	Tertiary Drain	186.29	1.50 - 2.50	0.64 - 1.00	Phase 02
419	Tertiary Drain	140.89	1.50 - 2.50	0.64 - 1.00	Phase 02
420	Tertiary Drain	102.98	1.50 - 2.50	0.64 - 1.00	Phase 01
421	Tertiary Drain	221.68	1.50 - 2.50	0.64 - 1.00	Phase 01
422	Tertiary Drain	300.77	1.50 - 2.50	0.64 - 1.00	Phase 01
423	Tertiary Drain	43.84	1.50 - 2.50	0.64 - 1.00	Phase 01
424	Tertiary Drain	128.76	1.50 - 2.50	0.64 - 1.00	Phase 01
425	Tertiary Drain	192.94	1.50 - 2.50	0.64 - 1.00	Phase 01
426	Tertiary Drain	202.62	1.50 - 2.50	0.64 - 1.00	Phase 01
427	Tertiary Drain	102.91	1.50 - 2.50	0.64 - 1.00	Phase 02
428	Tertiary Drain	359.64	1.50 - 2.50	0.64 - 1.00	Phase 02
429	Tertiary Drain	41.16	1.50 - 2.50	0.64 - 1.00	Phase 01
430	Tertiary Drain	72.31	1.50 - 2.50	0.64 - 1.00	Phase 01
431	Tertiary Drain	351.30	1.50 - 2.50	0.64 - 1.00	Phase 02
432	Tertiary Drain	153.60	1.50 - 2.50	0.64 - 1.00	Phase 02
433	Tertiary Drain	115.14	1.50 - 2.50	0.64 - 1.00	Phase 02
434	Tertiary Drain	118.40	1.50 - 2.50	0.64 - 1.00	Phase 01
435	Tertiary Drain	21.92	1.50 - 2.50	0.64 - 1.00	Phase 01
436	Tertiary Drain	134.73	1.50 - 2.50	0.64 - 1.00	Phase 01
437	Tertiary Drain	215.11	1.50 - 2.50	0.64 - 1.00	Phase 02
438	Tertiary Drain	128.09	1.50 - 2.50	0.64 - 1.00	Phase 01
439	Tertiary Drain	331.18	1.50 - 2.50	0.64 - 1.00	Phase 02
440	Tertiary Drain	125.25	1.50 - 2.50	0.64 - 1.00	Phase 02
441	Tertiary Drain	191.22	1.50 - 2.50	0.64 - 1.00	Phase 02
442	Tertiary Drain	185.04	1.50 - 2.50	0.64 - 1.00	Phase 02
443	Tertiary Drain	179.58	1.50 - 2.50	0.64 - 1.00	Phase 02
444	Tertiary Drain	143.80	1.50 - 2.50	0.64 - 1.00	Phase 02
445	Tertiary Drain	156.91	1.50 - 2.50	0.64 - 1.00	Phase 01
446	Tertiary Drain	84.35	1.50 - 2.50	0.64 - 1.00	Phase 01
447	Tertiary Drain	60.92	1.50 - 2.50	0.64 - 1.00	Phase 02
448	Tertiary Drain	94.46	1.50 - 2.50	0.64 - 1.00	Phase 01
449	Tertiary Drain	70.28	1.50 - 2.50	0.64 - 1.00	Phase 01
450	Tertiary Drain	260.10	1.50 - 2.50	0.64 - 1.00	Phase 01
451	Tertiary Drain	22.63	1.50 - 2.50	0.64 - 1.00	Phase 01
452	Tertiary Drain	27.78	1.50 - 2.50	0.64 - 1.00	Phase 01
453	Tertiary Drain	88.53	1.50 - 2.50	0.64 - 1.00	Phase 02
454	Tertiary Drain	283.58	1.50 - 2.50	0.64 - 1.00	Phase 01
455	Tertiary Drain	494.49	1.50 - 2.50	0.64 - 1.00	Phase 02
456	Tertiary Drain	49.58	1.50 - 2.50	0.64 - 1.00	Phase 01
457	Tertiary Drain	325.30	1.50 - 2.50	0.64 - 1.00	Phase 02
458	Tertiary Drain	110.41	1.50 - 2.50	0.64 - 1.00	Phase 02
459	Tertiary Drain	354.37	1.50 - 2.50	0.64 - 1.00	Phase 02
460	Tertiary Drain	172.99	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
461	Tertiary Drain	248.71	1.50 - 2.50	0.64 - 1.00	Phase 01
462	Tertiary Drain	240.26	1.50 - 2.50	0.64 - 1.00	Phase 01
463	Tertiary Drain	263.50	1.50 - 2.50	0.64 - 1.00	Phase 02
464	Tertiary Drain	171.81	1.50 - 2.50	0.64 - 1.00	Phase 02
465	Tertiary Drain	95.30	1.50 - 2.50	0.64 - 1.00	Phase 02
466	Tertiary Drain	333.45	1.50 - 2.50	0.64 - 1.00	Phase 02
467	Tertiary Drain	232.45	1.50 - 2.50	0.64 - 1.00	Phase 02
468	Tertiary Drain	139.67	1.50 - 2.50	0.64 - 1.00	Phase 01
469	Tertiary Drain	144.80	1.50 - 2.50	0.64 - 1.00	Phase 01
470	Tertiary Drain	126.70	1.50 - 2.50	0.64 - 1.00	Phase 01
471	Tertiary Drain	76.55	1.50 - 2.50	0.64 - 1.00	Phase 01
472	Tertiary Drain	81.51	1.50 - 2.50	0.64 - 1.00	Phase 01
473	Tertiary Drain	417.12	1.50 - 2.50	0.64 - 1.00	Phase 02
474	Tertiary Drain	64.35	1.50 - 2.50	0.64 - 1.00	Phase 01
475	Tertiary Drain	108.16	1.50 - 2.50	0.64 - 1.00	Phase 01
476	Tertiary Drain	74.63	1.50 - 2.50	0.64 - 1.00	Phase 01
477	Tertiary Drain	103.93	1.50 - 2.50	0.64 - 1.00	Phase 02
478	Tertiary Drain	217.70	1.50 - 2.50	0.64 - 1.00	Phase 01
557	Tertiary Drain	140.05	1.50 - 2.50	0.64 - 1.00	Phase 01
558	Tertiary Drain	108.72	1.50 - 2.50	0.64 - 1.00	Phase 01
559	Tertiary Drain	107.97	1.50 - 2.50	0.64 - 1.00	Phase 01
560	Tertiary Drain	10.07	1.50 - 2.50	0.64 - 1.00	Phase 01
561	Tertiary Drain	19.75	1.50 - 2.50	0.64 - 1.00	Phase 01
562	Tertiary Drain	274.36	1.50 - 2.50	0.64 - 1.00	Phase 01
563	Tertiary Drain	1.11	1.50 - 2.50	0.64 - 1.00	Phase 02
564	Tertiary Drain	292.75	1.50 - 2.50	0.64 - 1.00	Phase 02
565	Tertiary Drain	191.29	1.50 - 2.50	0.64 - 1.00	Phase 02
566	Tertiary Drain	217.56	1.50 - 2.50	0.64 - 1.00	Phase 02
567	Tertiary Drain	145.64	1.50 - 2.50	0.64 - 1.00	Phase 02
568	Tertiary Drain	218.41	1.50 - 2.50	0.64 - 1.00	Phase 02
568	Tertiary Drain	218.41	1.50 - 2.50	0.64 - 1.00	Phase 02
569	Tertiary Drain	201.92	1.50 - 2.50	0.64 - 1.00	Phase 02
570	Tertiary Drain	185.05	1.50 - 2.50	0.64 - 1.00	Phase 02
571	Tertiary Drain	169.90	1.50 - 2.50	0.64 - 1.00	Phase 01
572	Tertiary Drain	20.24	1.50 - 2.50	0.64 - 1.00	Phase 01
573	Tertiary Drain	323.31	1.50 - 2.50	0.64 - 1.00	Phase 02
574	Tertiary Drain	116.31	1.50 - 2.50	0.64 - 1.00	Phase 02
575	Tertiary Drain	108.32	1.50 - 2.50	0.64 - 1.00	Phase 02
576	Tertiary Drain	131.33	1.50 - 2.50	0.64 - 1.00	Phase 02
577	Tertiary Drain	157.05	1.50 - 2.50	0.64 - 1.00	Phase 02
578	Tertiary Drain	323.13	1.50 - 2.50	0.64 - 1.00	Phase 02
579	Tertiary Drain	59.78	1.50 - 2.50	0.64 - 1.00	Phase 02
580	Tertiary Drain	34.74	1.50 - 2.50	0.64 - 1.00	Phase 02
581	Tertiary Drain	139.42	1.50 - 2.50	0.64 - 1.00	Phase 01
582	Tertiary Drain	107.86	1.50 - 2.50	0.64 - 1.00	Phase 01
583	Tertiary Drain	38.04	1.50 - 2.50	0.64 - 1.00	Phase 01
584	Tertiary Drain	25.62	1.50 - 2.50	0.64 - 1.00	Phase 01
585	Tertiary Drain	266.91	1.50 - 2.50	0.64 - 1.00	Phase 01
586	Tertiary Drain	290.24	1.50 - 2.50	0.64 - 1.00	Phase 02
587	Tertiary Drain	194.10	1.50 - 2.50	0.64 - 1.00	Phase 02

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
588	Tertiary Drain	77.35	1.50 - 2.50	0.64 - 1.00	Phase 02
589	Tertiary Drain	216.87	1.50 - 2.50	0.64 - 1.00	Phase 02
590	Tertiary Drain	146.92	1.50 - 2.50	0.64 - 1.00	Phase 02
591	Tertiary Drain	218.86	1.50 - 2.50	0.64 - 1.00	Phase 02
591	Tertiary Drain	218.86	1.50 - 2.50	0.64 - 1.00	Phase 02
592	Tertiary Drain	202.90	1.50 - 2.50	0.64 - 1.00	Phase 02
593	Tertiary Drain	184.69	1.50 - 2.50	0.64 - 1.00	Phase 02
594	Tertiary Drain	167.88	1.50 - 2.50	0.64 - 1.00	Phase 01
595	Tertiary Drain	20.36	1.50 - 2.50	0.64 - 1.00	Phase 01
596	Tertiary Drain	310.08	1.50 - 2.50	0.64 - 1.00	Phase 02
597	Tertiary Drain	119.08	1.50 - 2.50	0.64 - 1.00	Phase 02
598	Tertiary Drain	156.58	1.50 - 2.50	0.64 - 1.00	Phase 02
599	Tertiary Drain	321.87	1.50 - 2.50	0.64 - 1.00	Phase 02
600	Tertiary Drain	183.25	1.50 - 2.50	0.64 - 1.00	Phase 02
608	Tertiary Drain	221.00	1.50 - 2.50	0.64 - 1.00	Phase 02
609	Tertiary Drain	222.22	1.50 - 2.50	0.64 - 1.00	Phase 02
610	Tertiary Drain	30.90	1.50 - 2.50	0.64 - 1.00	Phase 01
611	Tertiary Drain	32.01	1.50 - 2.50	0.64 - 1.00	Phase 01
612	Tertiary Drain	70.94	1.50 - 2.50	0.64 - 1.00	Phase 01
613	Tertiary Drain	71.01	1.50 - 2.50	0.64 - 1.00	Phase 01
616	Tertiary Drain	189.12	1.50 - 2.50	0.64 - 1.00	Phase 01
617	Tertiary Drain	197.11	1.50 - 2.50	0.64 - 1.00	Phase 01
618	Tertiary Drain	150.93	1.50 - 2.50	0.64 - 1.00	Phase 02
619	Tertiary Drain	151.40	1.50 - 2.50	0.64 - 1.00	Phase 02
624	Tertiary Drain	107.35	1.50 - 2.50	0.64 - 1.00	Phase 02
625	Tertiary Drain	107.47	1.50 - 2.50	0.64 - 1.00	Phase 02
628	Tertiary Drain	139.14	1.50 - 2.50	0.64 - 1.00	Phase 02
629	Tertiary Drain	135.54	1.50 - 2.50	0.64 - 1.00	Phase 02
630	Tertiary Drain	97.73	1.50 - 2.50	0.64 - 1.00	Phase 01
631	Tertiary Drain	105.68	1.50 - 2.50	0.64 - 1.00	Phase 01
633	Tertiary Drain	44.45	1.50 - 2.50	0.64 - 1.00	Phase 01
634	Tertiary Drain	119.08	1.50 - 2.50	0.64 - 1.00	Phase 02
635	Tertiary Drain	115.13	1.50 - 2.50	0.64 - 1.00	Phase 02
638	Tertiary Drain	205.27	1.50 - 2.50	0.64 - 1.00	Phase 02
639	Tertiary Drain	204.69	1.50 - 2.50	0.64 - 1.00	Phase 02
640	Tertiary Drain	117.40	1.50 - 2.50	0.64 - 1.00	Phase 01
641	Tertiary Drain	115.46	1.50 - 2.50	0.64 - 1.00	Phase 01
642	Tertiary Drain	101.33	1.50 - 2.50	0.64 - 1.00	Phase 01
643	Tertiary Drain	58.76	1.50 - 2.50	0.64 - 1.00	Phase 01
644	Tertiary Drain	85.41	1.50 - 2.50	0.64 - 1.00	Phase 01
645	Tertiary Drain	56.65	1.50 - 2.50	0.64 - 1.00	Phase 02
646	Tertiary Drain	130.35	1.50 - 2.50	0.64 - 1.00	Phase 02
647	Tertiary Drain	95.18	1.50 - 2.50	0.64 - 1.00	Phase 02
648	Tertiary Drain	95.06	1.50 - 2.50	0.64 - 1.00	Phase 02
651	Tertiary Drain	177.46	1.50 - 2.50	0.64 - 1.00	Phase 02
652	Tertiary Drain	96.43	1.50 - 2.50	0.64 - 1.00	Phase 02
653	Tertiary Drain	141.09	1.50 - 2.50	0.64 - 1.00	Phase 01
654	Tertiary Drain	133.90	1.50 - 2.50	0.64 - 1.00	Phase 01
655	Tertiary Drain	73.97	1.50 - 2.50	0.64 - 1.00	Phase 01
656	Tertiary Drain	136.14	1.50 - 2.50	0.64 - 1.00	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
657	Tertiary Drain	135.32	1.50 - 2.50	0.64 - 1.00	Phase 02
658	Tertiary Drain	133.70	1.50 - 2.50	0.64 - 1.00	Phase 02
659	Tertiary Drain	14.44	1.50 - 2.50	0.64 - 1.00	Phase 01
660	Tertiary Drain	16.23	1.50 - 2.50	0.64 - 1.00	Phase 01
661	Tertiary Drain	87.09	1.50 - 2.50	0.64 - 1.00	Phase 02
662	Tertiary Drain	86.40	1.50 - 2.50	0.64 - 1.00	Phase 02
665	Tertiary Drain	39.44	1.50 - 2.50	0.64 - 1.00	Phase 01
666	Tertiary Drain	38.51	1.50 - 2.50	0.64 - 1.00	Phase 01
667	Tertiary Drain	57.90	1.50 - 2.50	0.64 - 1.00	Phase 01
668	Tertiary Drain	57.40	1.50 - 2.50	0.64 - 1.00	Phase 01
669	Tertiary Drain	77.88	1.50 - 2.50	0.64 - 1.00	Phase 02
670	Tertiary Drain	77.85	1.50 - 2.50	0.64 - 1.00	Phase 02
671	Tertiary Drain	206.09	1.50 - 2.50	0.64 - 1.00	Phase 02
674	Tertiary Drain	65.88	1.50 - 2.50	0.64 - 1.00	Phase 02
675	Tertiary Drain	64.91	1.50 - 2.50	0.64 - 1.00	Phase 02
676	Tertiary Drain	79.03	1.50 - 2.50	0.64 - 1.00	Phase 02
677	Tertiary Drain	78.18	1.50 - 2.50	0.64 - 1.00	Phase 02
678	Tertiary Drain	139.38	1.50 - 2.50	0.64 - 1.00	Phase 01
679	Tertiary Drain	148.00	1.50 - 2.50	0.64 - 1.00	Phase 01
680	Tertiary Drain	32.85	1.50 - 2.50	0.64 - 1.00	Phase 01
681	Tertiary Drain	33.14	1.50 - 2.50	0.64 - 1.00	Phase 01
682	Tertiary Drain	83.80	1.50 - 2.50	0.64 - 1.00	Phase 02
683	Tertiary Drain	83.38	1.50 - 2.50	0.64 - 1.00	Phase 02
684	Tertiary Drain	190.81	1.50 - 2.50	0.64 - 1.00	Phase 02
685	Tertiary Drain	191.04	1.50 - 2.50	0.64 - 1.00	Phase 02
686	Tertiary Drain	150.54	1.50 - 2.50	0.64 - 1.00	Phase 02
687	Tertiary Drain	151.57	1.50 - 2.50	0.64 - 1.00	Phase 02
Total		**60420.47**			

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 Muladi, 90.30 km of new secondary drains have been proposed **(Table-12.2)**.

Table- 12.2: Proposals of New Secondary Drains in Muladi Paurashava

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
20	Secondary Drain	843.53	2.35 - 3.35	1.124 - 2.124	Phase 01
21	Secondary Drain	263.69	2.35 - 3.35	1.124 - 2.124	Phase 02
22	Secondary Drain	133.36	2.35 - 3.35	1.124 - 2.124	Phase 01
23	Secondary Drain	856.18	2.35 - 3.35	1.124 - 2.124	Phase 01
24	Secondary Drain	266.23	2.35 - 3.35	1.124 - 2.124	Phase 02
25	Secondary Drain	131.05	2.35 - 3.35	1.124 - 2.124	Phase 01
26	Secondary Drain	229.15	2.35 - 3.35	1.124 - 2.124	Phase 01
27	Secondary Drain	147.12	2.35 - 3.35	1.124 - 2.124	Phase 01
28	Secondary Drain	399.02	2.35 - 3.35	1.124 - 2.124	Phase 01
29	Secondary Drain	317.54	2.35 - 3.35	1.124 - 2.124	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
30	Secondary Drain	874.97	2.35 - 3.35	1.124 - 2.124	Phase 01
31	Secondary Drain	197.54	2.35 - 3.35	1.124 - 2.124	Phase 01
32	Secondary Drain	988.64	2.35 - 3.35	1.124 - 2.124	Phase 03
33	Secondary Drain	1940.77	2.35 - 3.35	1.124 - 2.124	Phase 03
34	Secondary Drain	78.47	2.35 - 3.35	1.124 - 2.124	Phase 02
35	Secondary Drain	97.00	2.35 - 3.35	1.124 - 2.124	Phase 01
36	Secondary Drain	247.90	2.35 - 3.35	1.124 - 2.124	Phase 02
37	Secondary Drain	353.35	2.35 - 3.35	1.124 - 2.124	Phase 01
38	Secondary Drain	1180.61	2.35 - 3.35	1.124 - 2.124	Phase 02
39	Secondary Drain	432.59	2.35 - 3.35	1.124 - 2.124	Phase 01
40	Secondary Drain	206.53	2.35 - 3.35	1.124 - 2.124	Phase 01
41	Secondary Drain	161.14	2.35 - 3.35	1.124 - 2.124	Phase 01
42	Secondary Drain	235.00	2.35 - 3.35	1.124 - 2.124	Phase 01
43	Secondary Drain	159.45	2.35 - 3.35	1.124 - 2.124	Phase 01
44	Secondary Drain	414.39	2.35 - 3.35	1.124 - 2.124	Phase 01
45	Secondary Drain	395.97	2.35 - 3.35	1.124 - 2.124	Phase 01
46	Secondary Drain	321.18	2.35 - 3.35	1.124 - 2.124	Phase 01
47	Secondary Drain	347.23	2.35 - 3.35	1.124 - 2.124	Phase 02
48	Secondary Drain	269.92	2.35 - 3.35	1.124 - 2.124	Phase 01
49	Secondary Drain	260.67	2.35 - 3.35	1.124 - 2.124	Phase 01
50	Secondary Drain	1065.72	2.35 - 3.35	1.124 - 2.124	Phase 03
51	Secondary Drain	75.87	2.35 - 3.35	1.124 - 2.124	Phase 02
52	Secondary Drain	267.06	2.35 - 3.35	1.124 - 2.124	Phase 01
53	Secondary Drain	195.81	2.35 - 3.35	1.124 - 2.124	Phase 02
54	Secondary Drain	97.65	2.35 - 3.35	1.124 - 2.124	Phase 01
55	Secondary Drain	64.08	2.35 - 3.35	1.124 - 2.124	Phase 02
56	Secondary Drain	61.64	2.35 - 3.35	1.124 - 2.124	Phase 02
57	Secondary Drain	251.68	2.35 - 3.35	1.124 - 2.124	Phase 02
58	Secondary Drain	349.06	2.35 - 3.35	1.124 - 2.124	Phase 01
59	Secondary Drain	439.11	2.35 - 3.35	1.124 - 2.124	Phase 01
60	Secondary Drain	210.97	2.35 - 3.35	1.124 - 2.124	Phase 01
61	Secondary Drain	165.25	2.35 - 3.35	1.124 - 2.124	Phase 01
62	Secondary Drain	497.19	2.35 - 3.35	1.124 - 2.124	Phase 01
63	Secondary Drain	856.14	2.35 - 3.35	1.124 - 2.124	Phase 01
64	Secondary Drain	793.53	2.35 - 3.35	1.124 - 2.124	Phase 01
65	Secondary Drain	190.51	2.35 - 3.35	1.124 - 2.124	Phase 01
66	Secondary Drain	310.79	2.35 - 3.35	1.124 - 2.124	Phase 01
67	Secondary Drain	336.37	2.35 - 3.35	1.124 - 2.124	Phase 01
68	Secondary Drain	334.93	2.35 - 3.35	1.124 - 2.124	Phase 01
69	Secondary Drain	282.58	2.35 - 3.35	1.124 - 2.124	Phase 01
70	Secondary Drain	158.79	2.35 - 3.35	1.124 - 2.124	Phase 01
71	Secondary Drain	304.39	2.35 - 3.35	1.124 - 2.124	Phase 01
72	Secondary Drain	412.09	2.35 - 3.35	1.124 - 2.124	Phase 01
73	Secondary Drain	411.29	2.35 - 3.35	1.124 - 2.124	Phase 01
74	Secondary Drain	228.98	2.35 - 3.35	1.124 - 2.124	Phase 01
75	Secondary Drain	375.78	2.35 - 3.35	1.124 - 2.124	Phase 01
76	Secondary Drain	175.86	2.35 - 3.35	1.124 - 2.124	Phase 01
77	Secondary Drain	758.54	2.35 - 3.35	1.124 - 2.124	Phase 02
78	Secondary Drain	472.38	2.35 - 3.35	1.124 - 2.124	Phase 02
79	Secondary Drain	272.82	2.35 - 3.35	1.124 - 2.124	Phase 01

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
80	Secondary Drain	174.91	2.35 - 3.35	1.124 - 2.124	Phase 01
81	Secondary Drain	201.08	2.35 - 3.35	1.124 - 2.124	Phase 01
82	Secondary Drain	75.80	2.35 - 3.35	1.124 - 2.124	Phase 02
83	Secondary Drain	195.63	2.35 - 3.35	1.124 - 2.124	Phase 01
84	Secondary Drain	228.34	2.35 - 3.35	1.124 - 2.124	Phase 02
85	Secondary Drain	457.95	2.35 - 3.35	1.124 - 2.124	Phase 02
86	Secondary Drain	919.17	2.35 - 3.35	1.124 - 2.124	Phase 02
87	Secondary Drain	222.72	2.35 - 3.35	1.124 - 2.124	Phase 01
88	Secondary Drain	324.99	2.35 - 3.35	1.124 - 2.124	Phase 02
89	Secondary Drain	90.49	2.35 - 3.35	1.124 - 2.124	Phase 02
90	Secondary Drain	169.58	2.35 - 3.35	1.124 - 2.124	Phase 02
91	Secondary Drain	71.15	2.35 - 3.35	1.124 - 2.124	Phase 01
92	Secondary Drain	223.52	2.35 - 3.35	1.124 - 2.124	Phase 02
93	Secondary Drain	224.14	2.35 - 3.35	1.124 - 2.124	Phase 02
94	Secondary Drain	48.10	2.35 - 3.35	1.124 - 2.124	Phase 01
95	Secondary Drain	522.55	2.35 - 3.35	1.124 - 2.124	Phase 02
96	Secondary Drain	289.48	2.35 - 3.35	1.124 - 2.124	Phase 02
97	Secondary Drain	341.63	2.35 - 3.35	1.124 - 2.124	Phase 01
98	Secondary Drain	346.43	2.35 - 3.35	1.124 - 2.124	Phase 01
99	Secondary Drain	504.62	2.35 - 3.35	1.124 - 2.124	Phase 01
100	Secondary Drain	828.35	2.35 - 3.35	1.124 - 2.124	Phase 01
101	Secondary Drain	814.19	2.35 - 3.35	1.124 - 2.124	Phase 01
102	Secondary Drain	190.69	2.35 - 3.35	1.124 - 2.124	Phase 01
103	Secondary Drain	305.47	2.35 - 3.35	1.124 - 2.124	Phase 01
104	Secondary Drain	340.37	2.35 - 3.35	1.124 - 2.124	Phase 01
105	Secondary Drain	335.01	2.35 - 3.35	1.124 - 2.124	Phase 01
106	Secondary Drain	285.34	2.35 - 3.35	1.124 - 2.124	Phase 01
107	Secondary Drain	171.59	2.35 - 3.35	1.124 - 2.124	Phase 01
108	Secondary Drain	296.74	2.35 - 3.35	1.124 - 2.124	Phase 01
109	Secondary Drain	441.10	2.35 - 3.35	1.124 - 2.124	Phase 01
110	Secondary Drain	409.52	2.35 - 3.35	1.124 - 2.124	Phase 01
111	Secondary Drain	631.47	2.35 - 3.35	1.124 - 2.124	Phase 03
112	Secondary Drain	210.32	2.35 - 3.35	1.124 - 2.124	Phase 01
113	Secondary Drain	356.78	2.35 - 3.35	1.124 - 2.124	Phase 01
114	Secondary Drain	184.28	2.35 - 3.35	1.124 - 2.124	Phase 01
115	Secondary Drain	267.31	2.35 - 3.35	1.124 - 2.124	Phase 02
116	Secondary Drain	779.87	2.35 - 3.35	1.124 - 2.124	Phase 02
117	Secondary Drain	465.54	2.35 - 3.35	1.124 - 2.124	Phase 02
118	Secondary Drain	54.13	2.35 - 3.35	1.124 - 2.124	Phase 03
119	Secondary Drain	148.25	2.35 - 3.35	1.124 - 2.124	Phase 03
120	Secondary Drain	262.58	2.35 - 3.35	1.124 - 2.124	Phase 03
121	Secondary Drain	272.81	2.35 - 3.35	1.124 - 2.124	Phase 03
122	Secondary Drain	275.32	2.35 - 3.35	1.124 - 2.124	Phase 01
123	Secondary Drain	171.79	2.35 - 3.35	1.124 - 2.124	Phase 01
124	Secondary Drain	204.93	2.35 - 3.35	1.124 - 2.124	Phase 01
125	Secondary Drain	75.00	2.35 - 3.35	1.124 - 2.124	Phase 02
126	Secondary Drain	196.72	2.35 - 3.35	1.124 - 2.124	Phase 01
127	Secondary Drain	229.31	2.35 - 3.35	1.124 - 2.124	Phase 02
128	Secondary Drain	460.97	2.35 - 3.35	1.124 - 2.124	Phase 02
129	Secondary Drain	919.98	2.35 - 3.35	1.124 - 2.124	Phase 02

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
130	Secondary Drain	300.99	2.35 - 3.35	1.124 - 2.124	Phase 02
131	Secondary Drain	219.82	2.35 - 3.35	1.124 - 2.124	Phase 01
132	Secondary Drain	317.28	2.35 - 3.35	1.124 - 2.124	Phase 02
133	Secondary Drain	79.35	2.35 - 3.35	1.124 - 2.124	Phase 02
134	Secondary Drain	181.90	2.35 - 3.35	1.124 - 2.124	Phase 02
135	Secondary Drain	80.65	2.35 - 3.35	1.124 - 2.124	Phase 01
136	Secondary Drain	220.77	2.35 - 3.35	1.124 - 2.124	Phase 02
137	Secondary Drain	225.12	2.35 - 3.35	1.124 - 2.124	Phase 02
138	Secondary Drain	539.10	2.35 - 3.35	1.124 - 2.124	Phase 03
139	Secondary Drain	86.01	2.35 - 3.35	1.124 - 2.124	Phase 01
140	Secondary Drain	38.68	2.35 - 3.35	1.124 - 2.124	Phase 01
141	Secondary Drain	293.85	2.35 - 3.35	1.124 - 2.124	Phase 02
142	Secondary Drain	339.61	2.35 - 3.35	1.124 - 2.124	Phase 01
143	Secondary Drain	341.57	2.35 - 3.35	1.124 - 2.124	Phase 01
144	Secondary Drain	235.97	2.35 - 3.35	1.124 - 2.124	Phase 01
145	Secondary Drain	236.26	2.35 - 3.35	1.124 - 2.124	Phase 01
146	Secondary Drain	69.57	2.35 - 3.35	1.124 - 2.124	Phase 02
147	Secondary Drain	69.52	2.35 - 3.35	1.124 - 2.124	Phase 01
148	Secondary Drain	190.86	2.35 - 3.35	1.124 - 2.124	Phase 02
149	Secondary Drain	139.86	2.35 - 3.35	1.124 - 2.124	Phase 02
150	Secondary Drain	219.18	2.35 - 3.35	1.124 - 2.124	Phase 02
151	Secondary Drain	151.11	2.35 - 3.35	1.124 - 2.124	Phase 02
152	Secondary Drain	341.57	2.35 - 3.35	1.124 - 2.124	Phase 01
153	Secondary Drain	142.99	2.35 - 3.35	1.124 - 2.124	Phase 02
154	Secondary Drain	319.80	2.35 - 3.35	1.124 - 2.124	Phase 02
155	Secondary Drain	341.36	2.35 - 3.35	1.124 - 2.124	Phase 02
156	Secondary Drain	114.19	2.35 - 3.35	1.124 - 2.124	Phase 01
157	Secondary Drain	253.04	2.35 - 3.35	1.124 - 2.124	Phase 02
158	Secondary Drain	211.01	2.35 - 3.35	1.124 - 2.124	Phase 02
159	Secondary Drain	109.19	2.35 - 3.35	1.124 - 2.124	Phase 02
160	Secondary Drain	105.60	2.35 - 3.35	1.124 - 2.124	Phase 02
161	Secondary Drain	96.89	2.35 - 3.35	1.124 - 2.124	Phase 02
162	Secondary Drain	168.99	2.35 - 3.35	1.124 - 2.124	Phase 02
163	Secondary Drain	251.94	2.35 - 3.35	1.124 - 2.124	Phase 01
164	Secondary Drain	231.83	2.35 - 3.35	1.124 - 2.124	Phase 01
165	Secondary Drain	132.25	2.35 - 3.35	1.124 - 2.124	Phase 01
166	Secondary Drain	70.39	2.35 - 3.35	1.124 - 2.124	Phase 02
167	Secondary Drain	72.77	2.35 - 3.35	1.124 - 2.124	Phase 01
168	Secondary Drain	190.80	2.35 - 3.35	1.124 - 2.124	Phase 02
169	Secondary Drain	139.79	2.35 - 3.35	1.124 - 2.124	Phase 02
170	Secondary Drain	213.86	2.35 - 3.35	1.124 - 2.124	Phase 02
171	Secondary Drain	150.51	2.35 - 3.35	1.124 - 2.124	Phase 02
172	Secondary Drain	341.15	2.35 - 3.35	1.124 - 2.124	Phase 01
173	Secondary Drain	144.29	2.35 - 3.35	1.124 - 2.124	Phase 02
174	Secondary Drain	318.74	2.35 - 3.35	1.124 - 2.124	Phase 02
175	Secondary Drain	340.40	2.35 - 3.35	1.124 - 2.124	Phase 02
176	Secondary Drain	113.04	2.35 - 3.35	1.124 - 2.124	Phase 01
177	Secondary Drain	255.16	2.35 - 3.35	1.124 - 2.124	Phase 02
178	Secondary Drain	206.86	2.35 - 3.35	1.124 - 2.124	Phase 02
179	Secondary Drain	111.25	2.35 - 3.35	1.124 - 2.124	Phase 02

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
180	Secondary Drain	112.60	2.35 - 3.35	1.124 - 2.124	Phase 02
181	Secondary Drain	95.57	2.35 - 3.35	1.124 - 2.124	Phase 02
182	Secondary Drain	163.11	2.35 - 3.35	1.124 - 2.124	Phase 02
495	Secondary Drain	786.38	2.35 - 3.35	1.124 - 2.124	Phase 03
496	Secondary Drain	166.69	2.35 - 3.35	1.124 - 2.124	Phase 02
497	Secondary Drain	169.26	2.35 - 3.35	1.124 - 2.124	Phase 02
498	Secondary Drain	913.57	2.35 - 3.35	1.124 - 2.124	Phase 01
499	Secondary Drain	741.68	2.35 - 3.35	1.124 - 2.124	Phase 01
500	Secondary Drain	110.55	2.35 - 3.35	1.124 - 2.124	Phase 01
501	Secondary Drain	1005.62	2.35 - 3.35	1.124 - 2.124	Phase 01
502	Secondary Drain	1425.04	2.35 - 3.35	1.124 - 2.124	Phase 01
503	Secondary Drain	318.20	2.35 - 3.35	1.124 - 2.124	Phase 01
504	Secondary Drain	670.69	2.35 - 3.35	1.124 - 2.124	Phase 01
505	Secondary Drain	409.72	2.35 - 3.35	1.124 - 2.124	Phase 01
506	Secondary Drain	598.01	2.35 - 3.35	1.124 - 2.124	Phase 04
507	Secondary Drain	845.23	2.35 - 3.35	1.124 - 2.124	Phase 04
508	Secondary Drain	1635.04	2.35 - 3.35	1.124 - 2.124	Phase 04
509	Secondary Drain	603.72	2.35 - 3.35	1.124 - 2.124	Phase 01
510	Secondary Drain	106.89	2.35 - 3.35	1.124 - 2.124	Phase 01
511	Secondary Drain	109.65	2.35 - 3.35	1.124 - 2.124	Phase 01
512	Secondary Drain	1004.15	2.35 - 3.35	1.124 - 2.124	Phase 01
513	Secondary Drain	1438.23	2.35 - 3.35	1.124 - 2.124	Phase 01
514	Secondary Drain	312.99	2.35 - 3.35	1.124 - 2.124	Phase 01
515	Secondary Drain	644.29	2.35 - 3.35	1.124 - 2.124	Phase 01
516	Secondary Drain	413.89	2.35 - 3.35	1.124 - 2.124	Phase 01
517	Secondary Drain	588.78	2.35 - 3.35	1.124 - 2.124	Phase 04
518	Secondary Drain	862.55	2.35 - 3.35	1.124 - 2.124	Phase 04
519	Secondary Drain	1640.16	2.35 - 3.35	1.124 - 2.124	Phase 04
520	Secondary Drain	630.71	2.35 - 3.35	1.124 - 2.124	Phase 01
521	Secondary Drain	957.03	2.35 - 3.35	1.124 - 2.124	Phase 01
522	Secondary Drain	43.43	2.35 - 3.35	1.124 - 2.124	Phase 02
523	Secondary Drain	909.65	2.35 - 3.35	1.124 - 2.124	Phase 02
524	Secondary Drain	302.65	2.35 - 3.35	1.124 - 2.124	Phase 01
525	Secondary Drain	105.29	2.35 - 3.35	1.124 - 2.124	Phase 01
526	Secondary Drain	641.78	2.35 - 3.35	1.124 - 2.124	Phase 01
527	Secondary Drain	894.31	2.35 - 3.35	1.124 - 2.124	Phase 01
528	Secondary Drain	909.01	2.35 - 3.35	1.124 - 2.124	Phase 02
529	Secondary Drain	228.40	2.35 - 3.35	1.124 - 2.124	Phase 01
530	Secondary Drain	296.81	2.35 - 3.35	1.124 - 2.124	Phase 01
531	Secondary Drain	598.14	2.35 - 3.35	1.124 - 2.124	Phase 02
532	Secondary Drain	248.21	2.35 - 3.35	1.124 - 2.124	Phase 01
533	Secondary Drain	62.51	2.35 - 3.35	1.124 - 2.124	Phase 01
534	Secondary Drain	385.35	2.35 - 3.35	1.124 - 2.124	Phase 01
535	Secondary Drain	335.00	2.35 - 3.35	1.124 - 2.124	Phase 02
536	Secondary Drain	232.62	2.35 - 3.35	1.124 - 2.124	Phase 01
537	Secondary Drain	253.21	2.35 - 3.35	1.124 - 2.124	Phase 01
538	Secondary Drain	902.74	2.35 - 3.35	1.124 - 2.124	Phase 02
539	Secondary Drain	605.32	2.35 - 3.35	1.124 - 2.124	Phase 02
540	Secondary Drain	1372.34	2.35 - 3.35	1.124 - 2.124	Phase 02
541	Secondary Drain	113.73	2.35 - 3.35	1.124 - 2.124	Phase 02

Drain ID	Drain Type	Length in Meter	Width in Meter	Depth in Meter	Phasing
542	Secondary Drain	137.47	2.35 - 3.35	1.124 - 2.124	Phase 02
543	Secondary Drain	486.65	2.35 - 3.35	1.124 - 2.124	Phase 02
544	Secondary Drain	156.35	2.35 - 3.35	1.124 - 2.124	Phase 02
545	Secondary Drain	246.39	2.35 - 3.35	1.124 - 2.124	Phase 01
546	Secondary Drain	62.29	2.35 - 3.35	1.124 - 2.124	Phase 01
547	Secondary Drain	380.14	2.35 - 3.35	1.124 - 2.124	Phase 01
548	Secondary Drain	332.59	2.35 - 3.35	1.124 - 2.124	Phase 02
549	Secondary Drain	208.54	2.35 - 3.35	1.124 - 2.124	Phase 01
550	Secondary Drain	928.87	2.35 - 3.35	1.124 - 2.124	Phase 02
551	Secondary Drain	602.47	2.35 - 3.35	1.124 - 2.124	Phase 02
552	Secondary Drain	1369.53	2.35 - 3.35	1.124 - 2.124	Phase 02
553	Secondary Drain	115.18	2.35 - 3.35	1.124 - 2.124	Phase 02
554	Secondary Drain	136.03	2.35 - 3.35	1.124 - 2.124	Phase 02
555	Secondary Drain	495.83	2.35 - 3.35	1.124 - 2.124	Phase 02
556	Secondary Drain	155.26	2.35 - 3.35	1.124 - 2.124	Phase 02
604	Secondary Drain	122.92	2.35 - 3.35	1.124 - 2.124	Phase 02
605	Secondary Drain	121.92	2.35 - 3.35	1.124 - 2.124	Phase 02
606	Secondary Drain	307.55	2.35 - 3.35	1.124 - 2.124	Phase 01
607	Secondary Drain	314.48	2.35 - 3.35	1.124 - 2.124	Phase 01
614	Secondary Drain	106.80	2.35 - 3.35	1.124 - 2.124	Phase 02
615	Secondary Drain	107.87	2.35 - 3.35	1.124 - 2.124	Phase 02
620	Secondary Drain	134.48	2.35 - 3.35	1.124 - 2.124	Phase 02
621	Secondary Drain	134.11	2.35 - 3.35	1.124 - 2.124	Phase 02
622	Secondary Drain	105.19	2.35 - 3.35	1.124 - 2.124	Phase 02
623	Secondary Drain	104.99	2.35 - 3.35	1.124 - 2.124	Phase 02
626	Secondary Drain	165.53	2.35 - 3.35	1.124 - 2.124	Phase 01
627	Secondary Drain	164.97	2.35 - 3.35	1.124 - 2.124	Phase 01
632	Secondary Drain	211.31	2.35 - 3.35	1.124 - 2.124	Phase 01
636	Secondary Drain	100.27	2.35 - 3.35	1.124 - 2.124	Phase 02
637	Secondary Drain	96.57	2.35 - 3.35	1.124 - 2.124	Phase 02
649	Secondary Drain	108.84	2.35 - 3.35	1.124 - 2.124	Phase 02
650	Secondary Drain	110.19	2.35 - 3.35	1.124 - 2.124	Phase 02
663	Secondary Drain	295.47	2.35 - 3.35	1.124 - 2.124	Phase 01
664	Secondary Drain	282.54	2.35 - 3.35	1.124 - 2.124	Phase 01
672	Secondary Drain	111.74	2.35 - 3.35	1.124 - 2.124	Phase 02
673	Secondary Drain	111.91	2.35 - 3.35	1.124 - 2.124	Phase 02
688	Secondary Drain	120.20	2.35 - 3.35	1.124 - 2.124	Phase 01
689	Secondary Drain	118.50	2.35 - 3.35	1.124 - 2.124	Phase 01
690	Secondary Drain	82.20	2.35 - 3.35	1.124 - 2.124	Phase 01
691	Secondary Drain	79.85	2.35 - 3.35	1.124 - 2.124	Phase 01
692	Secondary Drain	152.62	2.35 - 3.35	1.124 - 2.124	Phase 02
693	Secondary Drain	153.20	2.35 - 3.35	1.124 - 2.124	Phase 02
694	Secondary Drain	77.66	2.35 - 3.35	1.124 - 2.124	Phase 02
695	Secondary Drain	77.47	2.35 - 3.35	1.124 - 2.124	Phase 02
33	Secondary Drain	1940.77	2.35 - 3.35	1.124 - 2.124	Phase 03
Total		**90307.96**			

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. All khals and rivers within the Paurashava, all that will serve as primary drain. So no new primary drain is proposed.

Outfall of Drains

There is no formal outfall of drains in or outside Muladi Paurashava. The primary drains mainly discharge storm water to the nearby rivers, 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 Arial Kha, Jayanti and Nayavangoni River 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.

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: 2012-2016: 35.62 km. Tertiary Drains, 44.78km of Secondary Drains
Phase 2: 2016-2021: 24.80 km. of Tertiary Drains, 30.72 km of Secondary Drains
Phase 3: 2021-2025: 8.63 km. of Secondary Drains.
Phase 4: 2021-2025: 6.17 km. of Secondary Drains.

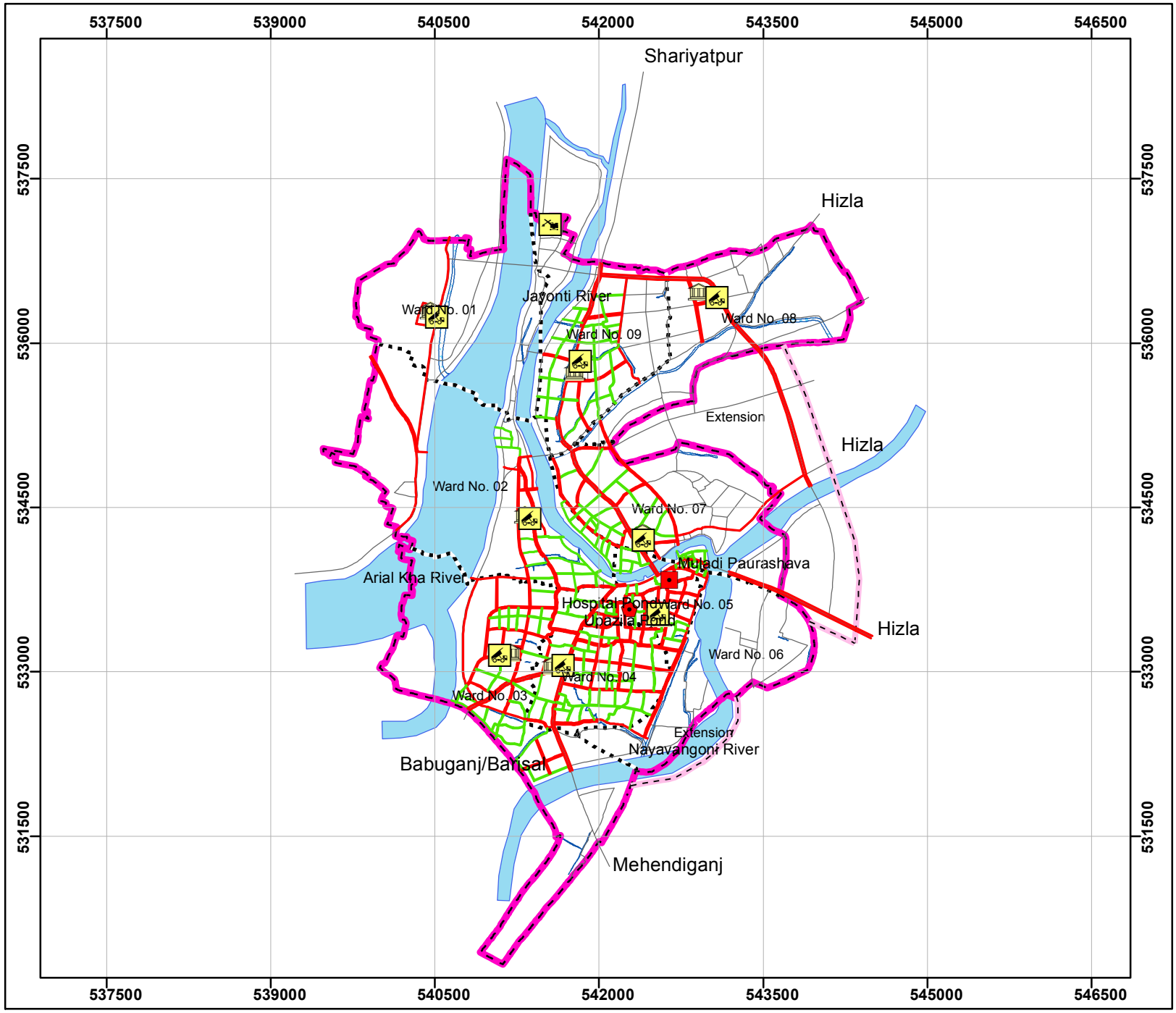
Other required tertiary drains and minor drains will be developed by community based with close collaboration of the Paura authority.

12.3.1.4 List of Infrastructure measures for Drainage and Flood Control Network

Muladi Paurashava has 37 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 ad Environmental Facilities of Muladi Paurashava**



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- BND_Extension
- BND_Pourashava
- BND_Ward
- Ward Center
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station
- Secondary Drain
- Tertiary Drain
- Proposed Road
- Canal
- River

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
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. Collection of holding tax at Muladi Paurashava is limited. 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 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 efficiently of the urban land market would make, more private land available to urban households;
- would pass much of the development costs for local infrastructure to the private sector and land market mechanisms;
- would increase in land for development without large cash outlays by government to purchase land for development schemes; and
- would keep provision of land for community facilities virtually no cost to government.

Plan Monitoring

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

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

Evaluation

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

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

Co-ordination

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

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

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

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 Muladi Paurashava.

12.6.1 Geology, Soil and Sub-soil Conditions

Muladi 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 Muladi 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. Muladi bears a hot summer and a mild winter. But almost all the area of the Paurashava 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 35.8^{o}c in August and minimum average monthly temperature is 7.8^{o}c in January in 2003. The monsoon starts from June and maximum rainfall is experienced from July to September. Fig 7.1 and 7.2 present the temperature level (2000-2010) to convey the circumstances more obviously.

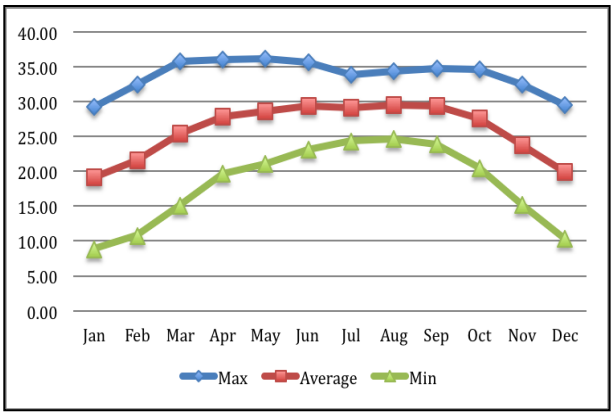


Fig 12.9: Monthly Average Temperature (2000-2010)
Source: Bangladesh Metrological Department, 2011

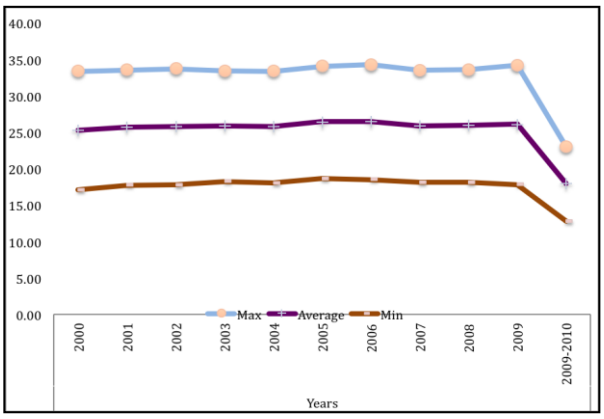


Fig 12.10: Year wise Average Temperature (2000-2010)
Source: Bangladesh Metrological Department, 2011

12.6.4 Humidity

The weather of Muladi 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.

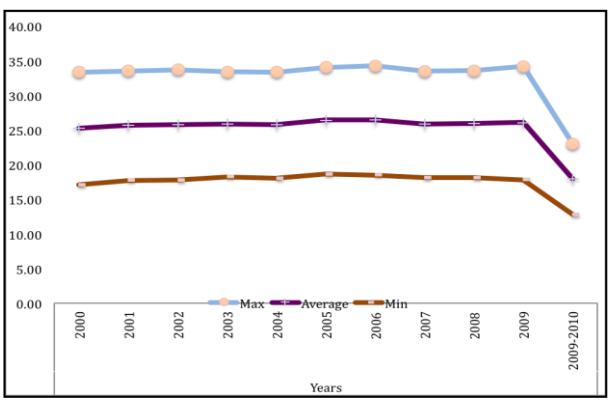


Fig 12.11: Monthly Average Humidity (%) for the year 2000-2010
Source: Bangladesh Metrological Department, 2011

12.6.5 Rainfall

The monsoon starts from June and maximum rainfall is experienced in 2004 and lowest in 2010. Annual rainfall as recorded from 2003 to 2010, the maximum was 180.72 mm in 2004and lowest in 2010 about 93.8 mm. It is recorded that during June to October there are high volume of rainfall.

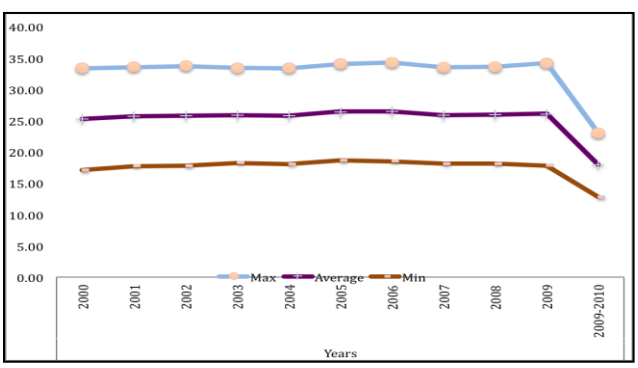
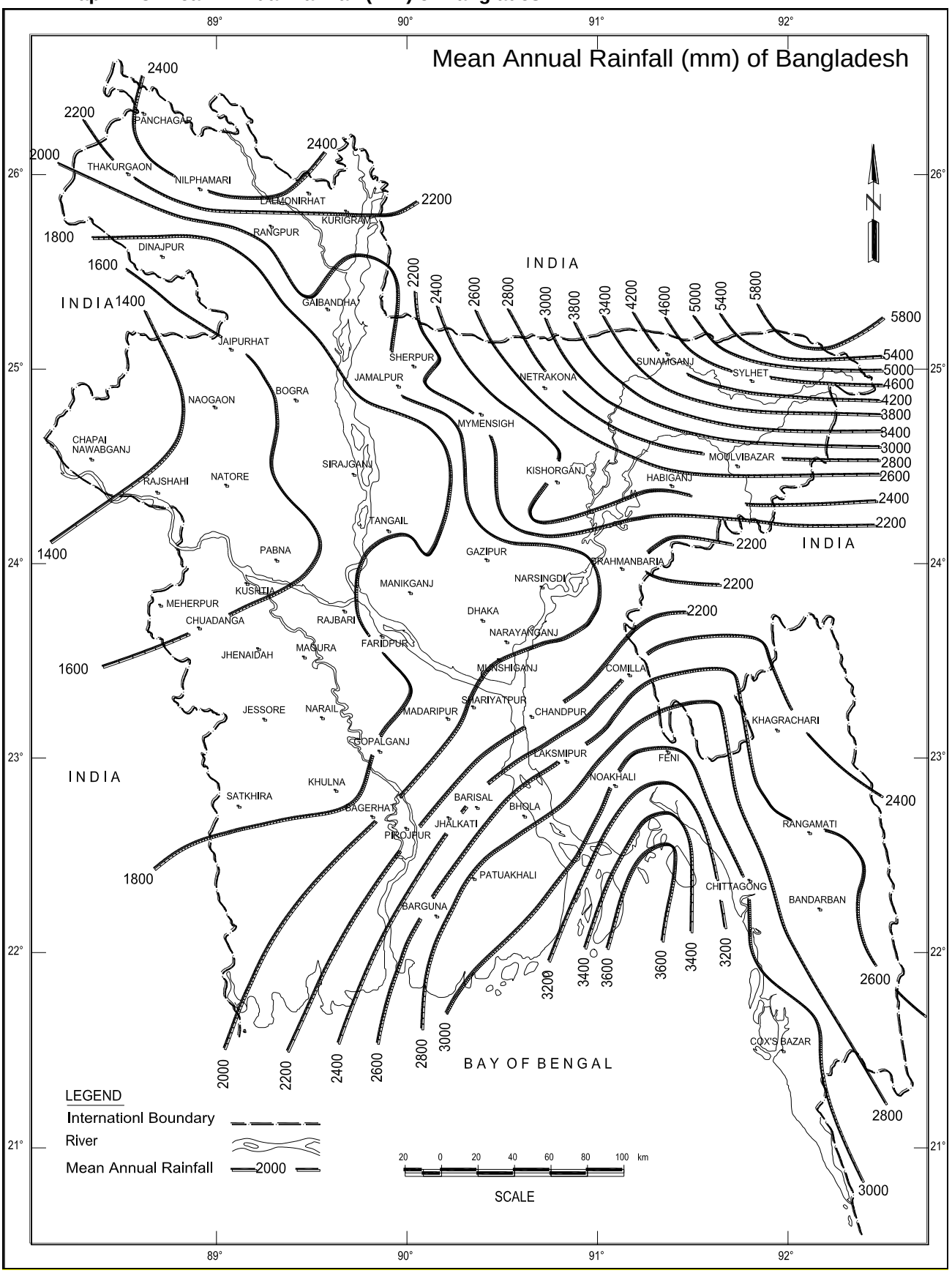


Fig 12.12: Rain Fall Data of Several Years
Source: Bangladesh Metrological Department, 2011

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 Muladi 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%).

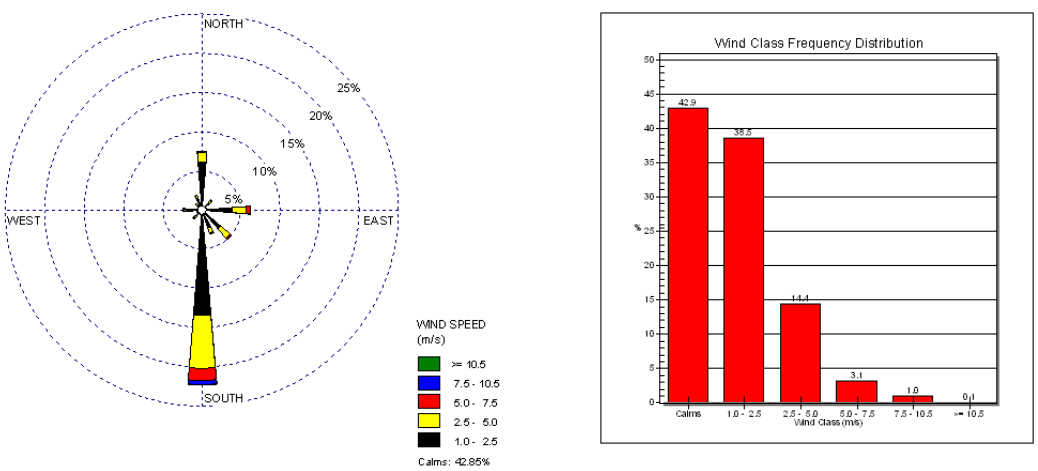


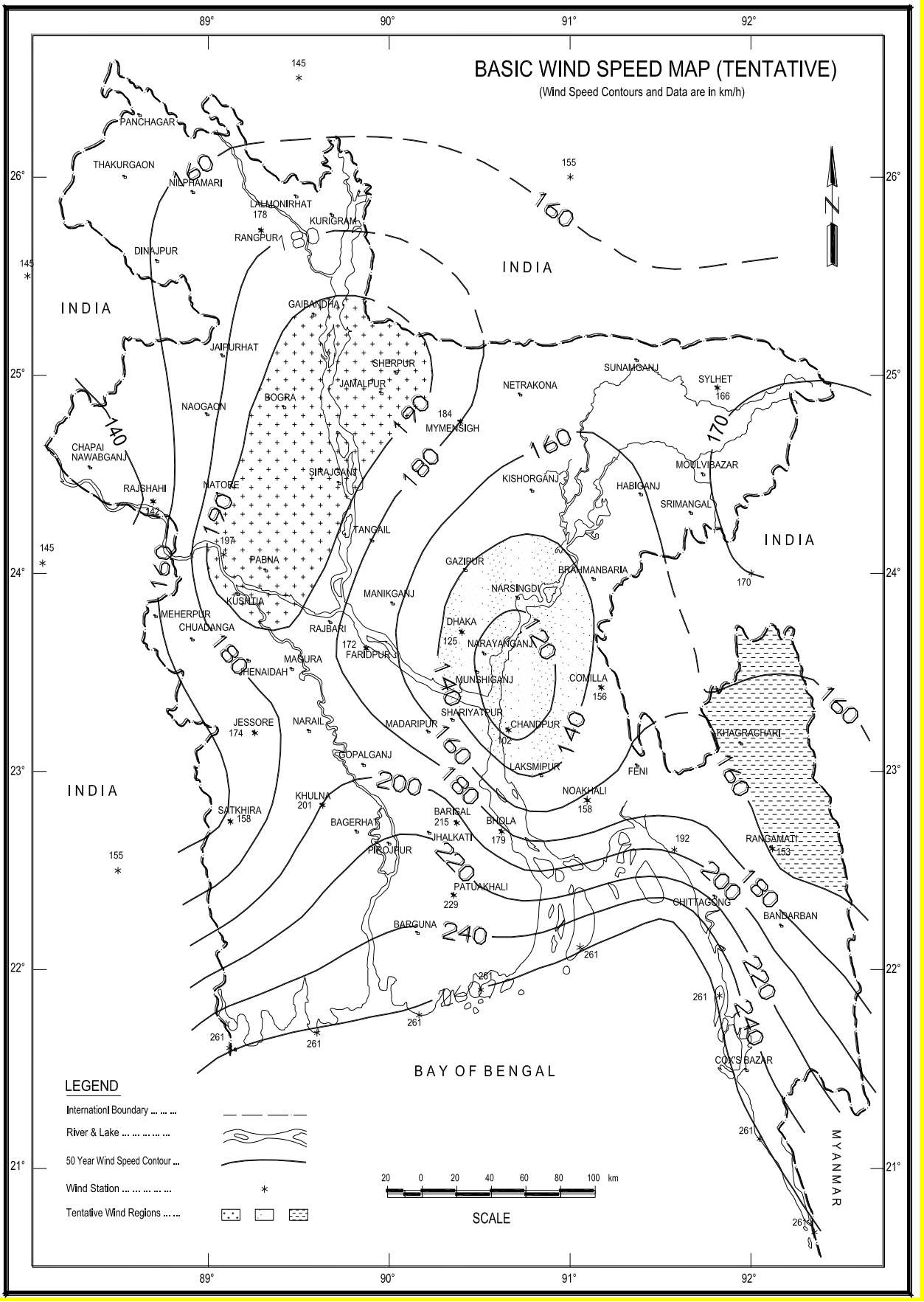
Fig 12.13: Wind Speed Data of Several Years
Source: Bangladesh Metrological Department, 2011

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 Muladi 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 Muladi 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, Muladi, 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 Muladi 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 coward. 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 Muladi 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 Muladi 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 Muladi 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 Muladi Paurashava in different years. But, in 1937, 1958, 1970, 1985, 1991, 2007 and 2009 year the extreme cyclone track is passed over the Muladi.

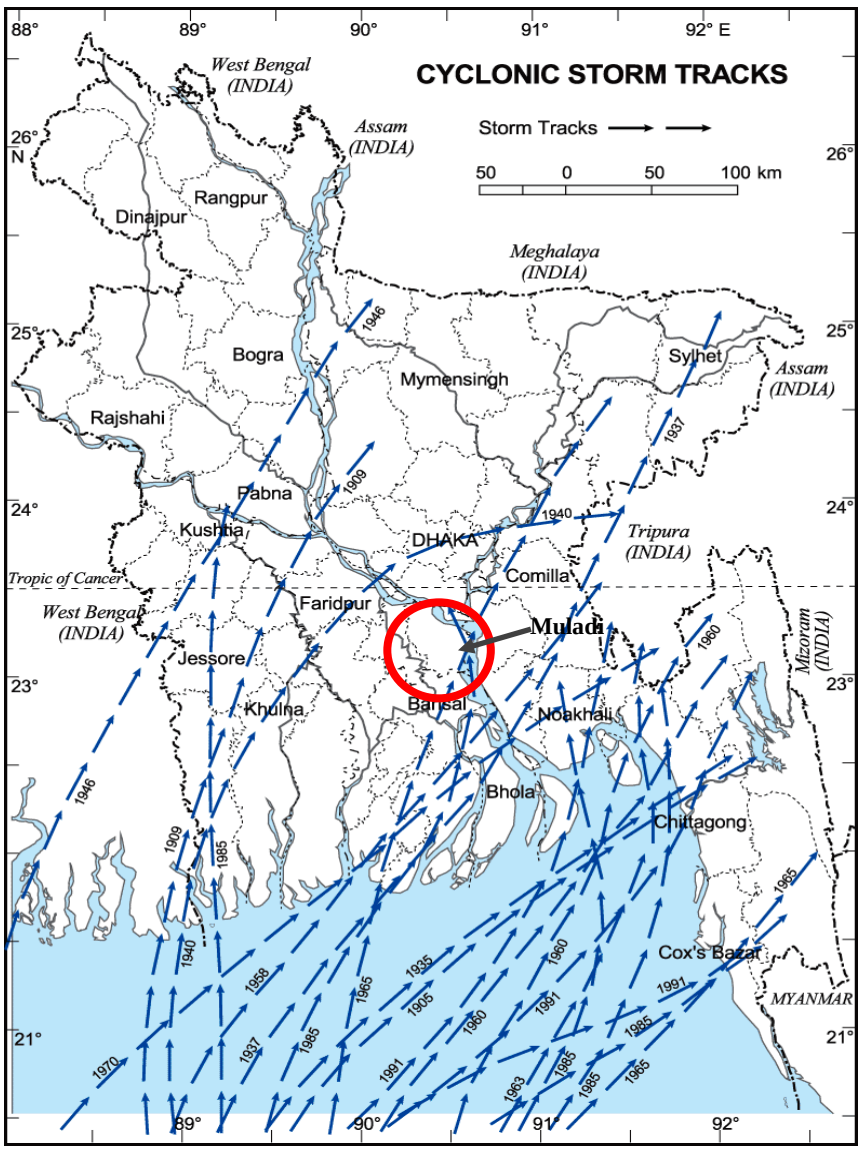


Fig 12.14: Cyclone Hit in different years over Muladi Paurashava

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 Muladi Paurashava. Mainly primary schools are serving as cyclone centers. Fig 12.14 shows the track of Cyclone storm over the Muladi.

A flood is the most common natural disaster at Muladi Paurashava. Tidal surge, caused by depression over the Bay and full moon, sweep Muladi 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 Muladi 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 Muladi 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 Muladi Paurashava frequently face the problem of fire but there is no fire brigade facility available for them. There is no fire station in Muladi Paurashava.

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

Most of the khals, in 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 Muladi Paurashava. As Muladi is a coastal area, surface water is refined by high tide and low tide. In Muladi 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 Muladi 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.*

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.*

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 Muladi. Only some medium scale industries and goldsmiths exist. No brickfield is seen within Muladi. 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 needs 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 ongoing and implemented projects is essential to keep the future course of action on the right track. An ongoing project should be regularly monitored and handicaps identified to enable taking appropriate measures at the right time. Post implementation evaluation is also needed to take appropriate measures correcting past errors-from project preparation to implementation.

Co-ordination

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

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

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

Chapter-Thirteen
URBAN BASIC SERVICES 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

Muladi 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 Muladi is a river based costal regional Paurashava of the south Bengal 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 Muladi. Muladi is rich enough with both surface and ground water but the water is not usable due to some salinity of the ground water. 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 Muladi Paurashava will require 2414 cubic meter water supply per day by 2031. The locations have been described in sub-section 10.3.2 (item 13) of Chapter in this report in details.

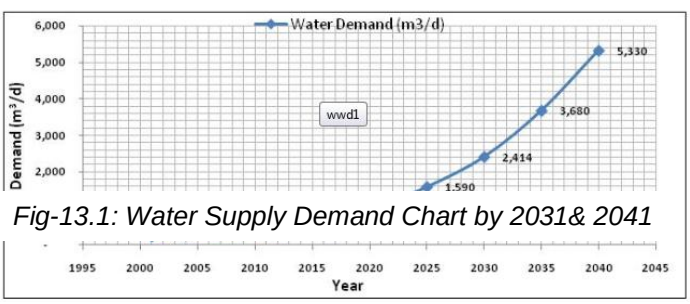


Fig-13.1: Water Supply Demand Chart by 2031& 2041

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 35.74 km. Following **Table-13.1** shows the inventory of proposed water supply network in Muladi Paurashava.

Table- 13.1: Proposed water supply network in Muladi

ID	Utility Service	Length (m)	Length (km)	Phase
1	Water Supply Line	991.36	0.99	Phase 01
3	Water Supply Line	2306.64	2.31	Phase 01
6	Water Supply Line	2022.12	2.02	Phase 03
7	Water Supply Line	1674.77	1.67	Phase 03
10	Water Supply Line	1913.90	1.91	Phase 01
12	Water Supply Line	523.75	0.52	Phase 01
14	Water Supply Line	3210.91	3.21	Phase 01
15	Water Supply Line	1096.70	1.10	Phase 01
18	Water Supply Line	1447.24	1.45	Phase 03

ID	Utility Service	Length (m)	Length (km)	Phase
19	Water Supply Line	318.80	0.32	Phase 02
22	Water Supply Line	1042.46	1.04	Phase 03
23	Water Supply Line	592.69	0.59	Phase 03
26	Water Supply Line	605.16	0.61	Phase 03
28	Water Supply Line	623.24	0.62	Phase 02
30	Water Supply Line	434.19	0.43	Phase 02
31	Water Supply Line	395.30	0.40	Phase 02
34	Water Supply Line	1367.90	1.37	Phase 03
36	Water Supply Line	340.68	0.34	Phase 03
38	Water Supply Line	253.38	0.25	Phase 03
39	Water Supply Line	769.93	0.77	Phase 03
42	Water Supply Line	647.32	0.65	Phase 03
43	Water Supply Line	301.17	0.30	Phase 03
46	Water Supply Line	352.27	0.35	Phase 02
48	Water Supply Line	314.12	0.31	Phase 02
49	Water Supply Line	369.21	0.37	Phase 02
52	Water Supply Line	735.21	0.74	Phase 03
53	Water Supply Line	768.37	0.77	Phase 02
56	Water Supply Line	288.44	0.29	Phase 02
57	Water Supply Line	410.96	0.41	Phase 02
58	Water Supply Line	408.43	0.41	Phase 02
60	Water Supply Line	855.95	0.86	Phase 03
61	Water Supply Line	1700.00	1.70	Phase 03
64	Water Supply Line	966.48	0.97	Phase 01
66	Water Supply Line	916.09	0.92	Phase 01
69	Water Supply Line	466.25	0.47	Phase 03
71	Water Supply Line	96.52	0.10	Phase 01
73	Water Supply Line	374.50	0.37	Phase 01
75	Water Supply Line	108.30	0.11	Phase 02
76	Water Supply Line	856.30	0.86	Phase 01
79	Water Supply Line	228.82	0.23	Phase 01
81	Water Supply Line	333.92	0.33	Phase 01
82	Water Supply Line	328.16	0.33	Phase 02
85	Water Supply Line	563.08	0.56	Phase 02
86	Water Supply Line	283.41	0.28	Phase 03
89	Water Supply Line	456.83	0.46	Phase 02
90	Water Supply Line	432.40	0.43	Phase 02
92	Water Supply Line	244.92	0.24	Phase 02
Total		**35738.55**	**35.74**	

As an alternative to drinking water supply harvesting of rain water may be explored. The idea of rainwater harvesting is unknown to the local people. NGOs working in rain water harvesting training and motivation may be engaged for this purpose. Paurashava may take initiative to prepare a programme for popularizing rain water harvesting among the Paurashava people.

13.1.2 Gas Supply

Presently Muladi 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 Muladi. 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 Muladi 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 Muladi after the completion of Muladi Master Plan and when it will start to implement.

Recent government has suspended gas connection for domestic purpose. Networks 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 to operate piped gas supply system that will be implemented over 20 years. The total length of proposed gas supply network is 36.15 km. Following **Table-13.2** shows the inventory of proposed gas supply network in Muladi Paurashava.

Table- 13.2: Proposed gas supply network in Muladi

ID	Utility Service	Length (m)	Length (km)	Phase
2	Gas Supply Line	995.19	1.00	Phase 02
4	Gas Supply Line	2786.02	2.79	Phase 02
5	Gas Supply Line	1988.37	1.99	Phase 03
8	Gas Supply Line	1636.40	1.64	Phase 03
9	Gas Supply Line	1926.77	1.93	Phase 03
11	Gas Supply Line	514.13	0.51	Phase 03
13	Gas Supply Line	3208.75	3.21	Phase 02
16	Gas Supply Line	1077.92	1.08	Phase 03
17	Gas Supply Line	1481.99	1.48	Phase 03
20	Gas Supply Line	338.84	0.34	Phase 03
21	Gas Supply Line	1066.69	1.07	Phase 03
24	Gas Supply Line	609.67	0.61	Phase 03
25	Gas Supply Line	875.06	0.88	Phase 03
27	Gas Supply Line	624.20	0.62	Phase 03
29	Gas Supply Line	459.74	0.46	Phase 03
32	Gas Supply Line	442.54	0.44	Phase 03
33	Gas Supply Line	1375.62	1.38	Phase 03
35	Gas Supply Line	376.64	0.38	Phase 03
37	Gas Supply Line	235.88	0.24	Phase 03
40	Gas Supply Line	780.29	0.78	Phase 03
41	Gas Supply Line	638.12	0.64	Phase 03
44	Gas Supply Line	292.99	0.29	Phase 03
45	Gas Supply Line	341.21	0.34	Phase 03
47	Gas Supply Line	293.21	0.29	Phase 03
50	Gas Supply Line	355.35	0.36	Phase 03
51	Gas Supply Line	738.16	0.74	Phase 03
54	Gas Supply Line	765.00	0.77	Phase 03

ID	Utility Service	Length (m)	Length (km)	Phase
55	Gas Supply Line	308.06	0.31	Phase 03
59	Gas Supply Line	410.87	0.41	Phase 03
62	Gas Supply Line	880.79	0.88	Phase 03
63	Gas Supply Line	1718.98	1.72	Phase 03
65	Gas Supply Line	986.27	0.99	Phase 03
67	Gas Supply Line	940.27	0.94	Phase 03
68	Gas Supply Line	458.90	0.46	Phase 03
70	Gas Supply Line	99.49	0.10	Phase 03
72	Gas Supply Line	400.90	0.40	Phase 03
74	Gas Supply Line	111.49	0.11	Phase 03
77	Gas Supply Line	859.74	0.86	Phase 03
78	Gas Supply Line	234.94	0.23	Phase 03
80	Gas Supply Line	364.54	0.36	Phase 03
83	Gas Supply Line	343.04	0.34	Phase 03
84	Gas Supply Line	600.30	0.60	Phase 03
87	Gas Supply Line	274.54	0.27	Phase 03
88	Gas Supply Line	490.87	0.49	Phase 03
91	Gas Supply Line	423.54	0.42	Phase 03
Total		**36132.28**	**36.15**	

13.1.3 Sanitation

There is no network based sewerage system in Muladi. 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.

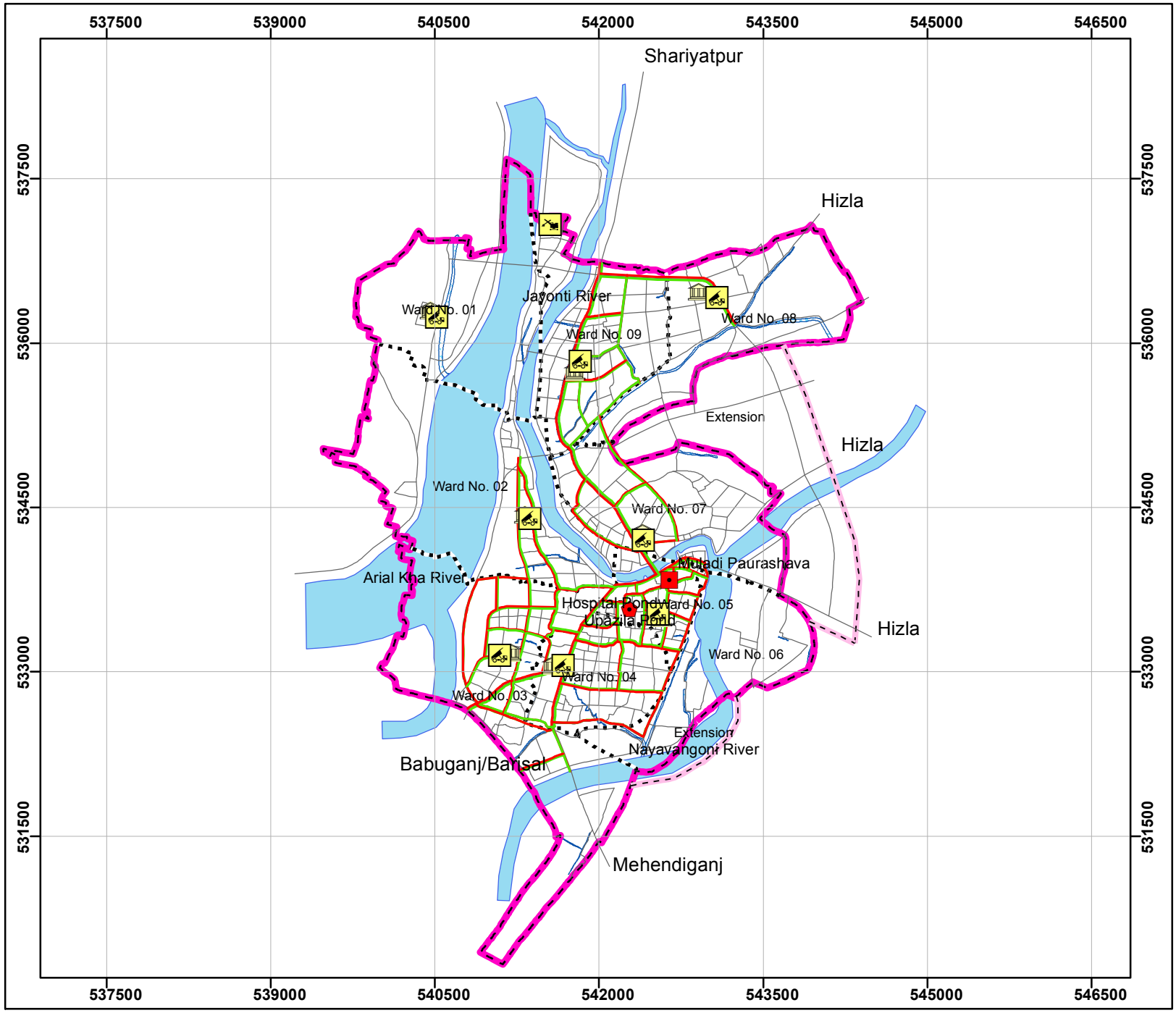
Due to prohibitive expenditure one should not expect establishing network and treatment plant based sewerage system in the town by the Paurashava. So, for long the sanitary system of the Paurashava will remain on site. To promote healthy sanitation, Paurashava should promote low cost sanitary latrines in the town together with awareness building for healthy sanitation. It is proposed to set up public toilets in public gathering areas, like, existing and proposed bus stand, bazaar and the main town centre.

13.1.4 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 3.48 acres for dumping site at the west side of ward no 09 in Dakshin Galai Bhanga mouza. 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.

Map 13.1 | **Proposed Linear Service Facilities of Muladi Paurashava**



SCALE

1:50,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- BND_Extension
- BND_Pourashava
- BND_Ward
- Ward Center
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station
- Gas Supply Network
- Water Supply Network
- Proposed Road
- Canal
- River

PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL 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 4528 households. As per projection it will be about 5883 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 2.9 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 Muladi 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 Muladi Paurashava, the present population is 20,490 (2011) and the projected population is 25,884 (2031). Current (2011) volume of waste generation in Muladi is 5.73 tons @ 0.28 kg/person per day which will increase to 7.24 tons @ 0.28 kg/person per day. It is a great opportunity for Muladi to introduce the solod waste based electricity generation which is a renewable energy and

will also manage solid waste problem scientifically as well as it will help Muladi 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.

Part C. Ward Action Plan

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 Muladi 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 Muladi 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 wee being. Ward Action Plan is a kind of detailed area plan guided by the policies and proposals of upper level plans these are structure plan and urban area plan.

14.1.5 Derivation of Ward Action Plan

The basic theme of the WAP is derived from Urban Area Plan. Ward Action Plan (WAP) is the third and the last tier of the current plan package. It elaborates the development plan of an area at plot to plot level. WAP helps adopt the land use zoning prepared by urban area plan, the preceding upper level plan. Development proposals in a WAP will include, detailed infrastructure development plan of all kinds-road, drainage, water supply, sanitation, solid waste management, land allocation for future development and development control regulations. A WAP will be presented in various scales of maps. A plan in a scale of 1'=330' will be prepared for giving planning permission, while larger scale plans will also be prepared to help undertake direct field level development projects. The aim of a WAP is to prevent haphazard urban development and ensure livable environment in areas that are likely to be 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 Muladi Structure Plan are incorporated in **Chapter 7** of the Muladi 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 20 categories of land uses for future urban area. But about 31% of the available land has been retained as agricultural as much of the current land is under farm use. The population projection and estimated future urban space requirement did not allow more land for urban use reducing the farm land. Residential use fetched about 16% of the land excluding about 3% of the rural settlement, while about 19% land has been earmarked as waterbody already existing and also that they are non-urban use. Circulation network takes 7.41% and 0.56% too commercial along with 3.62% mixed use.

Transportation

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

- Primary Road: RoW 60 - 80 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 131 km including about 62 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 (2012 - 2016) development proposal. The plan proposes first phase development plan for transportation facilities including circulation network, drainage proposal, utility services proposal and other development proposals.

In the stage of Ward Action Plan (WAP), proposals of only existing Paurashava will be discussed as a priority basis. Recently 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 existed on Mahish Gudi and Char Gudghata 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 1091 persons. Family size was 4, sex ratio was 115, 115 males for 100 female. Population projection shows 1413 population for the year 2031. For the same year (2031), it has a density of 3 persons per acre.

Table - 14.1: Population Statistics of Ward No. 01

Item	Year		
	2001	2011	2031
Area (acre)	534.24	534.24	534.24
Population	959	1091	1413
Density of Population (acre)	1	2	3

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 4.29 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 1.9 km road is Katcha. Unpaved roads, even pave road also, turn miserable during monsoon making movement more difficult.

ii. Poor Drainage

The ward has no drainage 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 grow. Besides, the average income of the people is also very low which is not conducive to economic flourishment 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 2 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 one hour journey from Muladi, the district headquarters. Madaripur or Shariyotpur another district headquarters is also about 1 and half hour journey from Muladi.

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 315.99 acres which is 11.24% of the total land and residential land and occupying about 4.87% (14.26 acres) of the Paurashava area. Besides, there is about 21.70% water body, about 5.31% circulation network, about 1.38% commercial activities and rest of lands are being used for education, community service, 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 exiting ones and the residential land use proposed under the present master plan. In total this zone covers 0.84 (0.16%) 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 1.89 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 2.41 acres (0.45%) land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 0.38 acres (0.07% of the ward area) that includes only new primary school including other existing schools and madrasas.

vi) Rural Settlement

As ward 01 bears the rural characteristics, about 14.72 acres (2.76%) has been proposed for rural settlement by the consultants.

vii) Government Office

Administrative zone covers all kinds of government and non-government offices in the town. This types of land use includes counsellor office, police box/outpost under proposed ward centre and others existing Government office. The total area under this use has been determined as 3.27 acres (0.61% of the ward area)

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 247.29 acres (46.29%) 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 36.83% of the total ward and it is 196.78 acres.

x) Circulation Network

Existing and proposed roads covers a total 18.40 acres of land and it is about 3.44% of the whole ward.

xi) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 47.86 acres of land (8.96% of the whole ward) for open space where the consultant proposes one Neighborhood Park.

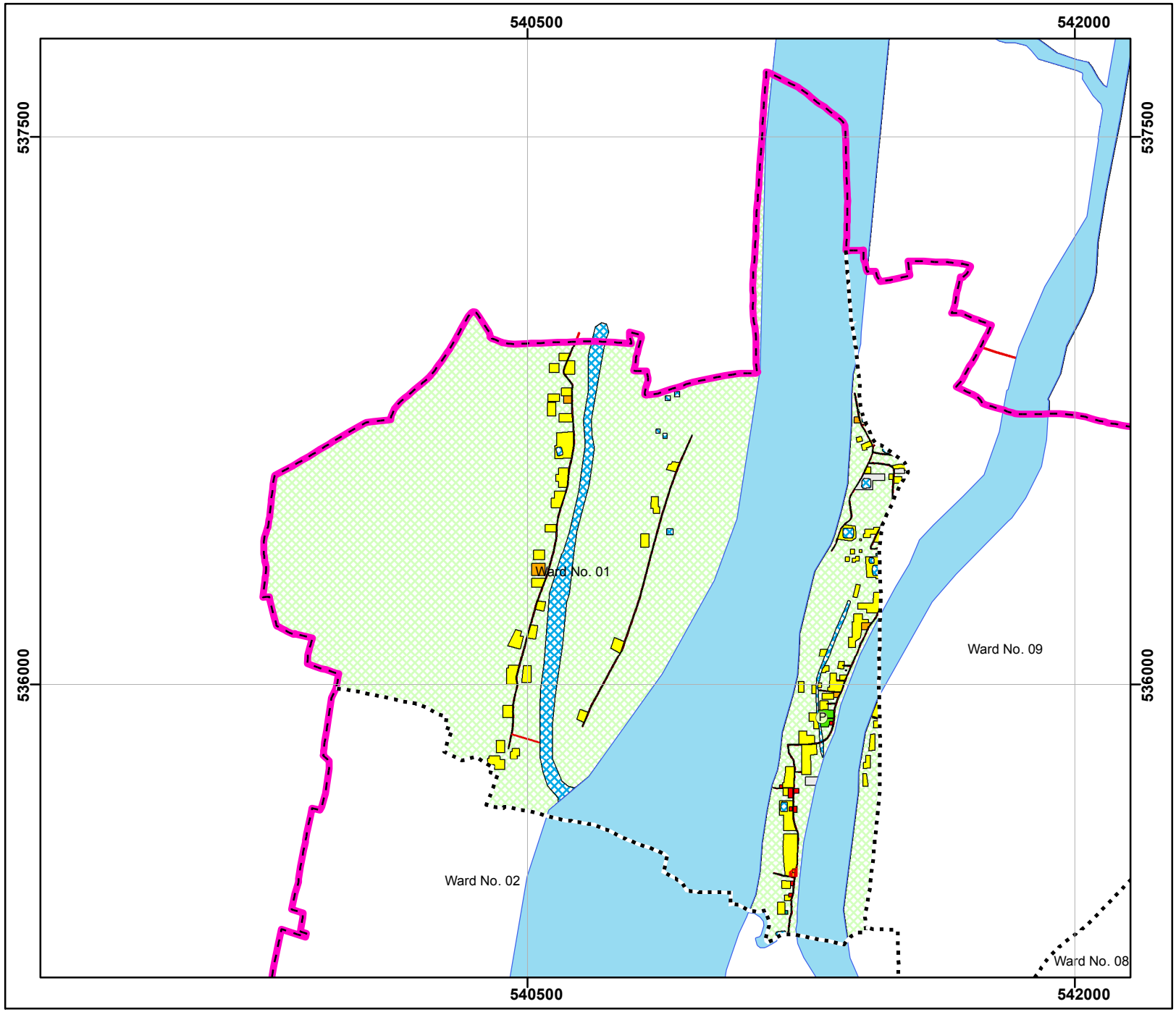
Map 14.1 shows the existing land use of Ward No.1 while **Map- 14.2** shows the proposed landuse zoning of ward no. 01.

Table-14.2: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	315.99	11.24	247.29	46.29
Circulation Network	2.58	5.31	18.40	3.44
Commercial Zone	0.28	1.38	1.89	0.35
Community Services	0.62	8	0.34	0.06
Education & Research Zone	0.38	2.76	0.38	0.07
Government Office	0.00	0.00	3.27	0.61
Manufacturng and processing activity	0.68	4.42	0.00	0.00
Mixed Use Zone	0.00	0.00	2.41	0.45
Open Space	0.00	0.00	47.86	8.96
Rural Settlement	0.00	0.00	14.72	2.76
Urban Residential Zone	14.26	4.87	0.84	0.16
Utility Services	0.00	0.00	0.06	0.01

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	**%**	**Acre**	**%**
Waterbody	199.44	21.7	196.78	36.83
Urban Green Space	0.03	0.86	0.00	0.00
Total	**534.24**	**100.00**	**534.24**	**100.00**

Map 14.1 Existing land use of Ward No.01



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

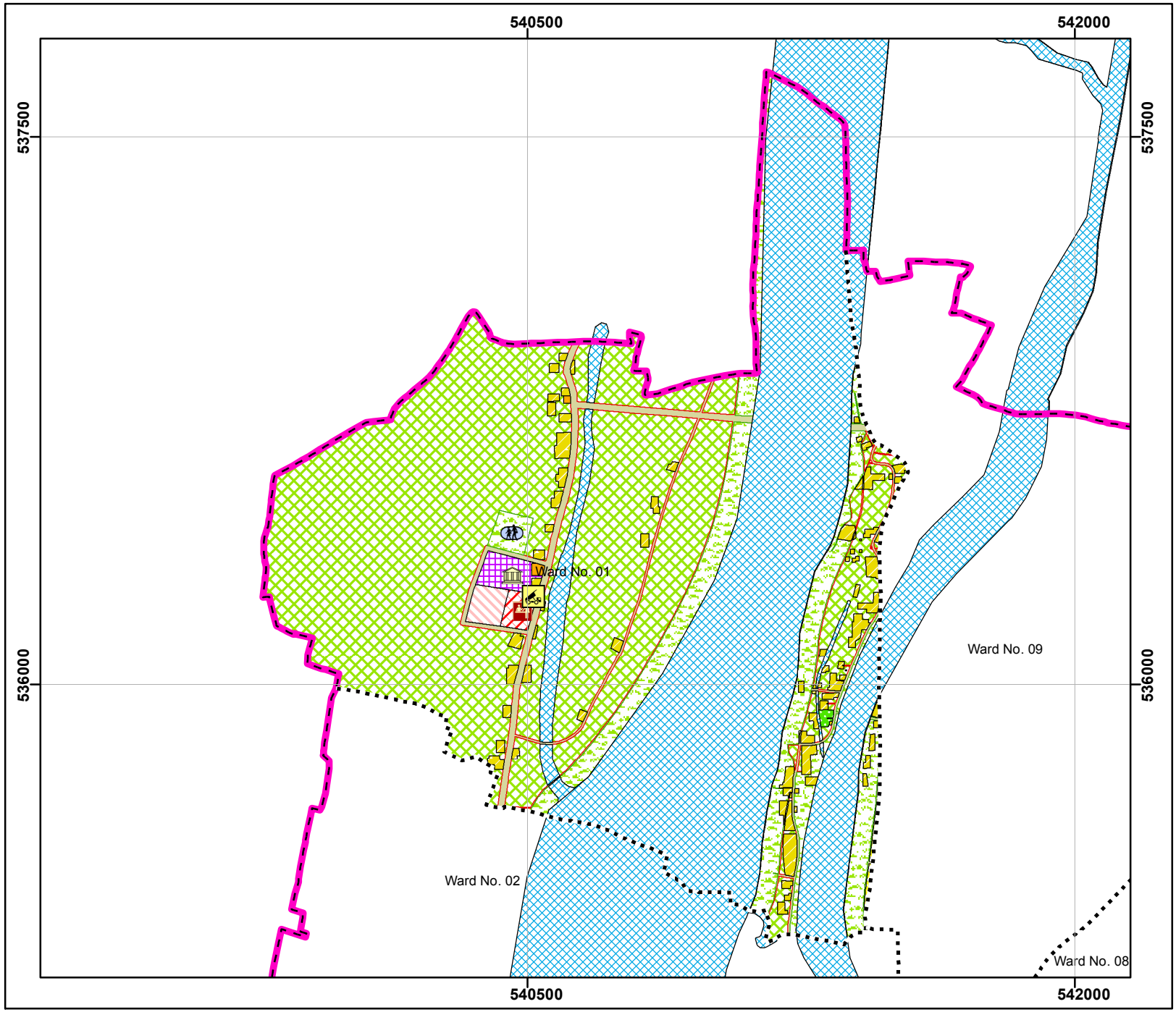
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.2 Proposed land use of Ward No.01



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.2.3.3 Proposed Circulation Network Infrastructure Development

8.85 km of circulation network has been proposed for this ward. Majority of these roads will be developed during first phase (2012 - 2016). Following 0.17 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 Type	Length (Meter)	RoW (Ft)	Road Proposal	Phase
36	Tertiary Road	46.39	20	Road Widening	Phase 01
345	Tertiary Road	125.41	20	Road Widening	Phase 01

14.2.3.4 Drainage Development Plan

The plan proposes 548 meters of new drains will be developed.

Table- 14.4: Proposed Drainage Development Plan Proposals for phase 01

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
138	Secondary Drain	Phase 03	539.10	2.35 - 3.35	1.124 - 2.124
538	Tertiary Drain	Phase 02	7.25	1.50 - 2.50	0.64 - 1.00
418	Tertiary Drain	Phase 02	2.53	1.50 - 2.50	0.64 - 1.00
Total			**548.88**		

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 allotted 6 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within proposed ward centre. 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 in ward no. 01 and the consultant proposed no water supply network in this ward.

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	5 decimal
Water Supply Network	-	Proposed Line Length	None
Electricity Line		As per existing programme of PDB/REB	

c. Sanitation

It is apprehended that there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue.

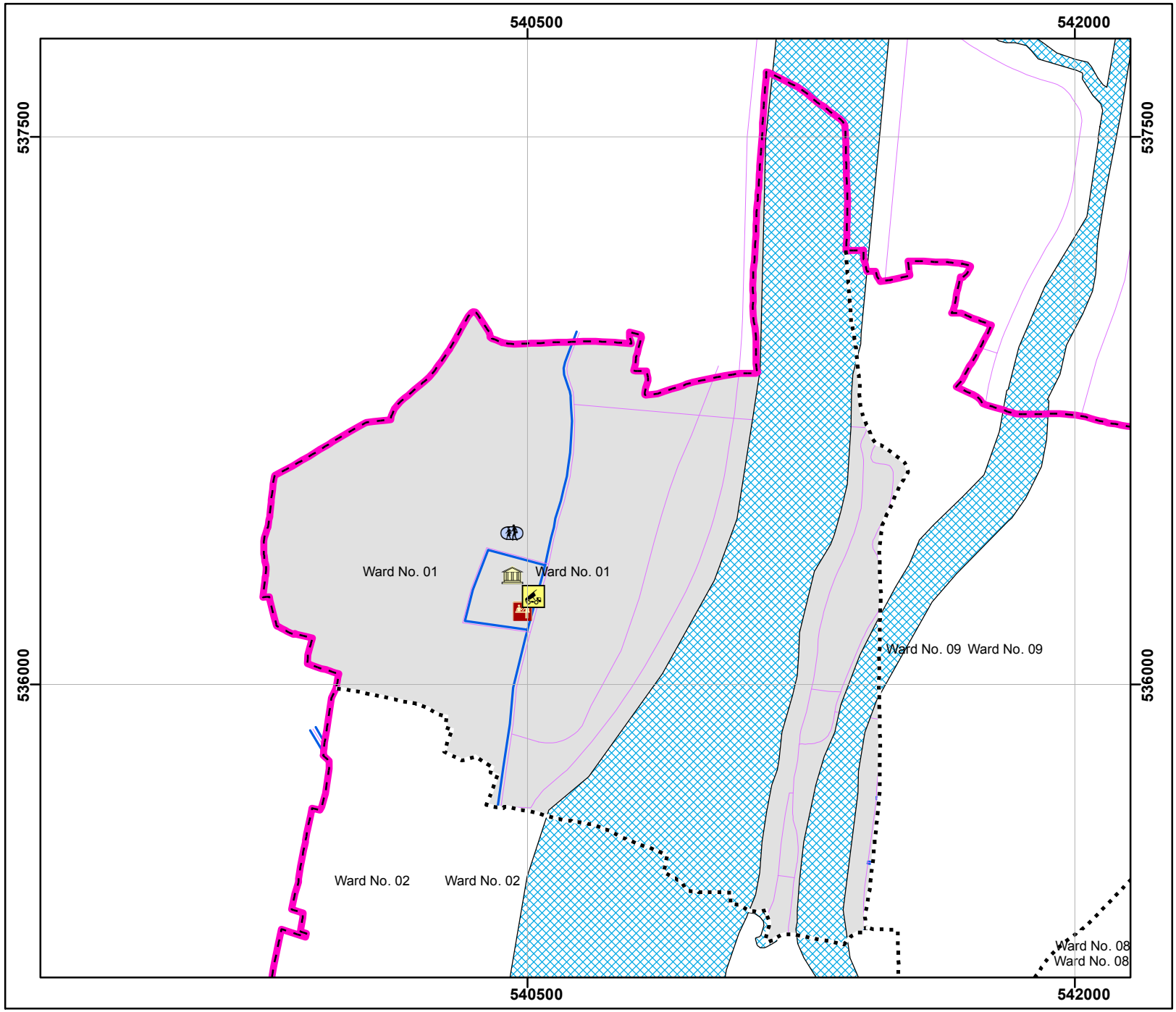
However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

Following table and **Map- 14.3** shows all the urban services, drainage, water and gas supply network facilities proposed for Ward No.1.

Table- 14.6: Proposed Urban Services for Ward No. 01

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Ward Center			1	3.27
Neighbourhood Market			1	1.89
Super Market				
Waste Transfer Station			1	0.06
Primary School	-	-	1	
High School	-	-	-	
Other School	3	existing	-	-
Community Clinic			1	
Playground			1	2.51
Green Park			1	45.01

Map 14.3 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 01



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.3 Ward Action Plan for Ward No.2

14.3.1 Demography

Ward No. 2 is located at western side of the Paurashava. It has medium density of population compare with other wards. In 2011 the Ward had a population of 2028 persons. Family size was over 4, sex ratio was 96, 96 males for 100 female. Population projection shows 2626 population for the year 2031. For the same year, it has a density of 3 persons per acre and 3 persons per acre respectively for 2011 and 2031.

Table - 14.7: Population Statistics of Ward No. 02

Item	Year		
	2001	2011	2031
Area (acre)	745.78	745.78	745.78
Population	1,782	2028	2,626
Density of Population (acre)	2	3	3

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 15 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 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 flourishment 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 3 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. 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 agricultural and it is 398.85 acres which is 14.19% of the total ward. Another major land use is waterbody, occupying about 32.62% (299.88 acres) of the ward. Besides, there is about 12.93% residential, 10.87% land under circulation network, 1.61% under commercial activities, 9.15% land under industrial, 4.35% land under government office and otherwise 6.59% 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 83.75 acres (11.23%) 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 1.62 acres (0.22%) 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 5.16 acres (0.69% of the ward) land for mixed use category.

iv) Education & Research Zone

The total area under this use has been determined as 2.27 acres 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 3.20 acres (0.43%) including counsellor office and police box/outpost within the proposed ward centre.

vi) 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 183.18 acres (24.56%) that include existing and proposed land uses.

vii) Circulation Network

Existing and proposed roads covers a total of 44.44 acres of land and it is about 5.96% of the whole ward.

viii) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 61.56 acres of land for open space.

ix) Waterbody

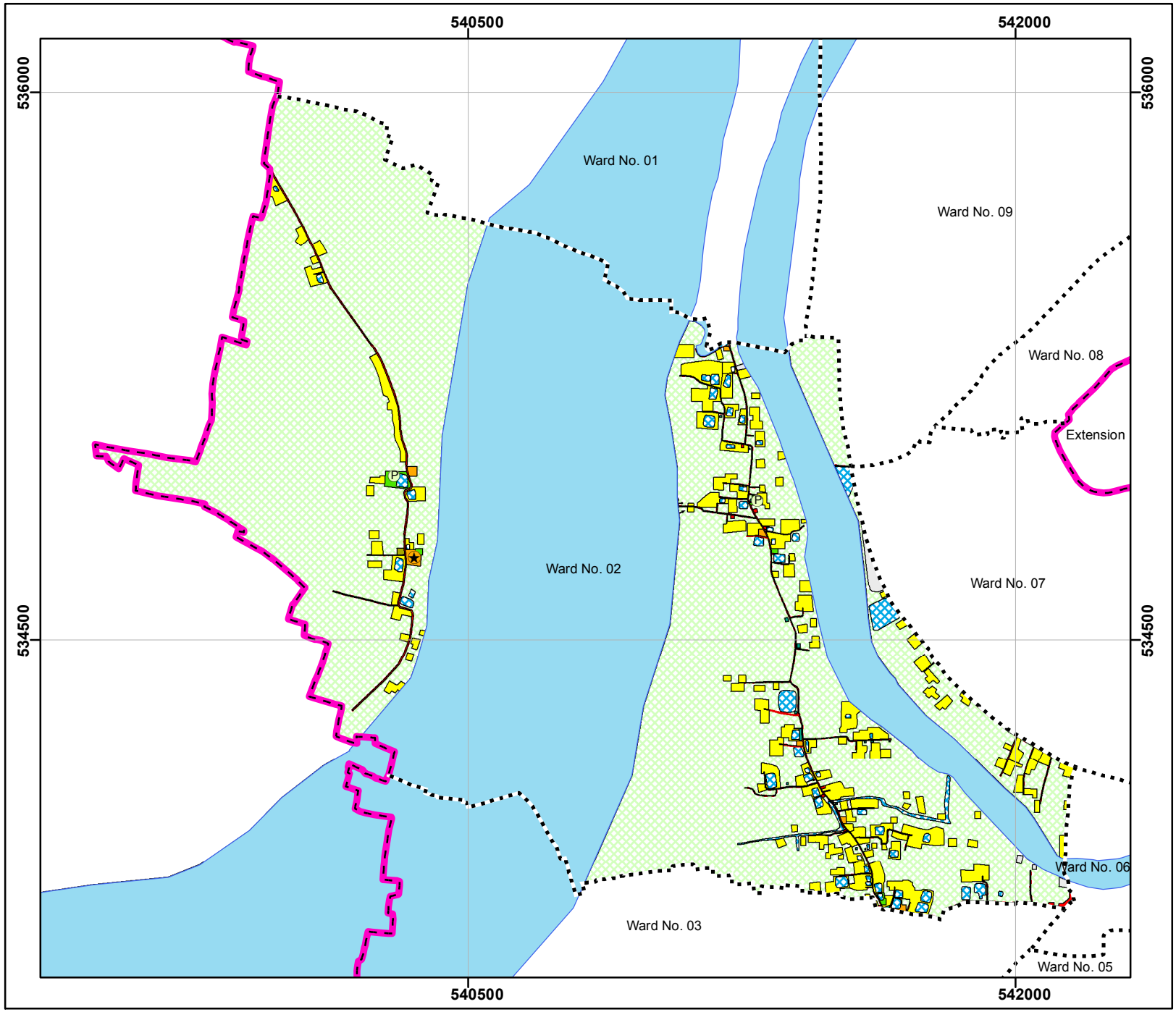
The plan suggests preserving most of the water bodies for two purposes, first, to serve as source of water, second to serve as water retention area during monsoon. The ponds with an area equal to or more than 0.15 acres will be preserved as the water retention ponds. The proposed retention area covers 39.46% of the total ward and it is 294.26 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	398.85	14.19	183.18	24.56
Circulation Network	5.27	10.87	44.44	5.96
Commercial Zone	0.33	1.61	1.62	0.22
Community Service	0.09	4.35	0.74	0.10
Education & Research Zone	0.92	6.59	2.27	0.31
Government Office	0.09	4.35	3.20	0.43
Health Services	0	0	0.06	0.01
Mixed Use Zone	0	0	5.16	0.69
Open Space	0.21	5.62	61.56	8.25
Industrial Zone	1.41	9.15	0.00	0.00
Rural Settlement	0	0	13.23	1.77
Transportation Facilities	0.21	5.62	0.52	0.07
Urban Deferred	0	0	50.01	6.71
Urban Residential Zone	37.86	12.93	83.75	11.23
Utility Services	0	0	1.78	0.24
Waterbody	299.88	32.62	294.26	39.46
Total	**745.78**	**100.00**	**745.78**	**100.00**

Map 14.4 Existing land use of Ward No.02



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

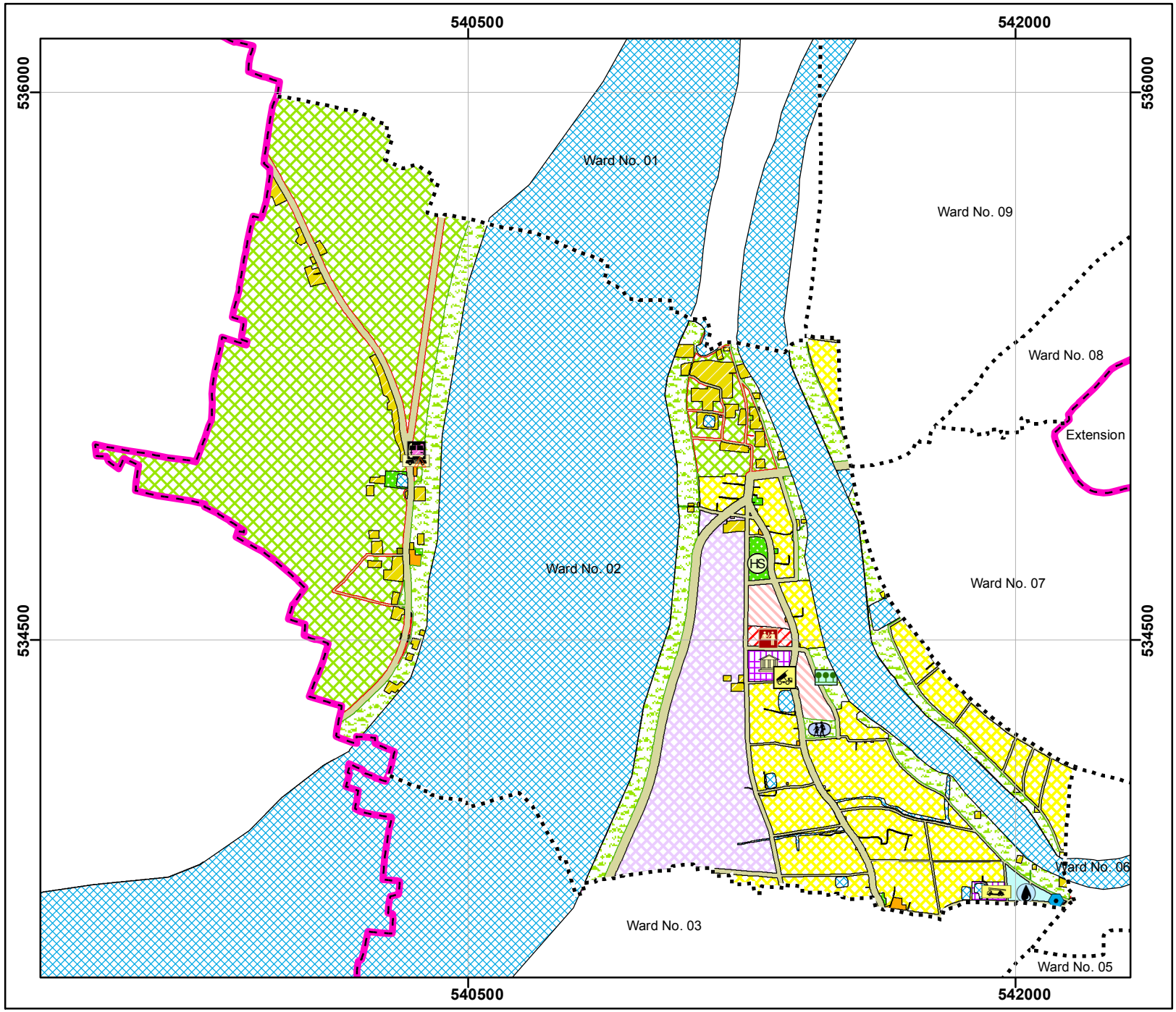
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.5 Proposed land use of Ward No.02



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.3.3.3 Proposed Circulation Network Development

15.55 km of circulation network has been proposed for this ward. Most of these roads will be developed during first phase (2012 - 2016). It is about 4.42 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 Type	Length (Meter)	RoW (Ft)	Road Proposal
37	Primary Road	1273.59	60	Road Widening
38	Tertiary Road	171.66	20	Road Widening
39	Tertiary Road	252.46	20	Road Widening
41	Secondary Road	393.23	40	Road Widening
42	Tertiary Road	6.17	20	Road Widening
49	Tertiary Road	59.19	20	Road Widening
61	Secondary Road	382.34	40	Road Widening
62	Tertiary Road	108.93	20	Road Widening
63	Tertiary Road	138.45	20	Road Widening
64	Tertiary Road	151.50	20	Road Widening
65	Tertiary Road	1.14	20	Road Widening
132	Primary Road	36.77	60	Road Widening
147	Secondary Road	8.12	40	Road Widening
155	Tertiary Road	101.05	20	Road Widening
156	Tertiary Road	235.99	20	Road Widening
157	Tertiary Road	59.34	20	Road Widening
158	Tertiary Road	126.08	20	Road Widening
159	Secondary Road	158.97	30	Road Widening
190	Primary Road	278.10	60	Road Widening
225	Tertiary Road	2.94	20	Road Widening
237	Tertiary Road	287.56	20	New Road
323	Secondary Road	40.23	40	Road Widening
344	Tertiary Road	153.97	20	New Road

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 17 km of new drains and among these drains, 4.69 km 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)
114	Secondary Drain	Phase 01	184.28	2.35 - 3.35	1.124 - 2.124
606	Secondary Drain	Phase 01	307.55	2.35 - 3.35	1.124 - 2.124
607	Secondary Drain	Phase 01	314.48	2.35 - 3.35	1.124 - 2.124
525	Secondary Drain	Phase 01	105.29	2.35 - 3.35	1.124 - 2.124
526	Secondary Drain	Phase 01	641.78	2.35 - 3.35	1.124 - 2.124
520	Secondary Drain	Phase 01	630.71	2.35 - 3.35	1.124 - 2.124
394	Tertiary Drain	Phase 01	90.94	1.50 - 2.50	0.64 - 1.00
395	Tertiary Drain	Phase 01	254.22	1.50 - 2.50	0.64 - 1.00
354	Tertiary Drain	Phase 01	99.58	1.50 - 2.50	0.64 - 1.00

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
355	Tertiary Drain	Phase 01	127.28	1.50 - 2.50	0.64 - 1.00
356	Tertiary Drain	Phase 01	141.19	1.50 - 2.50	0.64 - 1.00
337	Tertiary Drain	Phase 01	157.98	1.50 - 2.50	0.64 - 1.00
338	Tertiary Drain	Phase 01	237.98	1.50 - 2.50	0.64 - 1.00
270	Tertiary Drain	Phase 01	286.21	1.50 - 2.50	0.64 - 1.00
250	Tertiary Drain	Phase 01	259.37	1.50 - 2.50	0.64 - 1.00
251	Tertiary Drain	Phase 01	111.60	1.50 - 2.50	0.64 - 1.00
208	Tertiary Drain	Phase 01	100.97	1.50 - 2.50	0.64 - 1.00
209	Tertiary Drain	Phase 01	129.88	1.50 - 2.50	0.64 - 1.00
210	Tertiary Drain	Phase 01	143.02	1.50 - 2.50	0.64 - 1.00
193	Tertiary Drain	Phase 01	237.84	1.50 - 2.50	0.64 - 1.00
165	Secondary Drain	Phase 01	132.25	2.35 - 3.35	1.124 - 2.124
Total			**4694.42**		

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 to lead to problem in future. The consultant allotted 8 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within proposed ward center complex. 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 500 meters of water supply lines in this ward running along all categories of roads and one water supply station of 1.70 acres will be proposed.

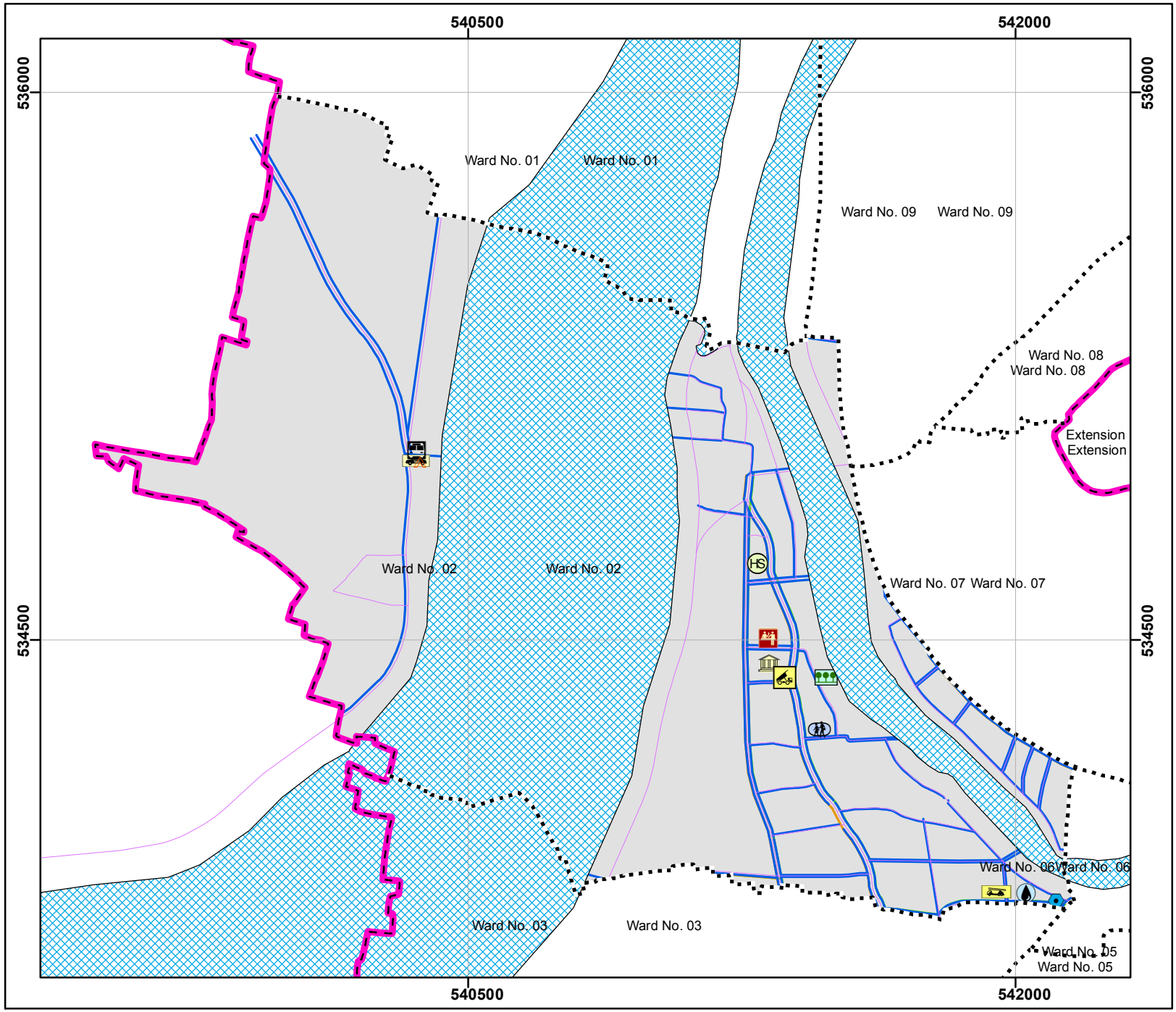
c. Sanitation

It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

Table- 14.11: Proposed Urban Services for Ward No. 02

Item	Existing		Proposed	
	No	Area (acre)	No	Area (acre)
Green Park			1	59.53
Neighborhood Market	None	-	1	1.54
Water Supply Station	1	0.24	1	1.70
Waste Transfer Station			1	0.08
Neighbourhood Park	None	-	1	1.90
Playground	None	-	1	0.99
Ward Center Complex	None	-	1	2.34
CNG/Rickshaw Stand			**1**	0.48
Fire Service			**1**	0.86

Map 14.6 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 02



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.4 Ward Action Plan for Ward No.3

14.4.1 Demography

Ward No. 03 is located at south west corner of the town. It has relatively high density of population compare with other wards. In 2011 the Ward had a population of 2962 persons. Family size was over 4, sex ratio was 91, 91 males for 100 female. Population projection shows 3835 populations in 2031. For the same year, it has a density of 4 persons per acre in 2011 and 5 persons per acre in 2031.

Table - 14.12: Population Statistics of Ward No. 03

Item	Year		
	2001	2011	2031
Area (acre)	746.16	746.16	746.16
Population	2,603	2962	3,835
Density of Population (acre)	3	4	5

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

The total length of roads in this ward 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.

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 flourishment 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 4 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. 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 505.05 acres which is 67.97% of the total ward. The second major land use is waterbody, occupying 23.79% (177.55 acres) of the ward. Besides, there is 5.67% residential, 15.14% land under circulation network, 1% under commercial activities, 0.25% land under community facilities, 0.73% land under manufacturing and processing activity, 0.47% land under education & research and otherwise 0.16% 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 166.38 (22.30%) 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 4.79 (0.64%) 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 total proposed commercial area is 3.93 acre (0.53%). The consultant proposes one kitchen market within the proposed.

iv) Community Facilities

The total proposed community area is 1.50 acre (0.20%). 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 36.84 acres (4.94%).

vi) Education & Research Zone

The total area under this use has been determined as 11.61 acres (1.56% of the ward area) that includes one new high school, one vocational training institute and existing educational institutions. Existing institutions are proposed to strengthen their capacity of both education and accommodation by following vertical expansion and shifting provision along with proposed one vocational institute of 6.62 acres.

vii) Government Office

Administrative zone covers all kinds of government and non-government offices in the town. The master plan proposes one counsellor office and one police box/outpost under the proposed ward center complex. Total proposed land under this category is 5.14 acre (0.69%).

viii) Agricultural Zone

At present Ward No. 03 has a vast area of agricultural land which is 505.05 acres. The consultant retains total 190.55 acres (25.54% 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 22.32% of the total ward and it is 166.55 acres.

x) Circulation Network

Existing and proposed roads covers a total of 54.46 acres of land and it is about 7.30% of the whole ward.

xi) General Industrial Zone

The total area under this use has been earmarked as 43.11 acres (5.78%) that includes the agro based and small & cottage industries or green category industry.

xii) Open Space

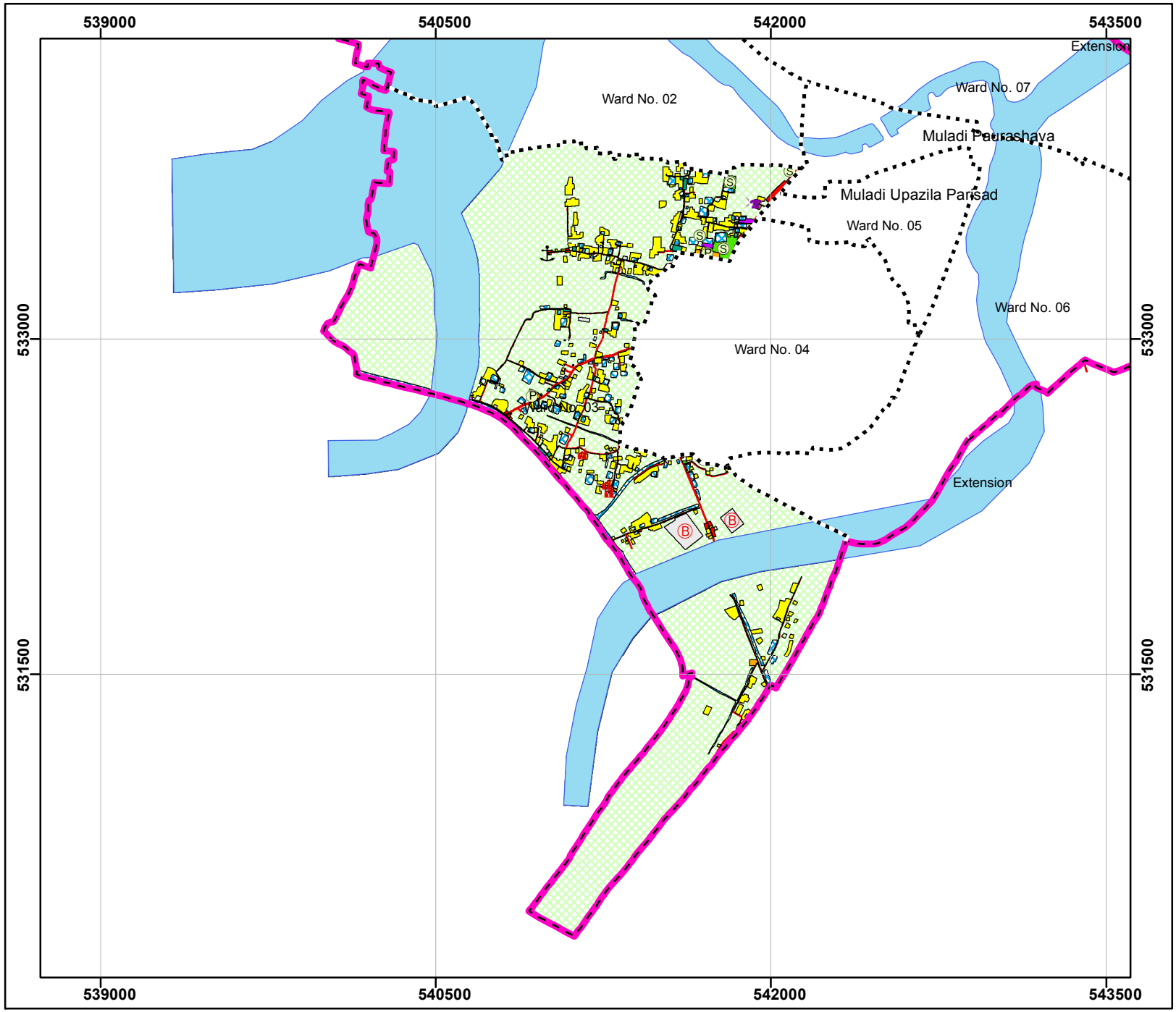
In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 49.20 acres (6.59% of the ward) of land for open space where they proposed one Central Park (with an area of 17.52 acres).

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	505.05	67.69	190.55	25.54
Circulation Network	7.34	0.98	54.46	7.30
Commercial Activity	1.89	0.25	3.93	0.53
Community Service	1.01	0.14	1.50	0.20
General Industrial Zone	5.46	0.73	43.11	5.78
Government Office	0.58	0.08	5.14	0.69
Education & Research Zone	3.53	0.47	11.61	1.56
Mixed Use Zone	0.01	0.00	36.84	4.94
Open Space	1.22	0.16	49.20	6.59
Rural Settlement	0.00	0.00	4.79	0.64
Transportation Facilities	1.22	0.16	11.56	1.55
Urban Deferred	30.72	4.12	0.12	0.02
Urban Residential Zone	42.31	5.67	166.38	22.30
Utility Services	0.15	0.02	0.43	0.06
Waterbody	177.55	23.80	166.55	22.32
Total	**746.16**	**100.00**	**746.16**	**100.00**

Map 14.7 Existing land use of Ward No.03



SCALE

1:24,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

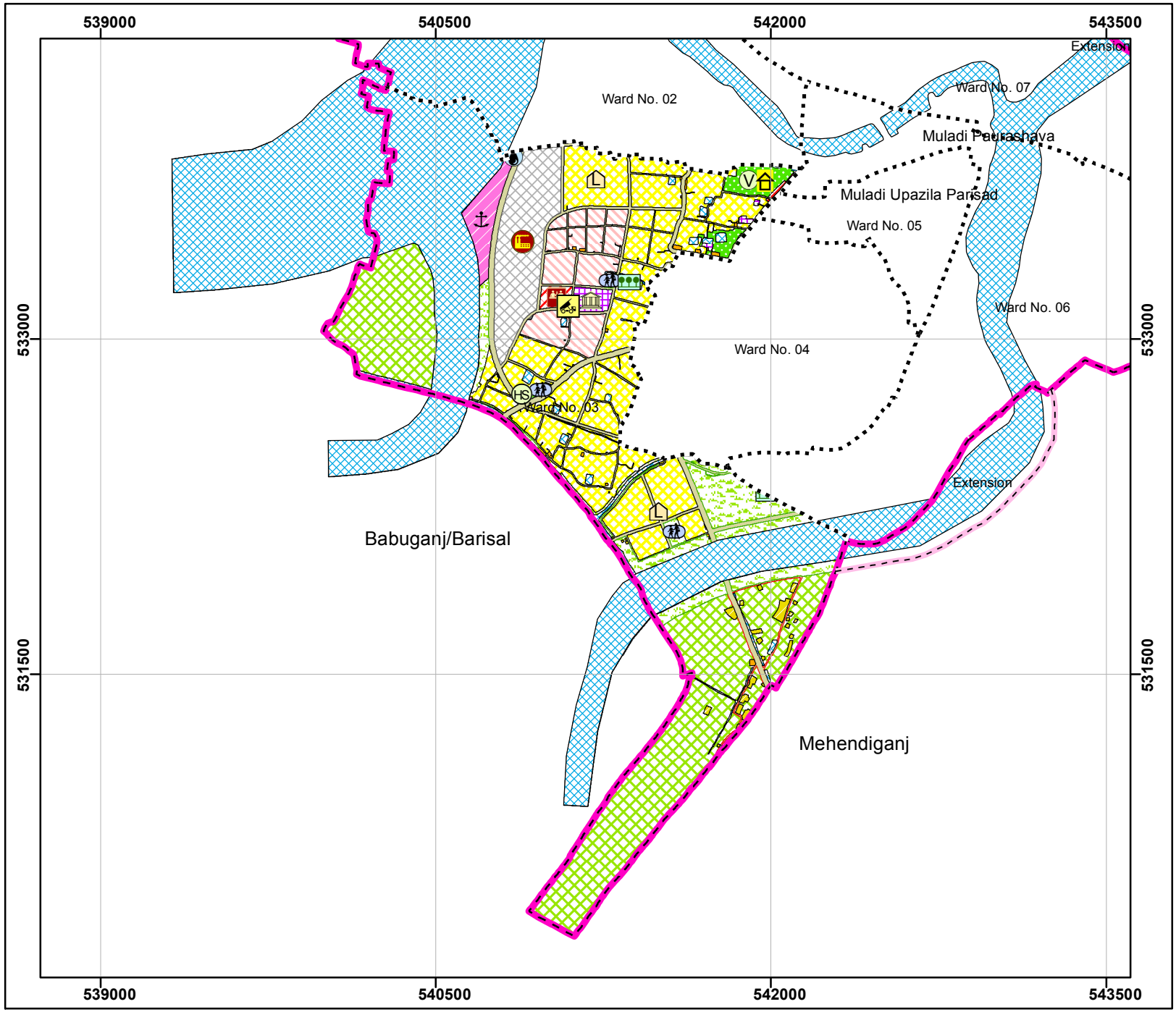
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.8 Proposed land use of Ward No.03



SCALE

1:24,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.4.3.3 Proposed Circulation Network Development

19.39 km of circulation network have been proposed for this ward. There are 10.49 km. roads will be developed during the first phase (2012 – 2016). All of these roads will be widened. Following table shows the detail of roads to be developed 20 to 80 feet during the first phase.

Table- 14.14: Road Proposals for Phase 01

Proposed Road ID	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
37	Primary Road	650.58	60	Road Widening
40	Tertiary Road	133.81	20	Road Widening
41	Secondary Road	125.79	40	Road Widening
42	Tertiary Road	239.92	20	Road Widening
44	Secondary Road	4.96	40	Road Widening
54	Tertiary Road	111.87	20	Road Widening
55	Tertiary Road	100.36	20	Road Widening
82	Tertiary Road	4.15	20	Road Widening
95	Primary Road	676.99	80	Road Widening
106	Tertiary Road	128.65	20	Road Widening
107	Tertiary Road	128.15	20	Road Widening
108	Tertiary Road	89.06	20	Road Widening
109	Secondary Road	462.48	40	Road Widening
110	Secondary Road	170.33	40	Road Widening
111	Tertiary Road	332.26	20	Road Widening
112	Secondary Road	304.58	40	Road Widening
113	Secondary Road	427.95	40	Road Widening
114	Secondary Road	253.98	30	Road Widening
115	Tertiary Road	121.25	20	Road Widening
116	Tertiary Road	201.46	20	Road Widening
118	Tertiary Road	164.54	20	Road Widening
119	Tertiary Road	342.81	20	Road Widening
120	Tertiary Road	41.07	20	Road Widening
121	Tertiary Road	232.86	20	Road Widening
122	Secondary Road	438.80	40	Road Widening
123	Tertiary Road	66.35	20	Road Widening
124	Primary Road	417.59	80	Road Widening
131	Tertiary Road	299.46	20	Road Widening
132	Primary Road	150.02	60	Road Widening
163	Tertiary Road	105.59	20	Road Widening
164	Tertiary Road	89.98	20	Road Widening
165	Tertiary Road	136.68	20	Road Widening
166	Tertiary Road	171.08	20	Road Widening
186	Tertiary Road	68.30	20	Road Widening
202	Secondary Road	459.08	40	Road Widening
239	Tertiary Road	109.58	20	New Road
240	Tertiary Road	232.25	20	New Road
279	Tertiary Road	45.26	20	New Road
280	Tertiary Road	121.82	20	New Road
281	Secondary Road	656.56	30	Road Widening

Proposed Road ID	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
288	Tertiary Road	176.94	20	New Road
357	Tertiary Road	2.49	20	New Road
363	Tertiary Road	162.99	20	New Road
369	Secondary Road	53.50	40	Road Widening
372	Primary Road	379.51	60	Road Widening
373	Primary Road	701.96	80	Road Widening

Besides roads, 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 4.89 km of new drains and all the drains will be developed during the third phase.

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 allotted 4 decimal land for waste transfer station. The consultant proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within proposed neighborhood market. 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 9.04 km of water supply lines for this ward running along all categories of roads.

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 9.12 km 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.

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

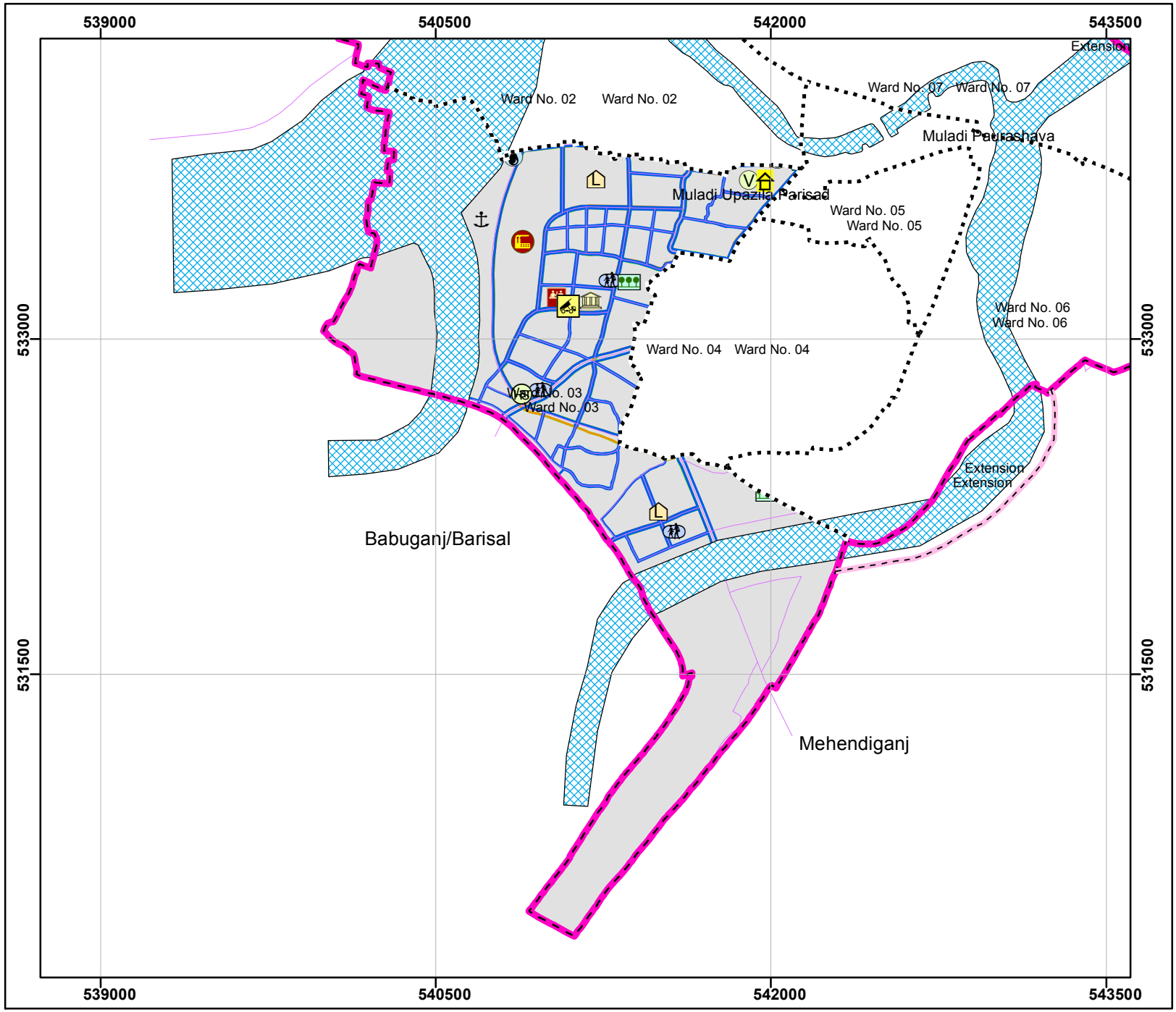
There are no existing recreational facilities in this ward. The consultant proposed one Central park (area 17.58 acres).

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)
Central Park			1	17.52
Green Park			1	27.93
Neighborhood Market	None	-	1	3.22
Waste Transfer Station			1	0.04
Industrail Area	1	0.04	-	43.11
High School	None	-	1	4.37
Treatment Plan	1	0.24	1	0.39
Neighbourhood Park	None	-	1	1.08
Playground	None	-	1	2.97
Ward Center Complex	None	-	1	4.30
Vocational Institute			1	6.62

Map 14.9 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 03



SCALE

1:24,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.5 Ward Action Plan for Ward No. 04

14.5.1 Demography

Ward No. 04 is located at Bazar elaka and Muladi mouza of the town. It has high density of population compare with other wards. In 2011 the Ward had a population of 3266 persons. Family size was over 4, sex ratio was 125, 125 males for 100 female. Population projection shows 4229 populations in 2031. For the same year, it has a density of 12 persons per acre in 2011 and 16 persons per acre in 2031.

Table - 14.16: Population Statistics of Ward No. 04

Item	Year		
	2001	2011	2031
Area (acre)	265.56	265.56	265.56
Population	2,870	3266	4,229
Density of Population (acre)	11	12	16

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 Muladi 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 flourishment 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 12persons/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. 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 54.44 acres which is 20.50% of the total ward. Agricultural land use occupying about 65.98% (175.23 acres) of the ward. Besides, there is 7.90% water body, 2.52% land under circulation network, 0.38% land under community facilities, 0.26% land under education & research, 0.40% land under government office, 0.62% land under manufacturing and processing activity and other 0.16% 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 162.18 (61.07%) 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 0.85 acres (0.32%) designated up to 2031 and a kitchen market also been proposed under proposed ward center complex.

iii) Community Facilities

Total proposed area under this category is 1.19 acre (0.45% of the ward). 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 33.95 acres (12.78% of the ward) land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 2.84 acres (1.07% 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 5.44 acres (2.05% of the ward) 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) 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 4.29% of the total ward and it is 11.39 acres.

viii) Health Services

Existing available health services have been retained under this category. The consultant also proposes a community clinic under proposed ward center complex.

ix) Circulation Network

Existing and proposed roads covers a total of 40.47 acres of land and it is about 15.24% of the whole ward.

x) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 5.85 acres of land for open space where they proposed two playgrounds and the whole proposal covers 2.20% of the whole ward.

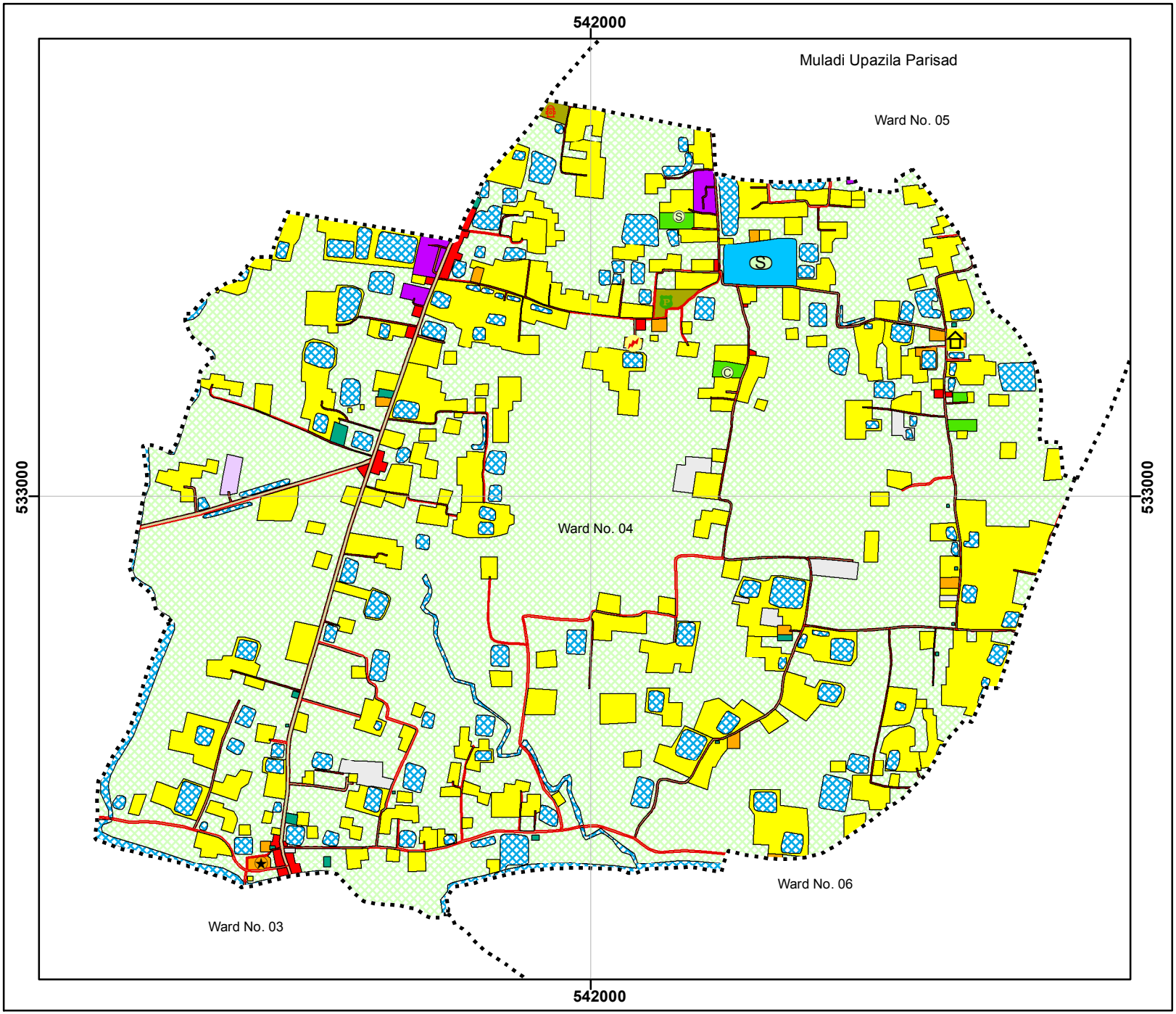
Map 14.10 shows the existing land use of Ward No.4 while **Map- 14.11** shows the proposed landuse zoning of ward no. 04.

Table-14.17: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agriculture	175.23	65.98	0.00	0
Circulation Network	6.68	2.52	40.47	15.24
Commercial Zone	0.97	0.37	0.85	0.32
Education & Research Zone	0.69	0.26	2.84	1.07
Government Office	1.06	0.40	5.44	2.05
General Industrial Zone	1.64	0.62	0.00	0.00
Mixed Use Zone	0	0.00	33.95	12.78
Open Space	0.43	0.16	5.85	2.20
Urban Residential Zone	54.44	20.50	162.18	61.07
Waterbody	20.99	7.90	11.39	4.29
Transportation Facilities	0.43	0.16	0.25	0.10

Community Facilities	1.02	0.38	1.19	0.45
Health Facilities	0.56	0.21	0.70	0.26
Miscellaneous	0.3	0.11	0.29	0.11
Recreational Facilities	1.51	0.57	0.00	0.00
Restricted Area	0	0.00	0.10	0.04
Rural Settlement	0	0.00	0.01	0.00
Total	**265.56**	**100.00**	**265.56**	**100.00**

Map 14.10 Existing land use of Ward No.04



SCALE

1:7,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

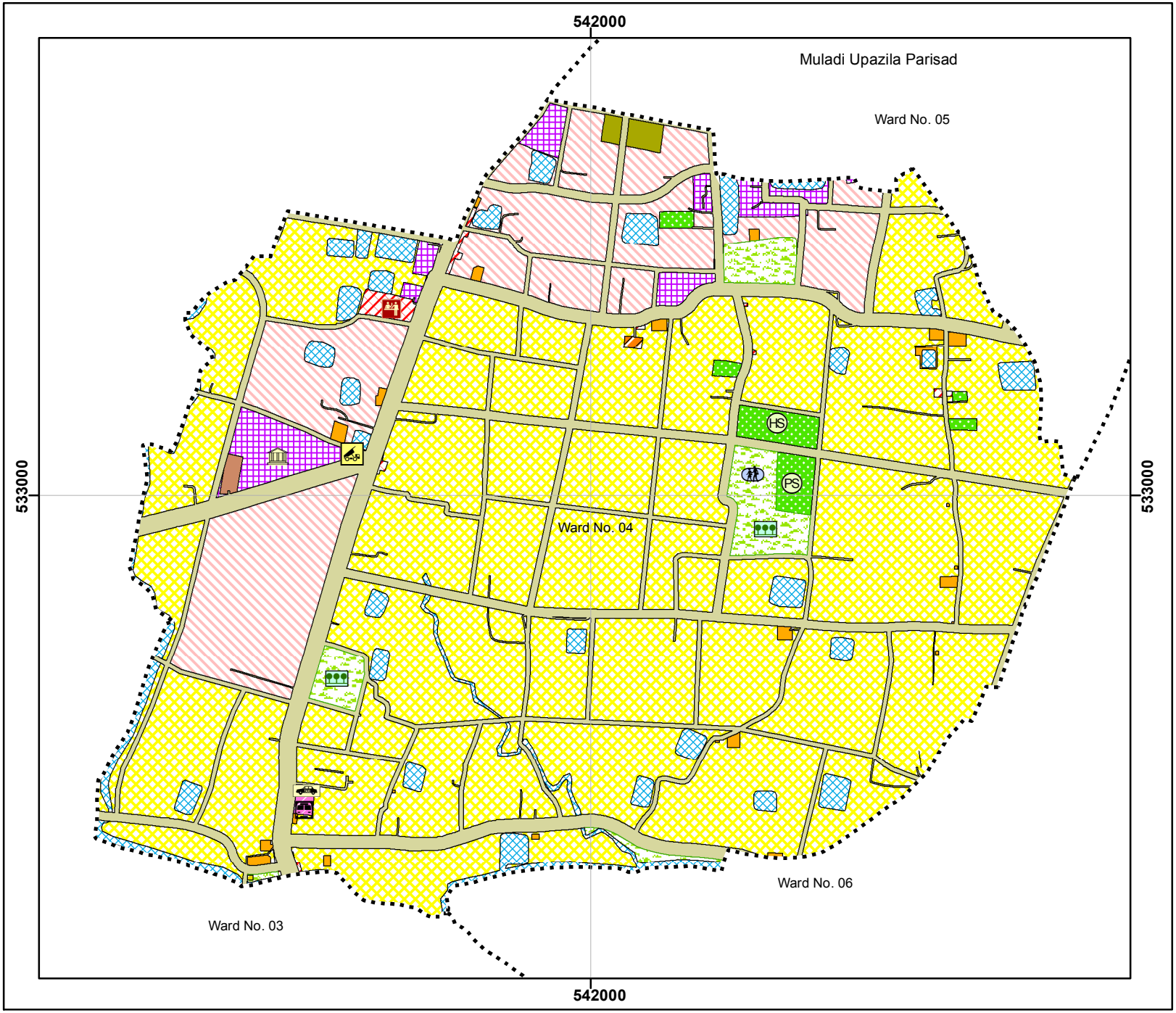
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.11 Proposed land use of Ward No.04



SCALE

1:7,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.5.3.3 Proposed Circulation Network Development

About 15.56 km of circulation network has been proposed for this ward. Most (9.13 km) of the roads will be developed during the first phase (2012 – 2016). Most of these roads will be widened 20 to 80 feet. 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 Type	Length (Meter)	RoW (Ft)	Road Proposal
43	Primary Road	836.71	80	Road Widening
47	Primary Road	407.78	60	Road Widening
48	Secondary Road	116.50	30	Road Widening
56	Tertiary Road	92.37	20	Road Widening
78	Tertiary Road	60.31	20	Road Widening
79	Tertiary Road	77.22	20	Road Widening
80	Secondary Road	218.59	40	Road Widening
81	Tertiary Road	63.15	20	Road Widening
82	Tertiary Road	73.53	20	Road Widening
83	Tertiary Road	80.16	20	Road Widening
84	Tertiary Road	97.65	20	Road Widening
85	Tertiary Road	80.78	20	Road Widening
86	Tertiary Road	166.49	20	Road Widening
87	Tertiary Road	211.73	20	Road Widening
88	Primary Road	319.11	60	Road Widening
89	Tertiary Road	618.49	20	Road Widening
90	Tertiary Road	307.03	20	Road Widening
91	Tertiary Road	148.00	20	Road Widening
92	Tertiary Road	179.79	20	Road Widening
93	Tertiary Road	119.40	20	Road Widening
94	Tertiary Road	233.02	20	Road Widening
95	Primary Road	334.29	80	Road Widening
96	Secondary Road	292.51	40	Road Widening
97	Tertiary Road	161.87	20	Road Widening
98	Tertiary Road	197.66	20	Road Widening
103	Tertiary Road	251.09	20	Road Widening
105	Tertiary Road	201.68	20	Road Widening
106	Tertiary Road	8.20	20	Road Widening
117	Primary Road	511.87	60	Road Widening
120	Tertiary Road	22.74	20	Road Widening
124	Primary Road	14.66	80	Road Widening
131	Tertiary Road	3.87	20	Road Widening
174	Primary Road	110.32	60	Road Widening
202	Secondary Road	288.36	40	Road Widening
253	Tertiary Road	144.21	20	Road Widening
254	Secondary Road	174.91	40	New Road
255	Secondary Road	201.47	40	Road Widening
257	Tertiary Road	220.88	20	Road Widening
259	Secondary Road	381.61	40	Road Widening

260	Tertiary Road	137.48	20	Road Widening
288	Tertiary Road	26.37	20	New Road
290	Tertiary Road	121.11	20	New Road
291	Tertiary Road	27.58	20	New Road
292	Tertiary Road	215.94	20	New Road
294	Tertiary Road	133.29	20	New Road
306	Tertiary Road	38.43	20	Road Widening
349	Tertiary Road	158.35	20	New Road
358	Tertiary Road	110.98	20	New Road
359	Tertiary Road	82.71	20	New Road
372	Primary Road	56.33	60	Road Widening

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 no drains. But this length of drain is not adequate for the town to discharge all its waste water and storm water. The plan proposes 35 km. of new drains for ward no. 04. Out of these proposed drains, 20.83 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)
39	Secondary Drain	Phase 01	291.57	2.35 - 3.35	1.124 - 2.124
39	Secondary Drain	Phase 01	141.02	2.35 - 3.35	1.124 - 2.124
59	Secondary Drain	Phase 01	55.43	2.35 - 3.35	1.124 - 2.124
59	Secondary Drain	Phase 01	383.68	2.35 - 3.35	1.124 - 2.124
663	Secondary Drain	Phase 01	253.86	2.35 - 3.35	1.124 - 2.124
663	Secondary Drain	Phase 01	41.61	2.35 - 3.35	1.124 - 2.124
527	Secondary Drain	Phase 01	218.17	2.35 - 3.35	1.124 - 2.124
527	Secondary Drain	Phase 01	1.20	2.35 - 3.35	1.124 - 2.124
527	Secondary Drain	Phase 01	674.95	2.35 - 3.35	1.124 - 2.124
233	Tertiary Drain	Phase 01	18.99	1.50 - 2.50	0.64 - 1.00
233	Tertiary Drain	Phase 01	118.39	1.50 - 2.50	0.64 - 1.00
52	Secondary Drain	Phase 01	237.79	2.35 - 3.35	1.124 - 2.124
52	Secondary Drain	Phase 01	29.28	2.35 - 3.35	1.124 - 2.124
377	Tertiary Drain	Phase 01	37.65	1.50 - 2.50	0.64 - 1.00
231	Tertiary Drain	Phase 01	35.79	1.50 - 2.50	0.64 - 1.00
377	Tertiary Drain	Phase 01	247.40	1.50 - 2.50	0.64 - 1.00
231	Tertiary Drain	Phase 01	243.54	1.50 - 2.50	0.64 - 1.00
20	Secondary Drain	Phase 01	843.53	2.35 - 3.35	1.124 - 2.124
23	Secondary Drain	Phase 01	856.18	2.35 - 3.35	1.124 - 2.124
28	Secondary Drain	Phase 01	399.02	2.35 - 3.35	1.124 - 2.124
29	Secondary Drain	Phase 01	317.54	2.35 - 3.35	1.124 - 2.124
35	Secondary Drain	Phase 01	97.00	2.35 - 3.35	1.124 - 2.124
45	Secondary Drain	Phase 01	395.97	2.35 - 3.35	1.124 - 2.124
46	Secondary Drain	Phase 01	321.18	2.35 - 3.35	1.124 - 2.124
54	Secondary Drain	Phase 01	97.65	2.35 - 3.35	1.124 - 2.124
68	Secondary Drain	Phase 01	334.93	2.35 - 3.35	1.124 - 2.124
69	Secondary Drain	Phase 01	282.58	2.35 - 3.35	1.124 - 2.124

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
80	Secondary Drain	Phase 01	174.91	2.35 - 3.35	1.124 - 2.124
81	Secondary Drain	Phase 01	201.08	2.35 - 3.35	1.124 - 2.124
83	Secondary Drain	Phase 01	195.63	2.35 - 3.35	1.124 - 2.124
105	Secondary Drain	Phase 01	335.01	2.35 - 3.35	1.124 - 2.124
106	Secondary Drain	Phase 01	285.34	2.35 - 3.35	1.124 - 2.124
123	Secondary Drain	Phase 01	171.79	2.35 - 3.35	1.124 - 2.124
124	Secondary Drain	Phase 01	204.93	2.35 - 3.35	1.124 - 2.124
126	Secondary Drain	Phase 01	196.72	2.35 - 3.35	1.124 - 2.124
144	Secondary Drain	Phase 01	235.97	2.35 - 3.35	1.124 - 2.124
163	Secondary Drain	Phase 01	251.94	2.35 - 3.35	1.124 - 2.124
204	Tertiary Drain	Phase 01	88.27	1.50 - 2.50	0.64 - 1.00
214	Tertiary Drain	Phase 01	49.55	1.50 - 2.50	0.64 - 1.00
215	Tertiary Drain	Phase 01	71.76	1.50 - 2.50	0.64 - 1.00
216	Tertiary Drain	Phase 01	51.48	1.50 - 2.50	0.64 - 1.00
217	Tertiary Drain	Phase 01	67.55	1.50 - 2.50	0.64 - 1.00
218	Tertiary Drain	Phase 01	68.54	1.50 - 2.50	0.64 - 1.00
219	Tertiary Drain	Phase 01	83.30	1.50 - 2.50	0.64 - 1.00
220	Tertiary Drain	Phase 01	66.43	1.50 - 2.50	0.64 - 1.00
221	Tertiary Drain	Phase 01	153.50	1.50 - 2.50	0.64 - 1.00
222	Tertiary Drain	Phase 01	202.14	1.50 - 2.50	0.64 - 1.00
223	Tertiary Drain	Phase 01	398.22	1.50 - 2.50	0.64 - 1.00
224	Tertiary Drain	Phase 01	139.93	1.50 - 2.50	0.64 - 1.00
225	Tertiary Drain	Phase 01	165.14	1.50 - 2.50	0.64 - 1.00
226	Tertiary Drain	Phase 01	113.83	1.50 - 2.50	0.64 - 1.00
227	Tertiary Drain	Phase 01	30.61	1.50 - 2.50	0.64 - 1.00
228	Tertiary Drain	Phase 01	149.55	1.50 - 2.50	0.64 - 1.00
229	Tertiary Drain	Phase 01	199.28	1.50 - 2.50	0.64 - 1.00
232	Tertiary Drain	Phase 01	193.45	1.50 - 2.50	0.64 - 1.00
276	Tertiary Drain	Phase 01	137.66	1.50 - 2.50	0.64 - 1.00
277	Tertiary Drain	Phase 01	193.01	1.50 - 2.50	0.64 - 1.00
278	Tertiary Drain	Phase 01	202.21	1.50 - 2.50	0.64 - 1.00
284	Tertiary Drain	Phase 01	115.90	1.50 - 2.50	0.64 - 1.00
285	Tertiary Drain	Phase 01	22.03	1.50 - 2.50	0.64 - 1.00
286	Tertiary Drain	Phase 01	138.92	1.50 - 2.50	0.64 - 1.00
288	Tertiary Drain	Phase 01	127.40	1.50 - 2.50	0.64 - 1.00
295	Tertiary Drain	Phase 01	155.69	1.50 - 2.50	0.64 - 1.00
632	Secondary Drain	Phase 01	211.31	2.35 - 3.35	1.124 - 2.124
612	Tertiary Drain	Phase 01	70.94	1.50 - 2.50	0.64 - 1.00
613	Tertiary Drain	Phase 01	71.01	1.50 - 2.50	0.64 - 1.00
616	Tertiary Drain	Phase 01	189.12	1.50 - 2.50	0.64 - 1.00
617	Tertiary Drain	Phase 01	197.11	1.50 - 2.50	0.64 - 1.00
626	Secondary Drain	Phase 01	165.53	2.35 - 3.35	1.124 - 2.124
627	Secondary Drain	Phase 01	164.97	2.35 - 3.35	1.124 - 2.124
610	Tertiary Drain	Phase 01	30.90	1.50 - 2.50	0.64 - 1.00
595	Tertiary Drain	Phase 01	20.36	1.50 - 2.50	0.64 - 1.00
549	Secondary Drain	Phase 01	208.54	2.35 - 3.35	1.124 - 2.124
557	Tertiary Drain	Phase 01	140.05	1.50 - 2.50	0.64 - 1.00
558	Tertiary Drain	Phase 01	108.72	1.50 - 2.50	0.64 - 1.00
559	Tertiary Drain	Phase 01	107.97	1.50 - 2.50	0.64 - 1.00
560	Tertiary Drain	Phase 01	10.07	1.50 - 2.50	0.64 - 1.00

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
561	Tertiary Drain	Phase 01	19.72	1.50 - 2.50	0.64 - 1.00
562	Tertiary Drain	Phase 01	273.70	1.50 - 2.50	0.64 - 1.00
571	Tertiary Drain	Phase 01	169.90	1.50 - 2.50	0.64 - 1.00
572	Tertiary Drain	Phase 01	20.24	1.50 - 2.50	0.64 - 1.00
581	Tertiary Drain	Phase 01	139.42	1.50 - 2.50	0.64 - 1.00
537	Secondary Drain	Phase 01	253.21	2.35 - 3.35	1.124 - 2.124
529	Secondary Drain	Phase 01	228.40	2.35 - 3.35	1.124 - 2.124
530	Secondary Drain	Phase 01	296.81	2.35 - 3.35	1.124 - 2.124
524	Secondary Drain	Phase 01	302.65	2.35 - 3.35	1.124 - 2.124
316	Tertiary Drain	Phase 01	143.20	1.50 - 2.50	0.64 - 1.00
322	Tertiary Drain	Phase 01	98.13	1.50 - 2.50	0.64 - 1.00
323	Tertiary Drain	Phase 01	74.48	1.50 - 2.50	0.64 - 1.00
349	Tertiary Drain	Phase 01	88.33	1.50 - 2.50	0.64 - 1.00
360	Tertiary Drain	Phase 01	47.88	1.50 - 2.50	0.64 - 1.00
361	Tertiary Drain	Phase 01	71.47	1.50 - 2.50	0.64 - 1.00
362	Tertiary Drain	Phase 01	52.29	1.50 - 2.50	0.64 - 1.00
363	Tertiary Drain	Phase 01	70.10	1.50 - 2.50	0.64 - 1.00
364	Tertiary Drain	Phase 01	69.24	1.50 - 2.50	0.64 - 1.00
365	Tertiary Drain	Phase 01	88.31	1.50 - 2.50	0.64 - 1.00
366	Tertiary Drain	Phase 01	66.62	1.50 - 2.50	0.64 - 1.00
367	Tertiary Drain	Phase 01	156.60	1.50 - 2.50	0.64 - 1.00
368	Tertiary Drain	Phase 01	203.85	1.50 - 2.50	0.64 - 1.00
369	Tertiary Drain	Phase 01	400.20	1.50 - 2.50	0.64 - 1.00
370	Tertiary Drain	Phase 01	139.77	1.50 - 2.50	0.64 - 1.00
371	Tertiary Drain	Phase 01	165.89	1.50 - 2.50	0.64 - 1.00
372	Tertiary Drain	Phase 01	113.56	1.50 - 2.50	0.64 - 1.00
373	Tertiary Drain	Phase 01	182.56	1.50 - 2.50	0.64 - 1.00
374	Tertiary Drain	Phase 01	150.70	1.50 - 2.50	0.64 - 1.00
375	Tertiary Drain	Phase 01	198.74	1.50 - 2.50	0.64 - 1.00
378	Tertiary Drain	Phase 01	193.48	1.50 - 2.50	0.64 - 1.00
514	Secondary Drain	Phase 01	312.99	2.35 - 3.35	1.124 - 2.124
503	Secondary Drain	Phase 01	318.20	2.35 - 3.35	1.124 - 2.124
475	Tertiary Drain	Phase 01	108.16	1.50 - 2.50	0.64 - 1.00
476	Tertiary Drain	Phase 01	74.63	1.50 - 2.50	0.64 - 1.00
469	Tertiary Drain	Phase 01	144.80	1.50 - 2.50	0.64 - 1.00
434	Tertiary Drain	Phase 01	118.40	1.50 - 2.50	0.64 - 1.00
435	Tertiary Drain	Phase 01	21.92	1.50 - 2.50	0.64 - 1.00
436	Tertiary Drain	Phase 01	134.73	1.50 - 2.50	0.64 - 1.00
438	Tertiary Drain	Phase 01	128.09	1.50 - 2.50	0.64 - 1.00
445	Tertiary Drain	Phase 01	156.91	1.50 - 2.50	0.64 - 1.00
424	Tertiary Drain	Phase 01	128.76	1.50 - 2.50	0.64 - 1.00
425	Tertiary Drain	Phase 01	192.94	1.50 - 2.50	0.64 - 1.00
426	Tertiary Drain	Phase 01	202.62	1.50 - 2.50	0.64 - 1.00
Total			20833.77		

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 allotted 5 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within wholesale market. 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 10.79 km of water supply lines will be developed in this ward running along all categories of roads.

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 11.46 km 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.

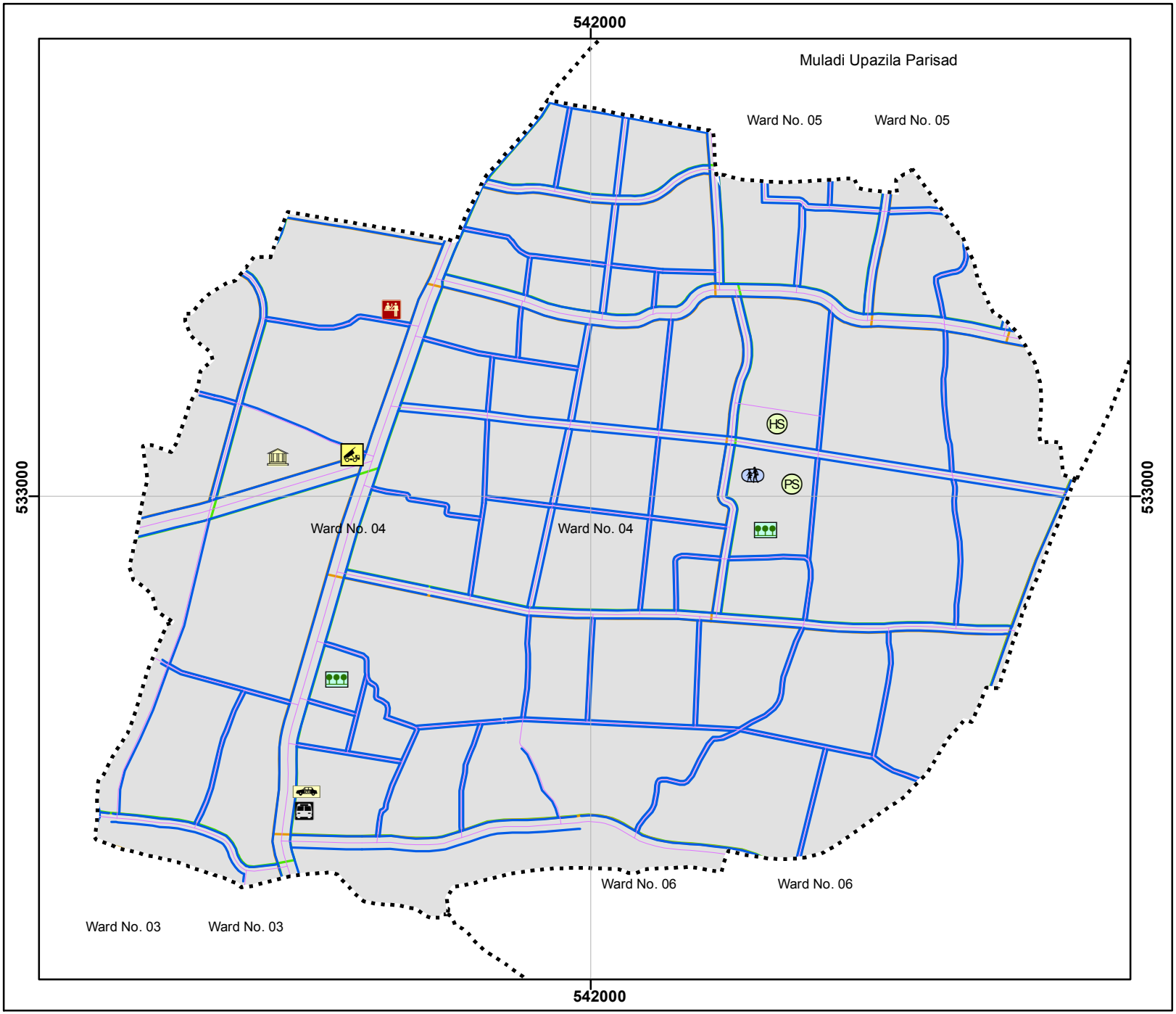
d. Sanitation

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.

Table- 14.20: Proposal of Urban Services for Ward No. 04

Item	Existing		Proposed	
	No.	Area (acre)	No.	Area (acre)
Neighborhood Market	None	-	1	0.57
CNG/Rickshaw Stand			1	0.25
Green Park			1	0.43
Waste Transfer Station			1	0.05
High School	None	-	1	1.27
Neighborhood Park	None	-	1	1.17
Playground	None	-	1	1.23
Upazila Stadium	1	1.45	-	-
Ward Center Complex	None	-	1	2.47
Post Office			1	0.54
Primary School			1	0.99

Map 14.12 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 04



SCALE

1:7,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.6 Ward Action Plan for Ward No. 05

14.6.1 Demography

Ward No. 05 is the middle of the town. It has high density of population compare with other wards. In 2011 the Ward had a population of 2133 persons. Family size was over 4, sex ratio was 103, 103 males for 100 female. Population projection shows 2762 population in the year 2031. For the same year, it has a density of 25 persons per acre and 33 persons per acre respectively.

Table - 14.21: Population Statistics of Ward No. 05

Item	Year		
	2001	2011	2031
Area (acre)	83.15	83.15	83.15
Population	1,875	2133	2,762
Density of Population (acre)	22	25	33

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 6 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 61 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. High 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.

b. Development Opportunities

i. Excellent External Connectivity

Barisal is only one hours journey from Muladi. It takes about 1 and half hour to reach other district headquarters Madaripur, Shariyotpur.

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 21.27 acres which is 25.59% of the total ward. Other major land use is agriculture, occupying 53.85% (44.77 acres) of the ward. Besides, there is 2.81% land under circulation network, 9.26% land under waterbody, 0.61% under educational facilities, 1.00% land under commercial zone, 3.92% land under government office, 0.22% land under mixed use, 0.17% land under transportation facility and other 0.17% 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 33.54 (40.33%) 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 1.22 acres (1.47%) 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 16.88 acres land for mixed use category.

iv) Education & Research Zone

The total area under this use has been determined as 0.81 acres (0.97% 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 6.24 acres (7.51%) 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 5.59% of the total ward and it is 4.65 acres.

vii) Health Services

Total area under this proposed category is 1.75 acre (2.10% of the ward). 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 15.65 acres of land and it is about 18.83% of the whole ward.

ix) Open Space

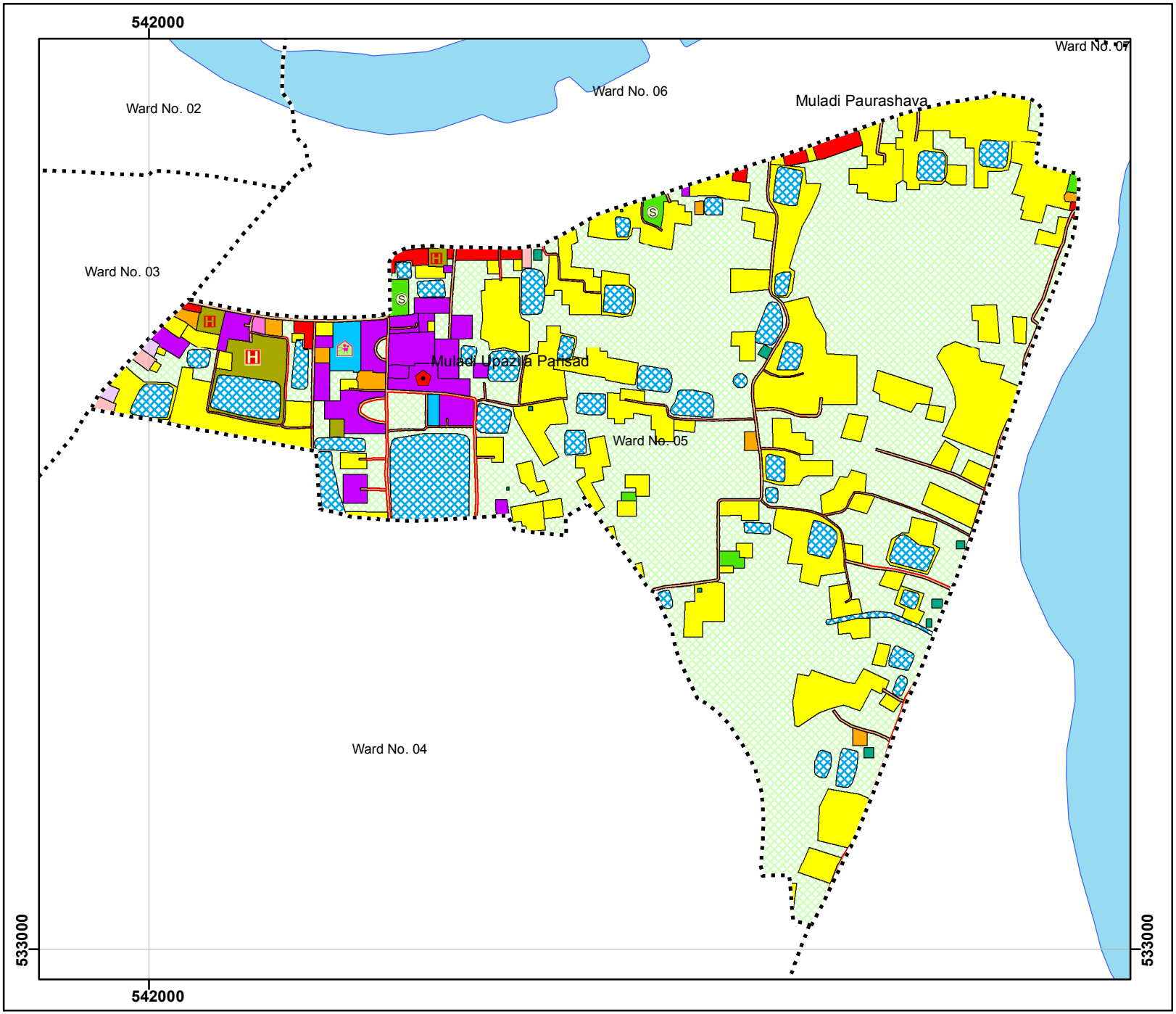
In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 1.21 acres of land for open space where they proposed Neighborhood Parks.

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	44.77	53.85	0.00	0.00
Circulation Network	2.34	2.81	15.65	18.83
Commercial Zone	0.83	1.00	1.22	1.47
Education & Research Zone	0.51	0.61	0.81	0.97
Government Office	3.26	3.92	6.24	7.51
Mixed Use Zone	0.18	0.22	16.88	20.30
Open Space	0.00	0.00	1.21	1.45
Urban Residential Zone	21.27	25.59	33.54	40.33
Waterbody	7.7	9.26	4.65	5.59
Service Activity	1.03	1.24	0.00	0.00
Transport & Communication	0.14	0.17	0.28	0.34
Urban Green Space	0.14	0.17	0.00	0.00
Community Facilities	0.5	0.60	0.53	0.64
Health Service		0.00	1.75	2.10
Non-Government Services	0.11	0.13	0	0
Recreational Facilities	0.46	0.55	0.34	0.40
Total	**83.15**	**100.00**	**83.15**	**100.00**

Map 14.13 Existing land use of Ward No.05



SCALE

1:5,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

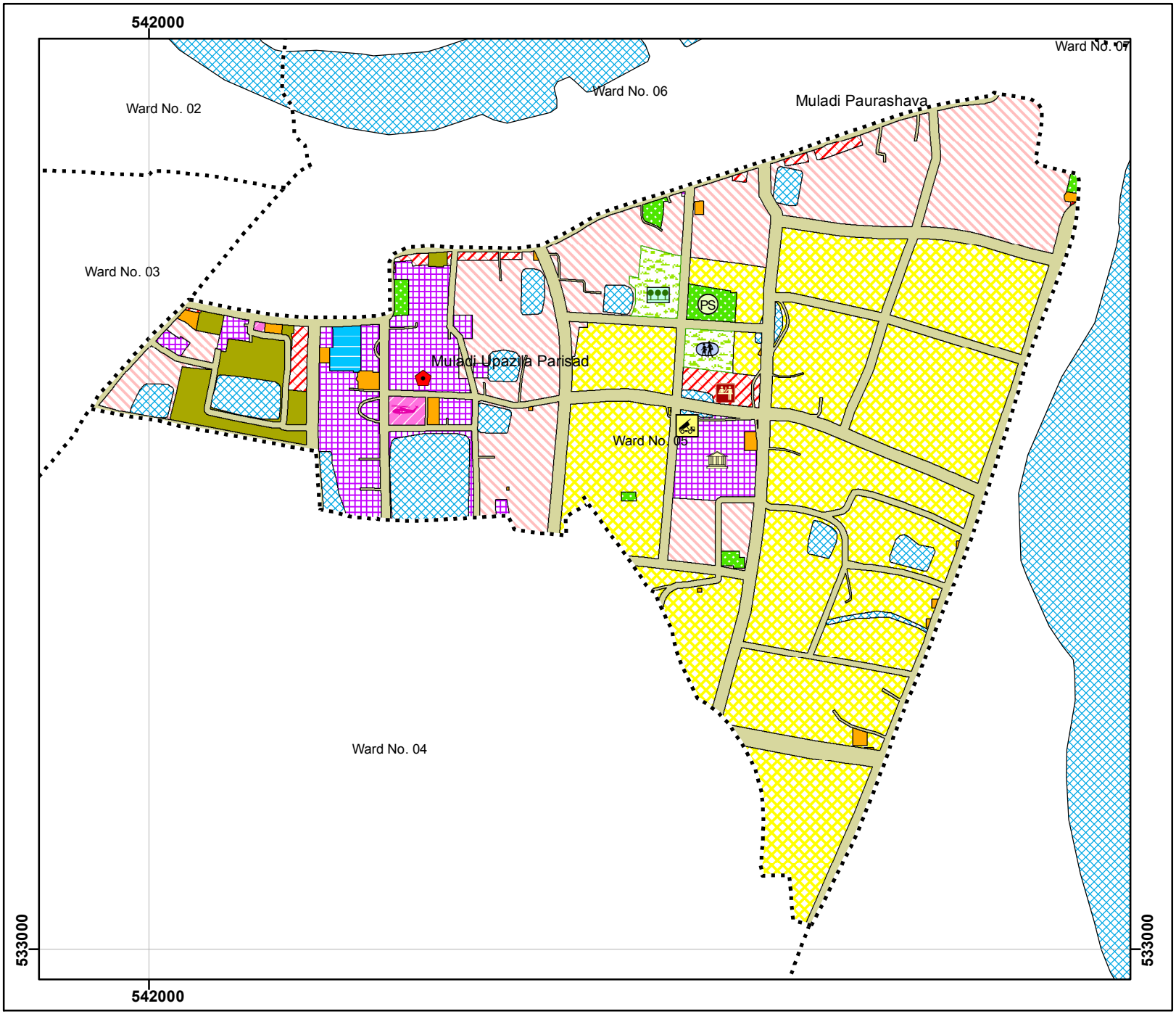
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.14 Proposed land use of Ward No.05



SCALE

1:5,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.6.3.3 Proposed Circulation Network Development

About 6.08 km of circulation network has been proposed for this ward. Among These roads, 3.52 km will be developed 20 to 40 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 Type	Length (Meter)	RoW (Ft)	Road Proposal
44	Secondary Road	242.29	40	Road Widening
45	Tertiary Road	79.48	20	Road Widening
46	Tertiary Road	279.77	20	Road Widening
48	Secondary Road	127.46	30	Road Widening
50	Tertiary Road	32.01	20	Road Widening
51	Tertiary Road	90.57	20	Road Widening
52	Tertiary Road	42.65	20	Road Widening
53	Tertiary Road	48.86	20	Road Widening
68	Secondary Road	201.86	40	Road Widening
70	Secondary Road	342.61	40	Road Widening
80	Secondary Road	130.72	40	Road Widening
99	Tertiary Road	127.07	20	Road Widening
135	Secondary Road	3.18	40	Road Widening
138	Tertiary Road	125.69	20	Road Widening
170	Tertiary Road	42.23	20	Road Widening
188	Tertiary Road	109.86	20	Road Widening
252	Secondary Road	288.29	40	New Road
260	Tertiary Road	190.20	20	Road Widening
264	Secondary Road	76.70	30	Road Widening
271	Secondary Road	235.57	40	Road Widening
302	Secondary Road	343.92	30	New Road
306	Tertiary Road	121.73	20	Road Widening
307	Tertiary Road	91.70	20	Road Widening
351	Tertiary Road	76.19	20	New Road
357	Tertiary Road	74.57	20	New Road

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 Muladi has 610 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 10.47 km. of new drains for ward no. 05. Out of these proposed drains, 7.12 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)
30	Secondary Drain	Phase 01	6.55	2.35 - 3.35	1.124 - 2.124
30	Secondary Drain	Phase 01	802.02	2.35 - 3.35	1.124 - 2.124
74	Secondary Drain	Phase 01	183.26	2.35 - 3.35	1.124 - 2.124

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
74	Secondary Drain	Phase 01	45.72	2.35 - 3.35	1.124 - 2.124
63	Secondary Drain	Phase 01	729.93	2.35 - 3.35	1.124 - 2.124
63	Secondary Drain	Phase 01	126.21	2.35 - 3.35	1.124 - 2.124
688	Secondary Drain	Phase 01	120.20	2.35 - 3.35	1.124 - 2.124
689	Secondary Drain	Phase 01	118.50	2.35 - 3.35	1.124 - 2.124
690	Secondary Drain	Phase 01	82.20	2.35 - 3.35	1.124 - 2.124
691	Secondary Drain	Phase 01	79.85	2.35 - 3.35	1.124 - 2.124
630	Tertiary Drain	Phase 01	97.73	1.50 - 2.50	0.64 - 1.00
631	Tertiary Drain	Phase 01	105.68	1.50 - 2.50	0.64 - 1.00
474	Tertiary Drain	Phase 01	64.35	1.50 - 2.50	0.64 - 1.00
471	Tertiary Drain	Phase 01	76.55	1.50 - 2.50	0.64 - 1.00
446	Tertiary Drain	Phase 01	84.35	1.50 - 2.50	0.64 - 1.00
405	Tertiary Drain	Phase 01	99.59	1.50 - 2.50	0.64 - 1.00
402	Tertiary Drain	Phase 01	41.58	1.50 - 2.50	0.64 - 1.00
387	Tertiary Drain	Phase 01	114.53	1.50 - 2.50	0.64 - 1.00
376	Tertiary Drain	Phase 01	123.61	1.50 - 2.50	0.64 - 1.00
341	Tertiary Drain	Phase 01	75.20	1.50 - 2.50	0.64 - 1.00
342	Tertiary Drain	Phase 01	266.44	1.50 - 2.50	0.64 - 1.00
343	Tertiary Drain	Phase 01	21.46	1.50 - 2.50	0.64 - 1.00
344	Tertiary Drain	Phase 01	84.01	1.50 - 2.50	0.64 - 1.00
345	Tertiary Drain	Phase 01	37.65	1.50 - 2.50	0.64 - 1.00
346	Tertiary Drain	Phase 01	46.50	1.50 - 2.50	0.64 - 1.00
321	Tertiary Drain	Phase 01	67.30	1.50 - 2.50	0.64 - 1.00
318	Tertiary Drain	Phase 01	76.42	1.50 - 2.50	0.64 - 1.00
296	Tertiary Drain	Phase 01	85.07	1.50 - 2.50	0.64 - 1.00
261	Tertiary Drain	Phase 01	98.67	1.50 - 2.50	0.64 - 1.00
257	Tertiary Drain	Phase 01	35.53	1.50 - 2.50	0.64 - 1.00
243	Tertiary Drain	Phase 01	118.09	1.50 - 2.50	0.64 - 1.00
230	Tertiary Drain	Phase 01	115.52	1.50 - 2.50	0.64 - 1.00
196	Tertiary Drain	Phase 01	74.45	1.50 - 2.50	0.64 - 1.00
197	Tertiary Drain	Phase 01	281.85	1.50 - 2.50	0.64 - 1.00
198	Tertiary Drain	Phase 01	27.13	1.50 - 2.50	0.64 - 1.00
199	Tertiary Drain	Phase 01	84.02	1.50 - 2.50	0.64 - 1.00
200	Tertiary Drain	Phase 01	36.40	1.50 - 2.50	0.64 - 1.00
201	Tertiary Drain	Phase 01	46.48	1.50 - 2.50	0.64 - 1.00
176	Secondary Drain	Phase 01	113.04	2.35 - 3.35	1.124 - 2.124
156	Secondary Drain	Phase 01	114.19	2.35 - 3.35	1.124 - 2.124
147	Secondary Drain	Phase 01	69.52	2.35 - 3.35	1.124 - 2.124
131	Secondary Drain	Phase 01	219.82	2.35 - 3.35	1.124 - 2.124
122	Secondary Drain	Phase 01	275.32	2.35 - 3.35	1.124 - 2.124
104	Secondary Drain	Phase 01	340.37	2.35 - 3.35	1.124 - 2.124
102	Secondary Drain	Phase 01	190.69	2.35 - 3.35	1.124 - 2.124
87	Secondary Drain	Phase 01	222.72	2.35 - 3.35	1.124 - 2.124
79	Secondary Drain	Phase 01	272.82	2.35 - 3.35	1.124 - 2.124
67	Secondary Drain	Phase 01	336.37	2.35 - 3.35	1.124 - 2.124
65	Secondary Drain	Phase 01	190.51	2.35 - 3.35	1.124 - 2.124
Total			7125.97		

Besides, it will be necessary to re-excavate the khals and rivers that serve as primary drains. The consultants have identified existing whole of the khals/ rivers 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 allotted 4 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within retail market. 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 2.07 kilometers of water supply lines will be developed in this ward running along all categories of roads.

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 0.89 kilometers 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

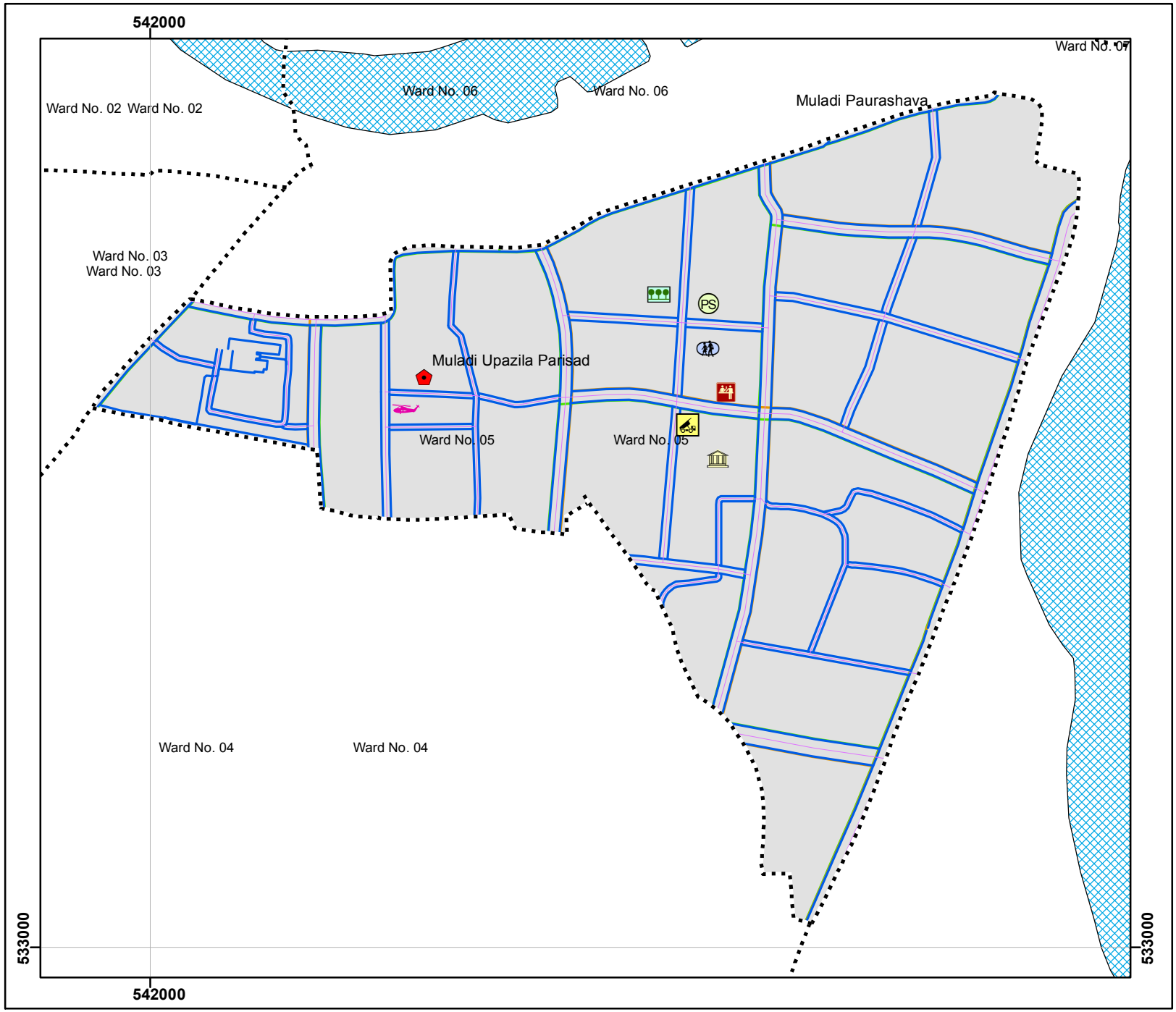
It is apprehended there is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

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	0.52
Waste Transfer Station			1	0.04
Primary School	None	-	1	0.39
Neighborhood Park	None	-	3	0.71
Ward Center Complex	None	-	1	1.47
Playground			1	0.50

Map 14.15 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 05



SCALE

1:5,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.7 Ward Action Plan for Ward No. 06

14.7.1 Demography

Ward No. 06 is located at eastern side of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 3712 persons. Family size was over 4, sex ratio was 85, 85 males for 100 female. Population projection shows 4806 population in 2031. For the same year, it has a density of 8 persons per acre and 11persons per acre respectively.

Table - 14.26: Population Statistics of Ward No. 06

Item	Year		
	2001	2011	2031
Area (acre)	432.89	432.89	432.89
Population	3,262	3712	4,806
Density of Population (acre)	7	8	11

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 10 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 no 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 flourishment 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 8 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 one hour journey from Muladi, the district headquarters. Madaripur or Shariyotpur another district headquarters is also about 1 and half hour journey from Muladi.

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 agricultural landuse and it is 289.31 acres which is 67.14% of the total ward. The second major land use is waterbody, occupying 20.05% (86.38 acres) of the ward. Besides, there is 2.23% land under commercial activity, 1.42% land under circulation network, 0.95% under educational facilities, 0.21% land under community facilities, 0.10% land under government office, 0.12% land under open space, 0.12% land under transportation facility and otherwise 0.12% of land is being used for open 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 7.89 (1.82%) 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 4.19 acres (0.97%) designated up to 2031. The consultant also proposes a kitchen market under ward center complex.

iii) Community Facilities

Existing facilities covers a total of 1.80 acres of land and it is about 0.41% 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 26.42 acres land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 4.82 acres (1.11% 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 0.37 acres (0.09%) 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 2.35% of the total ward and it is 88.07 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 27.17 acres of land and it is about 6.28% 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 62.08 acre of land.

x) Urban Deferred

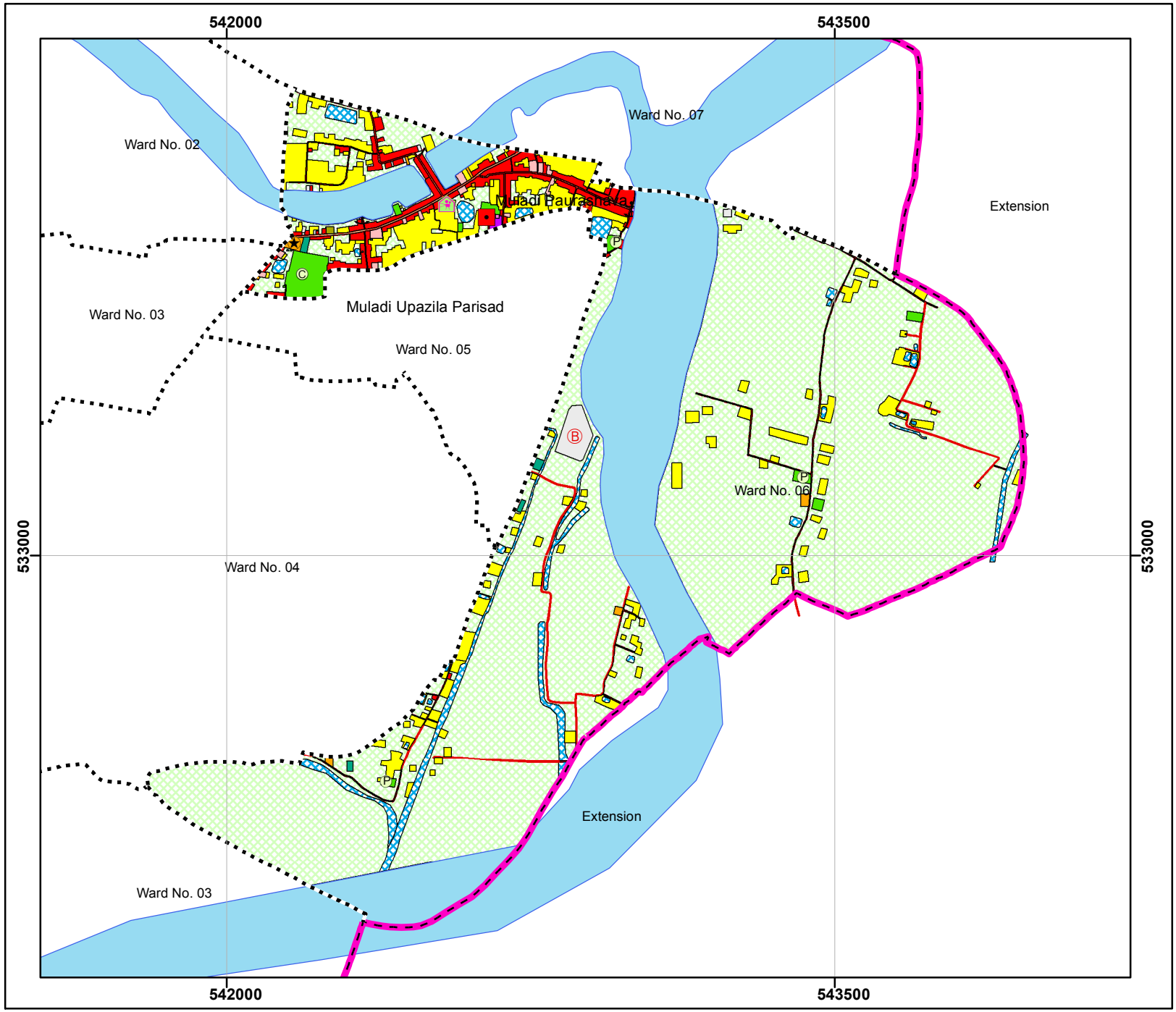
According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 58.15 acres or 13.43% of the whole ward. A portion of this zone may use for housing of the poor, disadvantages and refugee for climate change and other disasters to fulfil National Housing Policy, Disaster Policy and other policy prescriptions of the Government.

Map 14.16 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	289.31	67.14	139.48	32.22
Circulation Network	6.13	1.42	27.17	6.28
Commercial Zone	9.62	2.23	4.19	0.97
Community Facilities	0.89	0.21	1.80	0.41
Education & Research Zone	4.08	0.95	4.82	1.11
Government Office	0.43	0.10	0.37	0.09
Mixed Use Zone	1.07	0.25	26.42	6.10
Open Space	0.5	0.12	62.08	14.34
Recreational Facilities	0.14	0.03	0.11	0.03
Transportation Facilities	0.5	0.12	0.04	0.01
Urban Deferred	0.00	0.00	58.15	13.43
Urban Residential Zone	28.93	6.71	7.89	1.82
Waterbody	86.38	20.05	88.07	20.35
Manufacturing and Processing Activity	2.34	0.54	0.00	0.00
Service Activity	0.08	0.02	0.00	0.00
Rural Settlement	0.00	0.00	12.28	2.84
Total	**432.89**	**100.00**	**432.89**	**100.00**

Map 14.16 | **Existing land use of Ward No.06**



SCALE

1:13,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

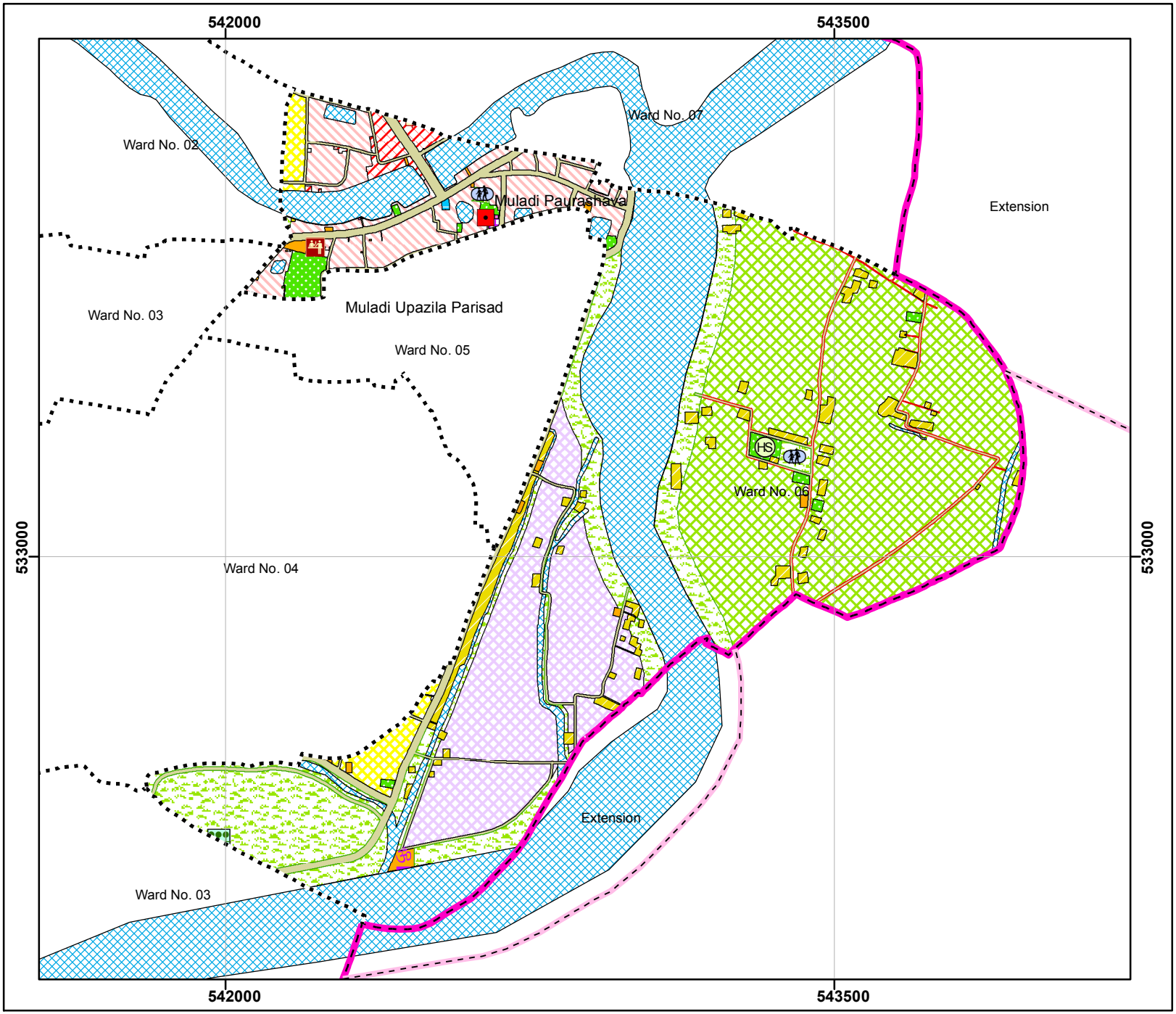
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.17 Proposed land use of Ward No.06



SCALE

1:13,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.7.3.3 Proposed Circulation Network Development

About 10.36 km of circulation network has been proposed for this ward. There are 3.82 km. roads will be developed during the first phase (2012 – 2016). Following table shows the detail of roads to be widened 20 to 80 feet during the first phase.

Table- 14.28: Road Proposals for Phase 01

Proposed Road ID	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
44	Secondary Road	610.39	40	Road Widening
45	Tertiary Road	1.60	20	Road Widening
57	Tertiary Road	275.05	20	Road Widening
58	Tertiary Road	180.88	20	Road Widening
59	Tertiary Road	118.24	20	Road Widening
60	Tertiary Road	160.09	20	Road Widening
67	Tertiary Road	98.96	20	Road Widening
70	Secondary Road	1.58	40	Road Widening
103	Tertiary Road	45.41	20	Road Widening
117	Primary Road	19.38	60	Road Widening
132	Primary Road	614.15	60	Road Widening
135	Secondary Road	227.57	40	Road Widening
136	Tertiary Road	38.99	20	Road Widening
137	Secondary Road	394.72	40	Road Widening
139	Tertiary Road	40.83	20	Road Widening
140	Tertiary Road	80.30	20	Road Widening
172	Primary Road	234.27	60	Road Widening
302	Secondary Road	1.28	30	New Road
312	Tertiary Road	54.68	20	Road Widening
319	Primary Road	123.75	80	Road Widening
320	Tertiary Road	225.50	20	Road Widening
323	Secondary Road	37.48	40	Road Widening
350	Tertiary Road	142.37	20	Road Widening
352	Tertiary Road	96.21	20	New Road

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 no drainage facilities. The plan proposes 10.33 km. of new drains for ward no. 06. Out of these proposed drains, 5.24 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)	Depth (Meter)
48	Secondary Drain	46.60	Phase 01	2.35 - 3.35	1.124 - 2.124
48	Secondary Drain	78.80	Phase 01	2.35 - 3.35	1.124 - 2.124
389	Tertiary Drain	74.08	Phase 01	1.50 - 2.50	0.64 - 1.00
389	Tertiary Drain	22.32	Phase 01	1.50 - 2.50	0.64 - 1.00
245	Tertiary Drain	21.39	Phase 01	1.50 - 2.50	0.64 - 1.00
245	Tertiary Drain	31.38	Phase 01	1.50 - 2.50	0.64 - 1.00

Drain ID	Drain Type	Length (Meter)	Phasing	Width (Meter)	Depth (Meter)
245	Tertiary Drain	22.51	Phase 01	1.50 - 2.50	0.64 - 1.00
245	Tertiary Drain	21.42	Phase 01	1.50 - 2.50	0.64 - 1.00
244	Tertiary Drain	34.72	Phase 01	1.50 - 2.50	0.64 - 1.00
244	Tertiary Drain	16.73	Phase 01	1.50 - 2.50	0.64 - 1.00
388	Tertiary Drain	35.84	Phase 01	1.50 - 2.50	0.64 - 1.00
388	Tertiary Drain	11.04	Phase 01	1.50 - 2.50	0.64 - 1.00
298	Tertiary Drain	16.27	Phase 01	1.50 - 2.50	0.64 - 1.00
454	Tertiary Drain	218.02	Phase 01	1.50 - 2.50	0.64 - 1.00
454	Tertiary Drain	65.55	Phase 01	1.50 - 2.50	0.64 - 1.00
303	Tertiary Drain	205.52	Phase 01	1.50 - 2.50	0.64 - 1.00
303	Tertiary Drain	51.41	Phase 01	1.50 - 2.50	0.64 - 1.00
298	Tertiary Drain	48.90	Phase 01	1.50 - 2.50	0.64 - 1.00
449	Tertiary Drain	49.34	Phase 01	1.50 - 2.50	0.64 - 1.00
30	Secondary Drain	14.06	Phase 01	2.35 - 3.35	1.124 - 2.124
449	Tertiary Drain	12.09	Phase 01	1.50 - 2.50	0.64 - 1.00
640	Tertiary Drain	117.40	Phase 01	1.50 - 2.50	0.64 - 1.00
641	Tertiary Drain	115.46	Phase 01	1.50 - 2.50	0.64 - 1.00
642	Tertiary Drain	101.33	Phase 01	1.50 - 2.50	0.64 - 1.00
472	Tertiary Drain	81.51	Phase 01	1.50 - 2.50	0.64 - 1.00
470	Tertiary Drain	126.70	Phase 01	1.50 - 2.50	0.64 - 1.00
386	Tertiary Drain	23.05	Phase 01	1.50 - 2.50	0.64 - 1.00
242	Tertiary Drain	85.09	Phase 01	1.50 - 2.50	0.64 - 1.00
359	Tertiary Drain	172.68	Phase 01	1.50 - 2.50	0.64 - 1.00
350	Tertiary Drain	172.24	Phase 01	1.50 - 2.50	0.64 - 1.00
351	Tertiary Drain	120.94	Phase 01	1.50 - 2.50	0.64 - 1.00
352	Tertiary Drain	152.43	Phase 01	1.50 - 2.50	0.64 - 1.00
353	Tertiary Drain	80.62	Phase 01	1.50 - 2.50	0.64 - 1.00
319	Tertiary Drain	128.33	Phase 01	1.50 - 2.50	0.64 - 1.00
317	Tertiary Drain	85.09	Phase 01	1.50 - 2.50	0.64 - 1.00
213	Tertiary Drain	84.12	Phase 01	1.50 - 2.50	0.64 - 1.00
205	Tertiary Drain	171.48	Phase 01	1.50 - 2.50	0.64 - 1.00
206	Tertiary Drain	119.13	Phase 01	1.50 - 2.50	0.64 - 1.00
207	Tertiary Drain	150.44	Phase 01	1.50 - 2.50	0.64 - 1.00
135	Secondary Drain	80.65	Phase 01	2.35 - 3.35	1.124 - 2.124
112	Secondary Drain	210.32	Phase 01	2.35 - 3.35	1.124 - 2.124
113	Secondary Drain	356.78	Phase 01	2.35 - 3.35	1.124 - 2.124
100	Secondary Drain	828.35	Phase 01	2.35 - 3.35	1.124 - 2.124
75	Secondary Drain	375.78	Phase 01	2.35 - 3.35	1.124 - 2.124
25	Secondary Drain	131.05	Phase 01	2.35 - 3.35	1.124 - 2.124
22	Secondary Drain	133.36	Phase 01	2.35 - 3.35	1.124 - 2.124
Total		5242.71			

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 consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within retail ‘ward center’.

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. 06 hence; the consultant proposes 4.13 kilometers of water supply lines will be developed in this ward running along all categories of roads.

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 4.89 kilometers 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

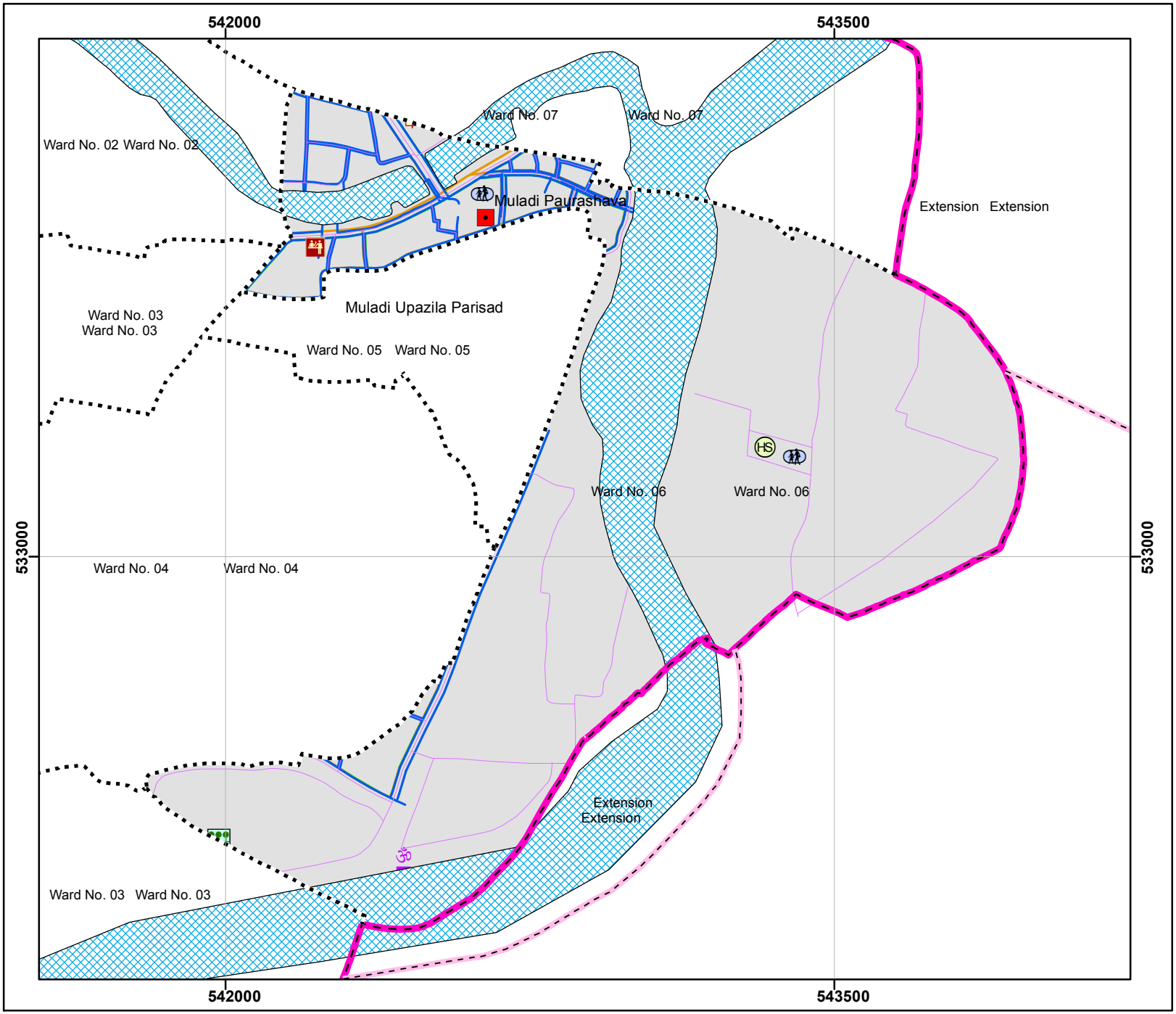
It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

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)
Central Park				24.11
Green Park				37.66
High School				1.07
Super market				0.46
Wholesale market	None	-	1	1.03
Playground	None	-	1	1.46

Map 14.18 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 06



SCALE

1:13,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.8 Ward Action Plan for Ward No. 07

14.8.1 Demography

Ward No. 07 has moderate density of population compare with other wards. In 2011 the Ward had a population of 2290 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 2965. For the same year, it will have a density of 6 persons per acre.

Table - 14.31: Population Statistics of Ward No. 07

Item	Year		
	2001	2011	2031
Area (acre)	459.28	459.28	459.28
Population	2,013	2290	2,965
Density of Population (acre)	4	5	6

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 17.73 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 flourishment 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 5 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 one hour journey from Muladi, the district headquarters. Madaripur or Shariyotpur another district headquarters is also about 1 and half hour journey from Muladi.

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 agricultural landuse and it is 347.74 acres which is 75.72% of the total ward. The second major land use is waterbody, occupying 11.56% (53.10 acres) of the ward. Besides, there is 8.47% residential, 1.25% commercial activity, 1.62% land under circulation network, 0.27% under educational facilities, 0.20% land under community facilities, 0.83% land under manufacturing and processing activity, and otherwise 0.06% of land is being used for open 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 118.44 (25.79%) 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 4.82 acres (1.05%) designated up to 2031.

iii) Community Facilities

This zone earmarked with an area of 1.23 acres (including existing and proposed) designated up to 2031 and it covers about only 0.27% 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 19.19 acres of land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 1.21 acres (0.26% of the ward area) that includes all the existing educational facilities within the ward.

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 9.77% of the total ward and it is 44.85 acres.

vii) 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.

viii) Circulation Network

Existing and proposed road covers a total of 45.98 acres of land and it is about 10.01% of the ward.

ix) Transportation Facilities

The total area under this category has been estimated as 3.05 acres or 0.66% of the whole ward. In this ward consultant proposes a CNG/Rickshaw stand.

x) 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 11.82 acres of land is proposed as open space and it is about 2.57% of the whole ward.

xi) Urban Deferred

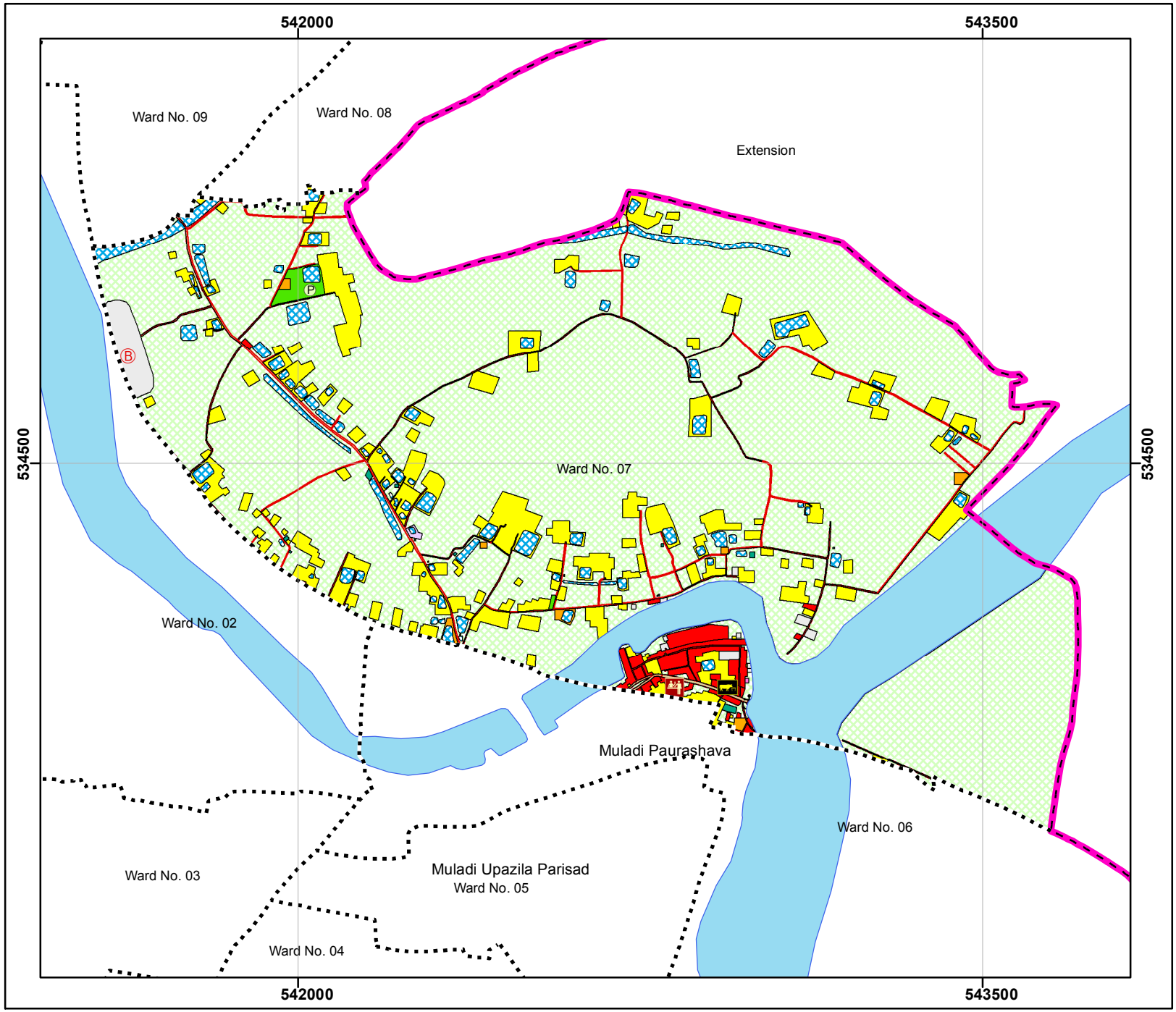
According to planning standard provided by LGED seeks about 10 percent of the total build up area. The total area under this use has been proposed as 162.24 acres or 35.32% of the whole ward. A portion of this zone may use for housing of the poor, disadvantages and refugee for climate change and other 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	347.74	75.72	29.54	6.43
Circulation Network	7.42	1.62	45.98	10.01
Commercial Zone	5.74	1.25	4.82	1.05
Community Facilities	0.9	0.20	1.23	0.27
Education & Research Zone	1.25	0.27	1.21	0.26
Government Office	0.00	0.00	2.25	0.49
Mixed Use Zone	0.00	0.00	19.19	4.18
Open Space	0.26	0.06	11.82	2.57
Transportation Facilities	0.26	0.06	3.05	0.66
Urban Deferred	0.00	0.00	162.24	35.32
Urban Residential Zone	38.9	8.47	118.44	25.79
Utility Services	0.00	0.00	0.07	0.02
Waterbody	53.1	11.56	44.85	9.77
Manufacturing and Processing	3.83	0.83	0.00	0.00
Service Activity	0.00	0.00	0.00	0.00
Rural Settlement	0.00	0.00	14.58	3.18
Non-Government Services	0.12	0.03	0	0
Total	**459.28**	**100.00**	**459.28**	**100.00**

Map 14.19 Existing land use of Ward No.07



SCALE

1:12,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

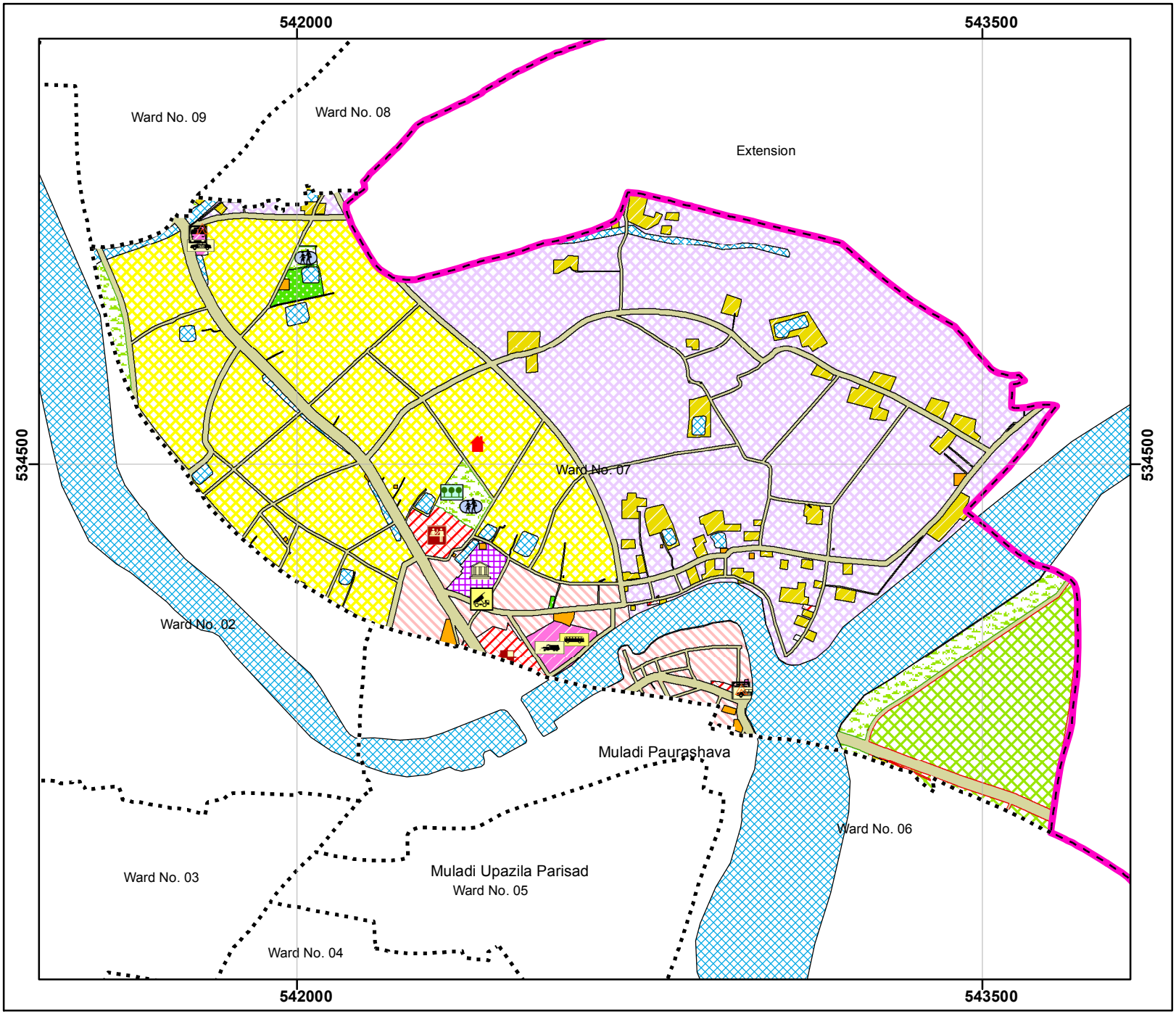
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.20 Proposed land use of Ward No.07



SCALE

1:12,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.8.3.3 Proposed Circulation Network Development

About 17.73 km of circulation network has been proposed for this ward. During the first phase in ward no. 07, 6.89 km of roads have to be widened 20 to 80 ft RoW.

Table- 14.33: Road Proposals for Phase 01

Proposed Road ID	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
8	Primary Road	1043.59	80	Road Widening
17	Primary Road	1.16	60	Road Widening
61	Secondary Road	433.27	40	Road Widening
65	Tertiary Road	407.03	20	Road Widening
66	Tertiary Road	357.24	20	Road Widening
69	Secondary Road	314.13	40	Road Widening
75	Primary Road	713.05	80	Road Widening
132	Primary Road	82.32	60	Road Widening
139	Tertiary Road	25.26	20	Road Widening
140	Tertiary Road	30.53	20	Road Widening
141	Primary Road	198.88	60	Road Widening
142	Tertiary Road	80.74	20	Road Widening
143	Tertiary Road	82.49	20	Road Widening
147	Secondary Road	177.76	40	Road Widening
148	Tertiary Road	91.45	20	Road Widening
149	Tertiary Road	201.32	20	Road Widening
182	Tertiary Road	116.29	20	Road Widening
190	Primary Road	7.13	60	Road Widening
225	Tertiary Road	114.96	20	Road Widening
242	Tertiary Road	305.80	20	New Road
251	Tertiary Road	65.10	20	Road Widening
311	Tertiary Road	84.85	20	Road Widening
312	Tertiary Road	22.89	20	Road Widening
313	Tertiary Road	251.60	20	Road Widening
314	Tertiary Road	32.41	20	Road Widening
315	Tertiary Road	31.67	20	New Road
320	Tertiary Road	112.79	20	Road Widening
325	Tertiary Road	55.59	20	New Road
334	Tertiary Road	257.46	20	New Road
335	Tertiary Road	247.09	20	New Road
374	Secondary Road	358.83	40	Road Widening
375	Tertiary Road	225.79	20	Road Widening
376	Secondary Road	362.30	40	Road Widening

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 no drains. The plan proposes 23 km. of new drains for ward no. 07. Out of these proposed drains, 15.95 new drains will be developed during the first phase.

Table- 14.34: Proposed Drainage Development Plan Proposals

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
390	Tertiary Drain	Phase 01	53.62	1.50 - 2.50	0.64 - 1.00
391	Tertiary Drain	Phase 01	79.57	1.50 - 2.50	0.64 - 1.00
392	Tertiary Drain	Phase 01	189.08	1.50 - 2.50	0.64 - 1.00
393	Tertiary Drain	Phase 01	103.45	1.50 - 2.50	0.64 - 1.00
403	Tertiary Drain	Phase 01	107.68	1.50 - 2.50	0.64 - 1.00
413	Tertiary Drain	Phase 01	300.77	1.50 - 2.50	0.64 - 1.00
422	Tertiary Drain	Phase 01	43.84	1.50 - 2.50	0.64 - 1.00
423	Tertiary Drain	Phase 01	94.46	1.50 - 2.50	0.64 - 1.00
448	Tertiary Drain	Phase 01	260.10	1.50 - 2.50	0.64 - 1.00
450	Tertiary Drain	Phase 01	22.63	1.50 - 2.50	0.64 - 1.00
451	Tertiary Drain	Phase 01	27.78	1.50 - 2.50	0.64 - 1.00
452	Tertiary Drain	Phase 01	49.58	1.50 - 2.50	0.64 - 1.00
456	Tertiary Drain	Phase 01	248.71	1.50 - 2.50	0.64 - 1.00
461	Tertiary Drain	Phase 01	240.26	1.50 - 2.50	0.64 - 1.00
462	Tertiary Drain	Phase 01	217.70	1.50 - 2.50	0.64 - 1.00
478	Tertiary Drain	Phase 01	1005.62	1.50 - 2.50	0.64 - 1.00
501	Secondary Drain	Phase 01	1004.15	2.35 - 3.35	1.124 - 2.124
512	Secondary Drain	Phase 01	32.01	2.35 - 3.35	1.124 - 2.124
611	Tertiary Drain	Phase 01	139.38	1.50 - 2.50	0.64 - 1.00
678	Tertiary Drain	Phase 01	148.00	1.50 - 2.50	0.64 - 1.00
679	Tertiary Drain	Phase 01	32.85	1.50 - 2.50	0.64 - 1.00
680	Tertiary Drain	Phase 01	33.14	1.50 - 2.50	0.64 - 1.00
681	Tertiary Drain	Phase 01	486.28	1.50 - 2.50	0.64 - 1.00
101	Secondary Drain	Phase 01	1.89	2.35 - 3.35	1.124 - 2.124
101	Secondary Drain	Phase 01	4.04	2.35 - 3.35	1.124 - 2.124
101	Secondary Drain	Phase 01	3.83	2.35 - 3.35	1.124 - 2.124
101	Secondary Drain	Phase 01	318.16	2.35 - 3.35	1.124 - 2.124
101	Secondary Drain	Phase 01	5.11	2.35 - 3.35	1.124 - 2.124
30	Secondary Drain	Phase 01	8.86	2.35 - 3.35	1.124 - 2.124
449	Tertiary Drain	Phase 01	8.49	1.50 - 2.50	0.64 - 1.00
298	Tertiary Drain	Phase 01	47.23	1.50 - 2.50	0.64 - 1.00
30	Secondary Drain	Phase 01	927.14	2.35 - 3.35	1.124 - 2.124
502	Secondary Drain	Phase 01	934.83	2.35 - 3.35	1.124 - 2.124
513	Secondary Drain	Phase 01	497.91	2.35 - 3.35	1.124 - 2.124
502	Secondary Drain	Phase 01	503.39	2.35 - 3.35	1.124 - 2.124
513	Secondary Drain	Phase 01	9.08	2.35 - 3.35	1.124 - 2.124
511	Secondary Drain	Phase 01	100.57	2.35 - 3.35	1.124 - 2.124
358	Tertiary Drain	Phase 01	205.17	1.50 - 2.50	0.64 - 1.00
326	Tertiary Drain	Phase 01	330.05	1.50 - 2.50	0.64 - 1.00
309	Tertiary Drain	Phase 01	221.38	1.50 - 2.50	0.64 - 1.00
310	Tertiary Drain	Phase 01	250.34	1.50 - 2.50	0.64 - 1.00
299	Tertiary Drain	Phase 01	237.39	1.50 - 2.50	0.64 - 1.00
300	Tertiary Drain	Phase 01	259.13	1.50 - 2.50	0.64 - 1.00
301	Tertiary Drain	Phase 01	23.13	1.50 - 2.50	0.64 - 1.00
305	Tertiary Drain	Phase 01	29.22	1.50 - 2.50	0.64 - 1.00
274	Tertiary Drain	Phase 01	50.89	1.50 - 2.50	0.64 - 1.00
275	Tertiary Drain	Phase 01	293.25	1.50 - 2.50	0.64 - 1.00
265	Tertiary Drain	Phase 01	47.06	1.50 - 2.50	0.64 - 1.00
259	Tertiary Drain	Phase 01	107.40	1.50 - 2.50	0.64 - 1.00

Drain ID	Drain Type	Phasing	Length (Meter)	Width (Meter)	Depth (Meter)
246	Tertiary Drain	Phase 01	105.44	1.50 - 2.50	0.64 - 1.00
247	Tertiary Drain	Phase 01	64.77	1.50 - 2.50	0.64 - 1.00
248	Tertiary Drain	Phase 01	60.10	1.50 - 2.50	0.64 - 1.00
249	Tertiary Drain	Phase 01	79.92	1.50 - 2.50	0.64 - 1.00
211	Tertiary Drain	Phase 01	189.74	1.50 - 2.50	0.64 - 1.00
212	Tertiary Drain	Phase 01	204.08	1.50 - 2.50	0.64 - 1.00
142	Tertiary Drain	Phase 01	343.30	2.35 - 3.35	1.124 - 2.124
143	Secondary Drain	Phase 01	339.61	2.35 - 3.35	1.124 - 2.124
103	Secondary Drain	Phase 01	341.57	2.35 - 3.35	1.124 - 2.124
97	Secondary Drain	Phase 01	305.47	2.35 - 3.35	1.124 - 2.124
98	Secondary Drain	Phase 01	341.63	2.35 - 3.35	1.124 - 2.124
91	Secondary Drain	Phase 01	346.43	2.35 - 3.35	1.124 - 2.124
76	Secondary Drain	Phase 01	71.15	2.35 - 3.35	1.124 - 2.124
66	Secondary Drain	Phase 01	175.86	2.35 - 3.35	1.124 - 2.124
49	Secondary Drain	Phase 01	310.79	2.35 - 3.35	1.124 - 2.124
64	Secondary Drain	Phase 01	260.67	2.35 - 3.35	1.124 - 2.124
358	Secondary Drain	Phase 01	793.53	1.50 - 2.50	0.64 - 1.00
Total			**13954.05**		

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 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 allotted 7 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within 'ward center'. 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 3.87 kilometers of water supply lines will be developed in this ward running along all categories of roads.

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 4.30 kilometers 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

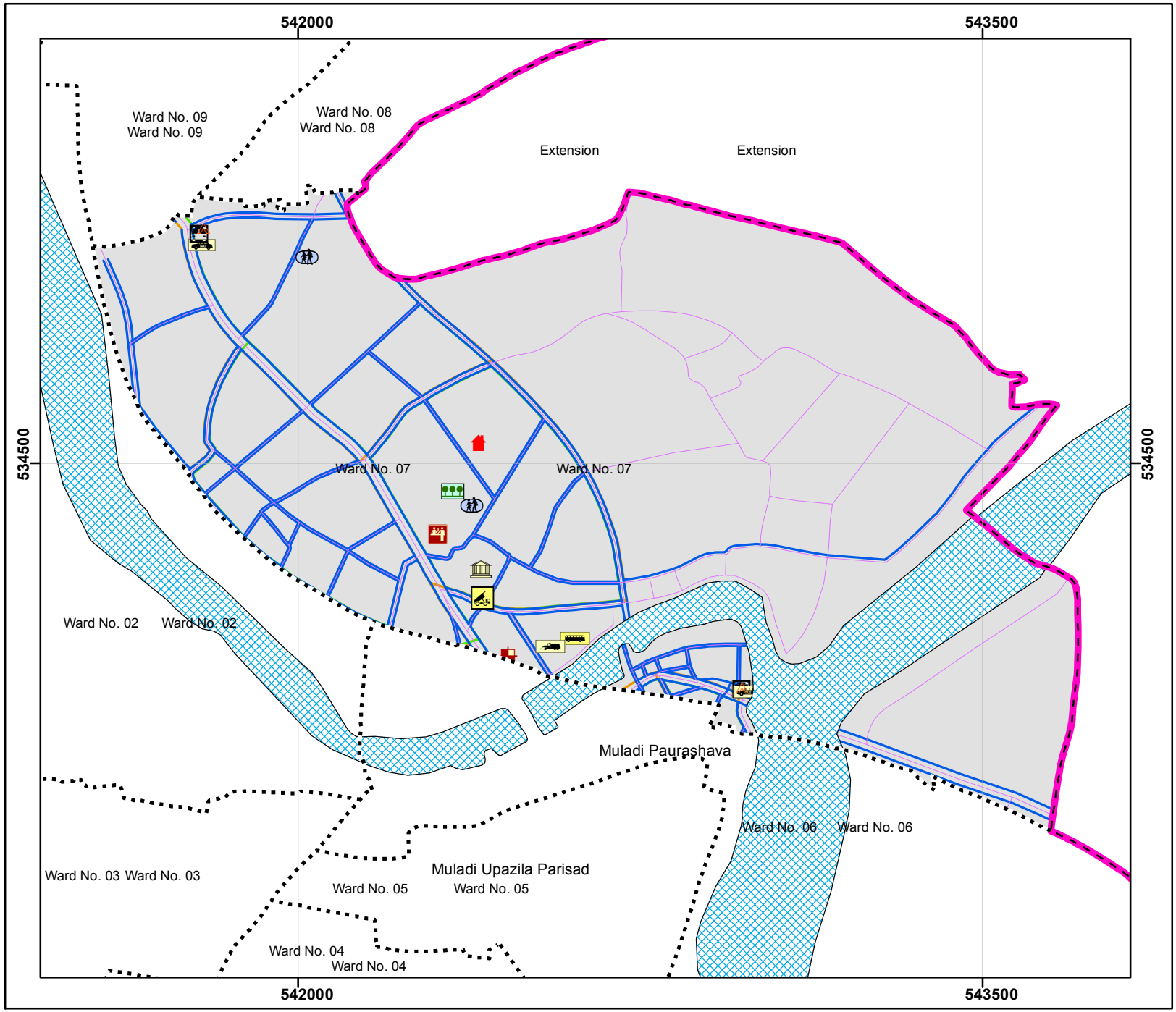
It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

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	2.58
Neighbourhood Park	None	-	1	1.22
Payground	None	-	1	1.76
Waste Transfer Station			1	0.07
Wholesale Market	None	-	1	1.76
Bus Terminal			1	1.49
Cattle Market			1	0.18
CNG/Rickshaw Stand			1	0.55
Green Park			1	8.92
Truck Terminal			1	0.99
Ward Center			1	2.25

Map 14.21 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 07



SCALE

1:12,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.9 Ward Action Plan for Ward No. 08

14.9.1 Demography

Ward No. 08 is located at Char Decree mouza of the town. It has low density of population compare with other wards. In 2011 the Ward had a population of 1421 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 1840 persons for the year 2031. For the same year, it will have a density of 4 persons per acre.

Table - 14.36: Population Statistics of Ward No. 08

Item	Year		
	2001	2011	2031
Area (acre)	461.75	461.75	461.75
Population	1,249	1421	1,840
Density of Population (acre)	2	3	4

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 11 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 flourishment 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 3 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 one hour journey from Muladi, the district headquarters. Madaripur or Shariyotpur another district headquarters is also about 1 and half hour journey from Muladi.

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 401.92 acres which is 87.04% of the total ward. The second major land use is waterbody covering 5.91% of ward area and residential use, occupying 5.48% (25.32 acres) of the ward. Besides, there is 0.08% commercial activity, 1.14% land under circulation network, 0.08% under educational facilities, 0.22% land under community facilities, 0.05% land under transport and communication and otherwise 0.05% of land is being used for open space.

14.9.3.2 Proposed Land Use Zoning

i) 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 21.18 acres of land (4.59%) delineated up to the year 2031 in Ward No. 08.

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 3.32 acres (0.72%) designated up to 2031. The consultant also proposes a kitchen market under the proposed ward center complex.

iii) Community Facilities

Total proposed area under this category is 5.82 acre (1.26% of the ward). Proposed plan suggests a community center in this ward 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. 08 the consultant allocates 15.03 acres land for mixed use category which is 3.26% of the whole ward.

v) Education & Research Zone

The total area under this use has been determined as 0.33 acres (0.07% of the ward area) that includes one new primary school along with other existing educational facilities.

vi) Agricultural Zone

At present Ward No. 08 has 401.92 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 220.28 acres (47.71% of the whole ward) has been earmarked as agricultural zone.

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 5.27% of the total ward and it is 24.31 acres.

viii) Health Services

This category includes existing available health facilities. Besides, the consultant proposes one new community clinic under the proposed ward center complex.

ix) Circulation Network

Existing and proposed road covers a total of 35.27 acres of land and it is about 7.64% of the whole ward.

x) 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 125.60 acres or 27.20% of the whole ward.

xi) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 4.89 acres of land for open space.

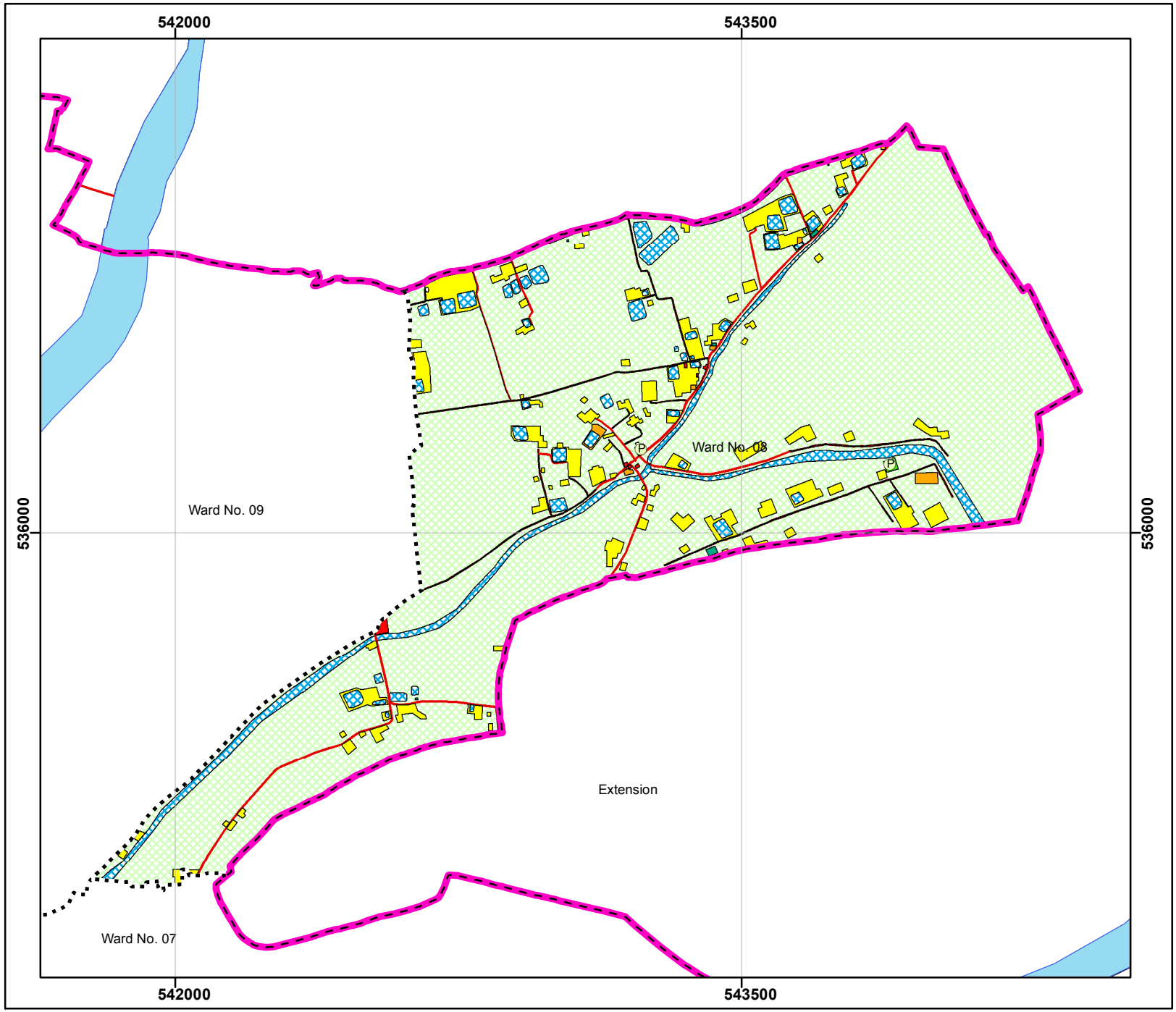
Map 14.22 shows the existing land use of Ward No. 08 while **Map- 14.23** shows the proposed landuse zoning of ward no. 08.

Table-14.37: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	401.92	87.04	220.28	47.71
Circulation Network	5.28	1.14	35.27	7.64
Commercial Zone	0.36	0.08	3.32	0.72

Community Service	1.01	0.22	5.82	1.26
Education & Research Zone	0.38	0.08	0.33	0.07
Government Office	0.00	0.00	5.63	1.22
Mixed Use Zone	0.00	0.00	15.03	3.26
Open Space	0.23	0.05	4.89	1.06
Rural Settlement	0.00	0.00	21.18	4.59
Urban Deferred	0.00	0.00	125.60	27.20
Urban Residential Zone	25.32	5.48	0.00	0.00
Waterbody	27.28	5.91	24.31	5.27
Transportation & Communication Facilities	0.23	0.05	0.00	0.00
Total	**461.75**	**100.00**	**461.75**	**100.00**

Map 14.22 Existing land use of Ward No.08



SCALE

1:14,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

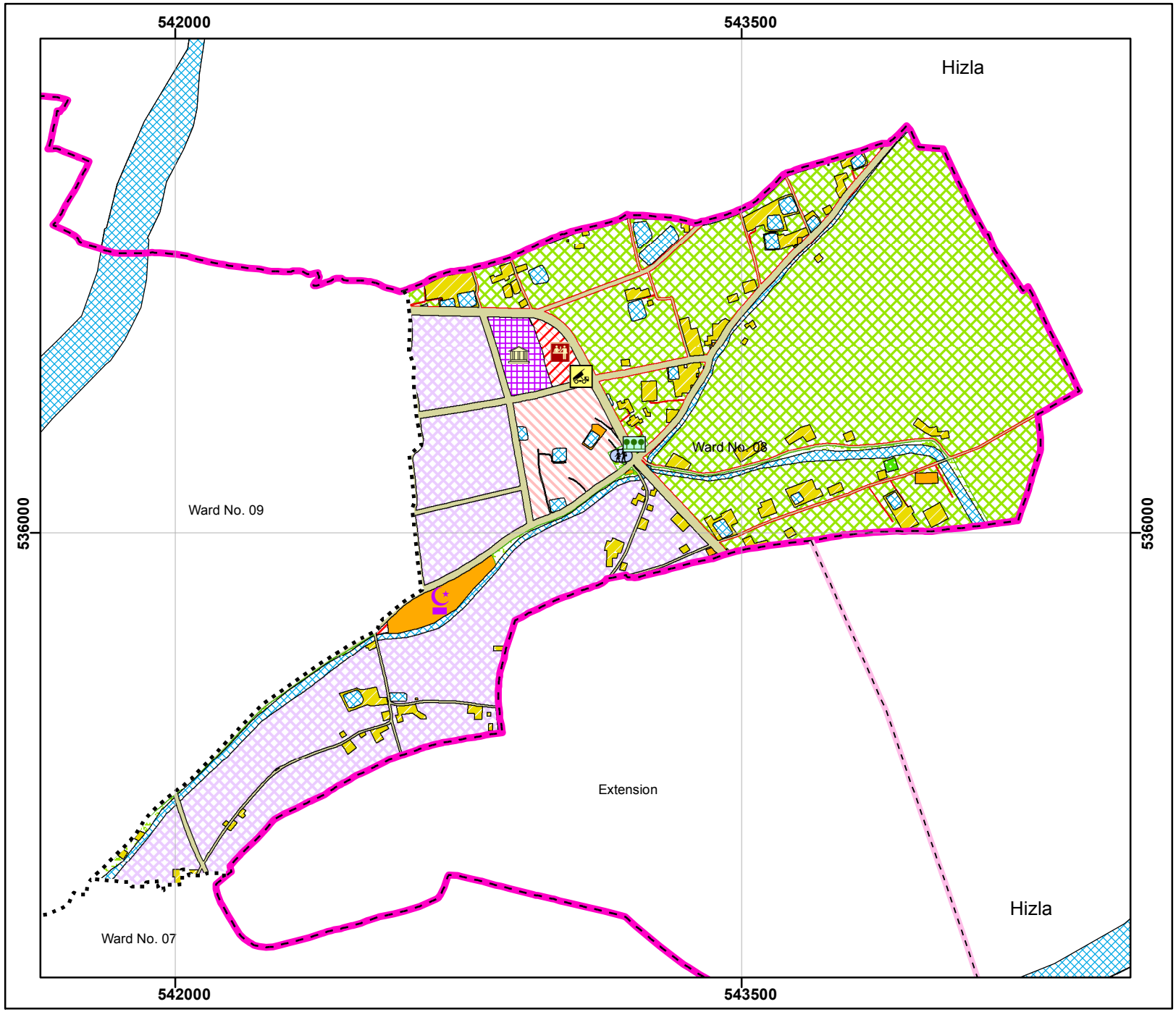
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.23 Proposed land use of Ward No.08



SCALE

1:14,500

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.9.3.3 Proposed Circulation Network Development

About 11 km of circulation network has been proposed for this ward. There are 1.54 km. roads will be developed during the first phase (2012 – 2016). Following table shows the detail of roads to be widened 20 to 80 feet during the first phase.

Table- 14.38: Road Proposals for Phase 01

Proposed Road ID	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
6	Primary Road	244.57	60	Road Widening
17	Primary Road	66.71	60	Road Widening
18	Primary Road	433.73	60	Road Widening
21	Primary Road	0.13	60	Road Widening
210	Primary Road	336.11	60	New Road
378	Primary Road	230.42	60	Road Widening
379	Primary Road	228.77	60	Road Widening

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 no drain. The plan proposes 2.7 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 rivers that serve as primary drains. The consultants have identified existing river 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 consultant allotted 8 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within ‘ward center’. 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 2.50 kilometers of water supply lines will be developed in this ward running along all categories of roads.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There will about 2.56 kilometers 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. Health Facilities

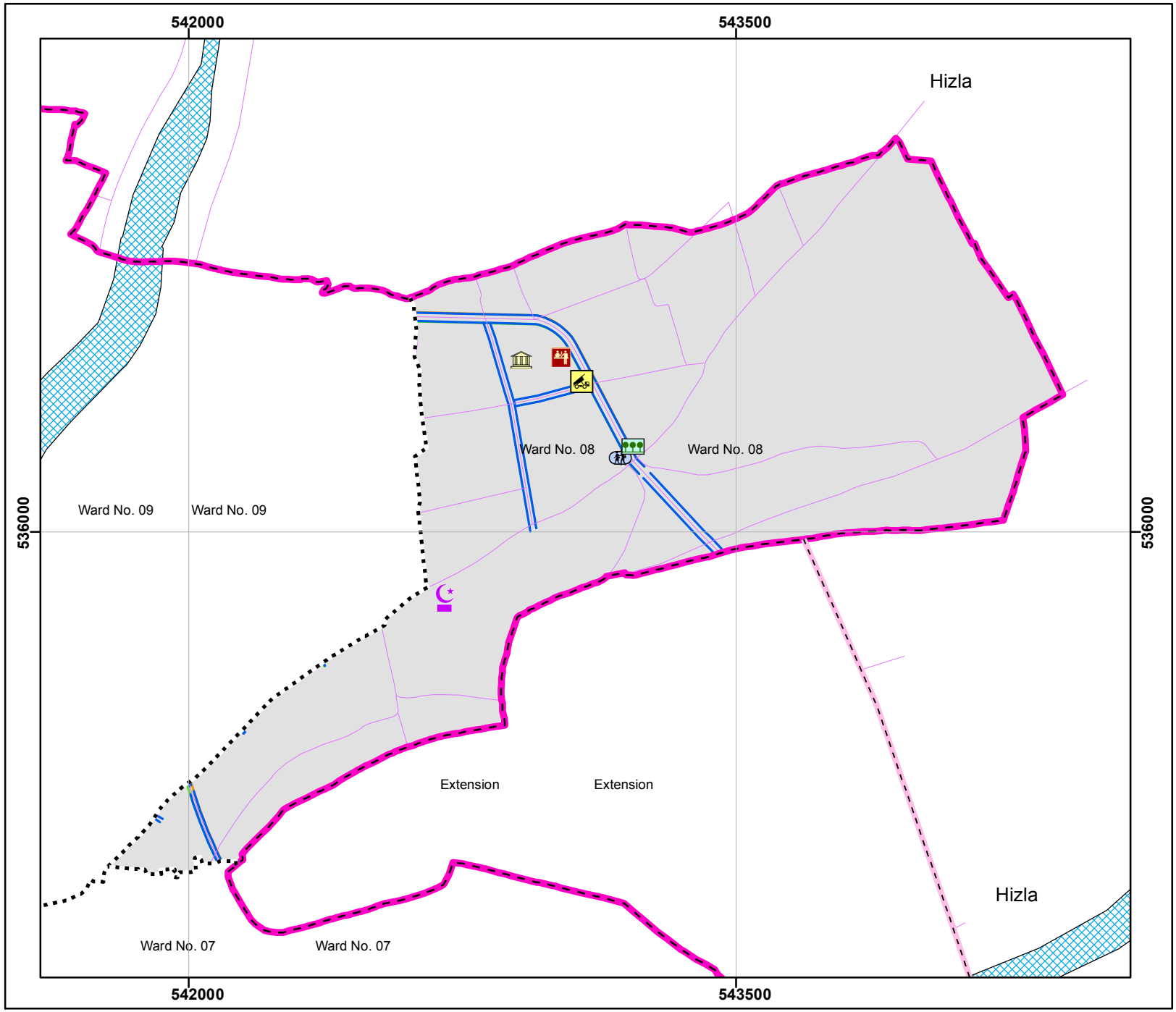
This category includes one new Community Clinic under the proposed ward center complex and existing other private hospital/clinic in this ward.

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	3.16
Neighborhood Park	None	-	1	0.21
Ward Center Complex	None	-	1	5.63
Waste Transfer Station			1	0.08
Central Graveyard			1	4.85
Green Park			1	4.21
Playground			1	0.47

Map 14.24 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 08



SCALE

1:15,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.10 Ward Action Plan for Ward No. 09

14.10.1 Demography

Ward No. 09 is located at Char Decree mouza of the town. It has moderate density of population compare with other wards. In 2011 the Ward had a population of 1587 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 2055 persons for the year 2031. For the same year, it will have a density of 5 persons per acre.

Table - 14.40: Population Statistics of Ward No. 09

Item	Year		
	2001	2011	2031
Area (acre)	417.65	417.65	417.65
Population	1,395	1587	2,055
Density of Population (acre)	3	4	5

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 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 flourishment 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 4 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 one hour journey from Muladi, the district headquarters. Madaripur or Shariyotpur another district headquarters is also about 1 and half hour journey from Muladi.

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 agricultural use and it is 331.77 acres which is 79.31% of the total ward. The second major land use is waterbody, occupying 11.20% (46.85 acres) of the ward. Besides, there is 7.05% residential, 0.06% commercial activity, 1.30% land under circulation network, 0.20% land under community facilities, 0.52% land under education& research and otherwise 0.16% of land is being used as open space.

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 157.48 (37.71%) acres of land delineated up to the year 2031 in Ward No. 09, 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 4.93 acres (1.18%) designated up to 2031.

iii) Community Facilities

Total proposed area under this category is 0.90 acre. 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 15.78 acres (3.78%) of land for mixed use category.

v) Education & Research Zone

The total area under this use has been determined as 4.61acres 1.10% of the ward area).

vi) Government Office

Total area under this category is 3.91 acre (0.94% of the ward). This zone covers all kinds of government offices in the town. 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 331.77 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 28.91 acres and it is only 6.92%.

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 9.44% of the total ward and it is 39.43 acres.

ix) Health Services

This category includes one new community clinic under the proposed ward center complex to serve the whole ward.

x) Circulation Network

Existing and proposed road covers a total of 55.09 acres of land and it is about 13.19% of the whole ward.

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 72.28 acres or 17.31% 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.

xii) Open Space

In this ward there is no outdoor recreational space like park, playground etc. So the consultants accommodate 24.37 acres of land for open space.

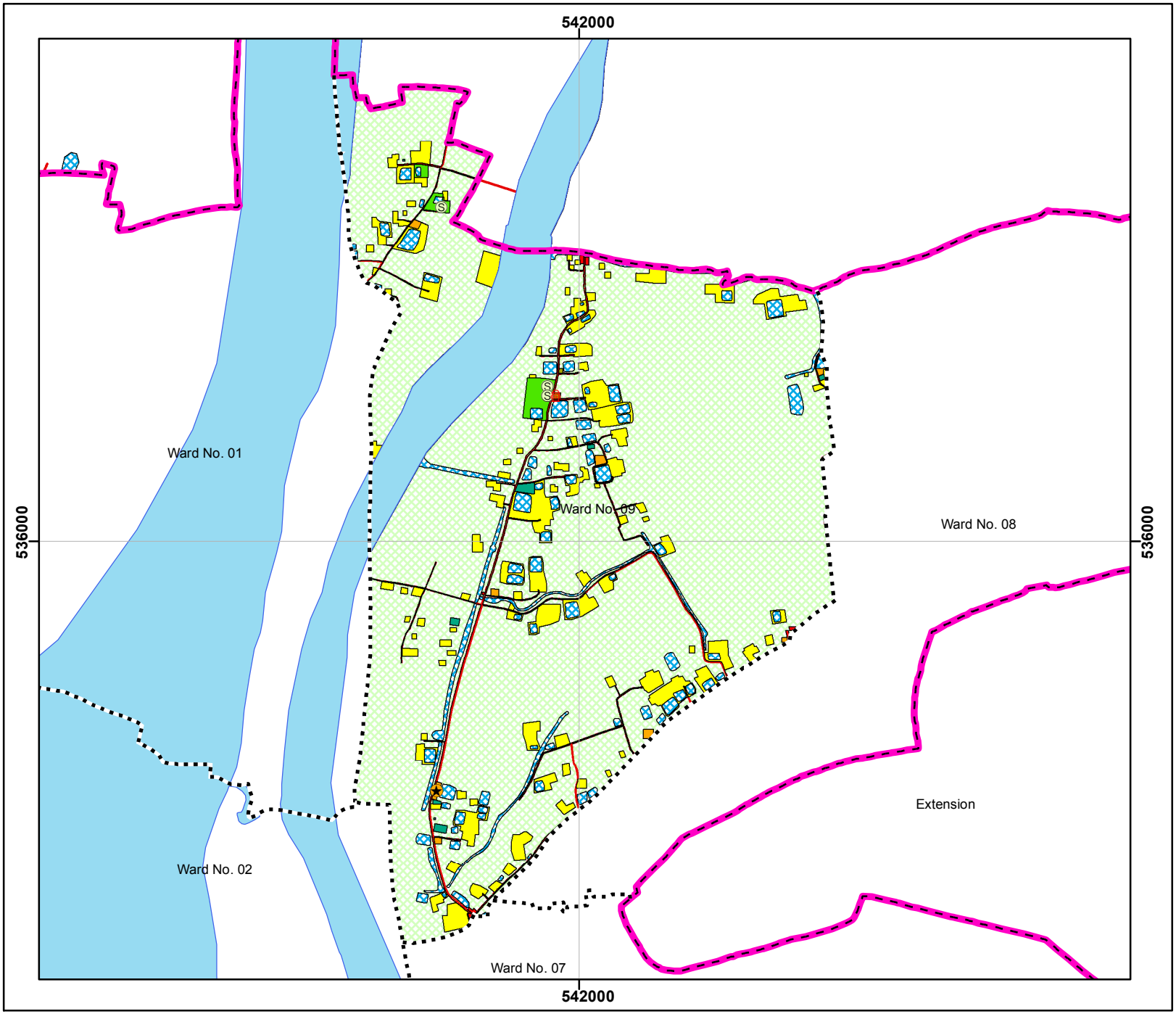
Map 14.25 shows the existing land use of Ward No. 09 while **Map- 14.26** shows the proposed landuse zoning of ward no. 09.

Table-14.41: Existing and Proposed Land Uses

Landuse Category	Existing Landuse		Proposed Landuse	
	Acre	%	Acre	%
Agricultural Zone	331.77	79.31	28.91	6.92
Circulation Network	5.45	1.30	55.09	13.19
Commercial Zone	0.27	0.06	4.93	1.18

Community Facilities	0.84	0.20	0.90	0.22
Education & Research Zone	2.18	0.52	4.61	1.10
Government Office	0.00	0.00	3.91	0.94
Mixed Use Zone	0.00	0.00	15.78	3.78
Open Space	0.68	0.16	24.37	5.83
Transportation Facilities	0.68	0.16	0.38	0.09
Urban Deferred	0.00	0.00	72.28	17.31
Urban Residential Zone	29.49	7.05	157.48	37.71
Waterbody	46.85	11.20	39.43	9.44
Community Service	0.00	0.00	0.90	0.22
Service Activity	0.1	0.02	0.00	0.00
Rural Settlement	0.00	0.00	5.95	1.42
Utility Services	0.00	0.00	3.65	0.87
Total	**418.31**	**100.00**	**418.31**	**100.00**

Map 14.25 Existing land use of Ward No.09



SCALE

1:14,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Kitchen Market
- Cyclone Shelter
- Upazila Stadium
- Launch Terminal
- Cattle Market
- Cinema/Theater Hall
- Eidgah
- Electric Sub-station
- Primary School
- Secondary School
- College
- Temple
- Hospital/Clinic
- Telephone Exchange
- Post Office/Post Box
- Fire Service
- Police Station
- Brickfield

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

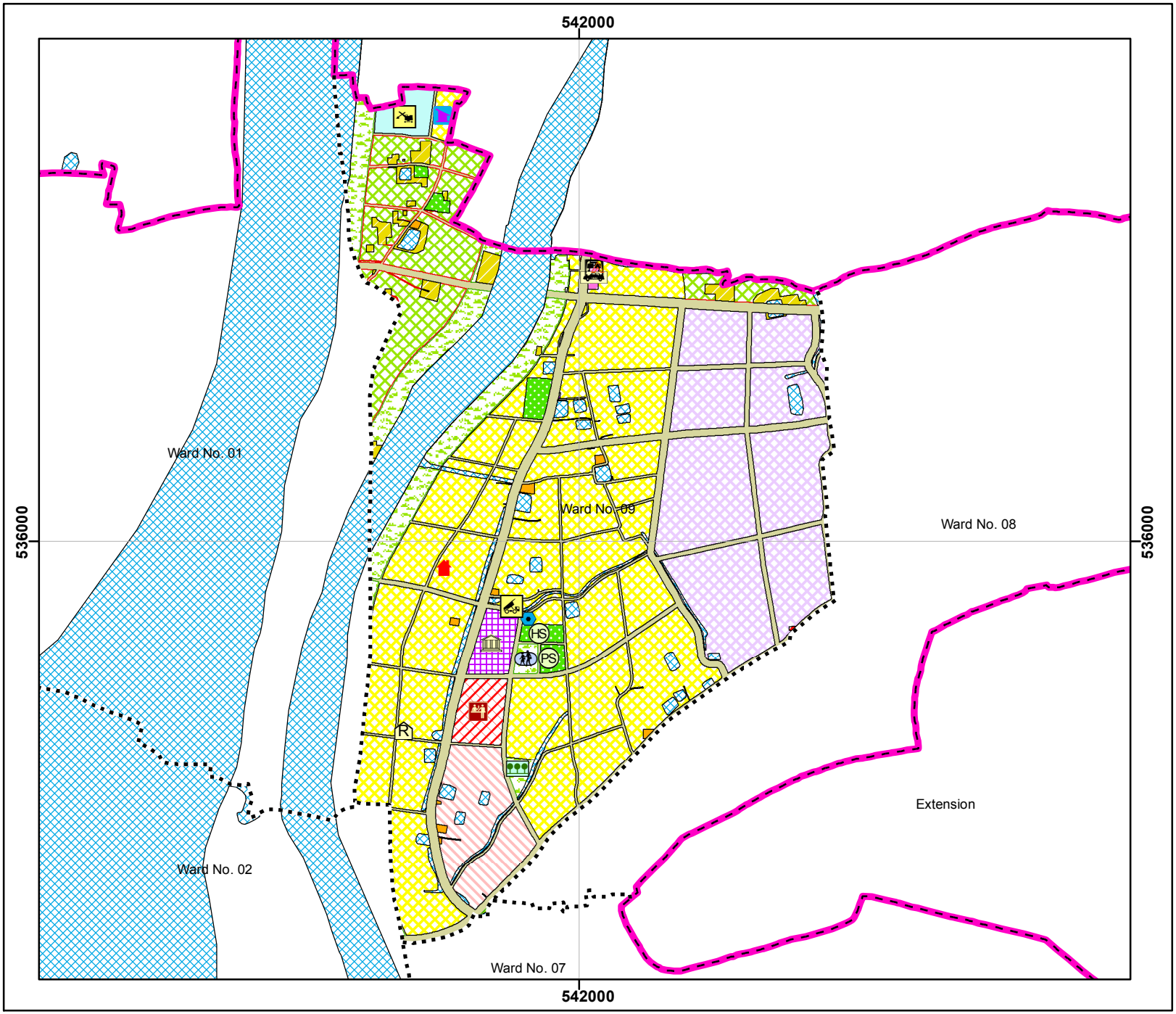
PREPARATION OF MASTER PLAN FOR MULADI PAURASHAVA
Muladi Upazila, Barisal District

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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

Map 14.26 Proposed land use of Ward No.09



SCALE

1:14,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- BND_Extension
- BND_Pourashava
- BND_Ward
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

14.10.3.3 Proposed Circulation Network Development

About 20.03km of circulation network has been proposed for this ward. There are 7.51 km. roads will be developed during the first phase (2012 – 2016). Following table shows the detail of roads to be developed 20 to 80 feet during the first phase.

Table- 14.42: Road Proposals for Phase 01

Proposed Road ID	Road Type	Length (Meter)	RoW (Ft)	Road Proposal
8	Primary Road	1785.39	80	Road Widening
9	Tertiary Road	295.37	20	Road Widening
10	Primary Road	166.34	60	Road Widening
11	Tertiary Road	53.13	20	Road Widening
17	Primary Road	1161.64	60	Road Widening
18	Primary Road	1.19	60	Road Widening
21	Primary Road	398.93	60	Road Widening
22	Tertiary Road	174.56	20	Road Widening
23	Tertiary Road	176.50	20	Road Widening
24	Tertiary Road	245.58	20	Road Widening
25	Tertiary Road	145.65	20	Road Widening
26	Tertiary Road	203.29	20	Road Widening
27	Tertiary Road	350.79	20	Road Widening
28	Tertiary Road	170.29	20	Road Widening
29	Tertiary Road	113.10	20	Road Widening
30	Tertiary Road	197.99	20	Road Widening
34	Secondary Road	267.72	40	Road Widening
35	Tertiary Road	214.58	20	Road Widening
178	Walkway	36.92	10	Road Widening
190	Primary Road	193.15	60	Road Widening
205	Tertiary Road	318.44	20	New Road
208	Tertiary Road	200.78	20	Road Widening
212	Tertiary Road	153.20	20	Road Widening
330	Tertiary Road	184.14	20	New Road
345	Tertiary Road	26.43	20	Road Widening
362	Secondary Road	102.74	40	Road Widening
380	Primary Road	172.17	60	New Road

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 Muladi has no drains. The plan proposes 2742 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. The consultant allotted 3 decimal land for waste transfer station. The consultant also proposed that the Paurashava arrange minimum 5 decimal areas for waste transfer station within proposed 'ward center'. 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 within ward no. 09 and the consultant proposes 2.81 kilometers of water supply lines will be developed in this ward running along all categories of roads.

c. Gas Supply

It is proposed to install a piped gas supply network to facilitate the households. There will about 2.91 kilometers 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

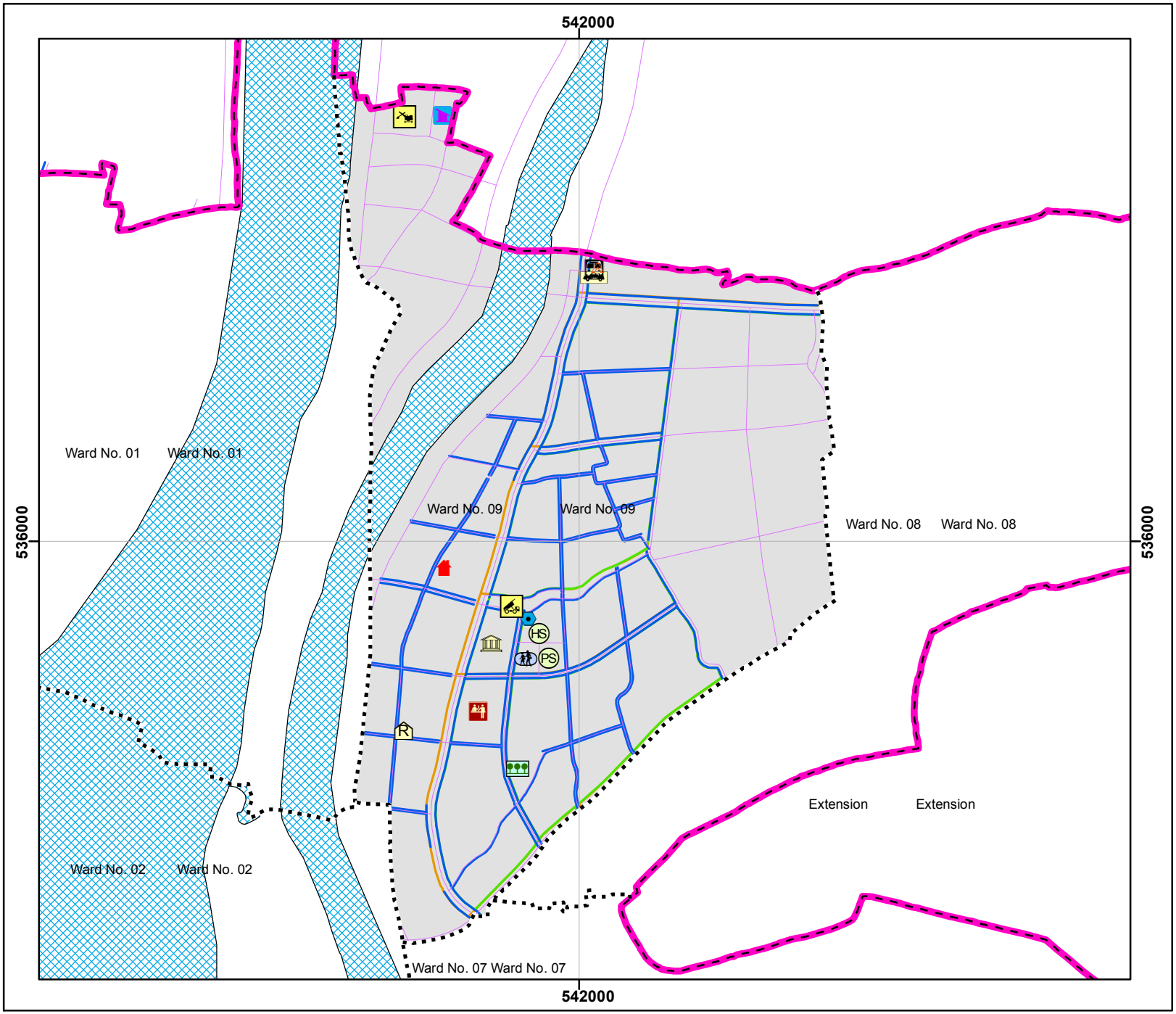
It is apprehended that is no hope that the government would be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Paurashava must try to promote hygienic sanitation to ensure better public health. There is hardly any public toilet in the town to serve the visiting and the local people.

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	4.89
Primary School	2	1.215	None	-
High School	None	-	1	1.29
Waste Transfer Station			1	0.03
Overhead Tank			1	0.14
Community Clinic	None	-	1	Part of ward center
Neighbourhood Park	None	-	1	1.07
Playground	None	-	1	1.07
CNG/Rickshaw Stand	None	-	1	0.38
Green Park				22.26
Ward Center Complex	None	-	1	3.90
Waste Dumping Ground	None	-	1	3.48

Map 14.27 Proposed Urban Services, Drainage, Water and Gas Supply Networks of Ward No. 09



SCALE

1:14,000

0 125 250 500 750 1,000 Meters

LEGEND

- Paurashava Office
- Upazila Headquarter
- Primary Road
- Wholesale Market
- Sweepers Colony
- Public Gathering
- Post Office
- Police Station
- Passenger Shed
- Overhead Tank
- Other School
- Housing Estate
- Helipad
- Ferry Ghat
- Electric Sub-station
- Eidgah
- Cyclone Shelter
- Central Graveyard
- Central Cremation Ground
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Low Income Housing Project
- BND_Extension
- BND_Pourashava
- BND_Ward
- Stadium
- Playground
- Primary School
- High School
- College
- Vocational Institute
- Auditorium/Cinema Hall
- Fire Service
- Park
- Bus Terminal
- Truck Terminal
- Auto Stand
- Bus Bay
- Parking Facility
- Filling Station
- Police Outpost
- Cattle Market
- Kitchen Market
- Slaughter House
- Waste Dumping Ground
- Waste Transfer Station

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 MULADI PAURASHAVA
Muladi Upazila, Barisal 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)

CONSULTANT
SCPL Sheltech Consultants (Pvt.) Ltd.
1/E/2, Paribagh (Mazar Road), Shahbagh,
Dhaka - 1000
scpl.mail@gmail.com
In Association with

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 emphasize 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.

Annexure

Team Composition of Master Plan Preparation

A.1 Personnel of the Project Management Office (UTIDP, LGED)

Sl 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:

Sl 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 Stuff:

Sl 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 Shafiqul Alam	Surveyor
7	Aolad Hossain	Surveyor

Annexure- C

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
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

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.2: Landuse Conditionally Permitted

Conditional
Addiction Treatment Center
Amusement and Recreation (Indoors)
Funeral Services
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Beauty and Body Service
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Maintenance \ Cleaning Services, No Outside Storage
Bus Passenger Shelter
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Correctional Institution
Courier Service
Crematorium
Plantation (Except Narcotic Plant)
Furniture & Variety Stores
Emergency Shelter
Energy Installation
Garages
Garden Center or Retail Nursery
Fire Brigade Station
Police Station
Temporary Rescue Shed
Guest House
Slaughter House
Static Transformer Stations
Tourist Home or Resort
Market (Bazar)
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Community Hall
Neighborhood Co-Operative Office
Overhead Water Storage Tanks
Row House
Paints and Varnishes Store
Parking Lot
Patio Homes
Photofinishing Laboratory
Post Office
Postal Facilities
Sports and Recreation Club
Tennis Club
Flood Management Structure
Telephone Sub Station
Electrical Sub Station

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

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
Bank & Financial Institution
Bicycle Assembly, Parts and Accessories
Blacksmith
Bus Passenger Shelter
Communication Tower Within Permitted Height
Freight Transport Facility
Police Box \ Barrack
Fire \ Rescue Station
Grocery Store
Household Appliance and Furniture Repair Service
Machine Sheds
Meat and Poultry (Packing & Processing)
Mosque, Place Of Worship
Newspaper Stand

Photocopying and Duplicating Services	Television, Radio or Electronics Repair (No Outside Storage)
Pipelines and Utility Lines	Transmission Lines
Printing, Publishing and Distributing	Truck Stop & Washing or Freight Terminal
Public Transport Facility	Utility Lines
Restaurant	Wood Products
Retail Shops \ Facilities	Woodlot
Salvage Processing	ATM Booth
Salvage Yards	Water Pump \ Reservoir
Satellite Dish Antenna	Effluent Treatment Plant
Sawmill, Chipping and Pallet Mill	Social Forestry
Shelter (Passers By)	

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee following appropriate procedure.

Table No. A.4: Landuse Conditionally Permitted

Conditional	
Amusement and Recreation (Indoors)	Lithographic or Print Shop
Appliance Store	Motor Vehicle Fuelling Station \ Gas Station
Plantation (Except Narcotic Plant)	Motorcycle Sales Outlet
Cyber Café	Outdoor Fruit and Vegetable Markets
Daycare Center (Commercial or Nonprofit)	Outside Bulk Storage
Doctor \ Dentist Chamber	Overhead Water Storage Tanks
Electrical and Electronic Equipment and Instruments Sales	Painting and Wallpaper Sales
Employee Housing	Paints and Varnishes
Energy Installation	Parking Lot
Fast Food Establishment \ Food Kiosk	Parking Lot (Commercial)
Garages	Private Garages
Grain & Feed Mills	Retail Shops Ancillary To Studio \ Workshop
Incineration Facility	Jute Mill
Super Store	

Source: Compiled by the Consultants

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	Vehicle Sales & Service, Leasing or Rental
Slaughter House	Veterinarian Clinics, Animal Hospitals, Kennels and Boarding Facilities
Software Development	Warehousing
Sporting Goods and Toys Sales	Wood Products
Taxi Stand	Woodlot
Telephone Exchanges	ATM Booth
Television, Radio or Electronics Repair (No Outside Storage)	Water Pump \ Reservoir
Theater (Indoor)	Agro-Based Industry (Rice Mill, Saw Mill, Cold Storage)
Transmission Lines	Social Forestry
Utility Lines	

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)	Fire \ Rescue Station
Bicycle Assembly, Parts and Accessories	Grain & Feed Mills
Broadcast Studio \ Recording Studio (No Audience)	Household Appliance and Furniture Repair Service
Coffee Shop \ Tea Stall	Incineration Facility
Concert Hall, Stage Shows	Indoor Amusement Centers, Game Arcades
Construction, Survey, Soil Testing Firms	Indoor Theatre
Trade Shows	Lithographic or Print Shop
Craft Workshop	Motor Vehicle Fuelling Station \ Gas Station
Plantation (Except Narcotic Plant)	Musical Instrument Sales or Repair
Energy Installation	Optical Goods Sales
Firm Equipment Sales & Service	Painting and Wallpaper Sales
Agricultural Chemicals, Pesticides or Fertilizers Shop	Paints and Varnishes
Fitness Centre	Parking Lot
Flowers, Nursery Stock and Florist Supplies	Patio Homes
Forest Products Sales	Postal Facilities
Fuel and Ice Dealers	Poultry
Garages	Private Garages
Garden Center or Retail Nursery	Professional Office
Police Box \ Barrack	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 Firming
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
Agricultural Chemicals, Pesticides or Fertilizers Shop
Amusement and Recreation (Indoors)
Beauty and Body Service
Broadcast Studio \ Recording Studio (No Audience)
Building Maintenance \ Cleaning Services, No Outside Storage
Building Material Sales or Storage (Indoors)
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Computer Maintenance and Repair
Computer Sales & Services
Concert Hall, Stage Shows
Conference Center
Construction Company
Construction, Survey, Soil Testing Firms
Cottage
Counseling Services
Craft Workshop
Crematorium
Plantation (Except Narcotic Plant)
Cultural Exhibits and Libraries
Department Stores, Furniture & Variety Stores
Drug Store or Pharmacy
Energy Installation
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Freight Handling, Storage & Distribution
Freight Transport Facility
Gaming Clubs
Garages
Garden Center or Retail Nursery
Commercial Office
Project Office
Government Office
Hotel or Motel
Household Appliance and Furniture Repair Service
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Market (Bazar)
Health Office, Dental Laboratory, Clinic or Lab
Musical Instrument Sales or Repair
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Painting and Wallpaper Sales
Paints and Varnishes
Patio Homes
Photofinishing Laboratory & Studio
Poultry
Printing, Publishing and Distributing
Psychiatric Hospital
Retail Shops Ancillary To Studio \ Workshop
Radio \ Television or T&T Station With Transmitter Tower
Refrigerator or Large Appliance Repair
Restaurant
Retail Shops \ Facilities
Sporting Goods and Toys Sales
Sports and Recreation Club, Firing Range: Indoor
Telephone Exchanges
Television, Radio or Electronics Repair (No Outside Storage)

Source: Compiled by the Consultants

Restricted Uses

All uses except permitted and conditionally permitted uses are restricted in this zone.

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 Firming
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	Roadside Parking
Woodlot	Social Forestry
Zoo	Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

Table No. A.20: Landuse Conditionally Permitted

Conditional	
Communication Tower Within Permitted Height	Outdoor Recreation Facilities
Trade Shows	Outdoor Recreation, Commercial
Fitness Centre	Outdoor Sports and Recreation
Flowers, Nursery Stock and Florist Supplies	Park Maintenance Facility
Golf Course	Retreat Center
Motorized Recreation	Sports and Recreation Club, Firing Range: Indoor

Source: Compiled by the Consultants

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)	Utility Lines
Fishing Club	Water Parks
	Memorial Structure

Source: Compiled by the Consultants

Landuse Conditionally Permitted

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table No. A.22: Landuse Conditionally Permitted

Conditional
Plantation (Except Narcotic Plant)
Marina \ Boating Facility
Motorized Recreation

Source: Compiled by the Consultants

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.

মুলাদী পৌরসভার মহাপরিকল্পনার উপর চূড়ান্ত মতবিনিময় সভার কার্যবিবরণী

তারিখ: ১৯/০২/২০১৫
স্থান: মুলাদী পৌরসভা
সময়: সকাল ১১:০০ ঘটিকা

স্থানীয় সরকার প্রকৌশল অধিদপ্তর, মুলাদী পৌরসভা ও পরামর্শক প্রতিষ্ঠানের যৌথ উদ্যোগে মুলাদী পৌরসভার মহাপরিকল্পণার উপর মাননীয় মেয়র জনাব মোঃ শফিকুজ্জামান রুবেল এর সভাপতিত্বে চূড়ান্ত মতবিনিময় সভা অনুষ্ঠিত হয়। উক্ত মতবিনিময় সভায় মুলাদী উপজেলার উপজেলা নির্বাহী কর্মকর্তা, মুলাদী থানার ভারপ্রাপ্ত কর্মকর্তা, স্থানীয় সরকার প্রকৌশল অধিদপ্তর এর পরিককল্পনাবিদ, পৌরসভার কাউন্সিলরবৃন্দ সহ স্থানীয় গণ্যমাণ্য ব্যক্তি বর্গ, বিভিন্ন সরকারি-বেসরকারি অধিদপ্তরের কর্মকর্তাবৃন্দ, শিক্ষক, সাংবাদিকসহ সমাজের বিভিন্ন শ্রেণি ও পেশার মানুষ এবং মহাপরিকল্পণা প্রণয়ণ প্রকল্পে নিযুক্ত পরামর্শকবৃন্দ উপস্থিত হয়ে আলোচনায় অংশগ্রহন করেন।

সভার শুরুতে মাননীয় মেয়র মহোদয় জনাব মোঃ শফিকুজ্জামান রুবেল উপস্থিত সকলকে শুভেচ্ছা জানিয়ে আনুষ্ঠানিকভাবে সভার কার্যক্রম শুরু করেন এবং স্বাগত বক্তব্যে উল্লেখ করেন যে, আগামী (২০) বিশ বছরের জন্য এই মহাপরিকল্পণা। উক্ত পরিকল্পনায় উপস্থিত সকলকে সুচিন্তিত মতামত প্রদানের জন্য আহ্বান করেন যাতে করে পরিকল্পণাটি আরও গঠণমূলক ও বাস্তবসম্মত হয়।
উপজেলা শহর অবকাঠামো উন্নয়ন প্রকল্পেস্থানীয় সরকার প্রকৌশল অধিদপ্তর এর পরিকল্পনাবিদ মোঃ জাদিদ হাসান মহাপরিকল্পনার উদ্দেশ্য সম্পর্কে উপস্থিত সকলকে বিস্তারিতভাবে বলেন। তিনি এর মহাপরিকল্পনার গুরুত্ব বোঝাতে বিভিন্ন উদাহরন দিয়ে বলেন মহাপরিকল্পনার সঠিক বাস্তবায়ন হলে শহরে সুন্দর পরিবেশে যেমন সবাই বসবাস করতে পারবে পাশাপাশি বিভিন্ন প্রকার দুর্ঘটনা বা দুর্যোগ সহজে মোকাবেলা করা যাবে। তিনি স্বয়ংসম্পূর্ণ ও যথাযথ বাস্তবায়নের জন্য সকলের সহযোগীতা কামনা করেন এবং তিনি বলেন যে সকলের মূল্যবান মতামত পরিকল্পনাকে আরো গঠণমূলক ও সময়োপযোগী করে তুলবে।

পরামর্শক প্রতিষ্ঠানের পক্ষ থেকে আল মুবিন রহমান, উপস্থিত সকলকে স্বাগত জানিয়ে মহাপরিকল্পনার উপর Power Point Presentation এর মাধ্যমে তার বক্তব্য তুলে ধরেন। তিনি কার্যক্রমসমূহ, উন্নয়নের সম্ভাবনাসমূহ ধাপে ধাপে বর্ণনা করেন। এরপর মহাপরিকল্পণার কোথায় কিভাবে প্রস্তাবনা সমূহ ওয়ার্ড ভিত্তিক দেওয়া হয়েছে সেসব বিষদ আলোচনা করেন।

মুলাদী উপজেলার নির্বাহী অফিসার জনাব আব্দুল্লাহ আল মাসুদ উপস্থাপিত প্রকল্পের ভূয়সী প্রসংশা করেন। তিনি বলেন শহরকে সুন্দর করে সাজাতে দীর্ঘ মেয়াদী পরিকল্পনা এবং সেই অনুযায়ী বাস্তবায়নের উদ্যোগ গ্রহণ করা জরুরী। এছাড়া তিনি পৌর শহরকে সুন্দরভাবে গড়ে তোলার জন্য কিছু সুপারিশ পেশ করেন। যেমন– নিয়মিত বৃক্ষরোপন, স্যানিটেশনসহ Sewerage ব্যবস্থাপনা নিশ্চিতকরা। সড়কের শ্রেণীবিন্যাস

অনুযায়ী পরিকল্পিত সড়ক নেটওয়ার্ক গড়ে তোলা, নদীর পানি দূষণমুক্ত করে পাইপ নেটওয়ার্কের মাধ্যমে পানীয় জলের সরবরাহ নিশ্চিত করতে হবে, Waste Management এর ক্ষেত্রে পরিবেশসম্মত ব্যবস্থা গ্রহণ করা এবং ময়লা Recycle করার মাধ্যমে Support Industry তৈরি করা। এছাড়া ময়লা থেকে বায়োগ্যাস প্ল্যান্ট স্থাপনের ম্যাধমে গ্যাসের উৎপাদন করা। সড়কের চৌরাস্তার মুখে স্মৃতিস্তম্ভ নির্মাণ করা, উন্নয়নের ক্ষেত্রে উলম্ব বিস্তার নিশ্চিত করা, প্রয়োজনীয় সংখ্যক পাবলিক টয়লেট স্থাপন করা।

মুলাদী থানার ভারপ্রাপ্ত কর্মকর্তা মহাপরিকল্পনার সকল প্রস্তাবনার সাথে সহমত পোষণ করেন। তিনি অনতিবিলম্বে ওয়ার্ডভিত্তিক প্রস্তাবিত পুলিশ বক্স স্থাপনের উদ্যোগ গ্রহণ করার জন্য মেয়র মহোদয়ের দৃষ্টি আকর্ষন করেন করেন। এছাড়াও তিনি পৌর লঞ্চ টার্মিনাল আধুনিকায়ন করে এর ধারণ ক্ষমতা বৃদ্ধির উপর জোর দেন।

প্যানেল মেয়র জনাব আব্দুর রব বলেন পৌরসভার আশপাশে পাঁচটি ইটভাটা থাকার কথা বলেন– যা থেকে পরিবেশ দূষণ হচ্ছে। তিনি অনতিবিলম্বে ইটভাটাগুলো সরিয়ে ফেলার দাবী জানান। এছাড়া তিনি ওয়ার্ডভিত্তিক পার্ক স্থাপনের উদ্যোগকে স্বাগত জানান। অন্যান্য প্রস্তাবনার সাথেও তিনি সহমত পোষণ করেন। পৌর সুপার মার্কেটের সভাপতি মোসলেম উদ্দিন বয়াতি মুলাদি বাজার এবং কাঠ বাজারের মধ্যে সংযোগ সেতু স্থাপন করার কথা বলেন।

মুক্তিযোদ্ধা প্রজন্মের মোঃ শাহ আলম ঢালী প্রস্তাবিত Cyclone Shelter এর সাথে প্রাথমিক বিদ্যালয় স্থাপনের কথা বলেন। এছাড়া তিনি শহীদ মুক্তিযোদ্ধা হাবিব ও জয়নাল আবেদিন স্মরণে স্মৃতিস্তম্ভ স্থাপনের দাবী করেন।

যুবলীগের সাধারণ সম্পাদক রামকৃষ্ণ বণিক পৌরসভায় শ্মশানের জন্য প্রস্তাব করেন।

৭ নং ওয়ার্ড কাউন্সিলর জনাব হারুন হাওলাদার নদীর পাশে পার্কসহ বিনোদন কেন্দ্র তৈরি করার কথা বলেন। এছাড়া তিনি ফেরীঘাট নির্মাণসহ ব্রীজ নির্মাণ করার কথা বলেন। অনতিবিলম্বে যেন পাইতিখোল খেয়াঘাট আধুনিকায়ন করা হয় সে ব্যাপারে মেয়র মহোদয়ের দৃষ্টি আকর্ষণ করেন তিনি।ৎ

এছাড়াও সকল ওয়ার্ড কাউন্সিলর আলোচনায় অংশগ্রহণ করে মহাপরিকল্পনায় বিভিন্ন প্রস্তাবনার ভূয়সী প্রশংসা করেন। বিশেষ করে তাঁরা বাস ও ট্রাক টার্মিনাল নির্মানের প্রস্তাবকে উচ্ছসিত প্রসংশা করেন।

সভার সিদ্ধান্তসমূহ:

১. মহাপরিকল্পনায় উপস্থাপিত গুরুত্বপূর্ণ সড়ক, খাল, নালা ও ব্রীজসমূহ সহ অন্যান্য সুবিদাদী অন্তর্ভূক্ত করনের সিদ্ধান্ত নীতিগতভাবে গৃহীত হলো।

২. খালসমূহ পূন:খননের মাধ্যমে এবং দখলমুক্ত করার মাধ্যমে নাব্যতা ফিরিয়ে আনার সিদ্ধান্ত নীতিগতভাবে গৃহীত হলো।

৩. প্রস্তাবিত শিল্প স্থাপনার পাশাপাশি অনতিবিলম্বে প্রস্তাবিত বাইপাসের জায়গা চিহ্নিতকরণের পাশাপাশি রাইট-অফ-ওয়ে সংরক্ষণ করার উদ্যোগ নেওয়ার সিদ্ধান্ত গৃহীত হলো।

৪. ২ নং ওয়ার্ডে মাধ্যমিক বিদ্যালয়ের প্রস্তাব গৃহীত হয়েছে। এছাড়া অন্যান্য বিদ্যালয়সমূহ নির্মানের পাশাপাশি বিদ্যমান বিদ্যালয়সমূহের উন্নয়নের প্রস্তাব গৃহীত হলো।

৫. এছাড়া প্রস্তাবিত ড্রেনেজসমূহসহ অন্যান্য গুরুত্বপূর্ণ প্রস্তাবনাসমূহ ক্রমান্বয়ে বাস্তবায়ন করার সিদ্ধান্ত গৃহীত হলো।

সভায় আর কোনো আলোচনা না থাকায় সভার সভাপতি, মেয়র মহোদয় সভার সমাপনী বক্তব্যে সুন্দর প্রস্তাবনাসহ সমগ্র মহাপরিকল্পনা প্রণয়নে পরামর্শক প্রতিষ্ঠান শেলটেক কন্সালটেন্ট (প্রা:) লিমিটেড এর অক্লান্ত পরিশ্রমের জন্য কৃতজ্ঞতা প্রকাশ করেন। বিশেষ কৃজ্ঞতা প্রকাশ করেন মাননীয় উপজেলা নির্বাহী অফিসার, মুলাদী থানার ভারপ্রাপ্ত কর্মকর্তা, প্রকল্প ব্যবস্থাপনা অফিসের নগর পরিকল্পনাবিদদের প্রতি। এছাড়া তিনি ওয়ার্ড কাউন্সিলরসহ অন্যান্য সম্মানিত অতিথিবৃন্দের প্রতি কৃতজ্ঞতা জানিয়ে এবং সকলকে আপ্যায়নের মাধ্যমে সভার সমাপ্তি ঘোষণা করেন।

.....

(জনাব মোঃ শফিকুজ্জামান রুবেল)

মেয়র,

মুলাদী পৌরসভা

স্থানীয় সরকার প্রকৌশল অধিদপ্তর, ঢাকা-১২০৭
উপজেলা শহর অবকাঠামো উন্নয়ন প্রকল্প, প্যাকেজ-১১

মুলাদি পৌরসভার মহাপরিকল্পনার উপর চূড়ান্ত মতবিনিময় সভা
মুলাদি পৌরসভা।
স্থান: মুলাদি পৌরসভা। তারিখ: ১৯ ফেব্রুয়ারি, ২০১৫ খ্রিঃ; সকাল ১১:০০ ঘটিকা

অংশগ্রহনকারীর তালিকা

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
১	[illegible]	[illegible]	01[illegible]	[illegible]
২	মো: আবদুল্লাহ — খান বাহাদুর	UNO মুলাদী	01799900803	
৩	মো: কামাল উদ্দিন	ওসি মুলাদী থানা	01713374270	
৪	মো: রাশিদুল আলম	সচিব মুলাদী পৌরসভা	01922222222	
৫	মো: তা: রব	পাওয়ার মোক্তার কাছারী-০৫	01726220678	
৬	মো: রাশেক মল্লা	কাউন্সিলর ওয়ার্ড নং ০২	01778676994	
৭	ইমরান হাসান মিলি	কাউন্সিলর ওয়ার্ড ১,২,৩	01724412059	মিলি
৮	মোসাম্মৎ হোসেন	কাউন্সিলর ৪,৫,৬	01741791819	
৯	[illegible]	কাউন্সিলর ৮	01715538887	
১০	[illegible]	কাউন্সিলর ৭		
১১	মো: [illegible]	কাউন্সিলর ৯	01716-952088	

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
১২			01718461554	
১৩			01712591274	
১৪			01717041297	
১৫				
১৬			01721652966	
১৭			01740644151	19.2.015
১৮				
১৯				
২০				
২১			01716-052088	
২২			01721-728492	
২৩			01715550830	
২৪			01914003639	
২৫			01915429170	

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
২৬	[illegible]	[illegible]	01715665640	[illegible]
২৭	[illegible]	[illegible]	01703370X920	[illegible]
২৮	[illegible]	[illegible]	01767[illegible]4377	[illegible]
২৯	মো: জাকির হোসেন	SD অফিসার- মুলাদী পৌরসভা	01724430966	[illegible]
৩০	[illegible]	[illegible]	01912[illegible]6622	
৩১	[illegible]	[illegible]	01716409456	[illegible]
৩২	[illegible]	[illegible]	01711343226	[illegible]
৩৩	[illegible]	[illegible]	01754269895	[illegible]
৩৪	[illegible]	৪নং ওয়ার্ড [illegible]		
৩৫	[illegible]		01750163406	
৩৬	[illegible]	[illegible]	01766433608	
৩৭	[illegible]	৭নং [illegible]	01720599940	[illegible]
৩৮	[illegible]	[illegible]	01981[illegible]8	[illegible]
৩৯	[illegible]	[illegible]	01720276329	[illegible]

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
৪০	[illegible]	[illegible]	01778366211	
৪১	[illegible]	[illegible]	01718094289	
৪২	[illegible]	[illegible]	01923050413	
৪৩	[illegible]	[illegible]	01726195126	
৪৪	[illegible]	[illegible]	01771541702	
৪৫	[illegible]	[illegible]		
৪৬	[illegible]	[illegible]	01727726162	
৪৭	[illegible]			
৪৮	[illegible]	[illegible]	01712915012	
৪৯	[illegible]		01726468003	
৫০	[illegible]	[illegible]	01798337561	
৫১	[illegible]		01944959763	
৫২	[illegible]	[illegible]		
৫৩	[illegible]	[illegible]	01731375164	

ক্রমিক নং	নাম	প্রতিষ্ঠান ও পদবী	ফোন নম্বর	স্বাক্ষর
৫৪	দেবাশীষ কুমার সরকার	বাংলাদেশ ব্যাংক	01721333995	
৫৫	মোঃ রফিকুল আলম	ইউনিসেফ বাংলাদেশ	01726553481	
৫৬	তিমির কান্তি সাহা	সহ-সভাপতি বাংলাদেশ ফেডারেশন	01915-252560	
৫৭	মোঃ আবুল কাশেম	ব্যবস্থাপক	01719659174	
৫৮	মোঃ শহিদুল ইসলাম	সিনিয়র	01735907467	
৫৯	[illegible]	[illegible]	01715035533	
৬০	কাজী মোহাম্মদ হাসান খোকন	ব্যাংকার (ভিসি+ক্যাশ)	01721598747	
৬১	মোঃ বিপ্লব	ব্যবসায়	01752075463	
৬২	আবুল কালাম আজাদ	নগর পরিকল্পনাবিদ	01941876475	
৬৩				
৬৪				
৬৫				
৬৬				

Annexure- E: Proposed Road Inventory

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
1	Road-1	Road Widening	6	20	Tertiary Road	170.45	Phase 03
2	Road-2	Road Widening	6	20	Tertiary Road	265.81	Phase 03
3	Road-3	Road Widening	8	20	Tertiary Road	447.24	Phase 03
4	Road-4	Road Widening	8	60	Primary Road	248.37	Phase 03
5	Road-10	Road Widening	8	60	Primary Road	286.07	Phase 03
6	Road-12	Road Widening	6	60	Primary Road	244.57	Phase 01
7	Road-13	Road Widening	6	20	Tertiary Road	153.67	Phase 03
8	Road-14	Road Widening	12	80	Primary Road	4614.98	Phase 01
9	Road-17	Road Widening	8	20	Tertiary Road	295.37	Phase 01
10	Road-18	Road Widening	8	60	Primary Road	166.34	Phase 01
11	Road-20	Road Widening	8	20	Tertiary Road	53.13	Phase 01
12	Road-21	Road Widening	6	20	Tertiary Road	553.49	Phase 02
13	Road-22	Road Widening	10	20	Tertiary Road	187.42	Phase 02
14	Road-23	Road Widening	8	20	Tertiary Road	146.49	Phase 02
15	Road-31	Road Widening	8	20	Tertiary Road	464.32	Phase 02
16	Road-32	Road Widening	8	60	Primary Road	336.69	Phase 03
17	Road-34	Road Widening	8	60	Primary Road	1229.52	Phase 01
18	Road-35	Road Widening	8	60	Primary Road	434.92	Phase 01
19	Road-37	Road Widening	8	20	Tertiary Road	1335.64	Phase 03
20	Road-38	Road Widening	8	20	Tertiary Road	791.38	Phase 03
21	Road-39	Road Widening	8	60	Primary Road	399.06	Phase 01
22	Road-40	Road Widening	8	20	Tertiary Road	174.56	Phase 01
23	Road-44	Road Widening	8	20	Tertiary Road	176.50	Phase 01
24	Road-46	Road Widening	8	20	Tertiary Road	245.58	Phase 01
25	Road-47	Road Widening	8	20	Tertiary Road	145.65	Phase 01
26	Road-48	Road Widening	6	20	Tertiary Road	203.29	Phase 01
27	Road-50	Road Widening	8	20	Tertiary Road	350.79	Phase 01
28	Road-51	Road Widening	6	20	Tertiary Road	170.29	Phase 01
29	Road-52	Road Widening	6	20	Tertiary Road	113.10	Phase 01
30	Road-54	Road Widening	8	20	Tertiary Road	197.99	Phase 01
31	Road-57	Road Widening	8	20	Tertiary Road	476.72	Phase 02
32	Road-59	Road Widening	6	20	Tertiary Road	80.45	Phase 02
33	Road-63	Road Widening	8	20	Tertiary Road	811.58	Phase 02
34	Road-66	Road Widening	6	40	Secondary	267.72	Phase 01
35	Road-67	Road Widening	6	20	Tertiary Road	214.58	Phase 01
36	Road-68	Road Widening	6	20	Tertiary Road	46.39	Phase 01
37	G.C. Road	Road Widening	8	60	Primary Road	1924.17	Phase 01
38	Road-70	Road Widening	8	20	Tertiary Road	171.66	Phase 01
39	Road-72	Road Widening	8	20	Tertiary Road	252.46	Phase 01
40	Road-77	Road Widening	6	20	Tertiary Road	133.81	Phase 01
41	Girls School Road	Road Widening	8	40	Secondary	519.03	Phase 01
42	Road-82	Road Widening	6	20	Tertiary Road	246.09	Phase 01
43	Mollar Bazar Road	Road Widening	16	80	Primary Road	836.71	Phase 01
44	Upazila Road	Road Widening	10	40	Secondary	857.65	Phase 01
45	Road-89	Road Widening	8	20	Tertiary Road	81.08	Phase 01
46	Road-90	Road Widening	6	20	Tertiary Road	279.77	Phase 01
47	Road-91	Road Widening	6	60	Primary Road	407.78	Phase 01
48	Road-92	Road Widening	8	30	Secondary	243.96	Phase 01
49	Road-95	Road Widening	8	20	Tertiary Road	59.19	Phase 01
50	Road-101	Road Widening	6	20	Tertiary Road	32.01	Phase 01
51	Road-104	Road Widening	6	20	Tertiary Road	90.57	Phase 01
52	Road-106	Road Widening	6	20	Tertiary Road	42.65	Phase 01
53	Road-107	Road Widening	6	20	Tertiary Road	48.86	Phase 01
54	Road-110	Road Widening	8	20	Tertiary Road	111.87	Phase 01
55	Road-111	Road Widening	8	20	Tertiary Road	100.36	Phase 01
56	Road-116	Road Widening	6	20	Tertiary Road	92.37	Phase 01

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
57	Road-118	Road Widening	8	20	Tertiary Road	275.05	Phase 01
58	Road-119	Road Widening	8	20	Tertiary Road	180.88	Phase 01
59	Road-120	Road Widening	8	20	Tertiary Road	118.24	Phase 01
60	Road-121	Road Widening	8	20	Tertiary Road	160.09	Phase 01
61	Road-122	Road Widening	8	40	Secondary	815.61	Phase 01
62	Road-123	Road Widening	8	20	Tertiary Road	108.93	Phase 01
63	Road-124	Road Widening	8	20	Tertiary Road	138.45	Phase 01
64	Road-125	Road Widening	8	20	Tertiary Road	151.50	Phase 01
65	Road-129	Road Widening	6	20	Tertiary Road	408.17	Phase 01
66	Road-130	Road Widening	8	20	Tertiary Road	357.24	Phase 01
67	Road-134	Road Widening	8	20	Tertiary Road	98.96	Phase 01
68	Road-139	Road Widening	6	40	Secondary	201.86	Phase 01
69	Road-141	Road Widening	8	40	Secondary	314.13	Phase 01
70	Road-142	Road Widening	8	40	Secondary	344.19	Phase 01
71	Road-146	Road Widening	8	20	Tertiary Road	115.44	Phase 03
72	Road-147	Road Widening	8	20	Tertiary Road	70.24	Phase 03
73	Road-148	Road Widening	8	20	Tertiary Road	166.44	Phase 03
74	Road-151	Road Widening	8	20	Tertiary Road	45.76	Phase 03
75	Road-154	Road Widening	8	80	Primary Road	1644.03	Phase 01
76	Road-155	Road Widening	8	20	Tertiary Road	947.32	Phase 03
77	Road-157	Road Widening	8	20	Tertiary Road	739.77	Phase 03
78	Road-162	Road Widening	6	20	Tertiary Road	60.31	Phase 01
79	Road-163	Road Widening	8	20	Tertiary Road	77.22	Phase 01
80	Thana Road	Road Widening	8	40	Secondary	349.31	Phase 01
81	Road-166	Road Widening	6	20	Tertiary Road	63.15	Phase 01
82	Road-173	Road Widening	6	20	Tertiary Road	77.68	Phase 01
83	Road-175	Road Widening	6	20	Tertiary Road	80.16	Phase 01
84	Road-181	Road Widening	6	20	Tertiary Road	97.65	Phase 01
85	Road-185	Road Widening	8	20	Tertiary Road	80.78	Phase 01
86	Road-186	Road Widening	8	20	Tertiary Road	166.49	Phase 01
87	Road-187	Road Widening	8	20	Tertiary Road	211.73	Phase 01
88	Road-194	Road Widening	8	60	Primary Road	319.11	Phase 01
89	Bir Muktizoodha Moklesur Rahman Road	Road Widening	8	20	Tertiary Road	618.49	Phase 01
90	Road-200	Road Widening	8	20	Tertiary Road	307.03	Phase 01
91	Road-201	Road Widening	6	20	Tertiary Road	148.00	Phase 01
92	Road-205	Road Widening	6	20	Tertiary Road	179.79	Phase 01
93	Road-207	Road Widening	6	20	Tertiary Road	119.40	Phase 01
94	Road-209	Road Widening	6	20	Tertiary Road	233.02	Phase 01
95	Road-212	Road Widening	16	80	Primary Road	1092.94	Phase 01
96	Road-214	Road Widening	8	40	Secondary	292.51	Phase 01
97	Road-218	Road Widening	6	20	Tertiary Road	161.87	Phase 01
98	Road-220	Road Widening	8	20	Tertiary Road	197.66	Phase 01
99	Road-223	Road Widening	6	20	Tertiary Road	127.07	Phase 01
100	Road-224	Road Widening	8	60	Primary Road	957.17	Phase 02
101	Road-225	Road Widening	8	60	Primary Road	347.49	Phase 02
102	Road-228	Road Widening	8	20	Tertiary Road	744.93	Phase 03
103	Road-232	Road Widening	6	20	Tertiary Road	296.50	Phase 01
104	Road-238	Road Widening	8	20	Tertiary Road	498.63	Phase 03
105	Road-244	Road Widening	8	20	Tertiary Road	201.68	Phase 01
106	Road-245	Road Widening	6	20	Tertiary Road	136.85	Phase 01
107	Road-246	Road Widening	8	20	Tertiary Road	128.15	Phase 01
108	Road-248	Road Widening	6	20	Tertiary Road	89.06	Phase 01
109	Road-252	Road Widening	8	40	Secondary	462.48	Phase 01
110	Road-257	Road Widening	6	40	Secondary	170.33	Phase 01
111	Road-258	Road Widening	8	20	Tertiary Road	332.26	Phase 01
112	Road-262	Road Widening	8	40	Secondary	304.58	Phase 01
113	Road-273	Road Widening	8	40	Secondary	427.95	Phase 01

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
114	Road-274	Road Widening	8	30	Secondary	253.98	Phase 01
115	Road-275	Road Widening	8	20	Tertiary Road	121.25	Phase 01
116	Road-276	Road Widening	8	20	Tertiary Road	201.46	Phase 01
117	Road-277	Road Widening	8	60	Primary Road	531.25	Phase 01
118	Road-278	Road Widening	8	20	Tertiary Road	164.54	Phase 01
119	Road-279	Road Widening	8	20	Tertiary Road	342.81	Phase 01
120	Road-281	Road Widening	8	20	Tertiary Road	63.81	Phase 01
121	Road-282	Road Widening	8	20	Tertiary Road	232.86	Phase 01
122	Road-284	Road Widening	8	40	Secondary	438.80	Phase 01
123	Road-285	Road Widening	8	20	Tertiary Road	66.35	Phase 01
124	Road-287	Road Widening	10	80	Primary Road	432.25	Phase 01
125	Road-288	Road Widening	10	20	Tertiary Road	465.62	Phase 03
126	Road-289	Road Widening	6	20	Tertiary Road	250.13	Phase 03
127	Road-290	Road Widening	8	20	Tertiary Road	312.05	Phase 03
128	Road-291	Road Widening	8	20	Tertiary Road	224.95	Phase 03
129	Road-292	Road Widening	8	40	Secondary	653.64	Phase 03
130	Road-293	Road Widening	8	40	Secondary	921.91	Phase 03
131	Road-300	Road Widening	8	20	Tertiary Road	303.33	Phase 01
132	Bazar Road	Road Widening	16	60	Primary Road	883.25	Phase 01
133	Road-302	Road Widening	8	20	Tertiary Road	234.48	Phase 03
134	Road-303	Road Widening	8	20	Tertiary Road	80.02	Phase 03
135	Road-305	Road Widening	8	40	Secondary	230.75	Phase 01
136	Road-306	Road Widening	6	20	Tertiary Road	38.99	Phase 01
137	Road-311	Road Widening	12	40	Secondary	394.72	Phase 01
138	Road-312	Road Widening	6	20	Tertiary Road	125.69	Phase 01
139	Road-316	Road Widening	6	20	Tertiary Road	66.09	Phase 01
140	Road-319	Road Widening	6	20	Tertiary Road	110.83	Phase 01
141	Bazar Road	Road Widening	22	60	Primary Road	198.88	Phase 01
142	Road-324	Road Widening	6	20	Tertiary Road	80.74	Phase 01
143	Road-325	Road Widening	6	20	Tertiary Road	82.49	Phase 01
144	Road-328	Road Widening	8	40	Secondary	561.35	Phase 03
145	Road-329	Road Widening	6	20	Tertiary Road	703.53	Phase 03
146	Road-331	Road Widening	8	20	Tertiary Road	162.53	Phase 03
147	Road-334	Road Widening	8	40	Secondary	185.88	Phase 01
148	Road-338	Road Widening	8	20	Tertiary Road	91.45	Phase 01
149	Road-343	Road Widening	10	20	Tertiary Road	201.32	Phase 01
150	Road-349	Road Widening	12	60	Primary Road	2817.95	Phase 03
151	Road-351	Road Widening	8	20	Tertiary Road	416.11	Phase 03
152	Mohish Godi Road	Road Widening	8	60	Primary Road	1990.45	Phase 03
153	Road-354	Road Widening	8	20	Tertiary Road	1193.20	Phase 03
154	Road-355	Road Widening	6	20	Tertiary Road	75.99	Phase 03
155	Road-361	Road Widening	8	20	Tertiary Road	101.05	Phase 01
156	Road-364	Road Widening	8	20	Tertiary Road	235.99	Phase 01
157	Road-367	Road Widening	6	20	Tertiary Road	59.34	Phase 01
158	Road-372	Road Widening	6	20	Tertiary Road	126.08	Phase 01
159	Road-378	Road Widening	8	30	Secondary	158.97	Phase 01
160	Road-381	Road Widening	6	20	Tertiary Road	105.96	Phase 02
161	Road-382	Road Widening	8	20	Tertiary Road	104.39	Phase 02
162	G.C. Road	Road Widening	8	20	Tertiary Road	117.71	Phase 02
163	Road-387	Road Widening	8	20	Tertiary Road	105.59	Phase 01
164	Road-388	Road Widening	8	20	Tertiary Road	89.98	Phase 01
165	Road-389	Road Widening	6	20	Tertiary Road	136.68	Phase 01
166	Road-391	Road Widening	8	20	Tertiary Road	171.08	Phase 01
167	Road-392	Road Widening	10	20	Tertiary Road	451.59	Phase 03
168	Road-393	Road Widening	8	20	Tertiary Road	862.50	Phase 03
169	Road-396	Road Widening	10	20	Tertiary Road	591.57	Phase 03
170	Road-397	Road Widening	6	20	Tertiary Road	42.23	Phase 01
171	Road-398	Road Widening	8	60	Primary Road	85.85	Phase 02
172	Road-399	Road Widening	8	60	Primary Road	234.27	Phase 01
173	Road-402	Road Widening	8	60	Primary Road	196.46	Phase 02

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
174	Road-405	Road Widening	8	60	Primary Road	110.32	Phase 01
175	G.C. Road	Road Widening	8	20	Tertiary Road	180.56	Phase 02
176	Road-412	Road Widening	8	40	Secondary	1959.98	Phase 04
177	Road-413	Road Widening	8	20	Tertiary Road	408.24	Phase 03
178	Road-418	Road Widening	8	10	Walkway	36.92	Phase 01
179	Road-420	Road Widening	6	20	Tertiary Road	208.54	Phase 03
180	Road-421	Road Widening	6	20	Tertiary Road	107.02	Phase 03
181	Road-422	Road Widening	8	20	Tertiary Road	419.10	Phase 03
182	Road-427	Road Widening	8	20	Tertiary Road	116.29	Phase 01
183	Road-428	Road Widening	8	60	Primary Road	65.32	Phase 02
184	Road-429	New Road	0	60	Primary Road	67.12	Phase 02
185	Road-430	Road Widening	6	20	Tertiary Road	136.24	Phase 03
186	Road-432	Road Widening	8	20	Tertiary Road	68.30	Phase 01
187	Road-436	Road Widening	8	60	Primary Road	1277.70	Phase 03
188	Road-224	Road Widening	8	20	Tertiary Road	109.86	Phase 01
189		New Road	0	60	Primary Road	258.73	Phase 02
190	Road-411	Road Widening	6	60	Primary Road	478.38	Phase 01
191	G.C. Road	Road Widening	8	20	Tertiary Road	103.10	Phase 02
192	Proposed Bypass Road	New Road	0	80	Primary Road	4352.67	Phase 04
193	Walkway	New Road	0	20	Tertiary Road	907.89	Phase 02
194	Walkway	New Road	0	10	Walkway	643.76	Phase 02
195	Walkway	New Road	0	10	Walkway	1253.44	Phase 02
196		New Road	0	40	Secondary	373.21	Phase 02
197	Walkway	New Road	0	10	Walkway	2587.27	Phase 03
198		New Road	0	20	Tertiary Road	441.85	Phase 02
199		New Road	0	40	Secondary	423.21	Phase 02
200		New Road	0	20	Tertiary Road	248.00	Phase 02
201		New Road	0	40	Secondary	781.07	Phase 02
202	Road-300	Road Widening	8	40	Secondary	747.43	Phase 01
203		New Road	0	40	Secondary	1547.42	Phase 02
204		New Road	0	20	Tertiary Road	680.76	Phase 02
205		New Road	0	20	Tertiary Road	318.44	Phase 01
206		New Road	0	60	Primary Road	638.03	Phase 02
207		New Road	0	60	Primary Road	421.97	Phase 03
208	Road-39	Road Widening	8	20	Tertiary Road	200.78	Phase 01
209		New Road	0	40	Secondary	610.66	Phase 02
210		New Road	0	60	Primary Road	336.11	Phase 01
211		New Road	0	20	Tertiary Road	298.50	Phase 02
212	Road-18	Road Widening	8	20	Tertiary Road	153.20	Phase 01
213	Road-10	Road Widening	8	20	Tertiary Road	170.08	Phase 03
214		New Road	0	60	Primary Road	151.02	Phase 03
215	Road-3	Road Widening	8	60	Primary Road	47.53	Phase 03
216		New Road	0	40	Secondary	634.01	Phase 03
217	Road-12	Road Widening	6	20	Tertiary Road	115.50	Phase 03
218	Walkway	New Road	0	10	Walkway	560.77	Phase 02
219		New Road	0	60	Primary Road	2342.30	Phase 02
220		New Road	0	10	Walkway	98.48	Phase 02
221		New Road	0	10	Walkway	2092.17	Phase 02
222		New Road	0	10	Walkway	336.48	Phase 02
223		New Road	0	10	Walkway	1996.76	Phase 02
224		New Road	0	20	Tertiary Road	538.91	Phase 02
225	Road-126	Road Widening	8	20	Tertiary Road	117.90	Phase 01
226		New Road	0	20	Tertiary Road	131.09	Phase 02
227		New Road	0	20	Tertiary Road	153.27	Phase 02
228		New Road	0	20	Tertiary Road	242.28	Phase 02
229		New Road	0	20	Tertiary Road	190.95	Phase 02
230		New Road	0	20	Tertiary Road	322.89	Phase 02
231		New Road	0	20	Tertiary Road	82.97	Phase 02
232		New Road	0	20	Tertiary Road	197.73	Phase 02

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
233		New Road	0	20	Tertiary Road	315.11	Phase 03
234		New Road	0	20	Tertiary Road	256.69	Phase 03
235		New Road	0	40	Secondary	1367.96	Phase 02
236		New Road	0	20	Tertiary Road	153.57	Phase 02
237		New Road	0	20	Tertiary Road	287.56	Phase 01
238		New Road	0	20	Tertiary Road	266.56	Phase 02
239		New Road	0	20	Tertiary Road	109.58	Phase 01
240		New Road	0	20	Tertiary Road	232.25	Phase 01
241		New Road	0	20	Tertiary Road	214.89	Phase 03
242		New Road	0	20	Tertiary Road	305.80	Phase 01
243		New Road	0	20	Tertiary Road	341.62	Phase 03
244		New Road	0	40	Secondary	63.29	Phase 03
245	Road-302	Road Widening	8	40	Secondary	147.53	Phase 03
246	Road-141	Road Widening	8	40	Secondary	257.96	Phase 03
247		New Road	0	40	Secondary	277.79	Phase 03
248	Road-328	Road Widening	8	20	Tertiary Road	498.51	Phase 03
249		New Road	0	20	Tertiary Road	180.25	Phase 03
250	Road-141	Road Widening	8	20	Tertiary Road	109.93	Phase 03
251	Road-130	Road Widening	8	20	Tertiary Road	65.10	Phase 01
252		New Road	0	40	Secondary	288.29	Phase 01
253	Road-200	Road Widening	8	20	Tertiary Road	144.21	Phase 01
254		New Road	0	40	Secondary	174.91	Phase 01
255	Road-200	Road Widening	8	40	Secondary	201.47	Phase 01
256		New Road	0	40	Secondary	268.86	Phase 02
257	Road-142	Road Widening	8	20	Tertiary Road	220.88	Phase 01
258		New Road	0	40	Secondary	81.16	Phase 02
259	Bir Muktizoodha Moklesur Rahman Road	Road Widening	8	40	Secondary	381.61	Phase 01
260	Road-142	Road Widening	8	20	Tertiary Road	327.69	Phase 01
261		New Road	0	40	Secondary	237.58	Phase 02
262		New Road	0	40	Secondary	473.54	Phase 02
263		New Road	0	30	Secondary	75.61	Phase 02
264	Road-92	Road Widening	8	30	Secondary	76.70	Phase 01
265		New Road	0	30	Secondary	202.12	Phase 02
266		New Road	0	40	Secondary	940.57	Phase 02
267		New Road	0	30	Secondary	410.23	Phase 02
268		New Road	0	40	Secondary	435.60	Phase 02
269		New Road	0	20	Tertiary Road	110.88	Phase 02
270		New Road	0	20	Tertiary Road	361.54	Phase 02
271	Road-313	Road Widening	8	40	Secondary	235.57	Phase 01
272		New Road	0	40	Secondary	336.06	Phase 02
273		New Road	0	30	Secondary	231.41	Phase 02
274		New Road	0	30	Secondary	282.16	Phase 02
275		New Road	0	30	Secondary	529.11	Phase 03
276		New Road	0	20	Tertiary Road	435.23	Phase 03
277		New Road	0	30	Secondary	591.20	Phase 03
279		New Road	0	20	Tertiary Road	45.26	Phase 01
280		New Road	0	20	Tertiary Road	121.82	Phase 01
281	G.C. Road	Road Widening	8	30	Secondary	656.56	Phase 01
282		New Road	0	20	Tertiary Road	582.69	Phase 02
283		New Road	0	20	Tertiary Road	255.55	Phase 02
284		New Road	0	20	Tertiary Road	208.19	Phase 02
285		New Road	0	30	Secondary	259.87	Phase 02
286		New Road	0	30	Secondary	330.56	Phase 02
287		New Road	0	20	Tertiary Road	800.06	Phase 02
288		New Road	0	20	Tertiary Road	203.31	Phase 01
289		New Road	0	30	Secondary	358.80	Phase 02
290		New Road	0	20	Tertiary Road	121.11	Phase 01

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
291		New Road	0	20	Tertiary Road	27.58	Phase 01
292		New Road	0	20	Tertiary Road	215.94	Phase 01
293		New Road	0	20	Tertiary Road	231.28	Phase 02
294		New Road	0	20	Tertiary Road	133.29	Phase 01
295		New Road	0	20	Tertiary Road	339.00	Phase 02
296		New Road	0	20	Tertiary Road	414.12	Phase 02
297		New Road	0	20	Tertiary Road	351.45	Phase 02
298		New Road	0	20	Tertiary Road	186.62	Phase 02
299		New Road	0	20	Tertiary Road	192.23	Phase 02
300		New Road	0	20	Tertiary Road	444.75	Phase 02
301		New Road	0	20	Tertiary Road	151.88	Phase 02
302		New Road	0	30	Secondary	345.20	Phase 01
303		New Road	0	30	Secondary	268.35	Phase 02
304		New Road	0	30	Secondary	383.19	Phase 02
305		New Road	0	30	Secondary	207.27	Phase 02
306	Road-92	Road Widening	8	20	Tertiary Road	160.16	Phase 01
307	Road-92	Road Widening	8	20	Tertiary Road	91.70	Phase 01
308		New Road	0	30	Secondary	123.75	Phase 02
309		New Road	0	30	Secondary	112.19	Phase 02
310		New Road	0	20	Tertiary Road	83.55	Phase 02
311	Road-322	Road Widening	8	20	Tertiary Road	84.85	Phase 01
312	Road-307	Road Widening	8	20	Tertiary Road	77.57	Phase 01
313	Road-323	Road Widening	10	20	Tertiary Road	251.60	Phase 01
314	Road-326	Road Widening	8	20	Tertiary Road	32.41	Phase 01
315		New Road	0	20	Tertiary Road	31.67	Phase 01
316		New Road	0	20	Tertiary Road	94.04	Phase 02
317		New Road	0	30	Secondary	319.82	Phase 02
318		New Road	0	80	Primary Road	264.54	Phase 02
319	Road-14	Road Widening	12	80	Primary Road	123.75	Phase 01
320	Road-14	Road Widening	12	20	Tertiary Road	338.29	Phase 01
321		New Road	0	40	Secondary	100.83	Phase 02
322		New Road	0	40	Secondary	185.96	Phase 02
323	Road-121	Road Widening	8	40	Secondary	77.71	Phase 01
324		New Road	0	20	Tertiary Road	507.89	Phase 02
325		New Road	0	20	Tertiary Road	55.59	Phase 01
326		New Road	0	20	Tertiary Road	726.56	Phase 02
327		New Road	0	20	Tertiary Road	375.23	Phase 02
328		New Road	0	20	Tertiary Road	359.45	Phase 02
329		New Road	0	20	Tertiary Road	492.87	Phase 02
330		New Road	0	20	Tertiary Road	184.14	Phase 01
331		New Road	0	40	Secondary	751.93	Phase 03
332		New Road	0	40	Secondary	872.61	Phase 03
333		New Road	0	40	Secondary	342.21	Phase 03
334		New Road	0	20	Tertiary Road	257.46	Phase 01
335		New Road	0	20	Tertiary Road	247.09	Phase 01
336		New Road	0	20	Tertiary Road	430.15	Phase 02
337		New Road	0	40	Secondary	616.05	Phase 02
338		New Road	0	20	Tertiary Road	186.56	Phase 02
339		New Road	0	20	Tertiary Road	97.92	Phase 02
340		New Road	0	20	Tertiary Road	347.42	Phase 02
341		New Road	0	40	Secondary	350.33	Phase 02
342		New Road	0	20	Tertiary Road	249.39	Phase 02
343		New Road	0	20	Tertiary Road	202.75	Phase 02
344		New Road	0	20	Tertiary Road	153.97	Phase 01
345	Road-66	Road Widening	6	20	Tertiary Road	151.85	Phase 01
346		New Road	0	20	Tertiary Road	442.56	Phase 02
347		New Road	0	30	Secondary	875.54	Phase 02
348		New Road	0	60	Primary Road	767.87	Phase 02
349		New Road	0	20	Tertiary Road	158.35	Phase 01
350	Road-133	Road Widening	4	20	Tertiary Road	142.37	Phase 01

Proposed Road ID	Road_Name	Road Proposal	Existing RoW (Ft)	Proposed RoW (Ft)	Proposed Road Type	Length in Meter	Phasing
351		New Road	0	20	Tertiary Road	76.19	Phase 01
352		New Road	0	20	Tertiary Road	96.21	Phase 01
353		New Road	0	20	Tertiary Road	375.12	Phase 02
354		New Road	0	20	Tertiary Road	329.77	Phase 03
355		New Road	0	20	Tertiary Road	535.93	Phase 03
356		New Road	0	40	Secondary	238.55	Phase 02
357		New Road	0	20	Tertiary Road	77.06	Phase 01
358		New Road	0	20	Tertiary Road	110.98	Phase 01
359		New Road	0	20	Tertiary Road	82.71	Phase 01
360		New Road	0	40	Secondary	578.73	Phase 03
361		New Road	0	20	Tertiary Road	280.81	Phase 02
362	Road-40	Road Widening	8	40	Secondary	102.74	Phase 01
363		New Road	0	20	Tertiary Road	162.99	Phase 01
364		New Road	0	20	Tertiary Road	115.91	Phase 02
365		New Road	0	30	Secondary	166.66	Phase 02
366		New Road	0	60	Primary Road	1387.59	Phase 03
367	Walkway	New Road	0	10	Walkway	211.82	Phase 03
368	Road-332	Road Widening	6	20	Tertiary Road	121.55	Phase 03
369	Road-391	Road Widening	8	40	Secondary	53.50	Phase 01
370		New Road	0	40	Secondary	469.90	Phase 02
371		New Road	0	40	Secondary	303.45	Phase 02
372	Mollar Bazar Road	Road Widening	16	60	Primary Road	435.85	Phase 01
373	Road-406	Road Widening	10	80	Primary Road	939.23	Phase 01
374	Road-328	Road Widening	8	40	Secondary	358.83	Phase 01
375	Road-38	Road Widening	8	20	Tertiary Road	225.79	Phase 01
376	Road-412	Road Widening	8	40	Secondary	362.82	Phase 01
377	Road-4	Road Widening	8	60	Primary Road	262.64	Phase 03
378	Road-436	Road Widening	8	60	Primary Road	230.42	Phase 01
379	Road-4	Road Widening	8	60	Primary Road	228.77	Phase 01
380		New Road	0	60	Primary Road	172.17	Phase 01

Annexure- F: Proposed Drain Inventory

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Mollar Bazar Road	0.84	PD S 20	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.26	PD S 21	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-14	0.13	PD S 22	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Mollar Bazar Road	0.86	PD S 23	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.27	PD S 24	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-14	0.13	PD S 25	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-12	0.23	PD S 26	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-18	0.15	PD S 27	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-91	0.40	PD S 28	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-194	0.32	PD S 29	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Bazar Road	0.87	PD S 30	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Bazar Road	0.20	PD S 31	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-349	0.99	PD S 32	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
Mohish Godi Road	1.94	PD S 33	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
Road-398	0.08	PD S 34	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-405	0.10	PD S 35	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.25	PD S 36	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.35	PD S 37	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	1.18	PD S 38	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Mollar Bazar Road	0.43	PD S 39	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-4	0.21	PD S 40	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.16	PD S 41	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-12	0.24	PD S 42	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-18	0.16	PD S 43	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-39	0.41	PD S 44	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-91	0.40	PD S 45	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-194	0.32	PD S 46	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-225	0.35	PD S 47	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Bazar Road	0.27	PD S 48	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Bazar Road	0.26	PD S 49	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-349	1.07	PD S 50	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
Road-398	0.08	PD S 51	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-399	0.27	PD S 52	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-402	0.20	PD S 53	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-405	0.10	PD S 54	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-428	0.06	PD S 55	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-429	0.06	PD S 56	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.25	PD S 57	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.35	PD S 58	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Mollar Bazar Road	0.44	PD S 59	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-4	0.21	PD S 60	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.17	PD S 61	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Girls School Road	0.50	PD S 62	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Upazila Road	0.86	PD S 63	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-122	0.79	PD S 64	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-139	0.19	PD S 65	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-141	0.31	PD S 66	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-142	0.34	PD S 67	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Thana Road	0.33	PD S 68	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-214	0.28	PD S 69	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-257	0.16	PD S 70	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-262	0.30	PD S 71	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-273	0.41	PD S 72	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-284	0.41	PD S 73	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-305	0.23	PD S 74	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-311	0.38	PD S 75	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-334	0.18	PD S 76	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.76	PD S 77	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.47	PD S 78	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.27	PD S 79	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.17	PD S 80	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-200	0.20	PD S 81	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.08	PD S 82	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Bir Muktizoodha Moklesur Rahman Road	0.20	PD S 83	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.23	PD S 84	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.46	PD S 85	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.92	PD S 86	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-313	0.22	PD S 87	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.32	PD S 88	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.09	PD S 89	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.17	PD S 90	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-121	0.07	PD S 91	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.22	PD S 92	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.22	PD S 93	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-391	0.05	PD S 94	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.52	PD S 95	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.29	PD S 96	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-328	0.34	PD S 97	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-412	0.35	PD S 98	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Girls School Road	0.50	PD S 99	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Upazila Road	0.83	PD S 100	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-122	0.81	PD S 101	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-139	0.19	PD S 102	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-141	0.31	PD S 103	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-142	0.34	PD S 104	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Thana Road	0.34	PD S 105	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-214	0.29	PD S 106	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-257	0.17	PD S 107	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-262	0.30	PD S 108	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-273	0.44	PD S 109	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-284	0.41	PD S 110	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-293	0.63	PD S 111	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
Road-305	0.21	PD S 112	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-311	0.36	PD S 113	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-334	0.18	PD S 114	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.27	PD S 115	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.78	PD S 116	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.47	PD S 117	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.05	PD S 118	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
Road-302	0.15	PD S 119	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
Road-141	0.26	PD S 120	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
	0.27	PD S 121	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
	0.28	PD S 122	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.17	PD S 123	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-200	0.20	PD S 124	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.07	PD S 125	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Bir Muktizoodha Moklesur Rahman Road	0.20	PD S 126	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.23	PD S 127	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.46	PD S 128	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.92	PD S 129	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.30	PD S 130	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-313	0.22	PD S 131	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.32	PD S 132	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.08	PD S 133	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.18	PD S 134	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-121	0.08	PD S 135	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.22	PD S 136	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.23	PD S 137	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.54	PD S 138	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-40	0.09	PD S 139	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-391	0.04	PD S 140	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.29	PD S 141	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-328	0.34	PD S 142	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-412	0.34	PD S 143	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-92	0.24	PD S 144	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-274	0.24	PD S 145	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.07	PD S 146	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-92	0.07	PD S 147	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.19	PD S 148	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.14	PD S 149	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.22	PD S 150	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.15	PD S 151	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
G.C. Road	0.34	PD S 152	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.14	PD S 153	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.32	PD S 154	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.34	PD S 155	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 156	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.25	PD S 157	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.21	PD S 158	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 159	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 160	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.10	PD S 161	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.17	PD S 162	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-92	0.25	PD S 163	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-274	0.23	PD S 164	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-378	0.13	PD S 165	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.07	PD S 166	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-92	0.07	PD S 167	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.19	PD S 168	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.14	PD S 169	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.21	PD S 170	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.15	PD S 171	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
G.C. Road	0.34	PD S 172	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.14	PD S 173	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.32	PD S 174	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.34	PD S 175	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 176	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.26	PD S 177	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.21	PD S 178	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 179	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 180	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.10	PD S 181	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.16	PD S 182	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-17	0.27	PD T 183	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-44	0.18	PD T 184	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-46	0.20	PD T 185	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-47	0.14	PD T 186	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-48	0.19	PD T 187	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-50	0.14	PD T 188	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-51	0.19	PD T 189	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-52	0.10	PD T 190	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-54	0.18	PD T 191	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-67	0.21	PD T 192	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-72	0.24	PD T 193	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-77	0.07	PD T 194	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-82	0.24	PD T 195	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-89	0.07	PD T 196	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-90	0.28	PD T 197	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-101	0.03	PD T 198	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-104	0.08	PD T 199	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-106	0.04	PD T 200	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-107	0.05	PD T 201	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-110	0.09	PD T 202	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-111	0.09	PD T 203	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-116	0.09	PD T 204	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-118	0.17	PD T 205	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-120	0.12	PD T 206	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-121	0.15	PD T 207	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-123	0.10	PD T 208	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-124	0.13	PD T 209	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-125	0.14	PD T 210	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-129	0.20	PD T 211	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-130	0.34	PD T 212	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-134	0.08	PD T 213	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-162	0.05	PD T 214	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-163	0.07	PD T 215	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-166	0.05	PD T 216	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-173	0.07	PD T 217	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-175	0.07	PD T 218	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-181	0.08	PD T 219	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-185	0.07	PD T 220	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-186	0.15	PD T 221	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-187	0.20	PD T 222	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Bir Muktizoodha Moklesur Rahman Road	0.40	PD T 223	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-201	0.14	PD T 224	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-205	0.17	PD T 225	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-207	0.11	PD T 226	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-209	0.03	PD T 227	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-218	0.15	PD T 228	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-220	0.20	PD T 229	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-223	0.12	PD T 230	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-232	0.28	PD T 231	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-244	0.19	PD T 232	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-245	0.14	PD T 233	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-246	0.12	PD T 234	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-248	0.09	PD T 235	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-258	0.32	PD T 236	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-276	0.22	PD T 237	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-278	0.12	PD T 238	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-279	0.33	PD T 239	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-282	0.22	PD T 240	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-285	0.07	PD T 241	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-306	0.03	PD T 242	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-312	0.12	PD T 243	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-316	0.05	PD T 244	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-319	0.10	PD T 245	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-324	0.06	PD T 246	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-325	0.06	PD T 247	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-338	0.08	PD T 248	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-343	0.19	PD T 249	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-364	0.26	PD T 250	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-372	0.11	PD T 251	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
G.C. Road	0.18	PD T 252	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-387	0.10	PD T 253	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-388	0.09	PD T 254	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-389	0.14	PD T 255	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-391	0.18	PD T 256	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-397	0.04	PD T 257	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
G.C. Road	0.18	PD T 258	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-427	0.11	PD T 259	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-432	0.06	PD T 260	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-224	0.10	PD T 261	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
G.C. Road	0.10	PD T 262	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 263	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-18	0.14	PD T 264	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-126	0.11	PD T 265	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.12	PD T 266	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.07	PD T 267	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 268	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 269	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.29	PD T 270	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.27	PD T 271	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD T 272	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.22	PD T 273	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.29	PD T 274	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-130	0.05	PD T 275	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-200	0.14	PD T 276	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-142	0.19	PD T 277	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-142	0.20	PD T 278	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.04	PD T 279	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.07	PD T 280	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.35	PD T 281	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 282	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 283	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 284	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.02	PD T 285	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.14	PD T 286	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.22	PD T 287	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD T 288	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.33	PD T 289	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 290	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 291	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.18	PD T 292	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.18	PD T 293	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 294	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-92	0.16	PD T 295	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-92	0.09	PD T 296	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.07	PD T 297	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-307	0.07	PD T 298	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-323	0.26	PD T 299	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-326	0.02	PD T 300	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.03	PD T 301	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.09	PD T 302	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-14	0.26	PD T 303	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.50	PD T 304	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.05	PD T 305	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.33	PD T 306	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.35	PD T 307	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 308	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.25	PD T 309	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.24	PD T 310	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.26	PD T 311	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 312	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.34	PD T 313	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.24	PD T 314	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.21	PD T 315	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 316	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-133	0.13	PD T 317	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.08	PD T 318	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.08	PD T 319	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.42	PD T 320	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.07	PD T 321	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.10	PD T 322	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
	0.07	PD T 323	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.17	PD T 324	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.11	PD T 325	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-38	0.22	PD T 326	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-17	0.27	PD T 327	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-40	0.11	PD T 328	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-44	0.19	PD T 329	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-46	0.24	PD T 330	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-47	0.14	PD T 331	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-50	0.21	PD T 332	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-51	0.18	PD T 333	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-52	0.10	PD T 334	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-54	0.18	PD T 335	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-67	0.21	PD T 336	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-70	0.16	PD T 337	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-72	0.24	PD T 338	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-77	0.06	PD T 339	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-82	0.24	PD T 340	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-89	0.08	PD T 341	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-90	0.27	PD T 342	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-101	0.02	PD T 343	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-104	0.08	PD T 344	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-106	0.04	PD T 345	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-107	0.05	PD T 346	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-110	0.10	PD T 347	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-111	0.09	PD T 348	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-116	0.09	PD T 349	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-118	0.17	PD T 350	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-119	0.17	PD T 351	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-120	0.12	PD T 352	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-121	0.15	PD T 353	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-123	0.10	PD T 354	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-124	0.13	PD T 355	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-125	0.14	PD T 356	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-129	0.21	PD T 357	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-130	0.33	PD T 358	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-134	0.09	PD T 359	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-162	0.05	PD T 360	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-163	0.07	PD T 361	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-166	0.05	PD T 362	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-173	0.07	PD T 363	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-175	0.07	PD T 364	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-181	0.09	PD T 365	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-185	0.07	PD T 366	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-186	0.16	PD T 367	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-187	0.20	PD T 368	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Bir Muktizoodha Moklesur Rahman Road	0.40	PD T 369	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-201	0.14	PD T 370	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-205	0.17	PD T 371	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-207	0.11	PD T 372	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-209	0.18	PD T 373	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-218	0.15	PD T 374	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-220	0.20	PD T 375	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-223	0.12	PD T 376	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-232	0.29	PD T 377	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-244	0.19	PD T 378	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-245	0.14	PD T 379	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-246	0.12	PD T 380	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-248	0.08	PD T 381	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-258	0.32	PD T 382	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-276	0.20	PD T 383	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-282	0.24	PD T 384	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-285	0.06	PD T 385	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-306	0.02	PD T 386	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-312	0.11	PD T 387	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-316	0.05	PD T 388	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-319	0.10	PD T 389	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-324	0.07	PD T 390	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-325	0.05	PD T 391	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-338	0.08	PD T 392	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-343	0.19	PD T 393	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-361	0.09	PD T 394	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-364	0.25	PD T 395	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-372	0.11	PD T 396	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-382	0.16	PD T 397	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-387	0.10	PD T 398	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-388	0.09	PD T 399	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-389	0.14	PD T 400	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-391	0.19	PD T 401	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-397	0.04	PD T 402	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-427	0.10	PD T 403	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-432	0.06	PD T 404	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-224	0.10	PD T 405	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Walkway	0.89	PD T 406	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.43	PD T 407	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.23	PD T 408	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.18	PD T 409	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-39	0.10	PD T 410	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.27	PD T 411	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-18	0.15	PD T 412	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-126	0.11	PD T 413	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.12	PD T 414	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.07	PD T 415	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 416	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 417	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 418	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 419	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD T 420	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.22	PD T 421	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.30	PD T 422	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-130	0.04	PD T 423	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-200	0.13	PD T 424	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-142	0.19	PD T 425	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-142	0.20	PD T 426	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.10	PD T 427	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.36	PD T 428	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.04	PD T 429	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.07	PD T 430	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.35	PD T 431	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 432	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 433	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 434	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.02	PD T 435	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.13	PD T 436	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.22	PD T 437	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD T 438	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.33	PD T 439	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD T 440	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 441	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 442	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.18	PD T 443	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 444	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-92	0.16	PD T 445	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-92	0.08	PD T 446	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.06	PD T 447	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-322	0.09	PD T 448	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-307	0.07	PD T 449	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-323	0.26	PD T 450	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-326	0.02	PD T 451	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.03	PD T 452	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.09	PD T 453	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-14	0.28	PD T 454	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.49	PD T 455	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.05	PD T 456	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.33	PD T 457	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.11	PD T 458	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.35	PD T 459	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 460	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.25	PD T 461	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.24	PD T 462	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.26	PD T 463	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 464	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD T 465	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.33	PD T 466	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.23	PD T 467	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 468	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.14	PD T 469	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-133	0.13	PD T 470	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.08	PD T 471	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.08	PD T 472	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.42	PD T 473	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.06	PD T 474	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.11	PD T 475	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.07	PD T 476	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.10	PD T 477	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-38	0.22	PD T 478	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.29		Existing Drain			
	0.12		Existing Drain			
	0.02		Existing Drain			
	0.13		Existing Drain			
	0.35		Existing Drain			
	0.21		Existing Drain			
	0.13		Existing Drain			
	0.08		Existing Drain			
	0.08		Existing Drain			
	0.06		Existing Drain			
	0.06		Existing Drain			
	0.06		Existing Drain			
	0.04		Existing Drain			
	0.11		Existing Drain			

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
	0.05		Existing Drain			
	0.20		Existing Drain			
Road-349	0.79	PD S 495	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 03
	0.17	PD S 496	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.17	PD S 497	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-14	0.91	PD S 498	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-14	0.74	PD S 499	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-14	0.11	PD S 500	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-14	1.01	PD S 501	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-154	1.43	PD S 502	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-212	0.32	PD S 503	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-212	0.67	PD S 504	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-287	0.41	PD S 505	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Proposed Bypass Road	0.60	PD S 506	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 04
Proposed Bypass Road	0.85	PD S 507	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 04
Proposed Bypass Road	1.64	PD S 508	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 04
Road-14	0.60	PD S 509	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-14	0.11	PD S 510	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-14	0.11	PD S 511	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-14	1.00	PD S 512	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-154	1.44	PD S 513	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-212	0.31	PD S 514	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-212	0.64	PD S 515	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-287	0.41	PD S 516	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Proposed Bypass Road	0.59	PD S 517	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 04
Proposed Bypass Road	0.86	PD S 518	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 04
Proposed Bypass Road	1.64	PD S 519	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 04
G.C. Road	0.63	PD S 520	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
G.C. Road	0.96	PD S 521	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-224	0.04	PD S 522	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-224	0.91	PD S 523	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-277	0.30	PD S 524	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-411	0.11	PD S 525	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
G.C. Road	0.64	PD S 526	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
G.C. Road	0.89	PD S 527	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-224	0.91	PD S 528	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-277	0.23	PD S 529	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-277	0.30	PD S 530	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.60	PD S 531	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-66	0.25	PD S 532	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-252	0.06	PD S 533	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-252	0.39	PD S 534	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.33	PD S 535	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-300	0.23	PD S 536	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-300	0.25	PD S 537	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.90	PD S 538	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.61	PD S 539	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	1.37	PD S 540	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 541	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.14	PD S 542	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.49	PD S 543	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.16	PD S 544	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-66	0.25	PD S 545	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-252	0.06	PD S 546	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-252	0.38	PD S 547	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.33	PD S 548	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-300	0.21	PD S 549	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.93	PD S 550	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.60	PD S 551	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	1.37	PD S 552	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.12	PD S 553	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.14	PD S 554	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.50	PD S 555	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.16	PD S 556	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Road-200	0.14	PD T 557	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-200	0.11	PD T 558	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-275	0.11	PD T 559	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-281	0.01	PD T 560	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-300	0.02	PD T 561	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-300	0.27	PD T 562	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.00	PD T 563	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.29	PD T 564	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 565	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.22	PD T 566	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 567	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.22	PD T 568	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.20	PD T 569	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 570	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 571	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.02	PD T 572	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.32	PD T 573	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 574	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.11	PD T 575	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD T 576	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.16	PD T 577	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.32	PD T 578	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.06	PD T 579	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.03	PD T 580	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-200	0.14	PD T 581	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-275	0.11	PD T 582	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-281	0.04	PD T 583	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-300	0.03	PD T 584	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-300	0.27	PD T 585	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.29	PD T 586	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 587	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.08	PD T 588	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.22	PD T 589	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 590	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.22	PD T 591	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.20	PD T 592	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.18	PD T 593	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.17	PD T 594	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.02	PD T 595	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.31	PD T 596	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 597	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.16	PD T 598	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.32	PD T 599	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.18	PD T 600	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10		Existing Drain			
	0.03		Existing Drain			
	0.18		Existing Drain			
	0.12	PD S 604	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.12	PD S 605	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
G.C. Road	0.31	PD S 606	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
G.C. Road	0.31	PD S 607	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.22	PD T 608	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.22	PD T 609	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-209	0.03	PD T 610	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-322	0.03	PD T 611	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.07	PD T 612	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.07	PD T 613	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.11	PD S 614	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 615	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
Bir Muktizoodha Moklesur Rahman Road	0.19	PD T 616	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Bir Muktizoodha Moklesur Rahman Road	0.20	PD T 617	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.15	PD T 618	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 619	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD S 620	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.13	PD S 621	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 622	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.10	PD S 623	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD T 624	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.11	PD T 625	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Bir Muktizoodha Moklesur Rahman Road	0.17	PD S 626	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Bir Muktizoodha Moklesur Rahman Road	0.16	PD S 627	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.14	PD T 628	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 629	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-142	0.10	PD T 630	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-142	0.11	PD T 631	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-300	0.21	PD S 632	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
Road-278	0.04	PD T 633	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.12	PD T 634	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD T 635	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD S 636	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.10	PD S 637	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.21	PD T 638	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.20	PD T 639	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-118	0.12	PD T 640	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-118	0.12	PD T 641	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-119	0.10	PD T 642	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-40	0.06	PD T 643	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-39	0.09	PD T 644	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.06	PD T 645	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD T 646	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD T 647	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD T 648	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.11	PD S 649	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 650	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.18	PD T 651	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.10	PD T 652	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.14	PD T 653	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.13	PD T 654	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-50	0.07	PD T 655	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-50	0.14	PD T 656	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.14	PD T 657	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.13	PD T 658	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-110	0.01	PD T 659	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01

Road Name	Length (m)	Proposed ID	Proposed Type	Proposed Width (m)	Proposed Depth (m)	Phasing
Road-110	0.02	PD T 660	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.09	PD T 661	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.09	PD T 662	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
G.C. Road	0.30	PD S 663	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
G.C. Road	0.28	PD S 664	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.04	PD T 665	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.04	PD T 666	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-77	0.06	PD T 667	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-77	0.06	PD T 668	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.08	PD T 669	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.08	PD T 670	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.21	PD T 671	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.11	PD S 672	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.11	PD S 673	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.07	PD T 674	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.06	PD T 675	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.08	PD T 676	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.08	PD T 677	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
Road-129	0.14	PD T 678	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-129	0.15	PD T 679	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-129	0.03	PD T 680	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
Road-129	0.03	PD T 681	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 01
	0.08	PD T 682	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.08	PD T 683	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 684	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.19	PD T 685	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 686	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.15	PD T 687	Tertiary	1.50 - 2.50	0.64 - 1.00	Phase 02
	0.12	PD S 688	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.12	PD S 689	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.08	PD S 690	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.08	PD S 691	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 01
	0.15	PD S 692	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.15	PD S 693	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.08	PD S 694	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02
	0.08	PD S 695	Secondary	2.35 - 3.35	1.124 - 2.124	Phase 02

Annexure- G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.89	Char Gudghata 061 00	1	1
River	0.78	Char Gudghata 061 00	2	1
River	0.22	Char Gudghata 061 00	3	1
River	0.06	Char Gudghata 061 00	4	1
River	0.03	Char Gudghata 061 00	5	1
River	0.35	Char Gudghata 061 00	6	1
River	0.05	Char Gudghata 061 00	7	1
River	0.05	Char Gudghata 061 00	8	1
River	0.28	Char Gudghata 061 00	9	1
River	0.69	Char Gudghata 061 00	10	1
River	0.49	Char Gudghata 061 00	11	1
River	0.34	Char Gudghata 061 00	12	1
River	0.08	Char Gudghata 061 00	13	1
River	0.22	Char Gudghata 061 00	14	1
River	0.72	Char Gudghata 061 00	15	1
River	0.49	Char Gudghata 061 00	16	1
River	0.44	Char Gudghata 061 00	17	1
River	2.26	Char Gudghata 061 00	18	1
River	0.6	Char Gudghata 061 00	19	1
River	1.38	Char Gudghata 061 00	20	1
River	0.64	Char Gudghata 061 00	21	1
River	0.17	Char Gudghata 061 00	22	1
River	0.43	Char Gudghata 061 00	23	1
River	0.08	Char Gudghata 061 00	24	1
River	0.09	Char Gudghata 061 00	25	1
River	0.02	Char Gudghata 061 00	26	1
River	0.13	Char Gudghata 061 00	27	1
River	0.16	Char Gudghata 061 00	28	1
River	1.17	Char Gudghata 061 00	29	1
River	0.48	Char Gudghata 061 00	30	1
River	0.16	Char Gudghata 061 00	31	1
River	0.12	Char Gudghata 061 00	32	1
River	0.33	Char Gudghata 061 00	34	1
River	1.4	Char Gudghata 061 00	35	1
River	0.94	Char Gudghata 061 00	36	1
River	0.15	Char Gudghata 061 00	37	1
River	0.11	Char Gudghata 061 00	38	1
River	0.01	Char Gudghata 061 00	39	1
River	0.6	Char Gudghata 061 00	40	1
River	0.69	Char Gudghata 061 00	41	1
River	0.65	Char Gudghata 061 00	43	1
River	0.84	Char Gudghata 061 00	44	1
River	0.31	Char Gudghata 061 00	45	1
River	0.26	Char Gudghata 061 00	46	1
River	0.29	Char Gudghata 061 00	47	1
River	1.07	Char Gudghata 061 00	48	1
River	1.03	Char Gudghata 061 00	49	1
River	0.93	Char Gudghata 061 00	50	1
River	0.22	Char Gudghata 061 00	51	1
River	0.27	Char Gudghata 061 00	52	1
River	0.31	Char Gudghata 061 00	53	1
River	0.31	Char Gudghata 061 00	54	1
River	0.34	Char Gudghata 061 00	55	1
River	0.21	Char Gudghata 061 00	56	1
River	0.45	Char Gudghata 061 00	57	1
River	0.04	Char Gudghata 061 00	58	1
River	0.34	Char Gudghata 061 00	59	1
River	0.27	Char Gudghata 061 00	60	1
River	1.69	Char Gudghata 061 00	61	1
River	1.3	Char Gudghata 061 00	62	1
River	0.26	Char Gudghata 061 00	63	1
River	0.27	Char Gudghata 061 00	64	1
River	0.5	Char Gudghata 061 00	65	1
River	0.19	Char Gudghata 061 00	66	1
River	0.1	Char Gudghata 061 00	67	1
River	0.64	Char Gudghata 061 00	68	1
River	0.27	Char Gudghata 061 00	69	1
River	0.18	Char Gudghata 061 00	70	1
River	0.19	Char Gudghata 061 00	71	1

Annexure G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.79	Char Gudghata 061 00	72	1
River	0.17	Char Gudghata 061 00	73	1
River	1.94	Char Gudghata 061 00	74	1
River	0.19	Char Gudghata 061 00	75	1
River	0.2	Char Gudghata 061 00	76	1
River	0.36	Char Gudghata 061 00	77	1
River	0.25	Char Gudghata 061 00	78	1
River	0.18	Char Gudghata 061 00	79	1
River	0.17	Char Gudghata 061 00	80	1
River	0.2	Char Gudghata 061 00	81	1
River	0.18	Char Gudghata 061 00	82	1
River	0.03	Char Gudghata 061 00	83	1
River	0.2	Char Gudghata 061 00	84	1
River	0.08	Char Gudghata 061 00	85	1
River	0.46	Char Gudghata 061 00	86	1
River	0.27	Char Gudghata 061 00	87	1
River	1.03	Char Gudghata 061 00	88	1
River	1.43	Char Gudghata 061 00	89	1
River	1.52	Char Gudghata 061 00	90	1
River	0.18	Char Gudghata 061 00	91	1
River	0.12	Char Gudghata 061 00	92	1
River	0.1	Char Gudghata 061 00	93	1
River	0.1	Char Gudghata 061 00	94	1
River	0.05	Char Gudghata 061 00	95	1
River	0.02	Char Gudghata 061 00	96	1
River	0.03	Char Gudghata 061 00	97	1
River	0.59	Char Gudghata 061 00	98	1
River	1.23	Char Gudghata 061 00	99	1
River	0.15	Char Gudghata 061 00	100	1
River	0.3	Char Gudghata 061 00	101	1
River	1.93	Char Gudghata 061 00	102	1
River	0.36	Char Gudghata 061 00	103	1
River	0.57	Char Gudghata 061 00	105	1
River	0.56	Char Gudghata 061 00	106	1
River	0.31	Char Gudghata 061 00	107	1
River	0.3	Char Gudghata 061 00	108	1
River	0.21	Char Gudghata 061 00	109	1
River	0.22	Char Gudghata 061 00	109	1
River	1.21	Char Gudghata 061 00	114	1
River	0.19	Char Gudghata 061 00	115	1
River	0.2	Char Gudghata 061 00	116	1
River	0.5	Char Gudghata 061 00	117	1
River	0.68	Char Gudghata 061 00	118	1
River	1.66	Char Gudghata 061 00	119	1
River	1	Char Gudghata 061 00	120	1
River	1.23	Char Gudghata 061 00	121	1
River	1.92	Char Gudghata 061 00	122	1
River	0.25	Char Gudghata 061 00	123	1
River	0.83	Char Gudghata 061 00	124	1
River	0.11	Char Gudghata 061 00	125	1
River	0.67	Char Gudghata 061 00	126	1
River	0.09	Char Gudghata 061 00	127	1
River	0.33	Char Gudghata 061 00	162	1
River	0.36	Char Gudghata 061 00	163	1
River	0.88	Char Gudghata 061 00	164	1
River	0.15	Char Gudghata 061 00	165	1
River	0.12	Char Gudghata 061 00	176	1
River	0.15	Char Gudghata 061 00	177	1
River	0.16	Char Gudghata 061 00	188	1
River	0.15	Char Gudghata 061 00	189	1
River	0.09	Char Gudghata 061 00	205	1
River	0.12	Char Gudghata 061 00	206	1
River	0.37	Char Gudghata 061 00	207	1
River	0.22	Char Gudghata 061 00	208	1
Canal	0.13	Char Gudghata 061 00	215	1
River	0.01	Char Gudghata 061 00	218	1
River	0.27	Char Gudghata 061 00	219	1
River	0.14	Char Gudghata 061 00	220	1
River	0.03	Char Gudghata 061 00	221	1
River	0.11	Char Gudghata 061 00	224	1

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.1	Char Gudghata 061 00	225	1
Canal	0.22	Char Gudghata 061 00	228	1
River	0.37	Char Gudghata 061 00	229	1
River	0.2	Char Gudghata 061 00	232	1
River	0.29	Char Gudghata 061 00	233	1
Canal	0.08	Char Gudghata 061 00	234	1
Canal	0.01	Char Gudghata 061 00	235	1
Canal	0.03	Char Gudghata 061 00	236	1
Canal	0.03	Char Gudghata 061 00	237	1
River	0.26	Char Gudghata 061 00	238	1
River	0.07	Char Gudghata 061 00	239	1
River	0.1	Char Gudghata 061 00	240	1
River	0.23	Char Gudghata 061 00	241	1
Canal	0.01	Char Gudghata 061 00	242	1
Canal	0.04	Char Gudghata 061 00	243	1
Canal	0.02	Char Gudghata 061 00	244	1
River	0.16	Char Gudghata 061 00	246	1
River	0.1	Char Gudghata 061 00	247	1
River	0.27	Char Gudghata 061 00	248	1
River	0.36	Char Gudghata 061 00	249	1
Canal	0.04	Char Gudghata 061 00	250	1
Canal	0.02	Char Gudghata 061 00	252	1
River	0.18	Char Gudghata 061 00	253	1
River	0.2	Char Gudghata 061 00	254	1
River	0.32	Char Gudghata 061 00	255	1
River	0.04	Char Gudghata 061 00	256	1
River	0.19	Char Gudghata 061 00	256	1
Canal	0.01	Char Gudghata 061 00	257	1
River	0.04	Char Gudghata 061 00	258	1
River	0.18	Char Gudghata 061 00	259	1
River	0.14	Char Gudghata 061 00	260	1
River	0.17	Char Gudghata 061 00	261	1
River	0.29	Char Gudghata 061 00	262	1
River	0.04	Char Gudghata 061 00	263	1
River	0.02	Char Gudghata 061 00	264	1
River	5.53	Char Gudghata 061 00	264	1
River	0.58	Char Gudghata 061 00	265	1
River	0.09	Char Gudghata 061 00	274	1
River	0.26	Char Gudghata 061 00	280	1
River	0.15	Char Gudghata 061 00	281	1
River	0.05	Char Gudghata 061 00	282	1
River	0.13	Char Gudghata 061 00	283	1
Canal	0.08	Char Gudghata 061 00	285	1
River	0.11	Char Gudghata 061 00	285	1
Canal	0.16	Char Gudghata 061 00	285	1
River	2.1	Char Gudghata 061 00	286	1
River	0.09	Char Gudghata 061 00	287	1
River	0.08	Char Gudghata 061 00	288	1
River	0.13	Char Gudghata 061 00	450	1
Canal	0.04	Mahish Gudi 063 00	268	1
Canal	0.08	Mahish Gudi 063 00	269	1
Canal	0.44	Mahish Gudi 063 00	285	1
Canal	0.12	Mahish Gudi 063 00	288	1
Canal	0.16	Mahish Gudi 063 00	289	1
Canal	0.18	Mahish Gudi 063 00	292	1
Canal	0.01	Mahish Gudi 063 00	308	1
Canal	0.47	Mahish Gudi 063 00	309	1
Canal	0.37	Mahish Gudi 063 00	310	1
Canal	0.43	Mahish Gudi 063 00	310	1
River	0.03	Mahish Gudi 063 00	312	1
Canal	0.05	Mahish Gudi 063 00	312	1
River	0.32	Mahish Gudi 063 00	313	1
River	0.25	Mahish Gudi 063 00	314	1
Canal	0.01	Mahish Gudi 063 00	315	1
River	0.26	Mahish Gudi 063 00	315	1
River	0.08	Mahish Gudi 063 00	316	1
Canal	0.1	Mahish Gudi 063 00	316	1
Canal	0.05	Mahish Gudi 063 00	318	1
Canal	0.1	Mahish Gudi 063 00	318	1
River	3.6	Mahish Gudi 063 00	318	1

Annexure G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.32	Mahish Gudi 063 00	319	1
Canal	0.06	Mahish Gudi 063 00	322	1
Canal	0.42	Mahish Gudi 063 00	323	1
Canal	0.64	Mahish Gudi 063 00	324	1
Canal	0.24	Mahish Gudi 063 00	325	1
Canal	0.64	Mahish Gudi 063 00	330	1
River	1.62	Mahish Gudi 063 00	338	1
River	0.46	Mahish Gudi 063 00	339	1
River	0.25	Mahish Gudi 063 00	340	1
River	1.46	Mahish Gudi 063 00	341	1
River	0.26	Mahish Gudi 063 00	345	1
River	0.19	Mahish Gudi 063 00	346	1
River	0.37	Mahish Gudi 063 00	347	1
River	0.84	Mahish Gudi 063 00	348	1
River	0.37	Mahish Gudi 063 00	349	1
River	0.42	Mahish Gudi 063 00	350	1
River	2.41	Mahish Gudi 063 00	351	1
River	0.2	Mahish Gudi 063 00	352	1
River	1.15	Mahish Gudi 063 00	353	1
River	0.08	Mahish Gudi 063 00	354	1
River	1.39	Mahish Gudi 063 00	355	1
River	0.71	Mahish Gudi 063 00	356	1
River	0.67	Mahish Gudi 063 00	357	1
River	0.05	Mahish Gudi 063 00	358	1
River	0.22	Mahish Gudi 063 00	359	1
River	0.31	Mahish Gudi 063 00	360	1
River	0.18	Mahish Gudi 063 00	361	1
River	0.38	Mahish Gudi 063 00	362	1
River	0.24	Mahish Gudi 063 00	363	1
River	2.68	Mahish Gudi 063 00	364	1
River	0.72	Mahish Gudi 063 00	365	1
River	1.58	Mahish Gudi 063 00	366	1
River	0.19	Mahish Gudi 063 00	367	1
River	0.23	Mahish Gudi 063 00	368	1
River	1.4	Mahish Gudi 063 00	369	1
River	0.92	Mahish Gudi 063 00	370	1
River	0.15	Mahish Gudi 063 00	371	1
River	0.16	Mahish Gudi 063 00	372	1
River	0.19	Mahish Gudi 063 00	373	1
River	0.27	Mahish Gudi 063 00	374	1
River	0.49	Mahish Gudi 063 00	375	1
River	0.31	Mahish Gudi 063 00	376	1
River	0.61	Mahish Gudi 063 00	377	1
River	0.62	Mahish Gudi 063 00	378	1
River	0.14	Mahish Gudi 063 00	379	1
River	0.55	Mahish Gudi 063 00	380	1
River	0.2	Mahish Gudi 063 00	381	1
River	0.2	Mahish Gudi 063 00	382	1
River	0.21	Mahish Gudi 063 00	383	1
River	0.27	Mahish Gudi 063 00	384	1
River	2.42	Mahish Gudi 063 00	385	1
River	0.4	Mahish Gudi 063 00	386	1
River	1.74	Mahish Gudi 063 00	387	1
River	0.68	Mahish Gudi 063 00	388	1
River	0.07	Mahish Gudi 063 00	389	1
River	0.11	Mahish Gudi 063 00	390	1
River	0.43	Mahish Gudi 063 00	391	1
River	0.48	Mahish Gudi 063 00	392	1
River	0.03	Mahish Gudi 063 00	393	1
River	0.87	Mahish Gudi 063 00	393	1
River	0.68	Mahish Gudi 063 00	394	1
Canal	1.42	Mahish Gudi 063 00	401	1
Canal	0.08	Mahish Gudi 063 00	402	1
Canal	0.56	Mahish Gudi 063 00	403	1
River	0.01	Mahish Gudi 063 00	412	1
Canal	0.15	Mahish Gudi 063 00	414	1
Canal	0.53	Mahish Gudi 063 00	417	1
Canal	0.08	Mahish Gudi 063 00	419	1
Canal	0.03	Mahish Gudi 063 00	420	1
Canal	0.01	Mahish Gudi 063 00	421	1

Annexure G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.17	Mahish Gudi 063 00	422	1
Canal	0.02	Mahish Gudi 063 00	423	1
Canal	0.08	Mahish Gudi 063 00	424	1
Canal	0.18	Mahish Gudi 063 00	431	1
Canal	0.06	Mahish Gudi 063 00	433	1
Canal	0.48	Mahish Gudi 063 00	434	1
Canal	0.12	Mahish Gudi 063 00	435	1
Canal	0.25	Mahish Gudi 063 00	437	1
River	1.05	Mahish Gudi 063 00	441	1
River	0.24	Mahish Gudi 063 00	442	1
River	0.29	Mahish Gudi 063 00	443	1
River	0.26	Mahish Gudi 063 00	444	1
River	0.24	Mahish Gudi 063 00	445	1
River	0.28	Mahish Gudi 063 00	446	1
River	0.03	Mahish Gudi 063 00	447	1
River	0.15	Mahish Gudi 063 00	447	1
River	0.05	Mahish Gudi 063 00	448	1
River	0.17	Mahish Gudi 063 00	448	1
River	0.46	Mahish Gudi 063 00	448	1
River	0.45	Mahish Gudi 063 00	449	1
River	0.99	Mahish Gudi 063 00	450	1
River	0.35	Mahish Gudi 063 00	451	1
River	0.02	Mahish Gudi 063 00	452	1
River	0.03	Mahish Gudi 063 00	453	1
River	0.13	Mahish Gudi 063 00	455	1
River	0.22	Mahish Gudi 063 00	458	1
River	1.5	Mahish Gudi 063 00	459	1
River	0.38	Mahish Gudi 063 00	460	1
River	2.94	Mahish Gudi 063 00	461	1
River	0.15	Mahish Gudi 063 00	462	1
River	0.06	Mahish Gudi 063 00	463	1
River	0.44	Mahish Gudi 063 00	464	1
River	1.81	Mahish Gudi 063 00	465	1
River	0.94	Mahish Gudi 063 00	466	1
River	0.32	Mahish Gudi 063 00	467	1
River	0.28	Mahish Gudi 063 00	468	1
River	0.01	Mahish Gudi 063 00	469	1
River	0.19	Mahish Gudi 063 00	470	1
River	1.59	Mahish Gudi 063 00	471	1
River	1.16	Mahish Gudi 063 00	472	1
River	0.24	Mahish Gudi 063 00	473	1
River	0.19	Mahish Gudi 063 00	474	1
River	0.16	Mahish Gudi 063 00	475	1
River	0.22	Mahish Gudi 063 00	476	1
River	0.39	Mahish Gudi 063 00	477	1
River	0.23	Mahish Gudi 063 00	478	1
River	0.21	Mahish Gudi 063 00	479	1
River	0.9	Mahish Gudi 063 00	480	1
River	0.42	Mahish Gudi 063 00	481	1
River	0.08	Mahish Gudi 063 00	482	1
River	0.35	Mahish Gudi 063 00	483	1
River	0.52	Mahish Gudi 063 00	484	1
River	0.84	Mahish Gudi 063 00	485	1
River	0.22	Mahish Gudi 063 00	486	1
River	0.21	Mahish Gudi 063 00	487	1
River	0.41	Mahish Gudi 063 00	488	1
River	0.07	Mahish Gudi 063 00	489	1
River	0.57	Mahish Gudi 063 00	490	1
River	0.61	Mahish Gudi 063 00	491	1
River	0.16	Mahish Gudi 063 00	492	1
River	0.08	Mahish Gudi 063 00	493	1
River	0.06	Mahish Gudi 063 00	494	1
River	0.15	Mahish Gudi 063 00	495	1
River	0.14	Mahish Gudi 063 00	496	1
River	1.2	Mahish Gudi 063 00	497	1
River	0.89	Mahish Gudi 063 00	498	1
River	2.62	Mahish Gudi 063 00	499	1
River	1.51	Mahish Gudi 063 00	500	1
River	0.16	Mahish Gudi 063 00	501	1
River	0.44	Mahish Gudi 063 00	502	1

Annexure G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.1	Mahish Gudi 063 00	503	1
River	1.42	Mahish Gudi 063 00	504	1
River	0.25	Mahish Gudi 063 00	505	1
River	1.07	Mahish Gudi 063 00	506	1
River	0.33	Mahish Gudi 063 00	507	1
River	0.28	Mahish Gudi 063 00	508	1
River	0.04	Mahish Gudi 063 00	509	1
River	0.07	Mahish Gudi 063 00	510	1
River	0.88	Mahish Gudi 063 00	511	1
River	0.43	Mahish Gudi 063 00	512	1
River	0.27	Mahish Gudi 063 00	513	1
River	0.3	Mahish Gudi 063 00	514	1
River	0.21	Mahish Gudi 063 00	515	1
River	0.37	Mahish Gudi 063 00	516	1
River	0.53	Mahish Gudi 063 00	517	1
River	0.65	Mahish Gudi 063 00	518	1
River	0.05	Mahish Gudi 063 00	519	1
River	0.1	Mahish Gudi 063 00	520	1
River	0.03	Mahish Gudi 063 00	521	1
River	0.09	Mahish Gudi 063 00	522	1
River	0.07	Mahish Gudi 063 00	523	1
River	0.24	Mahish Gudi 063 00	524	1
River	0.47	Mahish Gudi 063 00	525	1
River	0.08	Mahish Gudi 063 00	526	1
River	0.62	Mahish Gudi 063 00	527	1
River	0.83	Mahish Gudi 063 00	528	1
River	0.36	Mahish Gudi 063 00	529	1
River	0.13	Mahish Gudi 063 00	530	1
River	0.07	Mahish Gudi 063 00	531	1
River	0.9	Mahish Gudi 063 00	532	1
River	0.19	Mahish Gudi 063 00	533	1
River	0.21	Mahish Gudi 063 00	534	1
River	0.29	Mahish Gudi 063 00	534	1
River	0.18	Mahish Gudi 063 00	535	1
River	0.16	Mahish Gudi 063 00	537	1
River	0.12	Mahish Gudi 063 00	538	1
River	0.67	Mahish Gudi 063 00	539	1
River	0.62	Mahish Gudi 063 00	540	1
River	0.29	Mahish Gudi 063 00	541	1
River	0.25	Mahish Gudi 063 00	542	1
River	0.13	Mahish Gudi 063 00	543	1
River	0.58	Mahish Gudi 063 00	544	1
River	0.11	Mahish Gudi 063 00	545	1
River	0.66	Mahish Gudi 063 00	546	1
River	0.6	Mahish Gudi 063 00	547	1
River	0.59	Mahish Gudi 063 00	548	1
River	0.41	Mahish Gudi 063 00	549	1
River	0.76	Mahish Gudi 063 00	550	1
River	0.69	Mahish Gudi 063 00	551	1
River	0.02	Mahish Gudi 063 00	552	1
River	0.07	Mahish Gudi 063 00	556	1
River	0.09	Mahish Gudi 063 00	557	1
River	0.46	Mahish Gudi 063 00	558	1
River	0.2	Mahish Gudi 063 00	559	1
River	0.02	Mahish Gudi 063 00	560	1
River	0.02	Mahish Gudi 063 00	561	1
River	0.01	Mahish Gudi 063 00	562	1
River	0.02	Mahish Gudi 063 00	563	1
River	0.89	Mahish Gudi 063 00	564	1
River	0.08	Mahish Gudi 063 00	565	1
River	0.07	Mahish Gudi 063 00	566	1
River	0.18	Mahish Gudi 063 00	569	1
River	0.53	Mahish Gudi 063 00	570	1
River	0.58	Mahish Gudi 063 00	571	1
River	0.17	Mahish Gudi 063 00	572	1
River	0.24	Mahish Gudi 063 00	573	1
River	0.18	Mahish Gudi 063 00	574	1
River	0.13	Mahish Gudi 063 00	576	1
River	0.31	Mahish Gudi 063 00	577	1
River	0.5	Mahish Gudi 063 00	578	1

Annexure G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.63	Mahish Gudi 063 00	579	1
River	0.46	Mahish Gudi 063 00	580	1
River	0.42	Mahish Gudi 063 00	581	1
River	0.27	Mahish Gudi 063 00	582	1
River	0.03	Mahish Gudi 063 00	583	1
River	0.14	Mahish Gudi 063 00	583	1
River	0.04	Mahish Gudi 063 00	588	1
River	0.03	Mahish Gudi 063 00	589	1
River	0.16	Mahish Gudi 063 00	590	1
River	0.03	Mahish Gudi 063 00	591	1
River	0.27	Mahish Gudi 063 00	592	1
River	0.47	Mahish Gudi 063 00	593	1
River	0.77	Mahish Gudi 063 00	594	1
River	0.82	Mahish Gudi 063 00	595	1
River	0.17	Mahish Gudi 063 00	596	1
River	0.87	Mahish Gudi 063 00	597	1
River	0.93	Mahish Gudi 063 00	598	1
River	0.39	Mahish Gudi 063 00	599	1
River	1.29	Mahish Gudi 063 00	600	1
River	0.77	Mahish Gudi 063 00	601	1
River	0.8	Mahish Gudi 063 00	602	1
River	0.11	Mahish Gudi 063 00	609	1
River	0.16	Mahish Gudi 063 00	610	1
Canal	0.29	Mahish Gudi 063 00	619	1
River	0.14	Mahish Gudi 063 00	623	1
River	0.16	Mahish Gudi 063 00	624	1
River	0.04	Mahish Gudi 063 00	625	1
Canal	1.07	Mahish Gudi 063 00	626	1
River	0.15	Mahish Gudi 063 00	627	1
River	0.1	Mahish Gudi 063 00	628	1
River	2.25	Mahish Gudi 063 00	629	1
River	0.16	Mahish Gudi 063 00	630	1
River	0.61	Mahish Gudi 063 00	631	1
Canal	0.01	Mahish Gudi 063 00	633	1
Canal	0.05	Mahish Gudi 063 00	634	1
Canal	0.02	Mahish Gudi 063 00	635	1
River	0.47	Mahish Gudi 063 00	637	1
River	0.51	Mahish Gudi 063 00	638	1
River	0.15	Mahish Gudi 063 00	655	1
River	0.02	Mahish Gudi 063 00	99999	1
River	2.15	Tera Char 071 01	179	2
River	1.22	Tera Char 071 01	180	2
River	0.19	Tera Char 071 01	181	2
River	0.07	Tera Char 071 01	182	2
River	0.8	Tera Char 071 01	185	2
River	0.14	Tera Char 071 01	186	2
River	0.12	Tera Char 071 01	187	2
River	0.19	Tera Char 071 01	188	2
River	0.14	Tera Char 071 01	189	2
River	0.15	Tera Char 071 01	190	2
River	0.09	Tera Char 071 01	191	2
River	0.08	Tera Char 071 01	192	2
River	0.07	Tera Char 071 01	193	2
River	0.05	Tera Char 071 01	194	2
River	0.03	Tera Char 071 01	195	2
River	0.12	Tera Char 071 01	196	2
River	0.06	Tera Char 071 01	197	2
River	2.03	Tera Char 071 01	198	2
River	2.6	Tera Char 071 01	199	2
River	0.41	Tera Char 071 01	200	2
River	0.18	Tera Char 071 01	201	2
River	0.17	Tera Char 071 01	202	2
River	0.1	Tera Char 071 01	203	2
River	0.09	Tera Char 071 01	204	2
River	0.07	Tera Char 071 01	205	2
River	0.23	Tera Char 071 01	206	2
River	3.03	Tera Char 071 01	207	2
River	1.06	Tera Char 071 01	208	2
River	0.19	Tera Char 071 01	209	2
River	0.72	Tera Char 071 01	210	2

Annexure G: Plot Scheduling of Water Retention Area

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.31	Tera Char 071 01	211	2
River	0.08	Tera Char 071 01	212	2
River	0.41	Tera Char 071 01	213	2
River	1.05	Tera Char 071 01	214	2
River	0.79	Tera Char 071 01	215	2
Pond	0.04	Tera Char 071 01	217	2
River	0.38	Tera Char 071 01	219	2
River	0.12	Tera Char 071 01	220	2
River	0.16	Tera Char 071 01	221	2
River	0.02	Tera Char 071 01	222	2
Pond	0.2	Tera Char 071 01	225	2
River	0.02	Tera Char 071 01	234	2
River	0.18	Tera Char 071 01	234	2
River	2.4	Tera Char 071 01	235	2
River	0.24	Tera Char 071 01	236	2
River	0.06	Tera Char 071 01	237	2
River	0.16	Tera Char 071 01	238	2
River	0.47	Tera Char 071 01	239	2
River	0.18	Tera Char 071 01	240	2
River	0.18	Tera Char 071 01	241	2
River	0.01	Tera Char 071 01	242	2
River	0.1	Tera Char 071 01	243	2
River	0.23	Tera Char 071 01	244	2
River	0.29	Tera Char 071 01	245	2
River	0.21	Tera Char 071 01	246	2
River	0.86	Tera Char 071 01	247	2
River	0.11	Tera Char 071 01	248	2
River	0.03	Tera Char 071 01	249	2
River	0.15	Tera Char 071 01	250	2
River	0.17	Tera Char 071 01	251	2
River	0.1	Tera Char 071 01	252	2
River	0.07	Tera Char 071 01	253	2
River	0.06	Tera Char 071 01	254	2
River	0.13	Tera Char 071 01	255	2
River	0.03	Tera Char 071 01	256	2
River	0.09	Tera Char 071 01	289	2
River	0.06	Tera Char 071 01	290	2
River	0.27	Tera Char 071 01	291	2
River	0.24	Tera Char 071 01	292	2
River	0.79	Tera Char 071 01	293	2
River	0.06	Tera Char 071 01	294	2
River	0.18	Tera Char 071 01	295	2
River	0.56	Tera Char 071 01	296	2
River	0.31	Tera Char 071 01	297	2
River	0.35	Tera Char 071 01	298	2
River	0.42	Tera Char 071 01	299	2
River	0.8	Tera Char 071 01	300	2
River	0.53	Tera Char 071 01	301	2
River	0.03	Tera Char 071 01	302	2
River	0.14	Tera Char 071 01	303	2
River	0.04	Tera Char 071 01	304	2
River	0.63	Tera Char 071 01	305	2
River	0.07	Tera Char 071 01	306	2
River	0.64	Tera Char 071 01	307	2
River	0.41	Tera Char 071 01	308	2
River	0.99	Tera Char 071 01	309	2
River	0.14	Tera Char 071 01	310	2
River	0.06	Tera Char 071 01	311	2
River	0.61	Tera Char 071 01	312	2
River	0.31	Tera Char 071 01	313	2
River	0.33	Tera Char 071 01	314	2
River	0.48	Tera Char 071 01	315	2
River	0.4	Tera Char 071 01	316	2
River	0.54	Tera Char 071 01	317	2
River	0.5	Tera Char 071 01	318	2
River	0.4	Tera Char 071 01	319	2
River	0.24	Tera Char 071 01	320	2
River	0.35	Tera Char 071 01	321	2
River	0.03	Tera Char 071 01	322	2
River	0.03	Tera Char 071 01	323	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.27	Tera Char 071 01	324	2
River	0.24	Tera Char 071 01	325	2
River	0.93	Tera Char 071 01	326	2
River	0.12	Tera Char 071 01	327	2
River	0.14	Tera Char 071 01	328	2
River	0.13	Tera Char 071 01	329	2
River	0.45	Tera Char 071 01	330	2
River	0.88	Tera Char 071 01	331	2
River	0.28	Tera Char 071 01	332	2
River	0.09	Tera Char 071 01	333	2
River	0.09	Tera Char 071 01	334	2
River	0.14	Tera Char 071 01	335	2
River	0.45	Tera Char 071 01	336	2
River	0.54	Tera Char 071 01	337	2
River	0.14	Tera Char 071 01	338	2
River	2.98	Tera Char 071 01	339	2
River	1.56	Tera Char 071 01	340	2
River	2.01	Tera Char 071 01	341	2
River	2.82	Tera Char 071 01	342	2
River	0.09	Tera Char 071 01	343	2
River	5.95	Tera Char 071 01	344	2
River	1.86	Tera Char 071 01	345	2
River	0.3	Tera Char 071 01	346	2
River	0.32	Tera Char 071 01	347	2
River	0.51	Tera Char 071 01	348	2
River	0.32	Tera Char 071 01	349	2
River	0.94	Tera Char 071 01	350	2
River	0.7	Tera Char 071 01	351	2
River	0.81	Tera Char 071 01	352	2
River	0.74	Tera Char 071 01	353	2
River	0.46	Tera Char 071 01	354	2
River	1.32	Tera Char 071 01	355	2
River	0.33	Tera Char 071 01	356	2
River	0.46	Tera Char 071 01	357	2
River	0.82	Tera Char 071 01	358	2
River	0.91	Tera Char 071 01	359	2
River	0.34	Tera Char 071 01	360	2
River	0.28	Tera Char 071 01	361	2
River	0.64	Tera Char 071 01	362	2
River	0.03	Tera Char 071 01	363	2
River	0.07	Tera Char 071 01	364	2
River	0.05	Tera Char 071 01	365	2
River	0.01	Tera Char 071 01	366	2
River	0.4	Tera Char 071 01	367	2
River	0.05	Tera Char 071 01	368	2
River	0.08	Tera Char 071 01	369	2
River	0.16	Tera Char 071 01	370	2
River	0.13	Tera Char 071 01	371	2
River	0.22	Tera Char 071 01	372	2
River	0.4	Tera Char 071 01	373	2
River	0.31	Tera Char 071 01	374	2
River	0.4	Tera Char 071 01	375	2
River	0.24	Tera Char 071 01	376	2
River	0.4	Tera Char 071 01	377	2
River	0.4	Tera Char 071 01	378	2
River	0.21	Tera Char 071 01	1001	2
River	0.26	Tera Char 071 01	1002	2
River	0.15	Tera Char 071 01	1003	2
River	0.17	Tera Char 071 01	1004	2
River	0.18	Tera Char 071 01	1005	2
River	0.22	Tera Char 071 01	1006	2
River	0.16	Tera Char 071 01	1007	2
River	0.15	Tera Char 071 01	1008	2
River	0.16	Tera Char 071 01	1009	2
River	0.41	Tera Char 071 01	1010	2
River	0.06	Tera Char 071 01	1011	2
River	0.25	Tera Char 071 01	1012	2
River	0.33	Tera Char 071 01	1013	2
River	0.53	Tera Char 071 01	1014	2
River	0.25	Tera Char 071 01	1015	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.16	Tera Char 071 01	1016	2
River	0.16	Tera Char 071 01	1017	2
River	0.86	Tera Char 071 01	1018	2
River	0.2	Tera Char 071 01	1019	2
River	0.1	Tera Char 071 01	1020	2
River	1.63	Tera Char 071 01	1021	2
River	2.42	Tera Char 071 01	1022	2
River	1.17	Tera Char 071 01	1023	2
River	0.51	Tera Char 071 01	1024	2
River	1.23	Tera Char 071 01	1025	2
River	0.57	Tera Char 071 01	1026	2
River	0.13	Tera Char 071 01	1027	2
River	0.15	Tera Char 071 01	1028	2
River	0.02	Tera Char 071 01	1029	2
River	0.16	Tera Char 071 01	1030	2
River	0.15	Tera Char 071 01	1031	2
River	0.25	Tera Char 071 01	1032	2
River	0.25	Tera Char 071 01	1033	2
River	0.37	Tera Char 071 01	1034	2
River	0.43	Tera Char 071 01	1035	2
River	0.23	Tera Char 071 01	1036	2
River	0.06	Tera Char 071 01	1037	2
River	0.12	Tera Char 071 01	1038	2
River	0.09	Tera Char 071 01	1039	2
River	0.82	Tera Char 071 01	1040	2
River	0.22	Tera Char 071 01	1041	2
River	0.23	Tera Char 071 01	1042	2
River	0.92	Tera Char 071 01	1043	2
River	0.96	Tera Char 071 01	1044	2
River	1.32	Tera Char 071 01	1045	2
River	1.27	Tera Char 071 01	1046	2
River	0.12	Tera Char 071 01	1047	2
River	0.06	Tera Char 071 01	1048	2
River	0.06	Tera Char 071 01	1052	2
River	0.05	Tera Char 071 01	1053	2
River	0.01	Tera Char 071 01	1054	2
River	0.44	Tera Char 071 01	1054	2
River	0.03	Tera Char 071 01	1055	2
River	0.05	Tera Char 071 01	1055	2
River	0.03	Tera Char 071 01	1056	2
River	0.33	Tera Char 071 01	1056	2
River	0.51	Tera Char 071 01	1071	2
River	0.77	Tera Char 071 01	1072	2
River	0.54	Tera Char 071 01	1073	2
River	0.57	Tera Char 071 01	1074	2
River	0.96	Tera Char 071 01	1075	2
Pond	0.23	Tera Char 071 01	1083	2
River	0.64	Tera Char 071 01	1086	2
River	0.03	Tera Char 071 01	1088	2
River	0.28	Tera Char 071 01	1089	2
River	0.1	Tera Char 071 01	1114	2
River	0.1	Tera Char 071 01	1115	2
River	0.92	Tera Char 071 01	1116	2
River	0.47	Tera Char 071 01	1117	2
River	0.3	Tera Char 071 01	1118	2
River	0.65	Tera Char 071 01	1119	2
River	0.07	Tera Char 071 01	1120	2
River	0.03	Tera Char 071 01	1121	2
River	0.1	Tera Char 071 01	1122	2
River	0.22	Tera Char 071 01	1123	2
River	0.64	Tera Char 071 01	1124	2
River	0.08	Tera Char 071 01	1125	2
River	0.29	Tera Char 071 01	1126	2
River	2.78	Tera Char 071 01	1127	2
River	0.1	Tera Char 071 01	1128	2
River	1.29	Tera Char 071 01	1129	2
River	1.18	Tera Char 071 01	1130	2
River	1.34	Tera Char 071 01	1131	2
River	0.53	Tera Char 071 01	1132	2
River	0.42	Tera Char 071 01	1133	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.24	Tera Char 071 01	1134	2
River	0.49	Tera Char 071 01	1135	2
River	0.07	Tera Char 071 01	1136	2
River	0.14	Tera Char 071 01	1137	2
River	0.27	Tera Char 071 01	1138	2
River	1.22	Tera Char 071 01	1139	2
River	1.48	Tera Char 071 01	1140	2
River	0.12	Tera Char 071 01	1141	2
River	0.14	Tera Char 071 01	1142	2
River	0.17	Tera Char 071 01	1143	2
River	0.5	Tera Char 071 01	1144	2
River	0.24	Tera Char 071 01	1145	2
River	0.18	Tera Char 071 01	1146	2
River	0.15	Tera Char 071 01	1147	2
River	0.49	Tera Char 071 01	1148	2
River	0.23	Tera Char 071 01	1149	2
River	0.17	Tera Char 071 01	1150	2
River	0.29	Tera Char 071 01	1151	2
River	0.19	Tera Char 071 01	1152	2
River	0.1	Tera Char 071 01	1153	2
River	0.09	Tera Char 071 01	1154	2
River	0.13	Tera Char 071 01	1155	2
River	0.13	Tera Char 071 01	1156	2
River	0.07	Tera Char 071 01	1157	2
River	0.05	Tera Char 071 01	1158	2
River	0.15	Tera Char 071 01	1159	2
River	0.11	Tera Char 071 01	1160	2
River	0.17	Tera Char 071 01	1161	2
River	0.14	Tera Char 071 01	1162	2
River	0.16	Tera Char 071 01	1163	2
River	0.15	Tera Char 071 01	1164	2
River	0.17	Tera Char 071 01	1165	2
River	0.1	Tera Char 071 01	1166	2
River	0.64	Tera Char 071 01	1167	2
River	0.21	Tera Char 071 01	1168	2
River	0.14	Tera Char 071 01	1169	2
River	0.1	Tera Char 071 01	1170	2
River	0.08	Tera Char 071 01	1171	2
River	0.07	Tera Char 071 01	1172	2
River	0.05	Tera Char 071 01	1173	2
River	0.06	Tera Char 071 01	1174	2
River	0.05	Tera Char 071 01	1175	2
River	0.11	Tera Char 071 01	1176	2
River	0.81	Tera Char 071 01	1177	2
River	0.38	Tera Char 071 01	1178	2
River	0.47	Tera Char 071 01	1179	2
River	0.56	Tera Char 071 01	1180	2
River	0.66	Tera Char 071 01	1181	2
River	0.79	Tera Char 071 01	1182	2
River	0.76	Tera Char 071 01	1183	2
River	0.44	Tera Char 071 01	1184	2
River	0.06	Tera Char 071 01	1185	2
River	0.05	Tera Char 071 01	1186	2
River	0.07	Tera Char 071 01	1187	2
River	0.45	Tera Char 071 01	1188	2
River	0.61	Tera Char 071 01	1189	2
River	0.5	Tera Char 071 01	1190	2
River	0.6	Tera Char 071 01	1191	2
River	0.53	Tera Char 071 01	1192	2
River	0.11	Tera Char 071 01	1193	2
River	0.04	Tera Char 071 01	1194	2
River	0.12	Tera Char 071 01	1195	2
River	0.11	Tera Char 071 01	1196	2
River	0.03	Tera Char 071 01	1197	2
River	0.03	Tera Char 071 01	1198	2
River	0.11	Tera Char 071 01	1199	2
River	0.53	Tera Char 071 01	1200	2
River	0.12	Tera Char 071 01	1201	2
River	0.03	Tera Char 071 01	1202	2
River	0.16	Tera Char 071 01	1203	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.14	Tera Char 071 01	1204	2
River	0.02	Tera Char 071 01	1205	2
River	0.16	Tera Char 071 01	1206	2
River	0.41	Tera Char 071 01	1207	2
River	0.21	Tera Char 071 01	1208	2
River	0.19	Tera Char 071 01	1209	2
River	0.62	Tera Char 071 01	1210	2
River	0.22	Tera Char 071 01	1211	2
River	0.27	Tera Char 071 01	1212	2
River	0.55	Tera Char 071 01	1213	2
River	0.19	Tera Char 071 01	1214	2
River	0.29	Tera Char 071 01	1215	2
River	0.36	Tera Char 071 01	1216	2
River	0.31	Tera Char 071 01	1217	2
River	0.15	Tera Char 071 01	1218	2
River	0.49	Tera Char 071 01	1219	2
River	0.45	Tera Char 071 01	1220	2
River	0.81	Tera Char 071 01	1221	2
River	0.09	Tera Char 071 01	1222	2
River	0.14	Tera Char 071 01	1223	2
River	0.08	Tera Char 071 01	1224	2
River	0.09	Tera Char 071 01	1225	2
River	0.24	Tera Char 071 01	1226	2
River	0.21	Tera Char 071 01	1227	2
River	0.31	Tera Char 071 01	1228	2
River	0.36	Tera Char 071 01	1229	2
River	0.17	Tera Char 071 01	1230	2
River	0.25	Tera Char 071 01	1231	2
River	0.11	Tera Char 071 01	1232	2
River	0.1	Tera Char 071 01	1233	2
River	0.08	Tera Char 071 01	1234	2
River	0.1	Tera Char 071 01	1235	2
River	0.18	Tera Char 071 01	1236	2
River	0.09	Tera Char 071 01	1237	2
River	0.09	Tera Char 071 01	1238	2
River	0.23	Tera Char 071 01	1239	2
River	0.04	Tera Char 071 01	1240	2
River	0.08	Tera Char 071 01	1241	2
River	0.22	Tera Char 071 01	1242	2
River	0.32	Tera Char 071 01	1243	2
River	0.59	Tera Char 071 01	1244	2
River	0.26	Tera Char 071 01	1245	2
River	0.28	Tera Char 071 01	1246	2
River	0.18	Tera Char 071 01	1247	2
River	0.19	Tera Char 071 01	1248	2
River	0.81	Tera Char 071 01	1249	2
River	0.65	Tera Char 071 01	1250	2
River	0.63	Tera Char 071 01	1251	2
River	0.72	Tera Char 071 01	1252	2
River	0.14	Tera Char 071 01	1253	2
River	1.09	Tera Char 071 01	1254	2
River	1.13	Tera Char 071 01	1255	2
River	0.32	Tera Char 071 01	1256	2
River	0.2	Tera Char 071 01	1257	2
River	0.03	Tera Char 071 01	1258	2
River	0.1	Tera Char 071 01	1259	2
River	0.08	Tera Char 071 01	1260	2
River	0.84	Tera Char 071 01	1261	2
River	0.15	Tera Char 071 01	1262	2
River	0.09	Tera Char 071 01	1263	2
River	0.06	Tera Char 071 01	1264	2
River	0.23	Tera Char 071 01	1265	2
River	0.13	Tera Char 071 01	1266	2
River	0.13	Tera Char 071 01	1267	2
River	0.27	Tera Char 071 01	1268	2
River	0.16	Tera Char 071 01	1269	2
River	0.34	Tera Char 071 01	1270	2
River	0.24	Tera Char 071 01	1271	2
River	0.25	Tera Char 071 01	1272	2
River	0.25	Tera Char 071 01	1273	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.18	Tera Char 071 01	1274	2
River	0.14	Tera Char 071 01	1275	2
River	0.15	Tera Char 071 01	1276	2
River	0.14	Tera Char 071 01	1277	2
River	0.14	Tera Char 071 01	1278	2
River	0.16	Tera Char 071 01	1279	2
River	0.27	Tera Char 071 01	1280	2
River	0.14	Tera Char 071 01	1281	2
River	0.13	Tera Char 071 01	1282	2
River	0.68	Tera Char 071 01	1283	2
River	0.34	Tera Char 071 01	1284	2
River	0.32	Tera Char 071 01	1285	2
River	0.98	Tera Char 071 01	1286	2
River	0.19	Tera Char 071 01	1287	2
River	0.3	Tera Char 071 01	1288	2
River	0.01	Tera Char 071 01	1293	2
River	0.09	Tera Char 071 01	1294	2
River	0.11	Tera Char 071 01	1295	2
River	0.04	Tera Char 071 01	1296	2
River	0.04	Tera Char 071 01	1297	2
River	0.04	Tera Char 071 01	1298	2
River	0.25	Tera Char 071 01	1305	2
River	0.04	Tera Char 071 01	1306	2
River	0.02	Tera Char 071 01	1307	2
River	0.03	Tera Char 071 01	1308	2
River	0.15	Tera Char 071 01	1330	2
River	0.16	Tera Char 071 01	1364	2
River	0.13	Tera Char 071 01	1377	2
River	0.33	Tera Char 071 01	1386	2
River	0.14	Tera Char 071 01	1388	2
River	0.34	Tera Char 071 01	1389	2
River	0.95	Tera Char 071 01	1390	2
River	0.6	Tera Char 071 01	1391	2
River	0.11	Tera Char 071 01	1392	2
River	0.91	Tera Char 071 01	1393	2
River	1.28	Tera Char 071 01	1394	2
River	0.12	Tera Char 071 01	1395	2
River	0.01	Tera Char 071 01	1396	2
River	0.01	Tera Char 071 01	1397	2
River	0.15	Tera Char 071 01	1398	2
River	0.44	Tera Char 071 01	1399	2
River	0.4	Tera Char 071 01	1400	2
River	0.46	Tera Char 071 01	1400	2
River	0.01	Tera Char 071 01	1401	2
River	0.05	Tera Char 071 01	1402	2
River	0.22	Tera Char 071 01	1403	2
River	0.69	Tera Char 071 01	1404	2
River	0.25	Tera Char 071 01	1405	2
River	0.36	Tera Char 071 01	1406	2
River	0.36	Tera Char 071 01	1407	2
River	0.26	Tera Char 071 01	1408	2
River	0.37	Tera Char 071 01	1410	2
River	0.38	Tera Char 071 01	1411	2
River	0.05	Tera Char 071 01	1412	2
River	0.34	Tera Char 071 01	1413	2
River	0.11	Tera Char 071 01	1414	2
River	0.1	Tera Char 071 01	1415	2
River	0.46	Tera Char 071 01	1416	2
River	0.21	Tera Char 071 01	1417	2
River	0.05	Tera Char 071 01	1418	2
River	0.22	Tera Char 071 01	1419	2
River	0.16	Tera Char 071 01	1420	2
River	0.11	Tera Char 071 01	1421	2
River	0.1	Tera Char 071 01	1422	2
River	0.07	Tera Char 071 01	1423	2
River	0.12	Tera Char 071 01	1424	2
River	0.06	Tera Char 071 01	1425	2
River	0.08	Tera Char 071 01	1426	2
River	0.06	Tera Char 071 01	1427	2
River	0.88	Tera Char 071 01	1428	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.18	Tera Char 071 01	1429	2
River	0.23	Tera Char 071 01	1430	2
River	0.08	Tera Char 071 01	1431	2
River	0.17	Tera Char 071 01	1432	2
River	0.28	Tera Char 071 01	1433	2
River	2.32	Tera Char 071 01	1434	2
River	1.52	Tera Char 071 01	1435	2
River	0.55	Tera Char 071 01	1436	2
River	0.1	Tera Char 071 01	1439	2
River	0.16	Tera Char 071 01	1440	2
River	0.08	Tera Char 071 01	1441	2
River	0.86	Tera Char 071 01	1442	2
River	0.18	Tera Char 071 01	1446	2
River	0.32	Tera Char 071 01	1447	2
River	0.86	Tera Char 071 01	1448	2
River	0.64	Tera Char 071 01	1449	2
River	0.06	Tera Char 071 01	1450	2
River	0.04	Tera Char 071 01	1451	2
Pond	0.11	Tera Char 071 01	1451	2
River	0.07	Tera Char 071 01	1456	2
River	0.08	Tera Char 071 01	1456	2
River	0.14	Tera Char 071 01	1457	2
River	1.26	Tera Char 071 01	1458	2
River	0.28	Tera Char 071 01	1459	2
River	0.19	Tera Char 071 01	1460	2
River	0.07	Tera Char 071 01	1461	2
River	0.1	Tera Char 071 01	1462	2
River	0.12	Tera Char 071 01	1463	2
River	0.58	Tera Char 071 01	1464	2
River	0.18	Tera Char 071 01	1484	2
River	0.05	Tera Char 071 01	1486	2
Pond	0.55	Tera Char 071 01	1492	2
River	0.02	Tera Char 071 01	1515	2
River	0.04	Tera Char 071 01	1516	2
River	0.06	Tera Char 071 01	1517	2
River	0.01	Tera Char 071 01	1521	2
River	0.04	Tera Char 071 01	1523	2
River	0.13	Tera Char 071 01	1524	2
River	0.04	Tera Char 071 01	1525	2
River	0.07	Tera Char 071 01	1526	2
River	0.24	Tera Char 071 01	1527	2
River	0.27	Tera Char 071 01	1528	2
River	0.32	Tera Char 071 01	1533	2
River	0.34	Tera Char 071 01	1534	2
River	0.09	Tera Char 071 01	1535	2
River	0.86	Tera Char 071 01	1536	2
River	0.03	Tera Char 071 01	1537	2
River	0.53	Tera Char 071 01	1538	2
River	0.89	Tera Char 071 01	1539	2
River	0.2	Tera Char 071 01	1540	2
River	0.27	Tera Char 071 01	1541	2
River	0.41	Tera Char 071 01	1542	2
River	0.3	Tera Char 071 01	1544	2
River	0.23	Tera Char 071 01	1545	2
River	0.25	Tera Char 071 01	1546	2
River	0.12	Tera Char 071 01	1547	2
River	0.06	Tera Char 071 01	1548	2
River	0.06	Tera Char 071 01	1549	2
River	0.11	Tera Char 071 01	1550	2
River	0.16	Tera Char 071 01	1551	2
River	1.19	Tera Char 071 01	1552	2
River	0.99	Tera Char 071 01	1553	2
River	0.65	Tera Char 071 01	1554	2
River	0.58	Tera Char 071 01	1555	2
River	0.29	Tera Char 071 01	1556	2
River	0.24	Tera Char 071 01	1557	2
River	0.63	Tera Char 071 01	1558	2
River	0.57	Tera Char 071 01	1559	2
River	0.17	Tera Char 071 01	1560	2
River	0.16	Tera Char 071 01	1561	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.24	Tera Char 071 01	1562	2
River	0.13	Tera Char 071 01	1563	2
River	0.5	Tera Char 071 01	1564	2
River	1.21	Tera Char 071 01	1565	2
River	0.13	Tera Char 071 01	1566	2
River	0.07	Tera Char 071 01	1567	2
River	0.12	Tera Char 071 01	1568	2
River	0.1	Tera Char 071 01	1569	2
River	0.06	Tera Char 071 01	1570	2
River	0.13	Tera Char 071 01	1571	2
River	0.1	Tera Char 071 01	1572	2
River	0.06	Tera Char 071 01	1573	2
River	0.07	Tera Char 071 01	1574	2
River	0.1	Tera Char 071 01	1575	2
River	0.13	Tera Char 071 01	1576	2
River	0.08	Tera Char 071 01	1577	2
River	0.06	Tera Char 071 01	1578	2
River	0.09	Tera Char 071 01	1579	2
River	0.07	Tera Char 071 01	1580	2
River	0.05	Tera Char 071 01	1581	2
River	0.06	Tera Char 071 01	1582	2
River	0.1	Tera Char 071 01	1583	2
River	0.21	Tera Char 071 01	1584	2
River	0.26	Tera Char 071 01	1585	2
River	0.18	Tera Char 071 01	1586	2
River	0.09	Tera Char 071 01	1587	2
River	0.09	Tera Char 071 01	1588	2
River	0.11	Tera Char 071 01	1589	2
River	0.1	Tera Char 071 01	1590	2
River	0.46	Tera Char 071 01	1591	2
River	0.5	Tera Char 071 01	1592	2
River	0.14	Tera Char 071 01	1593	2
River	0.22	Tera Char 071 01	1594	2
River	0.24	Tera Char 071 01	1595	2
River	0.11	Tera Char 071 01	1596	2
River	0.14	Tera Char 071 01	1597	2
River	0.16	Tera Char 071 01	1598	2
River	0.12	Tera Char 071 01	1599	2
River	0.04	Tera Char 071 01	1600	2
River	0.05	Tera Char 071 01	1601	2
River	0.05	Tera Char 071 01	1602	2
River	0.16	Tera Char 071 01	1603	2
River	0.12	Tera Char 071 01	1604	2
River	0.2	Tera Char 071 01	1605	2
River	0.73	Tera Char 071 01	1606	2
River	0.34	Tera Char 071 01	1607	2
River	0.34	Tera Char 071 01	1608	2
River	0.1	Tera Char 071 01	1609	2
River	0.14	Tera Char 071 01	1610	2
River	0.26	Tera Char 071 01	1611	2
River	0.33	Tera Char 071 01	1612	2
River	0.25	Tera Char 071 01	1613	2
River	0.14	Tera Char 071 01	1614	2
River	0.06	Tera Char 071 01	1616	2
River	0.83	Tera Char 071 01	1616	2
River	0.46	Tera Char 071 01	1617	2
River	0.49	Tera Char 071 01	1618	2
River	0.98	Tera Char 071 01	1619	2
River	0.14	Tera Char 071 01	1620	2
River	0.17	Tera Char 071 01	1621	2
River	2.69	Tera Char 071 01	1622	2
River	0.23	Tera Char 071 01	1623	2
River	0.27	Tera Char 071 01	1624	2
River	0.73	Tera Char 071 01	1625	2
River	0.29	Tera Char 071 01	1626	2
River	0.13	Tera Char 071 01	1627	2
River	3.52	Tera Char 071 01	1628	2
River	0.13	Tera Char 071 01	1629	2
River	0.55	Tera Char 071 01	1630	2
River	0.16	Tera Char 071 01	1631	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.23	Tera Char 071 01	1632	2
River	0.09	Tera Char 071 01	1633	2
River	0.22	Tera Char 071 01	1634	2
River	0.56	Tera Char 071 01	1635	2
River	0.36	Tera Char 071 01	1636	2
River	0.04	Tera Char 071 01	1637	2
River	0.21	Tera Char 071 01	1638	2
River	0.6	Tera Char 071 01	1639	2
River	0.21	Tera Char 071 01	1640	2
River	0.64	Tera Char 071 01	1641	2
River	0.96	Tera Char 071 01	1642	2
River	0.11	Tera Char 071 01	1643	2
River	0.08	Tera Char 071 01	1644	2
River	1.17	Tera Char 071 01	1645	2
River	0.26	Tera Char 071 01	1646	2
River	0.45	Tera Char 071 01	1647	2
River	0.04	Tera Char 071 01	1648	2
River	0.05	Tera Char 071 01	1649	2
River	0.05	Tera Char 071 01	1650	2
River	0.37	Tera Char 071 01	1651	2
River	0.02	Tera Char 071 01	1652	2
River	0.11	Tera Char 071 01	1653	2
River	0.32	Tera Char 071 01	1654	2
River	0.32	Tera Char 071 01	1655	2
River	0.2	Tera Char 071 01	1659	2
River	0.72	Tera Char 071 01	1660	2
River	0.55	Tera Char 071 01	1661	2
River	0.42	Tera Char 071 01	1662	2
River	0.06	Tera Char 071 01	1663	2
River	0.14	Tera Char 071 01	1664	2
River	0.96	Tera Char 071 01	1665	2
River	0.18	Tera Char 071 01	1666	2
River	0.56	Tera Char 071 01	1667	2
River	3.25	Tera Char 071 01	1668	2
River	0.22	Tera Char 071 01	1669	2
River	0.7	Tera Char 071 01	1670	2
River	1.17	Tera Char 071 01	1671	2
River	0.24	Tera Char 071 01	1672	2
River	2.89	Tera Char 071 01	1673	2
River	0.27	Tera Char 071 01	1674	2
River	0.07	Tera Char 071 01	1675	2
River	0.52	Tera Char 071 01	1676	2
River	0.16	Tera Char 071 01	1677	2
River	2.09	Tera Char 071 01	1678	2
River	0.26	Tera Char 071 01	1679	2
River	0.39	Tera Char 071 01	1680	2
River	0.09	Tera Char 071 01	1681	2
River	0.33	Tera Char 071 01	1682	2
River	0.4	Tera Char 071 01	1683	2
River	0.22	Tera Char 071 01	1684	2
River	0.2	Tera Char 071 01	1685	2
River	0.87	Tera Char 071 01	1686	2
River	0.51	Tera Char 071 01	1687	2
River	0.33	Tera Char 071 01	1688	2
River	0.12	Tera Char 071 01	1689	2
River	0.5	Tera Char 071 01	1690	2
River	0.49	Tera Char 071 01	1691	2
River	0.46	Tera Char 071 01	1692	2
River	0.32	Tera Char 071 01	1694	2
River	0.46	Tera Char 071 01	1695	2
River	0.48	Tera Char 071 01	1696	2
River	0.48	Tera Char 071 01	1697	2
River	0.46	Tera Char 071 01	1698	2
River	0.11	Tera Char 071 01	1699	2
River	0.19	Tera Char 071 01	1700	2
River	0.5	Tera Char 071 01	1701	2
River	1.89	Tera Char 071 01	1702	2
River	0.78	Tera Char 071 01	1703	2
River	0.37	Tera Char 071 01	1704	2
River	3.8	Tera Char 071 01	1705	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.85	Tera Char 071 01	1706	2
River	0.15	Tera Char 071 01	1707	2
River	0.19	Tera Char 071 01	1708	2
River	0.64	Tera Char 071 01	1709	2
River	0.21	Tera Char 071 01	1710	2
River	0.58	Tera Char 071 01	1711	2
River	0.15	Tera Char 071 01	1712	2
River	0.34	Tera Char 071 01	1713	2
River	0.66	Tera Char 071 01	1714	2
River	1.14	Tera Char 071 01	1715	2
River	0.23	Tera Char 071 01	1716	2
River	0.57	Tera Char 071 01	1717	2
River	0.07	Tera Char 071 01	1718	2
River	0.74	Tera Char 071 01	1719	2
River	0.4	Tera Char 071 01	1720	2
River	0.98	Tera Char 071 01	1721	2
River	0.09	Tera Char 071 01	1722	2
River	0.29	Tera Char 071 01	1723	2
River	0.32	Tera Char 071 01	1724	2
River	0.08	Tera Char 071 01	1725	2
River	0.37	Tera Char 071 01	1726	2
River	0.05	Tera Char 071 01	1727	2
Pond	0.25	Tera Char 071 01	1783	2
River	0.09	Tera Char 071 01	1812	2
River	0.18	Tera Char 071 01	1813	2
River	0.74	Tera Char 071 01	1814	2
River	0.63	Tera Char 071 01	1815	2
River	0.18	Tera Char 071 01	1816	2
River	0.04	Tera Char 071 01	1817	2
River	0.36	Tera Char 071 01	1818	2
River	1.35	Tera Char 071 01	1820	2
River	0.32	Tera Char 071 01	1822	2
River	0.54	Tera Char 071 01	1823	2
River	0.14	Tera Char 071 01	1824	2
River	0.45	Tera Char 071 01	1825	2
River	0.15	Tera Char 071 01	1826	2
River	1.15	Tera Char 071 01	1827	2
Canal	0.01	Tera Char 071 01	1834	2
River	0.09	Tera Char 071 01	1840	2
Canal	0.03	Tera Char 071 01	1843	2
Canal	0.14	Tera Char 071 01	1843	2
River	0.29	Tera Char 071 01	1844	2
River	0.09	Tera Char 071 01	1845	2
River	0.23	Tera Char 071 01	1846	2
River	0.16	Tera Char 071 01	1847	2
Canal	0.01	Tera Char 071 01	3520	2
Canal	0.01	Tera Char 071 01	3520	2
Canal	0.01	Tera Char 071 01	3520	2
Canal	0.01	Tera Char 071 01	3520	2
River	0.01	Tera Char 071 01	3520	2
River	0.01	Tera Char 071 01	3520	2
River	0.01	Tera Char 071 01	3520	2
River	0.01	Tera Char 071 01	3520	2
River	0.39	Tera Char 071 01	3520	2
Canal	0.52	Tera Char 071 01	3520	2
Pond	1.02	Tera Char 071 01	3520	2
River	3.7	Tera Char 071 01	3520	2
River	0.02	Tera Char 071 01	3522	2
River	0.07	Tera Char 071 01	3523	2
River	0.08	Tera Char 071 01	3526	2
River	0.02	Tera Char 071 01	99999	2
River	0.02	Tera Char 071 01	99999	2
River	0.24	Tera Char 071 02	1693	2
River	0.28	Tera Char 071 02	2318	2
River	0.06	Tera Char 071 02	2319	2
River	0.23	Tera Char 071 02	2323	2
River	0.35	Tera Char 071 02	2324	2
River	0.11	Tera Char 071 02	2325	2
River	0.24	Tera Char 071 02	2328	2
River	0.33	Tera Char 071 02	2331	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.1	Tera Char 071 02	2332	2
River	0.21	Tera Char 071 02	2333	2
River	0.17	Tera Char 071 02	2334	2
River	0.19	Tera Char 071 02	2335	2
River	0.04	Tera Char 071 02	2336	2
River	0.04	Tera Char 071 02	2337	2
River	0.06	Tera Char 071 02	2338	2
River	0.25	Tera Char 071 02	2339	2
River	0.35	Tera Char 071 02	2340	2
River	0.42	Tera Char 071 02	2341	2
River	0.3	Tera Char 071 02	2342	2
River	0.17	Tera Char 071 02	2343	2
River	0.09	Tera Char 071 02	2344	2
River	0.12	Tera Char 071 02	2346	2
River	0.64	Tera Char 071 02	2347	2
River	0.06	Tera Char 071 02	2348	2
River	0.42	Tera Char 071 02	2349	2
River	0.67	Tera Char 071 02	2350	2
River	0.21	Tera Char 071 02	2351	2
River	0.22	Tera Char 071 02	2352	2
River	0.42	Tera Char 071 02	2353	2
River	0.02	Tera Char 071 02	2354	2
River	0.23	Tera Char 071 02	2355	2
River	0.03	Tera Char 071 02	2356	2
River	0.07	Tera Char 071 02	2357	2
River	0.1	Tera Char 071 02	2358	2
River	0.14	Tera Char 071 02	2359	2
River	0.02	Tera Char 071 02	2360	2
River	0.08	Tera Char 071 02	2361	2
River	0.05	Tera Char 071 02	2362	2
River	0.05	Tera Char 071 02	2363	2
River	0.05	Tera Char 071 02	2364	2
River	0.03	Tera Char 071 02	2365	2
River	0.03	Tera Char 071 02	2366	2
River	0.02	Tera Char 071 02	2367	2
River	0.03	Tera Char 071 02	2368	2
River	0.66	Tera Char 071 02	2369	2
River	0.13	Tera Char 071 02	2370	2
River	0.19	Tera Char 071 02	2371	2
River	0.05	Tera Char 071 02	2372	2
River	0.07	Tera Char 071 02	2379	2
River	0.04	Tera Char 071 02	2388	2
River	0.02	Tera Char 071 02	2389	2
Canal	0.01	Tera Char 071 02	2485	2
Canal	0.01	Tera Char 071 02	2486	2
Canal	0.06	Tera Char 071 02	2486	2
Canal	0.01	Tera Char 071 02	2507	2
Canal	0.03	Tera Char 071 02	2509	2
Canal	0.02	Tera Char 071 02	2510	2
Canal	0.02	Tera Char 071 02	2511	2
Canal	0.02	Tera Char 071 02	2512	2
Canal	0.07	Tera Char 071 02	2513	2
Canal	0.02	Tera Char 071 02	2515	2
Canal	0.03	Tera Char 071 02	2516	2
Canal	0.01	Tera Char 071 02	2517	2
Canal	0.02	Tera Char 071 02	2519	2
Canal	0.05	Tera Char 071 02	2520	2
Pond	0.23	Tera Char 071 02	2692	2
Canal	0.02	Tera Char 071 02	2772	2
Canal	0.01	Tera Char 071 02	2774	2
Canal	0.23	Tera Char 071 02	2776	2
Canal	0.01	Tera Char 071 02	2777	2
Canal	0.08	Tera Char 071 02	2778	2
Canal	0.02	Tera Char 071 02	2779	2
Canal	0.02	Tera Char 071 02	2782	2
Canal	0.05	Tera Char 071 02	2783	2
Canal	0.05	Tera Char 071 02	2786	2
Canal	0.01	Tera Char 071 02	2787	2
Canal	0.01	Tera Char 071 02	2789	2
Canal	0.02	Tera Char 071 02	2790	2

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.02	Tera Char 071 02	2792	2
Canal	0.07	Tera Char 071 02	2793	2
River	0.53	Tera Char 071 03	4002	2
River	0.47	Tera Char 071 03	4003	2
River	0.33	Tera Char 071 03	4004	2
River	0.45	Tera Char 071 03	4005	2
River	0.67	Tera Char 071 03	4006	2
River	0.05	Tera Char 071 03	4007	2
River	0.03	Tera Char 071 03	4008	2
River	0.3	Tera Char 071 03	4009	2
River	0.08	Tera Char 071 03	4010	2
River	3.23	Tera Char 071 03	4022	2
River	0.48	Tera Char 071 03	4023	2
River	0.34	Tera Char 071 03	4024	2
River	0.13	Tera Char 071 03	4025	2
River	0.57	Tera Char 071 03	4026	2
River	0.11	Tera Char 071 03	4029	2
River	0.02	Tera Char 071 03	4031	2
Pond	0.24	Tera Char 071 03	4132	2
Pond	0.2	Tera Char 071 03	4133	2
River	0.2	Tera Char 071 03	4351	2
Canal	0.34	Baro Madhob Rayer Char 075 01	1	3
Canal	0.01	Baro Madhob Rayer Char 075 01	25	3
River	0.02	Baro Madhob Rayer Char 075 01	25	3
River	0.07	Baro Madhob Rayer Char 075 01	25	3
Ditch	0.34	Baro Madhob Rayer Char 075 01	25	3
Canal	0.05	Baro Madhob Rayer Char 075 01	32	3
Canal	1.12	Baro Madhob Rayer Char 075 01	32	3
River	0.06	Baro Madhob Rayer Char 075 01	95	3
River	0.01	Baro Madhob Rayer Char 075 01	102	3
River	0.01	Baro Madhob Rayer Char 075 01	103	3
River	0.04	Baro Madhob Rayer Char 075 01	104	3
River	0.04	Baro Madhob Rayer Char 075 01	105	3
River	0.01	Baro Madhob Rayer Char 075 01	107	3
River	0.03	Baro Madhob Rayer Char 075 01	111	3
River	0.01	Baro Madhob Rayer Char 075 01	112	3
River	0.01	Baro Madhob Rayer Char 075 01	113	3
River	0.01	Baro Madhob Rayer Char 075 01	114	3
River	0.01	Baro Madhob Rayer Char 075 01	138	3
River	0.01	Baro Madhob Rayer Char 075 01	142	3
River	0.1	Baro Madhob Rayer Char 075 01	144	3
River	0.06	Baro Madhob Rayer Char 075 01	145	3
River	0.17	Baro Madhob Rayer Char 075 01	173	3
River	0.03	Baro Madhob Rayer Char 075 01	174	3
River	0.11	Baro Madhob Rayer Char 075 01	175	3
River	0.14	Baro Madhob Rayer Char 075 01	176	3
River	0.43	Baro Madhob Rayer Char 075 01	177	3
River	0.76	Baro Madhob Rayer Char 075 01	181	3
River	0.21	Baro Madhob Rayer Char 075 01	182	3
River	0.22	Baro Madhob Rayer Char 075 01	183	3
River	0.28	Baro Madhob Rayer Char 075 01	184	3
River	0.82	Baro Madhob Rayer Char 075 01	185	3
River	1.2	Baro Madhob Rayer Char 075 01	186	3
River	0.41	Baro Madhob Rayer Char 075 01	189	3
River	0.11	Baro Madhob Rayer Char 075 01	190	3
River	0.11	Baro Madhob Rayer Char 075 01	191	3
River	0.2	Baro Madhob Rayer Char 075 01	192	3
River	1.28	Baro Madhob Rayer Char 075 01	193	3
River	0.17	Baro Madhob Rayer Char 075 01	194	3
River	0.46	Baro Madhob Rayer Char 075 01	195	3
River	0.43	Baro Madhob Rayer Char 075 01	196	3
River	0.23	Baro Madhob Rayer Char 075 01	197	3
River	0.06	Baro Madhob Rayer Char 075 01	198	3
River	0.07	Baro Madhob Rayer Char 075 01	199	3
River	0.04	Baro Madhob Rayer Char 075 01	200	3
River	0.2	Baro Madhob Rayer Char 075 01	201	3
River	0.04	Baro Madhob Rayer Char 075 01	202	3
River	0.18	Baro Madhob Rayer Char 075 01	203	3
River	0.18	Baro Madhob Rayer Char 075 01	204	3
River	0.16	Baro Madhob Rayer Char 075 01	205	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.1	Baro Madhob Rayer Char 075 01	206	3
River	0.21	Baro Madhob Rayer Char 075 01	207	3
River	0.12	Baro Madhob Rayer Char 075 01	208	3
River	0.35	Baro Madhob Rayer Char 075 01	209	3
River	0.28	Baro Madhob Rayer Char 075 01	210	3
River	0.26	Baro Madhob Rayer Char 075 01	211	3
River	0.19	Baro Madhob Rayer Char 075 01	212	3
River	0.18	Baro Madhob Rayer Char 075 01	213	3
River	0.54	Baro Madhob Rayer Char 075 01	214	3
River	0.18	Baro Madhob Rayer Char 075 01	215	3
River	0.41	Baro Madhob Rayer Char 075 01	216	3
River	0.75	Baro Madhob Rayer Char 075 01	217	3
River	0.18	Baro Madhob Rayer Char 075 01	218	3
River	0.01	Baro Madhob Rayer Char 075 01	219	3
River	0.2	Baro Madhob Rayer Char 075 01	220	3
River	0.72	Baro Madhob Rayer Char 075 01	221	3
River	0.03	Baro Madhob Rayer Char 075 01	222	3
River	0.02	Baro Madhob Rayer Char 075 01	223	3
River	0.17	Baro Madhob Rayer Char 075 01	224	3
River	0.25	Baro Madhob Rayer Char 075 01	225	3
River	0.22	Baro Madhob Rayer Char 075 01	226	3
River	0.16	Baro Madhob Rayer Char 075 01	227	3
River	0.18	Baro Madhob Rayer Char 075 01	228	3
River	0.15	Baro Madhob Rayer Char 075 01	229	3
River	0.16	Baro Madhob Rayer Char 075 01	230	3
River	0.12	Baro Madhob Rayer Char 075 01	231	3
River	0.47	Baro Madhob Rayer Char 075 01	231	3
River	0.11	Baro Madhob Rayer Char 075 01	232	3
River	0.13	Baro Madhob Rayer Char 075 01	233	3
River	0.27	Baro Madhob Rayer Char 075 01	234	3
River	0.18	Baro Madhob Rayer Char 075 01	235	3
River	0.17	Baro Madhob Rayer Char 075 01	236	3
River	0.1	Baro Madhob Rayer Char 075 01	237	3
River	0.06	Baro Madhob Rayer Char 075 01	238	3
River	0.14	Baro Madhob Rayer Char 075 01	239	3
River	0.12	Baro Madhob Rayer Char 075 01	240	3
River	0.22	Baro Madhob Rayer Char 075 01	241	3
River	0.26	Baro Madhob Rayer Char 075 01	242	3
River	0.09	Baro Madhob Rayer Char 075 01	243	3
River	0.17	Baro Madhob Rayer Char 075 01	244	3
River	0.38	Baro Madhob Rayer Char 075 01	245	3
River	0.3	Baro Madhob Rayer Char 075 01	246	3
River	0.48	Baro Madhob Rayer Char 075 01	247	3
River	3.04	Baro Madhob Rayer Char 075 01	248	3
River	0.26	Baro Madhob Rayer Char 075 01	249	3
River	0.19	Baro Madhob Rayer Char 075 01	250	3
River	0.62	Baro Madhob Rayer Char 075 01	251	3
River	0.57	Baro Madhob Rayer Char 075 01	252	3
River	0.01	Baro Madhob Rayer Char 075 01	253	3
Ditch	0.01	Baro Madhob Rayer Char 075 01	329	3
River	0.02	Baro Madhob Rayer Char 075 01	369	3
River	0.06	Baro Madhob Rayer Char 075 01	370	3
River	0.01	Baro Madhob Rayer Char 075 01	372	3
River	0.11	Baro Madhob Rayer Char 075 01	373	3
River	0.23	Baro Madhob Rayer Char 075 01	374	3
River	0.08	Baro Madhob Rayer Char 075 01	375	3
River	0.21	Baro Madhob Rayer Char 075 01	376	3
River	0.3	Baro Madhob Rayer Char 075 01	377	3
River	0.1	Baro Madhob Rayer Char 075 01	378	3
River	0.12	Baro Madhob Rayer Char 075 01	379	3
River	0.13	Baro Madhob Rayer Char 075 01	380	3
River	0.27	Baro Madhob Rayer Char 075 01	381	3
River	0.6	Baro Madhob Rayer Char 075 01	382	3
River	0.34	Baro Madhob Rayer Char 075 01	383	3
River	0.49	Baro Madhob Rayer Char 075 01	384	3
River	0.81	Baro Madhob Rayer Char 075 01	385	3
River	0.1	Baro Madhob Rayer Char 075 01	386	3
River	0.05	Baro Madhob Rayer Char 075 01	387	3
River	0.27	Baro Madhob Rayer Char 075 01	388	3
River	0.21	Baro Madhob Rayer Char 075 01	389	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.23	Baro Madhob Rayer Char 075 01	390	3
River	0.3	Baro Madhob Rayer Char 075 01	391	3
River	0.3	Baro Madhob Rayer Char 075 01	392	3
River	1.49	Baro Madhob Rayer Char 075 01	393	3
River	0.64	Baro Madhob Rayer Char 075 01	394	3
River	0.22	Baro Madhob Rayer Char 075 01	395	3
River	0.22	Baro Madhob Rayer Char 075 01	396	3
River	0.24	Baro Madhob Rayer Char 075 01	397	3
River	0.22	Baro Madhob Rayer Char 075 01	398	3
River	0.62	Baro Madhob Rayer Char 075 01	399	3
River	0.35	Baro Madhob Rayer Char 075 01	400	3
River	0.09	Baro Madhob Rayer Char 075 01	401	3
River	0.17	Baro Madhob Rayer Char 075 01	402	3
River	0.11	Baro Madhob Rayer Char 075 01	403	3
River	0.15	Baro Madhob Rayer Char 075 01	404	3
River	0.11	Baro Madhob Rayer Char 075 01	405	3
River	0.14	Baro Madhob Rayer Char 075 01	406	3
River	0.04	Baro Madhob Rayer Char 075 01	408	3
River	0.1	Baro Madhob Rayer Char 075 01	409	3
River	0.11	Baro Madhob Rayer Char 075 01	410	3
River	0.11	Baro Madhob Rayer Char 075 01	411	3
River	0.12	Baro Madhob Rayer Char 075 01	412	3
River	0.05	Baro Madhob Rayer Char 075 01	413	3
River	0.25	Baro Madhob Rayer Char 075 01	414	3
River	0.13	Baro Madhob Rayer Char 075 01	415	3
River	0.13	Baro Madhob Rayer Char 075 01	416	3
River	0.15	Baro Madhob Rayer Char 075 01	417	3
River	0.01	Baro Madhob Rayer Char 075 01	419	3
River	0.11	Baro Madhob Rayer Char 075 01	420	3
River	0.09	Baro Madhob Rayer Char 075 01	421	3
River	0.01	Baro Madhob Rayer Char 075 01	422	3
River	0.02	Baro Madhob Rayer Char 075 01	423	3
River	0.15	Baro Madhob Rayer Char 075 01	424	3
River	0.1	Baro Madhob Rayer Char 075 01	425	3
River	0.02	Baro Madhob Rayer Char 075 01	426	3
River	0.02	Baro Madhob Rayer Char 075 01	427	3
River	0.08	Baro Madhob Rayer Char 075 01	428	3
River	0.08	Baro Madhob Rayer Char 075 01	429	3
River	0.02	Baro Madhob Rayer Char 075 01	430	3
River	0.02	Baro Madhob Rayer Char 075 01	431	3
River	0.09	Baro Madhob Rayer Char 075 01	432	3
River	0.06	Baro Madhob Rayer Char 075 01	433	3
River	0.02	Baro Madhob Rayer Char 075 01	434	3
River	0.04	Baro Madhob Rayer Char 075 01	435	3
River	0.14	Baro Madhob Rayer Char 075 01	436	3
River	0.07	Baro Madhob Rayer Char 075 01	437	3
River	0.03	Baro Madhob Rayer Char 075 01	438	3
River	0.12	Baro Madhob Rayer Char 075 01	439	3
River	0.25	Baro Madhob Rayer Char 075 01	440	3
River	0.08	Baro Madhob Rayer Char 075 01	441	3
River	0.04	Baro Madhob Rayer Char 075 01	442	3
River	0.05	Baro Madhob Rayer Char 075 01	443	3
River	0.09	Baro Madhob Rayer Char 075 01	444	3
River	0.08	Baro Madhob Rayer Char 075 01	445	3
River	0.06	Baro Madhob Rayer Char 075 01	446	3
River	0.04	Baro Madhob Rayer Char 075 01	447	3
River	0.07	Baro Madhob Rayer Char 075 01	448	3
River	0.2	Baro Madhob Rayer Char 075 01	449	3
River	0.15	Baro Madhob Rayer Char 075 01	450	3
River	0.11	Baro Madhob Rayer Char 075 01	451	3
River	0.44	Baro Madhob Rayer Char 075 01	452	3
River	0.03	Baro Madhob Rayer Char 075 01	453	3
River	0.04	Baro Madhob Rayer Char 075 01	456	3
River	0.02	Baro Madhob Rayer Char 075 01	457	3
River	0.02	Baro Madhob Rayer Char 075 01	460	3
River	0.27	Baro Madhob Rayer Char 075 01	469	3
River	0.22	Baro Madhob Rayer Char 075 01	470	3
River	0.07	Baro Madhob Rayer Char 075 01	471	3
River	0.04	Baro Madhob Rayer Char 075 01	476	3
River	0.46	Baro Madhob Rayer Char 075 01	520	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Ditch	0.06	Baro Madhob Rayer Char 075 01	577	3
Ditch	0.03	Baro Madhob Rayer Char 075 01	602	3
Ditch	0.02	Baro Madhob Rayer Char 075 01	603	3
Ditch	0.03	Baro Madhob Rayer Char 075 01	604	3
Ditch	0.06	Baro Madhob Rayer Char 075 01	605	3
Ditch	0.11	Baro Madhob Rayer Char 075 01	606	3
Ditch	0.16	Baro Madhob Rayer Char 075 01	625	3
Ditch	0.21	Baro Madhob Rayer Char 075 01	625	3
Ditch	0.01	Baro Madhob Rayer Char 075 01	626	3
River	0.25	Baro Madhob Rayer Char 075 01	627	3
Missing Link	0.04	Baro Madhob Rayer Char 075 01	22222	3
Canal	0.65	Baro Madhob Rayer Char 075 01	22222	3
Canal	0.84	Baro Madhob Rayer Char 075 01	22222	3
River	1.11	Baro Madhob Rayer Char 075 01	22222	3
Canal	0.14	Baro Madhob Rayer Char 075 02	1026	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1029	3
Canal	0.02	Baro Madhob Rayer Char 075 02	1032	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1036	3
Canal	0.02	Baro Madhob Rayer Char 075 02	1037	3
Canal	0.02	Baro Madhob Rayer Char 075 02	1042	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1043	3
Canal	0.02	Baro Madhob Rayer Char 075 02	1047	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1050	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1053	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1056	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1068	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1072	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1075	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1078	3
Canal	0.03	Baro Madhob Rayer Char 075 02	1078	3
Canal	0.03	Baro Madhob Rayer Char 075 02	1079	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1080	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1084	3
Canal	0.14	Baro Madhob Rayer Char 075 02	1085	3
Canal	0.05	Baro Madhob Rayer Char 075 02	1086	3
Canal	0.04	Baro Madhob Rayer Char 075 02	1090	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1094	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1101	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1104	3
Canal	0.05	Baro Madhob Rayer Char 075 02	1108	3
Canal	0.01	Baro Madhob Rayer Char 075 02	1111	3
Canal	0.03	Muladi 072 00	184	3
Canal	0.03	Muladi 072 00	184	3
Canal	0.09	Muladi 072 00	184	3
Canal	0.01	Muladi 072 00	185	3
Canal	0.03	Muladi 072 00	186	3
Canal	0.22	Muladi 072 00	186	3
Canal	0.01	Muladi 072 00	190	3
Canal	0.06	Muladi 072 00	192	3
Canal	0.01	Muladi 072 00	195	3
Canal	0.06	Muladi 072 00	660	3
Canal	0.1	Muladi 072 00	660	3
Canal	0.05	Muladi 072 00	2977	3
Canal	0.03	Muladi 072 00	99999	3
River	0.25	Tera Char 071 02	2001	3
River	0.07	Tera Char 071 02	2002	3
River	0.02	Tera Char 071 02	2003	3
River	0.07	Tera Char 071 02	2004	3
River	0.45	Tera Char 071 02	2005	3
River	0.25	Tera Char 071 02	2006	3
River	0.76	Tera Char 071 02	2007	3
River	0.35	Tera Char 071 02	2008	3
River	0.27	Tera Char 071 02	2009	3
River	0.09	Tera Char 071 02	2010	3
River	1.06	Tera Char 071 02	2011	3
River	0.6	Tera Char 071 02	2012	3
River	0.25	Tera Char 071 02	2013	3
River	0.07	Tera Char 071 02	2014	3
River	0.76	Tera Char 071 02	2015	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	1	Tera Char 071 02	2016	3
River	0.48	Tera Char 071 02	2017	3
River	0.12	Tera Char 071 02	2018	3
River	0.08	Tera Char 071 02	2019	3
River	0.23	Tera Char 071 02	2020	3
River	0.33	Tera Char 071 02	2021	3
River	0.27	Tera Char 071 02	2022	3
River	0.22	Tera Char 071 02	2023	3
River	0.65	Tera Char 071 02	2024	3
River	0.24	Tera Char 071 02	2025	3
River	0.44	Tera Char 071 02	2026	3
River	0.37	Tera Char 071 02	2027	3
River	0.55	Tera Char 071 02	2028	3
River	1.37	Tera Char 071 02	2029	3
River	0.56	Tera Char 071 02	2030	3
River	0.31	Tera Char 071 02	2031	3
River	0.1	Tera Char 071 02	2032	3
River	0.79	Tera Char 071 02	2033	3
River	0.23	Tera Char 071 02	2034	3
River	0.48	Tera Char 071 02	2035	3
River	0.61	Tera Char 071 02	2036	3
River	0.1	Tera Char 071 02	2037	3
River	0.25	Tera Char 071 02	2038	3
River	1.43	Tera Char 071 02	2039	3
River	0.4	Tera Char 071 02	2040	3
River	0.41	Tera Char 071 02	2041	3
River	0.35	Tera Char 071 02	2042	3
River	0.36	Tera Char 071 02	2043	3
River	0.46	Tera Char 071 02	2044	3
River	0.6	Tera Char 071 02	2045	3
River	0.34	Tera Char 071 02	2046	3
River	0.46	Tera Char 071 02	2047	3
River	0.13	Tera Char 071 02	2048	3
River	0.21	Tera Char 071 02	2049	3
River	0.05	Tera Char 071 02	2050	3
River	1.57	Tera Char 071 02	2051	3
River	0.38	Tera Char 071 02	2052	3
River	0.22	Tera Char 071 02	2053	3
River	1.45	Tera Char 071 02	2054	3
River	0.19	Tera Char 071 02	2055	3
River	1.32	Tera Char 071 02	2056	3
River	0.05	Tera Char 071 02	2057	3
River	0.06	Tera Char 071 02	2058	3
River	0.16	Tera Char 071 02	2059	3
River	0.09	Tera Char 071 02	2060	3
River	0.23	Tera Char 071 02	2061	3
River	0.19	Tera Char 071 02	2062	3
River	0.43	Tera Char 071 02	2063	3
River	2.72	Tera Char 071 02	2064	3
River	0.11	Tera Char 071 02	2065	3
River	0.99	Tera Char 071 02	2066	3
River	0.31	Tera Char 071 02	2067	3
River	0.19	Tera Char 071 02	2068	3
River	0.51	Tera Char 071 02	2069	3
River	1.01	Tera Char 071 02	2070	3
River	0.26	Tera Char 071 02	2071	3
River	0.34	Tera Char 071 02	2072	3
River	0.29	Tera Char 071 02	2073	3
River	0.47	Tera Char 071 02	2074	3
River	0.15	Tera Char 071 02	2075	3
River	0.24	Tera Char 071 02	2076	3
River	0.49	Tera Char 071 02	2077	3
River	0.54	Tera Char 071 02	2078	3
River	0.19	Tera Char 071 02	2079	3
River	0.09	Tera Char 071 02	2080	3
River	0.04	Tera Char 071 02	2081	3
River	0.05	Tera Char 071 02	2082	3
River	2.03	Tera Char 071 02	2083	3
River	0.09	Tera Char 071 02	2084	3
River	0.2	Tera Char 071 02	2085	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.12	Tera Char 071 02	2086	3
River	0.2	Tera Char 071 02	2087	3
River	0.12	Tera Char 071 02	2088	3
River	0.23	Tera Char 071 02	2089	3
River	0.66	Tera Char 071 02	2090	3
River	0.14	Tera Char 071 02	2091	3
River	0.12	Tera Char 071 02	2092	3
River	0.36	Tera Char 071 02	2093	3
River	0.34	Tera Char 071 02	2094	3
River	0.37	Tera Char 071 02	2095	3
River	0.16	Tera Char 071 02	2096	3
River	0.37	Tera Char 071 02	2097	3
River	0.22	Tera Char 071 02	2098	3
River	0.24	Tera Char 071 02	2099	3
River	0.68	Tera Char 071 02	2100	3
River	0.2	Tera Char 071 02	2101	3
River	0.07	Tera Char 071 02	2102	3
River	0.12	Tera Char 071 02	2103	3
River	0.08	Tera Char 071 02	2104	3
River	0.06	Tera Char 071 02	2105	3
River	0.17	Tera Char 071 02	2106	3
River	0.17	Tera Char 071 02	2107	3
River	0.34	Tera Char 071 02	2108	3
River	0.46	Tera Char 071 02	2109	3
River	0.04	Tera Char 071 02	2110	3
River	0.17	Tera Char 071 02	2111	3
River	0.25	Tera Char 071 02	2112	3
River	0.09	Tera Char 071 02	2113	3
River	0.37	Tera Char 071 02	2114	3
River	0.01	Tera Char 071 02	2115	3
River	0.03	Tera Char 071 02	2116	3
River	0.07	Tera Char 071 02	2117	3
River	0.26	Tera Char 071 02	2118	3
River	0.65	Tera Char 071 02	2119	3
River	0.82	Tera Char 071 02	2120	3
River	0.5	Tera Char 071 02	2121	3
River	0.12	Tera Char 071 02	2122	3
River	0.25	Tera Char 071 02	2123	3
River	0.26	Tera Char 071 02	2124	3
River	0.07	Tera Char 071 02	2125	3
River	0.53	Tera Char 071 02	2126	3
River	0.28	Tera Char 071 02	2127	3
River	0.39	Tera Char 071 02	2128	3
River	0.03	Tera Char 071 02	2129	3
River	0.19	Tera Char 071 02	2130	3
River	0.2	Tera Char 071 02	2131	3
River	2.49	Tera Char 071 02	2132	3
River	0.46	Tera Char 071 02	2133	3
River	0.15	Tera Char 071 02	2134	3
River	0.25	Tera Char 071 02	2135	3
River	2.23	Tera Char 071 02	2136	3
River	0.06	Tera Char 071 02	2137	3
River	0.08	Tera Char 071 02	2138	3
River	0.37	Tera Char 071 02	2139	3
River	0.19	Tera Char 071 02	2140	3
River	0.31	Tera Char 071 02	2141	3
River	0.18	Tera Char 071 02	2142	3
River	0.17	Tera Char 071 02	2143	3
River	0.09	Tera Char 071 02	2144	3
River	0.58	Tera Char 071 02	2145	3
River	0.48	Tera Char 071 02	2146	3
River	0.09	Tera Char 071 02	2147	3
River	0.07	Tera Char 071 02	2148	3
River	0.8	Tera Char 071 02	2149	3
River	0.78	Tera Char 071 02	2150	3
River	0.58	Tera Char 071 02	2151	3
River	0.48	Tera Char 071 02	2152	3
River	0.18	Tera Char 071 02	2153	3
River	0.17	Tera Char 071 02	2154	3
River	0.08	Tera Char 071 02	2155	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.04	Tera Char 071 02	2156	3
River	0.09	Tera Char 071 02	2157	3
River	0.12	Tera Char 071 02	2158	3
River	0.21	Tera Char 071 02	2159	3
River	0.09	Tera Char 071 02	2160	3
River	0.72	Tera Char 071 02	2161	3
River	0.38	Tera Char 071 02	2162	3
River	0.04	Tera Char 071 02	2163	3
River	0.12	Tera Char 071 02	2164	3
River	0.2	Tera Char 071 02	2165	3
River	0.27	Tera Char 071 02	2166	3
River	0.38	Tera Char 071 02	2167	3
River	0.97	Tera Char 071 02	2168	3
River	0.15	Tera Char 071 02	2169	3
River	0.27	Tera Char 071 02	2170	3
River	0.22	Tera Char 071 02	2171	3
River	0.16	Tera Char 071 02	2172	3
River	0.12	Tera Char 071 02	2173	3
River	0.14	Tera Char 071 02	2174	3
River	0.11	Tera Char 071 02	2175	3
River	0.22	Tera Char 071 02	2176	3
River	0.02	Tera Char 071 02	2182	3
River	0.11	Tera Char 071 02	2183	3
River	0.07	Tera Char 071 02	2184	3
River	0.02	Tera Char 071 02	2187	3
River	0.03	Tera Char 071 02	2188	3
River	0.1	Tera Char 071 02	2189	3
River	0.28	Tera Char 071 02	2190	3
River	0.12	Tera Char 071 02	2191	3
River	0.06	Tera Char 071 02	2192	3
River	0.05	Tera Char 071 02	2193	3
River	0.3	Tera Char 071 02	2194	3
River	0.27	Tera Char 071 02	2195	3
River	0.4	Tera Char 071 02	2196	3
River	0.26	Tera Char 071 02	2197	3
River	0.42	Tera Char 071 02	2198	3
River	0.19	Tera Char 071 02	2199	3
River	0.73	Tera Char 071 02	2200	3
River	0.33	Tera Char 071 02	2201	3
River	0.15	Tera Char 071 02	2202	3
River	0.08	Tera Char 071 02	2203	3
River	0.16	Tera Char 071 02	2204	3
River	0.91	Tera Char 071 02	2205	3
River	0.18	Tera Char 071 02	2206	3
River	0.16	Tera Char 071 02	2207	3
River	0.32	Tera Char 071 02	2208	3
River	0.12	Tera Char 071 02	2210	3
River	0.48	Tera Char 071 02	2211	3
River	0.53	Tera Char 071 02	2212	3
River	0.05	Tera Char 071 02	2213	3
River	0.04	Tera Char 071 02	2214	3
River	0.11	Tera Char 071 02	2215	3
River	0.17	Tera Char 071 02	2216	3
River	0.11	Tera Char 071 02	2217	3
River	0.59	Tera Char 071 02	2218	3
River	0.18	Tera Char 071 02	2219	3
River	0.17	Tera Char 071 02	2220	3
River	0.36	Tera Char 071 02	2221	3
River	0.35	Tera Char 071 02	2222	3
River	0.31	Tera Char 071 02	2223	3
River	0.93	Tera Char 071 02	2224	3
River	0.1	Tera Char 071 02	2225	3
River	0.04	Tera Char 071 02	2226	3
River	0.2	Tera Char 071 02	2227	3
River	0.01	Tera Char 071 02	2316	3
River	0.02	Tera Char 071 02	2317	3
Pond	0.25	Tera Char 071 02	2695	3
Pond	0.06	Tera Char 071 02	2843	3
Pond	0.02	Tera Char 071 02	2844	3
Pond	0.17	Tera Char 071 02	2846	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Pond	0.32	Tera Char 071 02	2848	3
Pond	0.27	Tera Char 071 02	2852	3
Pond	0.02	Tera Char 071 02	2853	3
Pond	0.32	Tera Char 071 02	2853	3
Pond	0.13	Tera Char 071 02	2854	3
Pond	0.35	Tera Char 071 02	2886	3
Canal	0.01	Tera Char 071 02	2913	3
Canal	0.02	Tera Char 071 02	2916	3
River	0.15	Tera Char 071 02	2939	3
River	0.31	Tera Char 071 02	2939	3
Pond	0.19	Tera Char 071 02	3014	3
Pond	0.02	Tera Char 071 02	3015	3
Pond	0.01	Tera Char 071 02	3016	3
Pond	0.25	Tera Char 071 02	3046	3
Canal	0.01	Tera Char 071 02	3084	3
Pond	0.01	Tera Char 071 02	3090	3
Canal	0.01	Tera Char 071 02	3090	3
Pond	0.14	Tera Char 071 02	3100	3
Pond	0.05	Tera Char 071 02	3101	3
Pond	0.22	Tera Char 071 02	3114	3
Pond	0.03	Tera Char 071 02	3115	3
Pond	0.01	Tera Char 071 02	3116	3
Pond	0.24	Tera Char 071 02	3137	3
River	0.98	Tera Char 071 02	3150	3
River	0.29	Tera Char 071 02	3151	3
River	0.08	Tera Char 071 02	3158	3
River	0.78	Tera Char 071 02	3159	3
River	0.25	Tera Char 071 02	3160	3
River	1.49	Tera Char 071 02	3161	3
River	1	Tera Char 071 02	3162	3
River	0.62	Tera Char 071 02	3163	3
River	0.11	Tera Char 071 02	3164	3
River	0.19	Tera Char 071 02	3165	3
River	0.08	Tera Char 071 02	3166	3
River	0.2	Tera Char 071 02	3167	3
River	0.2	Tera Char 071 02	3168	3
River	0.04	Tera Char 071 02	3169	3
River	0.46	Tera Char 071 02	3170	3
River	0.44	Tera Char 071 02	3171	3
River	5.83	Tera Char 071 02	3172	3
River	0.27	Tera Char 071 02	3173	3
River	0.04	Tera Char 071 02	3175	3
River	0.11	Tera Char 071 02	3190	3
River	0.2	Tera Char 071 02	3191	3
River	0.11	Tera Char 071 02	3192	3
River	0.04	Tera Char 071 02	3193	3
River	0.24	Tera Char 071 02	3194	3
River	0.33	Tera Char 071 02	3195	3
River	0.18	Tera Char 071 02	3196	3
River	0.18	Tera Char 071 02	3197	3
River	0.43	Tera Char 071 02	3198	3
River	0.06	Tera Char 071 02	3202	3
River	0.59	Tera Char 071 02	3203	3
River	0.1	Tera Char 071 02	3204	3
River	0.37	Tera Char 071 02	3205	3
River	1.39	Tera Char 071 02	3206	3
River	0.75	Tera Char 071 02	3207	3
River	0.41	Tera Char 071 02	3208	3
River	0.47	Tera Char 071 02	3209	3
River	0.22	Tera Char 071 02	3210	3
River	0.22	Tera Char 071 02	3211	3
River	0.18	Tera Char 071 02	3212	3
River	0.34	Tera Char 071 02	3213	3
River	0.17	Tera Char 071 02	3214	3
River	0.17	Tera Char 071 02	3215	3
River	0.09	Tera Char 071 02	3216	3
River	0.24	Tera Char 071 02	3217	3
River	0.76	Tera Char 071 02	3218	3
River	0.74	Tera Char 071 02	3219	3
River	0.22	Tera Char 071 02	3220	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.05	Tera Char 071 02	3221	3
River	1.28	Tera Char 071 02	3222	3
River	0.25	Tera Char 071 02	3223	3
River	0.29	Tera Char 071 02	3224	3
River	0.21	Tera Char 071 02	3225	3
River	0.09	Tera Char 071 02	3226	3
River	0.18	Tera Char 071 02	3227	3
River	0.09	Tera Char 071 02	3228	3
River	0.08	Tera Char 071 02	3236	3
River	0.25	Tera Char 071 02	3237	3
River	0.02	Tera Char 071 02	3238	3
River	0.03	Tera Char 071 02	3239	3
River	0.16	Tera Char 071 02	3240	3
River	0.25	Tera Char 071 02	3241	3
River	0.06	Tera Char 071 02	3242	3
River	0.38	Tera Char 071 02	3243	3
River	0.41	Tera Char 071 02	3244	3
River	0.05	Tera Char 071 02	3245	3
River	0.15	Tera Char 071 02	3246	3
River	0.16	Tera Char 071 02	3247	3
River	0.52	Tera Char 071 02	3248	3
River	0.16	Tera Char 071 02	3250	3
River	0.09	Tera Char 071 02	3251	3
River	0.03	Tera Char 071 02	3252	3
River	0.07	Tera Char 071 02	3253	3
River	0.01	Tera Char 071 02	3256	3
River	0.06	Tera Char 071 02	3288	3
River	0.07	Tera Char 071 02	3289	3
River	0.08	Tera Char 071 02	3289	3
River	0.07	Tera Char 071 02	3290	3
River	0.05	Tera Char 071 02	3291	3
River	0.08	Tera Char 071 02	3292	3
River	0.39	Tera Char 071 02	3293	3
River	0.15	Tera Char 071 02	3294	3
River	0.34	Tera Char 071 02	3295	3
River	0.06	Tera Char 071 02	3296	3
River	0.03	Tera Char 071 02	3298	3
Canal	0.15	Tera Char 071 02	3357	3
Canal	0.09	Tera Char 071 02	3358	3
Canal	0.08	Tera Char 071 02	3367	3
River	0.04	Tera Char 071 02	3368	3
Canal	0.15	Tera Char 071 02	3368	3
River	0.61	Tera Char 071 02	3370	3
River	0.6	Tera Char 071 02	3371	3
River	0.18	Tera Char 071 02	3372	3
River	0.06	Tera Char 071 02	3373	3
River	0.11	Tera Char 071 02	3374	3
River	0.24	Tera Char 071 02	3375	3
River	0.05	Tera Char 071 02	3376	3
River	0.19	Tera Char 071 02	3377	3
River	0.82	Tera Char 071 02	3378	3
River	0.48	Tera Char 071 02	3379	3
River	0.06	Tera Char 071 02	3380	3
River	0.19	Tera Char 071 02	3381	3
River	0.07	Tera Char 071 02	3382	3
River	0.05	Tera Char 071 02	3383	3
River	0.22	Tera Char 071 02	3384	3
River	0.21	Tera Char 071 02	3385	3
River	0.01	Tera Char 071 02	3386	3
River	0.24	Tera Char 071 02	3386	3
River	0.01	Tera Char 071 02	3387	3
Canal	0.06	Tera Char 071 02	3387	3
Canal	0.01	Tera Char 071 02	3388	3
Canal	0.05	Tera Char 071 02	3392	3
Canal	0.06	Tera Char 071 02	3393	3
Canal	0.06	Tera Char 071 02	3399	3
Canal	0.04	Tera Char 071 02	3400	3
Canal	0.01	Tera Char 071 02	3405	3
Canal	0.08	Tera Char 071 02	3405	3
Canal	0.09	Tera Char 071 02	3406	3

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.01	Tera Char 071 02	3409	3
Canal	0.03	Tera Char 071 02	3414	3
Canal	0.04	Tera Char 071 02	3420	3
Pond	0.06	Tera Char 071 02	3427	3
Pond	0.11	Tera Char 071 02	3428	3
Pond	0.12	Tera Char 071 02	3429	3
Pond	0.01	Tera Char 071 02	3435	3
Pond	0.02	Tera Char 071 02	3437	3
Canal	0.05	Tera Char 071 02	3462	3
Canal	0.19	Tera Char 071 02	3462	3
Canal	0.01	Tera Char 071 02	3466	3
Canal	0.03	Tera Char 071 02	3467	3
Canal	0.01	Tera Char 071 02	3468	3
Pond	0.17	Tera Char 071 02	3481	3
Pond	0.19	Tera Char 071 02	3482	3
Canal	0.01	Tera Char 071 02	3508	3
Canal	0.01	Tera Char 071 02	3517	3
Canal	0.01	Tera Char 071 02	3517	3
River	0.19	Tera Char 071 02	3517	3
River	0.11	Tera Char 071 02	3543	3
River	0.03	Tera Char 071 02	3545	3
River	0.04	Tera Char 071 02	99999	3
Canal	0.04	Tera Char 071 02	99999	3
Canal	0.55	Tera Char 071 02	99999	3
River	0.56	Tera Char 071 02	99999	3
Canal	1.26	Tera Char 071 02	99999	3
Canal	1.82	Tera Char 071 02	99999	3
Pond	0.13	Muladi 072 00	45	4
Pond	0.03	Muladi 072 00	47	4
Pond	0.04	Muladi 072 00	48	4
Ditch	0.13	Muladi 072 00	51	4
Ditch	0.13	Muladi 072 00	52	4
Ditch	0.13	Muladi 072 00	53	4
Ditch	0.08	Muladi 072 00	54	4
Ditch	0.22	Muladi 072 00	74	4
Pond	0.14	Muladi 072 00	96	4
Pond	0.06	Muladi 072 00	97	4
Pond	0.23	Muladi 072 00	142	4
Pond	0.31	Muladi 072 00	143	4
Canal	0.01	Muladi 072 00	146	4
Canal	0.01	Muladi 072 00	146	4
Pond	0.06	Muladi 072 00	163	4
Pond	0.06	Muladi 072 00	171	4
Pond	0.21	Muladi 072 00	174	4
Ditch	0.01	Muladi 072 00	175	4
Pond	0.02	Muladi 072 00	175	4
Ditch	0.29	Muladi 072 00	176	4
Canal	0.01	Muladi 072 00	184	4
Canal	0.02	Muladi 072 00	184	4
Canal	0.04	Muladi 072 00	184	4
Canal	0.07	Muladi 072 00	184	4
Canal	0.06	Muladi 072 00	186	4
Canal	0.01	Muladi 072 00	209	4
Canal	0.01	Muladi 072 00	211	4
Pond	0.22	Muladi 072 00	217	4
Pond	0.05	Muladi 072 00	359	4
Pond	0.06	Muladi 072 00	360	4
Pond	0.07	Muladi 072 00	370	4
Pond	0.37	Muladi 072 00	371	4
Pond	0.02	Muladi 072 00	415	4
Pond	0.05	Muladi 072 00	415	4
Pond	0.36	Muladi 072 00	416	4
Pond	0.01	Muladi 072 00	422	4
Pond	0.02	Muladi 072 00	476	4
Pond	0.19	Muladi 072 00	477	4
Canal	0.03	Muladi 072 00	482	4
Canal	0.09	Muladi 072 00	482	4
Canal	0.14	Muladi 072 00	482	4
Canal	0.22	Muladi 072 00	482	4
Canal	0.24	Muladi 072 00	482	4

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Pond	0.06	Muladi 072 00	497	4
Pond	0.18	Muladi 072 00	498	4
Canal	0.02	Muladi 072 00	520	4
Canal	0.03	Muladi 072 00	522	4
Canal	0.13	Muladi 072 00	522	4
Canal	0.4	Muladi 072 00	522	4
Canal	0.01	Muladi 072 00	523	4
Canal	0.02	Muladi 072 00	523	4
Canal	0.03	Muladi 072 00	526	4
Pond	0.02	Muladi 072 00	537	4
Canal	0.01	Muladi 072 00	538	4
Canal	0.09	Muladi 072 00	539	4
Pond	0.26	Muladi 072 00	540	4
Canal	0.03	Muladi 072 00	541	4
Canal	0.01	Muladi 072 00	542	4
Canal	0.03	Muladi 072 00	543	4
Canal	0.01	Muladi 072 00	547	4
Canal	0.01	Muladi 072 00	557	4
Canal	0.02	Muladi 072 00	559	4
Pond	0.18	Muladi 072 00	571	4
Pond	0.05	Muladi 072 00	572	4
Ditch	0.23	Muladi 072 00	579	4
Ditch	0.19	Muladi 072 00	580	4
Pond	0.09	Muladi 072 00	588	4
Pond	0.15	Muladi 072 00	589	4
Canal	0.27	Muladi 072 00	590	4
Pond	0.01	Muladi 072 00	596	4
Pond	0.14	Muladi 072 00	598	4
Pond	0.15	Muladi 072 00	599	4
Pond	0.08	Muladi 072 00	610	4
Pond	0.05	Muladi 072 00	611	4
Pond	0.07	Muladi 072 00	612	4
Pond	0.03	Muladi 072 00	615	4
Pond	0.12	Muladi 072 00	646	4
Pond	0.22	Muladi 072 00	647	4
Pond	0.08	Muladi 072 00	651	4
Pond	0.1	Muladi 072 00	654	4
Pond	0.1	Muladi 072 00	655	4
Canal	0.46	Muladi 072 00	658	4
Canal	0.1	Muladi 072 00	660	4
Canal	0.11	Muladi 072 00	660	4
Canal	0.02	Muladi 072 00	99999	4
Canal	0.17	Muladi 072 00	99999	4
Canal	0.3	Muladi 072 00	99999	4
Pond	0.17	Tera Char 071 02	2880	4
Pond	0.44	Tera Char 071 02	2880	4
Pond	0.22	Tera Char 071 02	2881	4
Canal	0.01	Tera Char 071 02	3082	4
Canal	0.02	Tera Char 071 02	99999	4
Pond	0.04	Tera Char 071 03	4153	4
Pond	0.07	Tera Char 071 03	4154	4
Pond	0.13	Tera Char 071 03	4155	4
Pond	0.01	Tera Char 071 03	4187	4
Pond	0.47	Tera Char 071 03	4189	4
Pond	0.01	Tera Char 071 03	4202	4
Pond	0.29	Tera Char 071 03	4204	4
Pond	0.06	Muladi 072 00	2	5
Pond	0.29	Muladi 072 00	7	5
Pond	0.32	Muladi 072 00	8	5
Ditch	0.24	Muladi 072 00	14	5
Pond	0.03	Muladi 072 00	28	5
Pond	0.08	Muladi 072 00	28	5
Pond	0.07	Muladi 072 00	37	5
Pond	0.13	Muladi 072 00	37	5
Pond	0.34	Muladi 072 00	38	5
Pond	0.15	Muladi 072 00	39	5
Pond	0.07	Muladi 072 00	40	5
Pond	0.55	Muladi 072 00	42	5
Pond	0.27	Muladi 072 00	43	5

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Pond	0.22	Muladi 072 00	44	5
Pond	0.01	Tera Char 071 03	4206	5
Pond	0.11	Tera Char 071 03	4207	5
Pond	0.09	Tera Char 071 03	4209	5
Pond	0.25	Tera Char 071 03	4221	5
Pond	0.2	Tera Char 071 03	4222	5
Pond	0.03	Tera Char 071 03	4240	5
Pond	0.05	Tera Char 071 03	4240	5
Pond	0.02	Tera Char 071 03	4242	5
Pond	0.19	Tera Char 071 03	4253	5
Pond	0.02	Tera Char 071 03	4267	5
Pond	0.06	Tera Char 071 03	4267	5
Pond	0.22	Tera Char 071 03	4277	5
Pond	0.27	Tera Char 071 03	4337	5
Canal	0.02	Tera Char 071 03	4339	5
Canal	0.07	Tera Char 071 03	4339	5
Canal	0.03	Tera Char 071 03	4340	5
Pond	0.21	Tera Char 071 03	4348	5
River	0.04	Char Decree 062 02	3455	6
River	0.06	Char Decree 062 02	3456	6
River	0.03	Char Decree 062 02	3457	6
River	0.06	Char Decree 062 02	3458	6
River	0.01	Ikar Khola 095 01	59	6
River	0.05	Ikar Khola 095 01	60	6
River	0.07	Ikar Khola 095 01	61	6
River	0.05	Ikar Khola 095 01	62	6
River	0.03	Ikar Khola 095 01	64	6
River	0.15	Ikar Khola 095 01	65	6
River	0.05	Ikar Khola 095 01	66	6
River	0.05	Ikar Khola 095 01	67	6
River	0.03	Ikar Khola 095 01	68	6
River	0.03	Ikar Khola 095 01	69	6
River	0.01	Ikar Khola 095 01	70	6
River	0.01	Ikar Khola 095 01	71	6
River	0.03	Ikar Khola 095 01	72	6
River	0.03	Ikar Khola 095 01	73	6
River	0.01	Ikar Khola 095 01	74	6
River	0.03	Ikar Khola 095 01	75	6
River	0.03	Ikar Khola 095 01	76	6
River	0.02	Ikar Khola 095 01	77	6
River	0.09	Ikar Khola 095 01	78	6
River	0.12	Ikar Khola 095 01	79	6
River	0.62	Ikar Khola 095 01	80	6
River	0.05	Ikar Khola 095 01	81	6
River	0.05	Ikar Khola 095 01	82	6
River	0.07	Ikar Khola 095 01	83	6
River	0.07	Ikar Khola 095 01	84	6
River	0.02	Ikar Khola 095 01	85	6
River	0.15	Ikar Khola 095 01	86	6
River	0.17	Ikar Khola 095 01	87	6
River	0.08	Ikar Khola 095 01	88	6
River	0.02	Ikar Khola 095 01	89	6
River	0.01	Ikar Khola 095 01	90	6
River	0.47	Ikar Khola 095 01	116	6
Pond	0.27	Ikar Khola 095 01	128	6
River	0.01	Ikar Khola 095 01	140	6
River	0.07	Ikar Khola 095 01	141	6
River	0.01	Ikar Khola 095 01	142	6
River	0.13	Ikar Khola 095 01	143	6
River	0.06	Ikar Khola 095 01	144	6
River	0.04	Ikar Khola 095 01	145	6
River	0.05	Ikar Khola 095 01	146	6
River	0.04	Ikar Khola 095 01	147	6
River	0.03	Ikar Khola 095 01	148	6
River	0.06	Ikar Khola 095 01	149	6
River	0.04	Ikar Khola 095 01	150	6
River	0.05	Ikar Khola 095 01	151	6
River	0.34	Ikar Khola 095 01	152	6
River	0.06	Ikar Khola 095 01	153	6

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.05	Ikar Khola 095 01	154	6
River	0.07	Ikar Khola 095 01	155	6
River	0.08	Ikar Khola 095 01	156	6
River	0.17	Ikar Khola 095 01	157	6
River	0.06	Ikar Khola 095 01	158	6
River	0.06	Ikar Khola 095 01	159	6
River	0.06	Ikar Khola 095 01	160	6
River	0.03	Ikar Khola 095 01	161	6
River	0.03	Ikar Khola 095 01	162	6
River	0.02	Ikar Khola 095 01	163	6
River	0.03	Ikar Khola 095 01	164	6
River	0.04	Ikar Khola 095 01	165	6
River	0.07	Ikar Khola 095 01	166	6
River	0.13	Ikar Khola 095 01	167	6
River	0.15	Ikar Khola 095 01	168	6
River	0.14	Ikar Khola 095 01	169	6
River	0.11	Ikar Khola 095 01	170	6
River	0.04	Ikar Khola 095 01	171	6
River	0.05	Ikar Khola 095 01	172	6
River	0.02	Ikar Khola 095 01	173	6
River	0.02	Ikar Khola 095 01	174	6
River	0.03	Ikar Khola 095 01	175	6
River	0.03	Ikar Khola 095 01	176	6
River	0.04	Ikar Khola 095 01	177	6
River	0.02	Ikar Khola 095 01	178	6
River	0.02	Ikar Khola 095 01	179	6
River	0.01	Ikar Khola 095 01	180	6
River	0.3	Ikar Khola 095 01	186	6
Canal	0.05	Ikar Khola 095 02	206	6
River	0.17	Ikar Khola 095 02	206	6
River	0.87	Ikar Khola 095 02	207	6
River	0.87	Ikar Khola 095 02	208	6
River	0.08	Ikar Khola 095 02	209	6
River	0.08	Ikar Khola 095 02	210	6
River	0.1	Ikar Khola 095 02	211	6
River	1.93	Ikar Khola 095 02	212	6
River	0.72	Ikar Khola 095 02	213	6
River	1.35	Ikar Khola 095 02	214	6
River	0.08	Ikar Khola 095 02	215	6
River	0.13	Ikar Khola 095 02	216	6
River	0.89	Ikar Khola 095 02	217	6
River	0.32	Ikar Khola 095 02	218	6
River	0.24	Ikar Khola 095 02	219	6
River	0.23	Ikar Khola 095 02	220	6
River	0.23	Ikar Khola 095 02	221	6
River	0.23	Ikar Khola 095 02	222	6
River	0.38	Ikar Khola 095 02	223	6
River	0.11	Ikar Khola 095 02	224	6
River	0.6	Ikar Khola 095 02	225	6
River	0.08	Ikar Khola 095 02	227	6
River	0.03	Ikar Khola 095 02	228	6
River	0.02	Ikar Khola 095 02	229	6
River	0.21	Ikar Khola 095 02	230	6
River	0.27	Ikar Khola 095 02	231	6
River	0.02	Ikar Khola 095 02	232	6
River	0.03	Ikar Khola 095 02	233	6
River	0.07	Ikar Khola 095 02	234	6
River	0.06	Ikar Khola 095 02	235	6
River	0.55	Ikar Khola 095 02	236	6
River	1.03	Ikar Khola 095 02	237	6
River	0.13	Ikar Khola 095 02	238	6
River	0.36	Ikar Khola 095 02	239	6
River	1.38	Ikar Khola 095 02	240	6
River	0.97	Ikar Khola 095 02	241	6
River	0.67	Ikar Khola 095 02	242	6
River	0.17	Ikar Khola 095 02	243	6
River	0.57	Ikar Khola 095 02	244	6
River	0.45	Ikar Khola 095 02	252	6
River	0.23	Ikar Khola 095 02	253	6
River	0.27	Ikar Khola 095 02	254	6

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.1	Ikar Khola 095 02	255	6
River	0.11	Ikar Khola 095 02	256	6
River	0.22	Ikar Khola 095 02	257	6
River	0.06	Ikar Khola 095 02	258	6
River	0.03	Ikar Khola 095 02	259	6
River	0.03	Ikar Khola 095 02	260	6
River	0.2	Ikar Khola 095 02	261	6
River	0.2	Ikar Khola 095 02	262	6
River	0.44	Ikar Khola 095 02	263	6
River	0.16	Ikar Khola 095 02	264	6
River	0.02	Ikar Khola 095 02	265	6
River	0.05	Ikar Khola 095 02	266	6
River	0.4	Ikar Khola 095 02	267	6
Canal	0.01	Ikar Khola 095 02	268	6
Canal	0.01	Ikar Khola 095 02	268	6
Canal	0.01	Ikar Khola 095 02	268	6
Canal	0.01	Ikar Khola 095 02	268	6
Canal	0.04	Ikar Khola 095 02	268	6
Canal	0.04	Ikar Khola 095 02	268	6
River	0.14	Ikar Khola 095 02	271	6
River	0.07	Ikar Khola 095 02	273	6
River	0.1	Ikar Khola 095 02	273	6
River	0.08	Ikar Khola 095 02	274	6
River	0.04	Ikar Khola 095 02	275	6
River	0.24	Ikar Khola 095 02	276	6
River	0.33	Ikar Khola 095 02	277	6
River	0.05	Ikar Khola 095 02	278	6
River	0.04	Ikar Khola 095 02	279	6
River	0.24	Ikar Khola 095 02	280	6
River	0.34	Ikar Khola 095 02	281	6
Canal	0.04	Ikar Khola 095 02	282	6
Canal	0.08	Ikar Khola 095 02	283	6
Canal	0.06	Ikar Khola 095 02	286	6
Canal	0.02	Ikar Khola 095 02	288	6
Canal	0.01	Ikar Khola 095 02	289	6
Canal	0.02	Ikar Khola 095 02	290	6
Canal	0.06	Ikar Khola 095 02	291	6
Canal	0.02	Ikar Khola 095 02	292	6
Canal	0.02	Ikar Khola 095 02	295	6
Canal	0.02	Ikar Khola 095 02	296	6
Canal	0.06	Ikar Khola 095 02	297	6
Canal	0.03	Ikar Khola 095 02	298	6
River	0.09	Ikar Khola 095 02	299	6
River	0.05	Ikar Khola 095 02	300	6
Canal	0.05	Ikar Khola 095 02	302	6
Canal	0.04	Ikar Khola 095 02	303	6
Canal	0.04	Ikar Khola 095 02	304	6
Canal	0.07	Ikar Khola 095 02	305	6
Canal	0.02	Ikar Khola 095 02	307	6
Canal	0.02	Ikar Khola 095 02	308	6
Canal	0.02	Ikar Khola 095 02	309	6
Canal	0.05	Ikar Khola 095 02	310	6
Canal	0.04	Ikar Khola 095 02	311	6
Canal	0.01	Ikar Khola 095 02	312	6
Canal	0.07	Ikar Khola 095 02	316	6
Canal	0.03	Ikar Khola 095 02	318	6
Canal	0.01	Ikar Khola 095 02	319	6
Canal	0.01	Ikar Khola 095 02	320	6
Canal	0.01	Ikar Khola 095 02	321	6
Canal	0.04	Ikar Khola 095 02	322	6
Canal	0.05	Ikar Khola 095 02	323	6
Canal	0.07	Ikar Khola 095 02	324	6
Canal	0.03	Ikar Khola 095 02	325	6
Canal	0.06	Ikar Khola 095 02	326	6
Canal	0.02	Ikar Khola 095 02	331	6
Canal	0.01	Ikar Khola 095 02	332	6
Canal	0.07	Ikar Khola 095 02	333	6
Canal	0.02	Ikar Khola 095 02	334	6
Canal	0.03	Ikar Khola 095 02	335	6
Canal	0.02	Ikar Khola 095 02	337	6

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.02	Ikar Khola 095 02	338	6
Canal	0.05	Ikar Khola 095 02	342	6
Canal	0.06	Ikar Khola 095 02	343	6
Canal	0.07	Ikar Khola 095 02	349	6
Canal	0.07	Ikar Khola 095 02	350	6
Canal	0.04	Ikar Khola 095 02	351	6
Canal	0.04	Ikar Khola 095 02	352	6
Canal	0.07	Ikar Khola 095 02	353	6
Canal	0.01	Ikar Khola 095 02	99999	6
Canal	0.01	Ikar Khola 095 02	99999	6
Canal	0.01	Ikar Khola 095 02	99999	6
Canal	0.01	Ikar Khola 095 02	99999	6
Canal	0.01	Ikar Khola 095 02	99999	6
Canal	0.04	Ikar Khola 095 02	99999	6
Canal	0.09	Ikar Khola 095 02	99999	6
Canal	0.13	Ikar Khola 095 02	99999	6
Canal	0.18	Ikar Khola 095 02	99999	6
Canal	0.19	Ikar Khola 095 02	99999	6
Canal	0.2	Ikar Khola 095 02	99999	6
Canal	0.2	Ikar Khola 095 02	99999	6
Canal	0.2	Ikar Khola 095 02	99999	6
Canal	0.2	Ikar Khola 095 02	99999	6
River	0.2	Ikar Khola 095 02	99999	6
River	0.2	Ikar Khola 095 02	99999	6
River	0.2	Ikar Khola 095 02	99999	6
River	0.2	Ikar Khola 095 02	99999	6
Canal	0.29	Ikar Khola 095 02	99999	6
Canal	0.29	Ikar Khola 095 02	99999	6
Canal	0.29	Ikar Khola 095 02	99999	6
Canal	0.29	Ikar Khola 095 02	99999	6
River	0.29	Ikar Khola 095 02	99999	6
River	0.29	Ikar Khola 095 02	99999	6
River	0.29	Ikar Khola 095 02	99999	6
River	0.29	Ikar Khola 095 02	99999	6
Canal	0.3	Ikar Khola 095 02	99999	6
Canal	0.33	Ikar Khola 095 02	99999	6
Canal	0.44	Ikar Khola 095 02	99999	6
Canal	0.63	Ikar Khola 095 02	99999	6
Canal	0.67	Ikar Khola 095 02	99999	6
Canal	0.77	Ikar Khola 095 02	99999	6
River	0.78	Ikar Khola 095 02	99999	6
River	1.13	Ikar Khola 095 02	99999	6
Canal	1.23	Ikar Khola 095 02	99999	6
River	1.99	Ikar Khola 095 02	99999	6
River	7.75	Ikar Khola 095 02	99999	6
River	17.31	Ikar Khola 095 02	99999	6
River	0.01	Paschim Char Pattani Vanga 073 00	1	6
River	0.01	Paschim Char Pattani Vanga 073 00	112	6
River	0.03	Paschim Char Pattani Vanga 073 00	114	6
River	0.02	Paschim Char Pattani Vanga 073 00	171	6
River	0.07	Paschim Char Pattani Vanga 073 00	176	6
River	0.04	Paschim Char Pattani Vanga 073 00	177	6
River	0.15	Paschim Char Pattani Vanga 073 00	185	6
River	0.15	Paschim Char Pattani Vanga 073 00	186	6
River	0.17	Paschim Char Pattani Vanga 073 00	187	6
River	0.2	Paschim Char Pattani Vanga 073 00	189	6
River	0.24	Paschim Char Pattani Vanga 073 00	190	6
River	0.42	Paschim Char Pattani Vanga 073 00	192	6
River	0.19	Paschim Char Pattani Vanga 073 00	193	6
River	0.19	Paschim Char Pattani Vanga 073 00	194	6
River	0.69	Paschim Char Pattani Vanga 073 00	195	6
River	0.24	Paschim Char Pattani Vanga 073 00	196	6
River	0.85	Paschim Char Pattani Vanga 073 00	197	6
River	0.61	Paschim Char Pattani Vanga 073 00	198	6
River	0.59	Paschim Char Pattani Vanga 073 00	199	6
River	0.33	Paschim Char Pattani Vanga 073 00	200	6
River	0.72	Paschim Char Pattani Vanga 073 00	201	6
River	0.59	Paschim Char Pattani Vanga 073 00	202	6
River	0.46	Paschim Char Pattani Vanga 073 00	203	6
River	0.22	Paschim Char Pattani Vanga 073 00	204	6

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.32	Paschim Char Pattani Vanga 073 00	205	6
River	0.18	Paschim Char Pattani Vanga 073 00	206	6
River	0.16	Paschim Char Pattani Vanga 073 00	207	6
River	0.07	Paschim Char Pattani Vanga 073 00	208	6
River	0.06	Paschim Char Pattani Vanga 073 00	209	6
River	0.17	Paschim Char Pattani Vanga 073 00	210	6
River	0.01	Paschim Char Pattani Vanga 073 00	211	6
River	0.17	Paschim Char Pattani Vanga 073 00	229	6
River	0.03	Paschim Char Pattani Vanga 073 00	230	6
River	0.08	Paschim Char Pattani Vanga 073 00	231	6
River	0.01	Paschim Char Pattani Vanga 073 00	232	6
River	0.03	Paschim Char Pattani Vanga 073 00	233	6
Canal	0.01	Paschim Char Pattani Vanga 073 00	315	6
Canal	0.12	Paschim Char Pattani Vanga 073 00	316	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	359	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	360	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	363	6
Canal	0.04	Paschim Char Pattani Vanga 073 00	364	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	367	6
Canal	0.04	Paschim Char Pattani Vanga 073 00	368	6
Canal	0.06	Paschim Char Pattani Vanga 073 00	371	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	372	6
Canal	0.04	Paschim Char Pattani Vanga 073 00	375	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	376	6
Canal	0.06	Paschim Char Pattani Vanga 073 00	381	6
Canal	0.04	Paschim Char Pattani Vanga 073 00	382	6
Canal	0.14	Paschim Char Pattani Vanga 073 00	383	6
Canal	0.08	Paschim Char Pattani Vanga 073 00	387	6
Canal	0.02	Paschim Char Pattani Vanga 073 00	388	6
Canal	0.05	Paschim Char Pattani Vanga 073 00	389	6
Canal	0.03	Paschim Char Pattani Vanga 073 00	390	6
River	0.12	Tera Char 071 03	4031	6
River	0.73	Tera Char 071 03	4032	6
River	0.1	Tera Char 071 03	4033	6
River	0.93	Tera Char 071 03	4034	6
River	0.22	Tera Char 071 03	4035	6
Pond	0.63	Tera Char 071 03	4046	6
River	0.46	Tera Char 071 03	4055	6
River	1.21	Tera Char 071 03	4056	6
River	0.85	Tera Char 071 03	4059	6
River	0.18	Tera Char 071 03	4060	6
River	0.27	Tera Char 071 03	4061	6
River	0.19	Tera Char 071 03	4062	6
River	0.16	Tera Char 071 03	4064	6
Pond	0.05	Tera Char 071 03	4065	6
Pond	0.09	Tera Char 071 03	4065	6
River	0.93	Tera Char 071 03	4065	6
River	0.01	Tera Char 071 03	4070	6
River	0.12	Tera Char 071 03	4071	6
River	0.09	Tera Char 071 03	4072	6
River	0.05	Tera Char 071 03	4073	6
River	0.01	Tera Char 071 03	4074	6
River	0.06	Tera Char 071 03	4075	6
River	0.13	Tera Char 071 03	4076	6
River	0.04	Tera Char 071 03	4085	6
Pond	0.13	Tera Char 071 03	4089	6
Pond	0.3	Tera Char 071 03	4090	6
River	0.04	Tera Char 071 03	4092	6
Pond	0.24	Tera Char 071 03	4215	6
Pond	0.1	Tera Char 071 03	4282	6
Pond	0.01	Tera Char 071 03	4283	6
Pond	0.25	Tera Char 071 03	4285	6
River	1.01	Tera Char 071 03	4363	6
River	0.08	Tera Char 071 03	4364	6
River	0.48	Tera Char 071 03	4365	6
River	1.36	Tera Char 071 03	4366	6
Canal	0.21	Char Decree 062 02	2013	7
Canal	0.02	Char Decree 062 02	2014	7
Canal	0.02	Char Decree 062 02	2019	7
Canal	0.07	Char Decree 062 02	2020	7

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.01	Char Decree 062 02	2021	7
Canal	0.07	Char Decree 062 02	2022	7
Canal	0.09	Char Decree 062 02	2023	7
Canal	0.07	Char Decree 062 02	2024	7
Canal	0.08	Char Decree 062 02	2025	7
Pond	0.14	Char Decree 062 02	2122	7
Canal	0.31	Char Decree 062 02	2128	7
Canal	0.03	Char Decree 062 02	2133	7
Canal	0.05	Char Decree 062 02	2136	7
Pond	0.12	Char Decree 062 02	2153	7
Pond	0.11	Char Decree 062 02	2154	7
Pond	0.08	Char Decree 062 02	2157	7
Pond	0.04	Char Decree 062 02	2185	7
Pond	0.06	Char Decree 062 02	2186	7
Pond	0.08	Char Decree 062 02	2187	7
Pond	0.02	Char Decree 062 02	2188	7
Pond	0.01	Char Decree 062 02	2189	7
Pond	0.08	Char Decree 062 02	2193	7
Pond	0.2	Char Decree 062 02	2194	7
Pond	0.16	Char Decree 062 02	2200	7
Pond	0.2	Char Decree 062 02	2232	7
Pond	0.08	Char Decree 062 02	2236	7
Ditch	0.02	Char Decree 062 02	2253	7
Ditch	0.01	Char Decree 062 02	2256	7
Ditch	0.01	Char Decree 062 02	2257	7
Ditch	0.05	Char Decree 062 02	2260	7
Ditch	0.01	Char Decree 062 02	2261	7
Ditch	0.02	Char Decree 062 02	2264	7
Ditch	0.02	Char Decree 062 02	2265	7
Ditch	0.01	Char Decree 062 02	2268	7
Ditch	0.01	Char Decree 062 02	2269	7
Ditch	0.02	Char Decree 062 02	2272	7
Ditch	0.03	Char Decree 062 02	2273	7
Ditch	0.05	Char Decree 062 02	2275	7
Ditch	0.01	Char Decree 062 02	2276	7
Ditch	0.01	Char Decree 062 02	2277	7
Ditch	0.01	Char Decree 062 02	2278	7
Ditch	0.03	Char Decree 062 02	2285	7
Ditch	0.02	Char Decree 062 02	2286	7
Ditch	0.02	Char Decree 062 02	2295	7
Ditch	0.01	Char Decree 062 02	2296	7
Ditch	0.02	Char Decree 062 02	2299	7
Ditch	0.03	Char Decree 062 02	2308	7
Ditch	0.04	Char Decree 062 02	2322	7
Ditch	0.03	Char Decree 062 02	2325	7
Ditch	0.04	Char Decree 062 02	2326	7
Ditch	0.06	Char Decree 062 02	2330	7
Ditch	0.04	Char Decree 062 02	2331	7
Ditch	0.07	Char Decree 062 02	2335	7
Ditch	0.04	Char Decree 062 02	2336	7
Canal	0.35	Char Decree 062 02	2406	7
Canal	0.18	Char Decree 062 02	2407	7
Canal	0.1	Char Decree 062 02	2414	7
Canal	0.12	Char Decree 062 02	2415	7
Canal	0.22	Char Decree 062 02	2416	7
Canal	0.05	Char Decree 062 02	2417	7
Canal	0.2	Char Decree 062 02	2418	7
Canal	0.06	Char Decree 062 02	2419	7
Canal	0.17	Char Decree 062 02	2420	7
Pond	0.08	Char Decree 062 02	2422	7
Pond	0.21	Char Decree 062 02	2432	7
Pond	0.22	Char Decree 062 02	2433	7
Canal	0.01	Char Decree 062 02	2440	7
Pond	0.19	Char Decree 062 02	2523	7
Pond	0.11	Char Decree 062 02	2524	7
Pond	0.01	Char Decree 062 02	2535	7
Pond	0.08	Char Decree 062 02	2536	7
Pond	0.06	Char Decree 062 02	2537	7
Pond	0.04	Char Decree 062 02	2538	7
Pond	0.03	Char Decree 062 02	2554	7

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Pond	0.47	Char Decree 062 02	2570	7
Pond	0.01	Char Decree 062 02	2575	7
Pond	0.11	Char Decree 062 02	2576	7
Pond	0.1	Char Decree 062 02	2577	7
Pond	0.04	Char Decree 062 02	2578	7
River	0.01	Char Decree 062 02	2622	7
River	0.04	Char Decree 062 02	2623	7
River	0.05	Char Decree 062 02	2628	7
River	0.13	Char Decree 062 02	2630	7
River	0.08	Char Decree 062 02	2631	7
River	0.03	Char Decree 062 02	2634	7
River	0.04	Char Decree 062 02	2635	7
River	0.06	Char Decree 062 02	2638	7
River	0.1	Char Decree 062 02	2639	7
River	0.09	Char Decree 062 02	2642	7
River	0.13	Char Decree 062 02	2643	7
River	0.15	Char Decree 062 02	2646	7
River	0.12	Char Decree 062 02	2647	7
River	0.09	Char Decree 062 02	2650	7
River	0.12	Char Decree 062 02	2651	7
River	0.18	Char Decree 062 02	2654	7
River	0.16	Char Decree 062 02	2655	7
River	0.12	Char Decree 062 02	2658	7
River	0.09	Char Decree 062 02	2659	7
River	0.11	Char Decree 062 02	2662	7
River	0.15	Char Decree 062 02	2663	7
River	0.01	Char Decree 062 02	2665	7
River	0.26	Char Decree 062 02	2666	7
River	0.21	Char Decree 062 02	2667	7
River	0.02	Char Decree 062 02	2668	7
River	0.23	Char Decree 062 02	2669	7
River	0.03	Char Decree 062 02	2670	7
Pond	0.2	Char Decree 062 02	2672	7
Pond	0.13	Char Decree 062 02	2749	7
Pond	0.14	Char Decree 062 02	2750	7
Pond	0.22	Char Decree 062 02	2765	7
River	0.02	Char Decree 062 02	2769	7
River	0.1	Char Decree 062 02	2770	7
River	0.13	Char Decree 062 02	2771	7
River	0.09	Char Decree 062 02	2772	7
River	0.34	Char Decree 062 02	2773	7
River	0.72	Char Decree 062 02	2774	7
River	0.31	Char Decree 062 02	2775	7
River	0.27	Char Decree 062 02	2776	7
River	0.23	Char Decree 062 02	2777	7
River	0.36	Char Decree 062 02	2778	7
River	0.4	Char Decree 062 02	2779	7
River	0.23	Char Decree 062 02	2780	7
River	0.14	Char Decree 062 02	2781	7
River	0.65	Char Decree 062 02	2782	7
River	1.49	Char Decree 062 02	2783	7
River	0.21	Char Decree 062 02	2784	7
River	0.12	Char Decree 062 02	2785	7
River	0.08	Char Decree 062 02	2786	7
River	0.14	Char Decree 062 02	2787	7
River	0.16	Char Decree 062 02	2788	7
River	0.08	Char Decree 062 02	2789	7
River	0.16	Char Decree 062 02	2793	7
River	0.02	Char Decree 062 02	2794	7
River	0.2	Char Decree 062 02	2801	7
River	0.19	Char Decree 062 02	2815	7
River	0.06	Char Decree 062 02	2816	7
River	0.09	Char Decree 062 02	2817	7
River	0.02	Char Decree 062 02	2818	7
River	0.07	Char Decree 062 02	2819	7
River	0.01	Char Decree 062 02	2894	7
River	1.56	Char Decree 062 02	2905	7
River	1.61	Char Decree 062 02	2905	7
River	1.8	Char Decree 062 02	2905	7
River	0.04	Char Decree 062 02	2906	7

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	7.92	Char Decree 062 02	2906	7
Canal	0.22	Char Decree 062 02	2907	7
Canal	0.02	Char Decree 062 02	3320	7
Canal	0.11	Char Decree 062 02	3320	7
Pond	0.29	Char Decree 062 02	3339	7
Pond	0.11	Char Decree 062 02	3377	7
Pond	0.11	Char Decree 062 02	3378	7
River	0.16	Char Decree 062 02	3417	7
River	1.34	Char Decree 062 02	3417	7
River	1.17	Char Decree 062 02	3419	7
River	0.08	Char Decree 062 02	3420	7
River	0.43	Char Decree 062 02	3421	7
River	0.02	Char Decree 062 02	3422	7
River	3.02	Char Decree 062 02	3423	7
River	0.48	Char Decree 062 02	3424	7
River	0.42	Char Decree 062 02	3425	7
River	0.84	Char Decree 062 02	3426	7
River	1.11	Char Decree 062 02	3427	7
River	0.95	Char Decree 062 02	3428	7
River	0.29	Char Decree 062 02	3429	7
River	0.28	Char Decree 062 02	3430	7
River	0.2	Char Decree 062 02	3431	7
River	0.18	Char Decree 062 02	3432	7
River	3.07	Char Decree 062 02	3433	7
River	0.03	Char Decree 062 02	3454	7
Canal	0.2	Char Decree 062 01	47	8
Canal	0.01	Char Decree 062 01	715	8
Canal	0.28	Char Decree 062 01	731	8
Canal	0.19	Char Decree 062 01	732	8
Canal	0.01	Char Decree 062 01	733	8
Canal	0.01	Char Decree 062 01	738	8
Canal	0.07	Char Decree 062 01	741	8
Canal	0.13	Char Decree 062 01	742	8
Canal	0.03	Char Decree 062 01	743	8
Canal	0.09	Char Decree 062 01	746	8
Canal	0.19	Char Decree 062 01	747	8
Canal	0.01	Char Decree 062 01	748	8
Canal	0.06	Char Decree 062 01	749	8
Canal	0.06	Char Decree 062 01	750	8
Canal	0.01	Char Decree 062 01	751	8
Canal	0.04	Char Decree 062 01	752	8
Canal	0.37	Char Decree 062 01	754	8
Pond	0.09	Char Decree 062 01	755	8
Pond	0.17	Char Decree 062 01	756	8
Pond	0.05	Char Decree 062 01	757	8
Canal	0.15	Char Decree 062 01	767	8
Canal	0.04	Char Decree 062 01	768	8
Pond	0.11	Char Decree 062 01	769	8
Pond	0.23	Char Decree 062 01	775	8
Pond	0.09	Char Decree 062 01	776	8
Pond	0.16	Char Decree 062 01	796	8
Pond	0.05	Char Decree 062 01	797	8
Pond	0.28	Char Decree 062 01	873	8
Pond	0.15	Char Decree 062 01	874	8
Pond	0.17	Char Decree 062 01	875	8
Pond	0.01	Char Decree 062 01	876	8
Canal	0.01	Char Decree 062 01	902	8
Pond	0.38	Char Decree 062 01	935	8
Canal	0.03	Char Decree 062 01	939	8
Pond	0.07	Char Decree 062 01	940	8
Canal	0.02	Char Decree 062 01	941	8
Pond	0.36	Char Decree 062 01	966	8
Pond	0.13	Char Decree 062 01	967	8
Pond	0.39	Char Decree 062 01	1001	8
Ditch	0.54	Char Decree 062 01	1001	8
Ditch	0.07	Char Decree 062 01	1002	8
Pond	0.25	Char Decree 062 01	1002	8
Pond	0.54	Char Decree 062 01	1003	8
Canal	0.03	Char Decree 062 01	1019	8
Pond	0.01	Char Decree 062 01	1040	8

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Pond	0.06	Char Decree 062 01	1040	8
Pond	0.2	Char Decree 062 01	1041	8
Canal	0.39	Char Decree 062 01	1048	8
Pond	0.26	Char Decree 062 01	1051	8
Pond	0.03	Char Decree 062 01	1063	8
Pond	0.08	Char Decree 062 01	1064	8
Pond	0.1	Char Decree 062 01	1068	8
Pond	0.22	Char Decree 062 01	1070	8
Pond	0.29	Char Decree 062 01	1072	8
Pond	0.29	Char Decree 062 01	1075	8
Pond	0.08	Char Decree 062 01	1076	8
Canal	0.02	Char Decree 062 01	1104	8
Canal	0.01	Char Decree 062 01	1105	8
Pond	0.05	Char Decree 062 01	1107	8
Pond	0.07	Char Decree 062 01	1108	8
Pond	0.1	Char Decree 062 01	1111	8
Pond	0.05	Char Decree 062 01	1128	8
Pond	0.01	Char Decree 062 01	1129	8
Pond	0.1	Char Decree 062 01	1173	8
Pond	0.01	Char Decree 062 01	1174	8
Pond	0.02	Char Decree 062 01	1175	8
Canal	0.02	Char Decree 062 01	1197	8
Canal	0.01	Char Decree 062 01	1199	8
Canal	0.07	Char Decree 062 01	1199	8
Canal	0.04	Char Decree 062 01	1200	8
Canal	0.07	Char Decree 062 01	1201	8
Canal	0.01	Char Decree 062 01	1202	8
Canal	0.03	Char Decree 062 01	1203	8
Canal	0.04	Char Decree 062 01	1204	8
Canal	0.04	Char Decree 062 01	1205	8
Canal	0.02	Char Decree 062 01	1206	8
Canal	0.02	Char Decree 062 01	1207	8
Canal	0.15	Char Decree 062 01	1208	8
Canal	0.11	Char Decree 062 01	1209	8
Canal	0.03	Char Decree 062 01	1212	8
Canal	0.08	Char Decree 062 01	1212	8
Canal	0.02	Char Decree 062 01	1218	8
Canal	0.07	Char Decree 062 01	1218	8
Canal	0.09	Char Decree 062 01	1219	8
Canal	0.02	Char Decree 062 01	1220	8
Canal	0.02	Char Decree 062 01	1222	8
Canal	0.02	Char Decree 062 01	1223	8
Canal	0.02	Char Decree 062 01	1256	8
Canal	0.05	Char Decree 062 01	1260	8
Canal	0.01	Char Decree 062 01	1261	8
Canal	0.01	Char Decree 062 01	1262	8
Canal	0.09	Char Decree 062 01	1266	8
Canal	0.13	Char Decree 062 01	1267	8
Canal	0.02	Char Decree 062 01	1268	8
Canal	0.07	Char Decree 062 01	1272	8
Canal	0.13	Char Decree 062 01	1273	8
Canal	0.13	Char Decree 062 01	1275	8
Canal	0.07	Char Decree 062 01	1276	8
Canal	0.02	Char Decree 062 01	1279	8
Canal	0.05	Char Decree 062 01	1576	8
Canal	0.03	Char Decree 062 01	1596	8
Canal	0.12	Char Decree 062 01	1597	8
Canal	0.09	Char Decree 062 01	1598	8
Canal	0.06	Char Decree 062 01	1599	8
Canal	0.03	Char Decree 062 01	1600	8
Canal	0.14	Char Decree 062 01	1609	8
Canal	0.23	Char Decree 062 01	1610	8
Canal	0.04	Char Decree 062 01	1611	8
Canal	0.09	Char Decree 062 01	1612	8
Canal	0.02	Char Decree 062 01	1630	8
Canal	0.01	Char Decree 062 01	1631	8
Canal	0.07	Char Decree 062 01	1632	8
Canal	0.15	Char Decree 062 01	1633	8
Canal	0.02	Char Decree 062 01	1634	8
Canal	0.01	Char Decree 062 01	1636	8

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.03	Char Decree 062 01	1646	8
Canal	0.11	Char Decree 062 01	1651	8
Canal	0.08	Char Decree 062 01	1652	8
Canal	0.06	Char Decree 062 01	1653	8
Canal	0.08	Char Decree 062 01	1654	8
Canal	0.04	Char Decree 062 01	1659	8
Canal	0.06	Char Decree 062 01	1660	8
Canal	0.14	Char Decree 062 01	1662	8
Canal	0.01	Char Decree 062 01	1663	8
Canal	0.07	Char Decree 062 01	1663	8
Canal	0.03	Char Decree 062 01	1666	8
Canal	0.18	Char Decree 062 01	1667	8
Canal	0.09	Char Decree 062 01	1669	8
Canal	0.06	Char Decree 062 01	1672	8
Canal	0.23	Char Decree 062 01	1679	8
Canal	0.06	Char Decree 062 01	1680	8
Canal	0.02	Char Decree 062 01	1681	8
Canal	0.05	Char Decree 062 01	1682	8
Canal	0.07	Char Decree 062 01	1683	8
Pond	0.25	Char Decree 062 01	1713	8
Pond	0.36	Char Decree 062 01	1716	8
Pond	0.05	Char Decree 062 01	1717	8
Canal	0.26	Char Decree 062 01	1798	8
Canal	0.03	Char Decree 062 01	1799	8
Canal	0.03	Char Decree 062 01	1800	8
Canal	0.05	Char Decree 062 01	1801	8
Canal	0.06	Char Decree 062 01	1802	8
Canal	0.32	Char Decree 062 01	1803	8
Canal	0.15	Char Decree 062 01	1804	8
Canal	0.05	Char Decree 062 01	1805	8
Canal	0.02	Char Decree 062 01	1806	8
Canal	0.04	Char Decree 062 01	1807	8
Canal	0.07	Char Decree 062 01	1808	8
Canal	0.1	Char Decree 062 01	1809	8
Canal	0.05	Char Decree 062 01	1810	8
Canal	0.02	Char Decree 062 01	1811	8
Canal	0.02	Char Decree 062 01	1812	8
Canal	0.06	Char Decree 062 01	1813	8
Canal	0.15	Char Decree 062 01	1813	8
Canal	0.02	Char Decree 062 01	1814	8
Canal	0.06	Char Decree 062 01	1815	8
Canal	0.12	Char Decree 062 01	1816	8
Canal	0.03	Char Decree 062 01	1853	8
Canal	0.14	Char Decree 062 01	1854	8
Canal	0.03	Char Decree 062 01	1855	8
Canal	0.18	Char Decree 062 02	2070	8
Canal	0.15	Char Decree 062 02	2072	8
Canal	0.04	Char Decree 062 02	2073	8
Canal	0.04	Char Decree 062 02	2074	8
Canal	0.03	Char Decree 062 02	2085	8
Canal	0.05	Char Decree 062 02	2086	8
Canal	0.02	Char Decree 062 02	2087	8
Canal	0.17	Char Decree 062 02	2090	8
Canal	0.02	Char Decree 062 02	2092	8
Canal	0.04	Char Decree 062 02	2093	8
Canal	0.06	Char Decree 062 02	2111	8
Pond	0.02	Char Decree 062 02	2112	8
Canal	0.07	Char Decree 062 02	2128	8
Canal	0.01	Char Decree 062 02	2908	8
Canal	0.05	Char Decree 062 02	2908	8
Canal	0.09	Char Decree 062 02	2909	8
Canal	0.06	Char Decree 062 02	2911	8
Canal	0.04	Char Decree 062 02	2912	8
Canal	0.01	Char Decree 062 02	2916	8
Canal	0.01	Char Decree 062 02	99999	8
Canal	0.02	Char Decree 062 02	99999	8
Canal	0.09	Char Decree 062 02	99999	8
Canal	0.08	Char Decree 062 03	3030	8
Canal	1.72	Char Decree 062 03	3030	8
Canal	0.01	Char Decree 062 03	3053	8

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.02	Char Decree 062 03	3054	8
Canal	0.04	Char Decree 062 03	3055	8
Canal	0.02	Char Decree 062 03	3056	8
Canal	0.01	Char Decree 062 03	3057	8
Canal	0.01	Char Decree 062 03	3058	8
Canal	0.02	Char Decree 062 03	3059	8
Canal	0.04	Char Decree 062 03	3060	8
Canal	0.02	Char Decree 062 03	3061	8
Canal	0.04	Char Decree 062 03	3062	8
Canal	0.02	Char Decree 062 03	3063	8
Canal	0.03	Char Decree 062 03	3064	8
Canal	0.02	Char Decree 062 03	3065	8
Canal	0.02	Char Decree 062 03	3066	8
Canal	0.02	Char Decree 062 03	3067	8
Canal	0.02	Char Decree 062 03	3068	8
Canal	0.03	Char Decree 062 03	3069	8
Canal	0.03	Char Decree 062 03	3070	8
Canal	0.02	Char Decree 062 03	3071	8
Canal	0.02	Char Decree 062 03	3072	8
Canal	0.02	Char Decree 062 03	3073	8
Canal	0.05	Char Decree 062 03	3074	8
Canal	0.03	Char Decree 062 03	3075	8
Canal	0.02	Char Decree 062 03	3076	8
Canal	0.03	Char Decree 062 03	3077	8
Canal	0.03	Char Decree 062 03	3117	8
Canal	0.07	Char Decree 062 03	3120	8
Canal	0.04	Char Decree 062 03	3121	8
Canal	0.12	Char Decree 062 03	3122	8
Canal	0.1	Char Decree 062 03	3124	8
Canal	0.53	Char Decree 062 03	3215	8
Canal	0.3	Char Decree 062 03	3216	8
Canal	0.31	Char Decree 062 03	3217	8
Canal	0.07	Char Decree 062 03	3219	8
Canal	0.1	Char Decree 062 03	3220	8
Canal	0.12	Char Decree 062 03	3221	8
Canal	0.15	Char Decree 062 03	3222	8
Canal	0.16	Char Decree 062 03	3223	8
Canal	0.19	Char Decree 062 03	3224	8
Canal	0.1	Char Decree 062 03	3226	8
Canal	0.29	Char Decree 062 03	3227	8
Canal	0.1	Char Decree 062 03	3228	8
Pond	0.16	Char Decree 062 03	3231	8
Pond	0.01	Char Decree 062 03	3233	8
Pond	0.04	Char Decree 062 03	3253	8
Pond	0.06	Char Decree 062 03	3255	8
Pond	0.12	Char Decree 062 03	3256	8
Pond	0.05	Char Decree 062 03	3257	8
Pond	0.06	Char Decree 062 03	3258	8
Pond	0.06	Char Decree 062 03	3259	8
Pond	0.21	Char Decree 062 03	3279	8
Pond	0.08	Char Decree 062 03	3280	8
Canal	0.29	Char Decree 062 03	3284	8
Canal	0.02	Char Decree 062 03	3285	8
Canal	0.91	Char Decree 062 03	3299	8
Canal	0.07	Char Decree 062 03	3300	8
River	0.03	Char Decree 062 01	1	9
River	0.06	Char Decree 062 01	5	9
River	0.13	Char Decree 062 01	6	9
River	0.08	Char Decree 062 01	7	9
River	0.02	Char Decree 062 01	8	9
River	0.01	Char Decree 062 01	9	9
River	0.04	Char Decree 062 01	10	9
River	0.02	Char Decree 062 01	11	9
River	0.01	Char Decree 062 01	12	9
River	0.02	Char Decree 062 01	13	9
River	0.07	Char Decree 062 01	14	9
River	0.01	Char Decree 062 01	15	9
River	0.02	Char Decree 062 01	19	9
River	0.01	Char Decree 062 01	20	9
River	0.03	Char Decree 062 01	22	9

Type	Acre	Mouza JL Sheet	Plot No	Ward No
River	0.12	Char Decree 062 01	23	9
River	0.29	Char Decree 062 01	24	9
River	0.31	Char Decree 062 01	25	9
River	0.13	Char Decree 062 01	26	9
River	0.07	Char Decree 062 01	27	9
River	0.03	Char Decree 062 01	30	9
River	0.23	Char Decree 062 01	31	9
River	0.36	Char Decree 062 01	32	9
River	0.39	Char Decree 062 01	34	9
River	0.49	Char Decree 062 01	35	9
River	0.57	Char Decree 062 01	36	9
River	0.6	Char Decree 062 01	37	9
River	0.63	Char Decree 062 01	38	9
River	0.97	Char Decree 062 01	39	9
River	0.02	Char Decree 062 01	45	9
River	0.65	Char Decree 062 01	45	9
River	0.7	Char Decree 062 01	46	9
River	0.69	Char Decree 062 01	47	9
Canal	0.08	Char Decree 062 01	48	9
River	0.56	Char Decree 062 01	48	9
Pond	0.08	Char Decree 062 01	61	9
River	0.84	Char Decree 062 01	63	9
River	0.24	Char Decree 062 01	64	9
River	0.16	Char Decree 062 01	65	9
River	0.38	Char Decree 062 01	66	9
River	0.25	Char Decree 062 01	72	9
River	0.24	Char Decree 062 01	73	9
River	0.3	Char Decree 062 01	74	9
River	0.31	Char Decree 062 01	75	9
River	0.12	Char Decree 062 01	76	9
River	0.15	Char Decree 062 01	77	9
River	0.14	Char Decree 062 01	78	9
River	0.14	Char Decree 062 01	79	9
River	0.55	Char Decree 062 01	80	9
River	0.48	Char Decree 062 01	81	9
River	0.29	Char Decree 062 01	82	9
River	0.36	Char Decree 062 01	89	9
River	0.6	Char Decree 062 01	91	9
River	0.36	Char Decree 062 01	92	9
River	0.12	Char Decree 062 01	93	9
River	0.72	Char Decree 062 01	94	9
River	0.54	Char Decree 062 01	95	9
River	0.21	Char Decree 062 01	96	9
River	0.28	Char Decree 062 01	97	9
River	0.29	Char Decree 062 01	103	9
River	0.2	Char Decree 062 01	104	9
River	0.13	Char Decree 062 01	105	9
River	0.22	Char Decree 062 01	106	9
River	0.29	Char Decree 062 01	130	9
River	0.36	Char Decree 062 01	131	9
River	0.16	Char Decree 062 01	132	9
River	0.09	Char Decree 062 01	133	9
River	0.04	Char Decree 062 01	134	9
River	0.31	Char Decree 062 01	135	9
River	0.1	Char Decree 062 01	136	9
River	0.02	Char Decree 062 01	137	9
Canal	0.02	Char Decree 062 01	137	9
River	0.3	Char Decree 062 01	138	9
River	0.13	Char Decree 062 01	139	9
Canal	0.15	Char Decree 062 01	139	9
Canal	0.31	Char Decree 062 01	139	9
Canal	0.14	Char Decree 062 01	140	9
Canal	0.01	Char Decree 062 01	144	9
River	0.12	Char Decree 062 01	144	9
River	0.08	Char Decree 062 01	145	9
River	0.07	Char Decree 062 01	150	9
Canal	0.01	Char Decree 062 01	167	9
Canal	0.11	Char Decree 062 01	187	9
Canal	0.33	Char Decree 062 01	187	9
Canal	0.01	Char Decree 062 01	195	9

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.01	Char Decree 062 01	196	9
Pond	0.03	Char Decree 062 01	202	9
Pond	0.05	Char Decree 062 01	202	9
Pond	0.02	Char Decree 062 01	203	9
Pond	0.16	Char Decree 062 01	204	9
Pond	0.16	Char Decree 062 01	206	9
Pond	0.21	Char Decree 062 01	215	9
Canal	0.02	Char Decree 062 01	219	9
Canal	0.02	Char Decree 062 01	221	9
Pond	0.19	Char Decree 062 01	222	9
Pond	0.09	Char Decree 062 01	223	9
Canal	0.01	Char Decree 062 01	226	9
Canal	0.01	Char Decree 062 01	227	9
Canal	0.01	Char Decree 062 01	228	9
Canal	0.02	Char Decree 062 01	229	9
Canal	0.02	Char Decree 062 01	230	9
Canal	0.01	Char Decree 062 01	231	9
Pond	0.36	Char Decree 062 01	271	9
Pond	0.02	Char Decree 062 01	307	9
Pond	0.06	Char Decree 062 01	308	9
Pond	0.09	Char Decree 062 01	309	9
Pond	0.03	Char Decree 062 01	310	9
Pond	0.03	Char Decree 062 01	311	9
Pond	0.05	Char Decree 062 01	312	9
Pond	0.15	Char Decree 062 01	315	9
Pond	0.12	Char Decree 062 01	317	9
Pond	0.02	Char Decree 062 01	318	9
Pond	0.02	Char Decree 062 01	319	9
Pond	0.07	Char Decree 062 01	320	9
Pond	0.08	Char Decree 062 01	322	9
Pond	0.04	Char Decree 062 01	331	9
Pond	0.05	Char Decree 062 01	333	9
Pond	0.16	Char Decree 062 01	340	9
Pond	0.12	Char Decree 062 01	341	9
Pond	0.11	Char Decree 062 01	342	9
Pond	0.07	Char Decree 062 01	343	9
Pond	0.14	Char Decree 062 01	344	9
Pond	0.01	Char Decree 062 01	345	9
Pond	0.01	Char Decree 062 01	345	9
Canal	0.01	Char Decree 062 01	379	9
Canal	0.02	Char Decree 062 01	380	9
Canal	0.03	Char Decree 062 01	381	9
Canal	0.03	Char Decree 062 01	384	9
Canal	0.01	Char Decree 062 01	385	9
Canal	0.03	Char Decree 062 01	390	9
Canal	0.02	Char Decree 062 01	397	9
Canal	0.06	Char Decree 062 01	398	9
Canal	0.02	Char Decree 062 01	399	9
Canal	0.04	Char Decree 062 01	400	9
Pond	0.01	Char Decree 062 01	420	9
Canal	0.03	Char Decree 062 01	429	9
Pond	0.04	Char Decree 062 01	430	9
Pond	0.05	Char Decree 062 01	430	9
Pond	0.02	Char Decree 062 01	431	9
Pond	0.05	Char Decree 062 01	431	9
Canal	0.01	Char Decree 062 01	435	9
Canal	0.01	Char Decree 062 01	436	9
Canal	0.01	Char Decree 062 01	436	9
Canal	0.01	Char Decree 062 01	439	9
Canal	0.03	Char Decree 062 01	441	9
Canal	0.03	Char Decree 062 01	442	9
Canal	0.03	Char Decree 062 01	443	9
Canal	0.07	Char Decree 062 01	449	9
Canal	0.01	Char Decree 062 01	450	9
Pond	0.41	Char Decree 062 01	451	9
Pond	0.01	Char Decree 062 01	456	9
Pond	0.04	Char Decree 062 01	474	9
Pond	0.09	Char Decree 062 01	475	9
Pond	0.01	Char Decree 062 01	476	9
Pond	0.02	Char Decree 062 01	477	9

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.01	Char Decree 062 01	570	9
Canal	0.01	Char Decree 062 01	578	9
Canal	0.01	Char Decree 062 01	579	9
Canal	0.01	Char Decree 062 01	580	9
Canal	0.01	Char Decree 062 01	581	9
Canal	0.02	Char Decree 062 01	582	9
Canal	0.04	Char Decree 062 01	582	9
Canal	0.26	Char Decree 062 01	582	9
Canal	0.01	Char Decree 062 01	583	9
Canal	0.01	Char Decree 062 01	585	9
Pond	0.01	Char Decree 062 01	1294	9
Pond	0.06	Char Decree 062 01	1295	9
Pond	0.07	Char Decree 062 01	1296	9
Pond	0.12	Char Decree 062 01	1299	9
Pond	0.21	Char Decree 062 01	1321	9
Pond	0.04	Char Decree 062 01	1322	9
Canal	0.07	Char Decree 062 01	1339	9
Canal	0.02	Char Decree 062 01	1341	9
Canal	0.04	Char Decree 062 01	1342	9
Canal	0.04	Char Decree 062 01	1348	9
Canal	0.04	Char Decree 062 01	1349	9
Canal	0.03	Char Decree 062 01	1351	9
Canal	0.09	Char Decree 062 01	1352	9
Canal	0.01	Char Decree 062 01	1353	9
Pond	0.24	Char Decree 062 01	1355	9
Pond	0.08	Char Decree 062 01	1356	9
Canal	0.03	Char Decree 062 01	1376	9
Canal	0.05	Char Decree 062 01	1377	9
Canal	0.04	Char Decree 062 01	1378	9
Canal	0.02	Char Decree 062 01	1379	9
Canal	0.03	Char Decree 062 01	1380	9
Canal	0.01	Char Decree 062 01	1411	9
Canal	0.04	Char Decree 062 01	1427	9
Canal	0.01	Char Decree 062 01	1428	9
Canal	0.02	Char Decree 062 01	1429	9
Canal	0.01	Char Decree 062 01	1430	9
Canal	0.01	Char Decree 062 01	1432	9
Canal	0.02	Char Decree 062 01	1433	9
Canal	0.01	Char Decree 062 01	1434	9
Canal	0.03	Char Decree 062 01	1437	9
Canal	0.03	Char Decree 062 01	1443	9
Canal	0.27	Char Decree 062 01	1443	9
Canal	0.05	Char Decree 062 01	1481	9
Pond	0.05	Char Decree 062 01	1483	9
Pond	0.15	Char Decree 062 01	1484	9
Canal	0.04	Char Decree 062 01	1489	9
Canal	0.01	Char Decree 062 01	1490	9
Pond	0.05	Char Decree 062 01	1490	9
Canal	0.01	Char Decree 062 01	1491	9
Canal	0.01	Char Decree 062 01	1493	9
Canal	0.01	Char Decree 062 01	1494	9
Canal	0.01	Char Decree 062 01	1495	9
Canal	0.03	Char Decree 062 01	1496	9
Canal	0.01	Char Decree 062 01	1497	9
Canal	0.02	Char Decree 062 01	1498	9
Canal	0.02	Char Decree 062 01	1499	9
Canal	0.01	Char Decree 062 01	1500	9
Canal	0.04	Char Decree 062 01	1501	9
Canal	0.03	Char Decree 062 01	1502	9
Canal	0.02	Char Decree 062 01	1503	9
Canal	0.05	Char Decree 062 01	1504	9
Canal	0.11	Char Decree 062 01	1504	9
Canal	0.12	Char Decree 062 01	1504	9
Canal	0.01	Char Decree 062 01	1505	9
Canal	0.01	Char Decree 062 01	1506	9
Pond	0.31	Char Decree 062 01	1524	9
Pond	0.17	Char Decree 062 01	1526	9
Pond	0.01	Char Decree 062 01	1527	9
Canal	0.01	Char Decree 062 01	1530	9
Canal	0.01	Char Decree 062 01	1533	9

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Canal	0.37	Char Decree 062 01	1539	9
Canal	0.02	Char Decree 062 01	1540	9
Canal	0.03	Char Decree 062 01	1585	9
Canal	0.01	Char Decree 062 01	1586	9
Pond	0.01	Char Decree 062 01	1629	9
Pond	0.23	Char Decree 062 01	1629	9
Pond	0.03	Char Decree 062 01	1632	9
Pond	0.15	Char Decree 062 01	1655	9
Pond	0.05	Char Decree 062 01	1777	9
Canal	0.03	Char Decree 062 01	1782	9
Canal	0.04	Char Decree 062 01	1786	9
Canal	0.05	Char Decree 062 01	1786	9
Canal	0.05	Char Decree 062 01	1787	9
Canal	0.15	Char Decree 062 01	1787	9
Canal	0.02	Char Decree 062 01	1788	9
Canal	0.03	Char Decree 062 01	1789	9
Canal	0.02	Char Decree 062 01	1790	9
Canal	0.03	Char Decree 062 01	1791	9
Canal	0.2	Char Decree 062 01	1792	9
Canal	0.04	Char Decree 062 01	1793	9
Canal	0.05	Char Decree 062 01	1794	9
Canal	0.06	Char Decree 062 01	1795	9
Canal	0.09	Char Decree 062 01	1796	9
Canal	0.2	Char Decree 062 01	1797	9
Canal	0.02	Char Decree 062 01	1798	9
Canal	0.02	Char Decree 062 01	1884	9
River	0.01	Char Decree 062 01	1910	9
River	0.01	Char Decree 062 01	1911	9
River	0.02	Char Decree 062 01	1914	9
River	0.04	Char Decree 062 01	1915	9
River	0.14	Char Decree 062 01	1918	9
River	0.14	Char Decree 062 01	1919	9
River	0.02	Char Decree 062 01	1920	9
River	0.07	Char Decree 062 01	1921	9
River	0.2	Char Decree 062 01	1922	9
River	0.12	Char Decree 062 01	1923	9
River	0.13	Char Decree 062 01	1924	9
River	0.12	Char Decree 062 01	1925	9
River	0.01	Char Decree 062 01	1926	9
River	0.12	Char Decree 062 01	1927	9
River	0.19	Char Decree 062 01	1928	9
River	0.18	Char Decree 062 01	1929	9
River	0.18	Char Decree 062 01	1930	9
River	0.1	Char Decree 062 01	1931	9
River	0.08	Char Decree 062 01	1932	9
River	0.05	Char Decree 062 01	1933	9
River	1.71	Char Decree 062 01	1934	9
River	0.28	Char Decree 062 01	1935	9
River	0.15	Char Decree 062 01	1936	9
River	0.13	Char Decree 062 01	1937	9
River	0.1	Char Decree 062 01	1938	9
River	0.1	Char Decree 062 01	1939	9
River	0.09	Char Decree 062 01	1940	9
River	0.07	Char Decree 062 01	1941	9
River	0.06	Char Decree 062 01	1942	9
River	0.08	Char Decree 062 01	1943	9
River	0.06	Char Decree 062 01	1944	9
River	0.04	Char Decree 062 01	1945	9
River	0.03	Char Decree 062 01	1946	9
River	0.02	Char Decree 062 01	1947	9
Pond	0.01	Char Decree 062 01	99999	9
Pond	0.05	Char Decree 062 01	99999	9
Canal	0.03	Char Decree 062 02	2003	9
Canal	0.03	Char Decree 062 02	2030	9
Canal	0.04	Char Decree 062 02	2031	9
Canal	0.01	Char Decree 062 02	2032	9
Canal	0.01	Char Decree 062 02	2033	9
Canal	0.01	Char Decree 062 02	2034	9
Canal	0.08	Char Decree 062 02	2035	9
Canal	0.04	Char Decree 062 02	2036	9

Type	Acre	Mouza JL Sheet	Plot No	Ward No
Pond	0.21	Char Decree 062 02	2037	9
Canal	0.02	Char Decree 062 02	2039	9
Canal	0.03	Char Decree 062 02	2040	9
Canal	0.01	Char Decree 062 02	2046	9
Pond	0.18	Char Decree 062 02	2046	9
Canal	0.01	Char Decree 062 02	2051	9
Canal	0.02	Char Decree 062 02	2064	9
Canal	0.28	Char Decree 062 02	2064	9
Ditch	0.02	Char Decree 062 02	2065	9
Canal	0.04	Char Decree 062 02	2065	9
Ditch	0.03	Char Decree 062 02	2066	9
Canal	0.01	Char Decree 062 02	2078	9
Canal	0.01	Char Decree 062 02	2080	9
Canal	0.01	Char Decree 062 02	2082	9
Canal	0.03	Char Decree 062 02	2130	9
Ditch	0.02	Char Decree 062 02	2132	9
Canal	0.01	Char Decree 062 02	22081	9
River	0.33	Dakshin Galai Bhanga 056 00	355	9
River	0.42	Dakshin Galai Bhanga 056 00	363	9
River	0.22	Dakshin Galai Bhanga 056 00	364	9
River	0.31	Dakshin Galai Bhanga 056 00	365	9
River	0.2	Dakshin Galai Bhanga 056 00	366	9
River	0.18	Dakshin Galai Bhanga 056 00	367	9
Pond	0.12	Dakshin Galai Bhanga 056 00	407	9
Pond	0.09	Dakshin Galai Bhanga 056 00	408	9
River	0.28	Dakshin Galai Bhanga 056 00	417	9
River	0.1	Dakshin Galai Bhanga 056 00	418	9
River	0.13	Dakshin Galai Bhanga 056 00	419	9
River	0.16	Dakshin Galai Bhanga 056 00	420	9
River	0.08	Dakshin Galai Bhanga 056 00	423	9
River	0.11	Dakshin Galai Bhanga 056 00	426	9
Pond	0.03	Dakshin Galai Bhanga 056 00	465	9
Pond	0.2	Dakshin Galai Bhanga 056 00	468	9
Pond	0.1	Dakshin Galai Bhanga 056 00	469	9
Pond	0.07	Dakshin Galai Bhanga 056 00	470	9
Pond	0.11	Dakshin Galai Bhanga 056 00	473	9
River	0.16	Paschim Char Pattani Vanga 073 00	443	Extension
River	0.14	Paschim Char Pattani Vanga 073 00	444	Extension
River	0.2	Paschim Char Pattani Vanga 073 00	445	Extension
River	0.09	Paschim Char Pattani Vanga 073 00	446	Extension
River	0.04	Paschim Char Pattani Vanga 073 00	447	Extension
River	0.08	Paschim Char Pattani Vanga 073 00	448	Extension
River	0.07	Paschim Char Pattani Vanga 073 00	449	Extension
River	0.05	Paschim Char Pattani Vanga 073 00	450	Extension
River	0.06	Paschim Char Pattani Vanga 073 00	451	Extension
River	0.06	Paschim Char Pattani Vanga 073 00	452	Extension
River	0.37	Paschim Char Pattani Vanga 073 00	453	Extension
River	0.17	Paschim Char Pattani Vanga 073 00	454	Extension
River	0.11	Paschim Char Pattani Vanga 073 00	455	Extension
River	0.12	Paschim Char Pattani Vanga 073 00	456	Extension
River	0.44	Paschim Char Pattani Vanga 073 00	457	Extension
River	0.08	Paschim Char Pattani Vanga 073 00	458	Extension
River	0.08	Paschim Char Pattani Vanga 073 00	459	Extension
River	0.22	Paschim Char Pattani Vanga 073 00	460	Extension
River	0.08	Paschim Char Pattani Vanga 073 00	461	Extension
River	0.03	Paschim Char Pattani Vanga 073 00	462	Extension
River	0.03	Paschim Char Pattani Vanga 073 00	463	Extension
River	0.02	Paschim Char Pattani Vanga 073 00	464	Extension
River	0.03	Paschim Char Pattani Vanga 073 00	472	Extension
River	0.09	Ikar Khola 095 02	99999	Extension