The Government of the Peoples Republic of Bangladesh

Ministry of Local Government, Rural Development & Cooperatives

Local Government Division

CHHATAK POURASHAVA
MASTER PLAN: 2011-2031

December, 2013

Local Government Engineering Department (LGED)

Government of the Peoples Republic of Bangladesh
Ministry of Local Government, Rural Development & Cooperatives
Local Government Division

Local Government Engineering Department (LGED)
Preparation of Master Plan for 218 Pourashava Towns under Upazila Towns Infrastructure Development Project (UTIDP)

CHHATAK POURASHAVA MASTER PLAN: 2011-2031

STRUCTURE PLAN

URBAN AREA PLAN:

- **Land use Plan**
- **Transportation & Traffic Management Plan**
- **Drainage & Environmental Management Plan**

WARD ACTION PLAN

December, 2013

CHHATAK POURASHAVA
CHHATAK, SUNAMGANJ

CHHATAK POURASHAVA MASTER PLAN: 2011-2031

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Chhatak Pourashava.

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PREFACE

It is a great pleasure for all concerned that Upazila Towns Infrastructure Development Project (UTIDP) under Local Government Engineering Department has prepared Master Plan of **Chhatak Pourashava**. This Master plan will serve as a guideline for the future infrastructure development of the Pourashava together with land use control and effective management of the service facilities. This will also ensure planned physical, social and economic development of the pourashava. The Master Plan comprises of three stages and tiers in a hierarchical order. These are:

i. Structure Plan for 20 years
ii. Urban Area Plan for 10 years
iii. Ward Action Plan for 5 years

For preparation of the Master Plan of **Chhatak Pourashava**, LGED engaged consulting firm Sheltech (Pvt.) Ltd. For finalization of the Master Plan, the consultant accomplished all the necessary tasks such as, consultation with the Pourashava authority and other stakeholders, collected and digitized mouza maps, demarcated pourashava boundary according to the gazette notification and with the help of the pourashava officials, conducted different types of Engineering Surveys, Socio-economic, Transportation and Traffic and Drainage and Environmental Studies. The Master Plan has been prepared as per Schedule – 2 of the Local Government (Pourashava) Act 2009. For legal coverage, the Master Plan would be placed before the Pourashava for recommendation and approval. Pourashava Authority, after according recommendation, will submit this Plan to the Local Government Division for approval. Upon approval, the Local Government Division will publish the plan through gazette notification.

The Local Government Engineering Department acknowledges the full support and cooperation of Chhatak Pourashava Authority, Public Representatives, Stakeholders and Civil Societies with the deepest gratitude for accomplishment of this remarkable assignment.

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EXECUTIVE SUMMARY

Chhatak is an important pourashava of Sunamganj District with an estimated population of 43282 in the year 2011. It was established as a Thana Headquarter in 1908 and upgraded to Upazila in 1982. It was upgraded as a “C” class Pourashava on 1997. It has an area of 10.10 square kilometer. Comparatively higher net density (125 persons per acre in 2011) covering concentrated residential area and dispersed development in lower elevation agricultural lands characterize this pourashava. It has higher industrial activity from the past. Currently two important cement industries of the country, Chhatak Cement Factory and Lafarge Cement Industry, are located in the pourashava. On the influence of these industries, in the coming 20 years, as projections show, the net density of population will reach 201 persons per acre. So, a huge amount of population shall be expected in the pourashava area. This may reduce the livability of the residential areas there. Under such circumstances a Master Plan can help creating advantages for living and working in the pourashava that will indirectly help attracting more investments for economic growth leading to employment generation. The development activities are lacking an organized management system that results in poor outcome. Current development emphasizes only on road and structural development. Other utilities are neglected here. The proposed Master Plan will induce such development activities that will ensure proper provisions of utility services, urban services and with these gradually create social development. It will also ensure good and automated governance of the pourashava and ensure good collection and utilization of its resources and thus enhance the development activities. By the implementation of the Master Plan it will be ensured that the natural condition of the pourashava along with its agricultural activities should be preserved as much as possible.

The Master Plan is prepared in three tiers. First one is Structure Plan, then Urban Area Plan and finally Ward Action Plan. The Structure Plan provides the policies that will guide the future development of the pourashava. It views this pourashava as an important industrial town with ample service facilities to the town dwellers at the end of the Master Plan period. In the Structure Plan of Chhatak Pourashava 45.95% land will be kept as urban area and the remaining as hill, agricultural area and water body to support the future need for food and other agricultural products of the town as well as to facilitate the future drainage network. The Structure Plan proposes the restructuring of the organogram of the pourashava and inclusion of town planning department comprising five town planners. This will ensure the better implementation and monitoring of the plan. It also proposes the system of periodic review and updating of the plan and also the resource mobilization process.

Urban Area Plan consists three types of Plans; Land Use Plan, Transportation and Traffic Management Plan and Drainage and Environmental Management Plan. Under the Land Use Plan the future land use of the pourashava is proposed according to the fixed standards set during the interim phase of the Master Plan. Land Use Plan proposes 21.93% of the pourashava land to be earmarked under Urban Residential Zone and 8.37% under Rural Settlement. These two zones will form the future residential areas of the pourashava. Urban Residential Zone will include all the important residential activities and some supporting services. Rural Settlement will include the low dense residential area which is scattered and rural in nature. Another important zone is Heavy industrial Zone which will have 12.84% of the pourashava area. Under this zone locations for establishing new industries have been earmarked. Land uses like Commercial Zone (3.27%), Education and Research Zone (1.53%), Government Office (1.80%), Open Space (4.96%), Circulation Network (8.05%) etc. are also proposed in the pourashava. Under the Land Use Plan the development proposals to support the future needs of the people are also given. It proposes a stadium, three low income housing projects, one real estate housing development project, tourist facility, shopping mall, four local markets, nine ward centers, six primary schools, one high school, one surface water treatment plant, one slaughterhouse and many other important facilities.

In the Transportation and Traffic Management Plan the Road Network Plan is proposed. The transportation facilities are proposed here in this plan. In this plan of the Pourashava 35.87 km of road widening and 27.06 km of construction of new roads are proposed. The road hierarchy is also proposed in this plan. The proposed road network will comprise of primary road (80 ft., 100 ft and 120 ft. Right of Way), secondary road (40 ft. and 60 ft. Right of Way), tertiary road (30 ft. RoW) and access road (20 ft. RoW). The proposed road network and the transportation facilities along with the proposed management system will provide a good system of management to mitigate future traffic and transportation problems. The proposed transportation facilities include one bus and truck terminal and six auto-rickshaw/tempo/microbus stands at different suitable locations.

Under the Drainage and Environmental Management Plan the drainage network of the pourashava is proposed. This plan will analyze drainage aspects in the planning of the pourashava, study geological fault and lineament of the project area and its surroundings, study the existing water development, flood protection and flood control project in the area and their impacts in the Pourashava plan, present planning options for drainage of the future Pourashava area, study conservation of the natural resources like parks, open space, water bodies, existing ponds etc. and conserve place of historical, architectural and agricultural importance including natural fisheries. At present there is 10.85 km manmade drain in the pourashava and the natural canals and river cover 18.22 km. This network is not enough to support the present need and will not be suitable to support in the future. On the basis of all these conditions the consultants proposed comprehensive network of drains that comprises 12.74 km of primary drain, 36.68 km of secondary drain, 36.19 km of tertiary drain and 6.87 km of quaternary drain. One bridge, one railway over-bridge, 15 culverts and 121 box culverts are proposed in the plan to support the drainage network.

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

This is the first Master Plan of Chhatak Pourashava. It is prepared by LGED under Package – 6 of the Upazila Towns Infrastructure Development Project (UTIDP). It is expected that the implementation of the plan will induce higher level of development, ensure planned life, good community and better future.

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

PACKAGE – 06

CHHATAK POURASHAVA

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LIST OF ABBREVIATIONS, ACRONYMS AND LOCAL TERMS

1. LIST OF ABBREVIATIONS AND ACRONYMS

BM	:	Bench Mark
BTM	:	Bangladesh Transverse Mercator
BIWTA	:	Bangladesh Inland Water Transport Authority
CBD	:	Central Business District
CNG	:	Compressed Natural Gas
CS	:	Cadastral survey
DGPS	:	Differential Global Positioning System
DLRS	:	Directorate of Land Records and Survey
DPA	:	Demarcation of Planning Area
DPHE	:	Department of Public Health and Engineering
ft	:	Feet
GCP	:	Ground Control Point
GIS	:	Geographic Information System
GPS	:	Global positioning system
K.P.H	:	kilometers Per Hour
Km	:	Kilometer
LAD	:	Least Available Depth
LGED	:	Local Government Engineering Department
LP	:	Liquid Paraffin
m	:	Meter
MSL	:	Mean Sea Level
O-D	:	Origin and destination Survey
PCU	:	Passenger Car Unit
PWD	:	Public Works Department
RHD	:	Roads and Highway Department
RoW	:	Right of Way
RTK-GPS	:	Real Time Kinematics Global Positioning System
SOB	:	Survey of Bangladesh
Sq.	:	Square (ie. Sq. ft.)
TCP	:	Temporary Control Points
TIC	:	Tentative points)
TS	:	Total Station
UTIDP	:	Upazila Towns Infrastructure Development Project

1. LIST OF LOCAL TERMS USED

Khal	:	Canal
Tempo	:	Human Hauler
Bazar	:	Trade Center
Hat	:	Weekly an occasional Market
Pourashava	:	Municipality

CHAPTER – 1

INTRODUCTION

Chapter – 1
INTRODUCTION

1.1 Introduction

Urbanization in Bangladesh is moving at a rapid pace. Between1961 to 1981, the average urban growth rate was 8%. The present average growth rate is about 4.5%. According to the population census of 2001, the share of urban population was about 23.29% and at present it is approximately 25%. By the year 2015, the share of urban population will be about 37% of the national population. The importance of urban development is emphasized in terms of its role in the national economy. More than 60% of the national GDP is derived from the non-agricultural sectors that are mainly based in urban areas. Again, the most foreign exchange earning sectors, like, garment and knitwear enterprises are agglomerated in urban areas. These sectors earn over 70% of the foreign exchange. Remittance is also a major sector of foreign exchange earning and a large share of the remittance goes into the purchase of urban land. Surplus remittance is invested in business and manufacturing located in urban areas. These phenomena indicate the increasing role of urban areas being played in the national economy. The expansion of urban economy leads to the growth of urban population and concomitant haphazard urban spatial growth without planning. The rapid urbanization is marked by the creation of Pourashavas, whose number at present stands at 312. Pourashavas are created not only to provide urban services to their citizens, but also to create a livable environment through development of planned and environmentally sound living space.

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

Under the above circumstances, it is high time to think about solving the problems of the Pourashavas that might otherwise be emerged critically in the future. To overcome all likely problems to come in future, the Pourashavas should go for planned development through preparation and implementation of a Master Plan. The Master Plan can be prepared exercising the power conferred to them by the Pourashava Ordinance 2009. The Upazila Towns Infrastructure Development Project (UTIDP) aims to update/prepare Master Plan for 218 Upazila level Pourashavas for a period of next 20 years. The project has provisions for separate plans for land use control, drainage and environment, traffic and transportation management and improvement. The project also aims to prepare a Ward Action Plan (WAP) to ensure systematic execution of future infrastructure development projects. There is also aim to prepare proposals to enhance Pourashava revenue so that it becomes more capable to meet its own capital needs. Of the total 218 Pourashavas; Chhatak is one of 13 Pourashavas within Sylhet Region under Package 06 of UTIDP. The location of Chhatak Pourashava within Bangladesh is shown in Map 1.1.

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

1.2 Philosophy of the Preparation of Master Plan

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

1.3 Objectives of the Master Plan

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

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

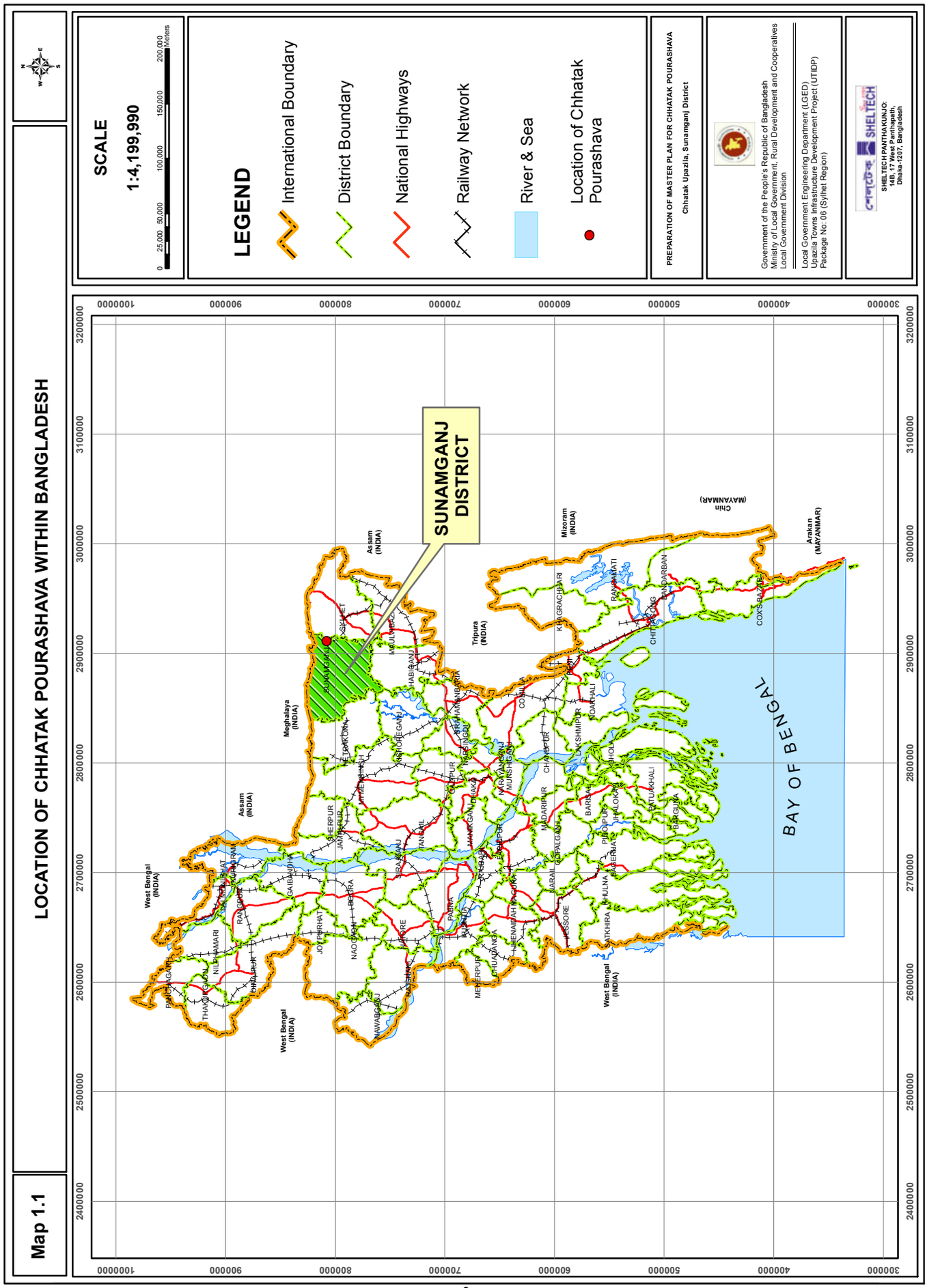
b. Plan for the people of Chhatak Pourashava to develop and update provisions for better transport and communication network, housing, roads, markets, bus terminals, sanitation, water supply, drainage, solid waste management, electricity, education, leisure and such other infrastructure facilities for meeting the social and community needs of the poor and the disadvantaged groups for better quality of life;

c. Prepare a multi-sector short and long term investment plan through participatory process for better living standards by identifying area based priority-drainage master plan, transportation and traffic management plan, other need specific plan as per requirement in accordance with the principle of sustainability;

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

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

f. Prepare a 20-year Master Plan to be used as a tool to ensure and promote growth of the Chhatak Pourashava in line with the guiding principles of the Master Plan and control any unplanned growth by any private and public organization.


Map 1.1
LOCATION OF CHHATAK POURASHAVA WITHIN BANGLADESH
SCALE
1:4,199,990
0 25,000 50,000 100,000 150,000 200,000 Meters
LEGEND
International Boundary
District Boundary
National Highways
Railway Network
River & Sea
Location of Chhatak Pourashava
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
148, 17 West Panthapath,
Dhaka-1207, Bangladesh
SUNAMGANJ DISTRICT
BAY OF BENGAL
Meghalaya (INDIA)
Assam (INDIA)
West Bengal (INDIA)
Tripura (INDIA)
Mizoram (INDIA)
Chin (MAYANMAR)
Arakan (MAYANMAR)
SUNAMGANJ
SYLHET
KHAGRACHHARI
RANGAMATI
BANDARBAN
COXSBAZAR
CHITTAGONG
COMILLA
FENI
LAKSHMIPUR
NOAKHALI
CHANDPUR
BARISAL
PATUAKHALI
BARGUNA
PIROJPUR
JHALOKATI
BHOLA
MADARIPUR
GOPALGANJ
NARAIL
KISHOREGANJ
MAGURA
JHENAIDAH
MEHERPUR
CHUADANGA
KUSHTIA
RAJBARI
PABNA
SIRAJGANJ
TANGAIL
JAMALPUR
SHERPUR
MYMENSINGH
NETROKONA
KISHOREGANJ
HABIGANJ
MOULVIBAZAR
NARSINGDI
MUNSHIGANJ
NARAYANGANJ
DHAKA
GAZIPUR
JAMALGANJ
SUNAMGANJ
SYLHET
KHAGRACHHARI
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NOAKHALI
CHANDPUR
BARISAL
PATUAKHALI
BARGUNA
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JHALOKATI
BHOLA
MADARIPUR
GOPALGANJ
NARAIL
KISHOREGANJ
MAGURA
JHENAIDAH
MEHERPUR
CHUADANGA
KUSHTIA
RAJBARI
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TANGAIL
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SHERPUR
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KISHOREGANJ
HABIGANJ
MOULVIBAZAR
NARSINGDI
MUNSHIGANJ
NARAYANGANJ
DHAKA
GAZIPUR
JAMALGANJ
PANCHAGARH
THAKURGAON
NILPHAMARI
LALMONIRHAT
KURIGRAM
RANGPUR
GAIBANDHA
DINAJPUR
JOYPURHAT
BOGRA
NAOGAON
NAWABGANJ
RAJSHAHI
SIRAJGANJ
PABNA
KUSHTIA
MEHERPUR
CHUADANGA
JHENAIDAH
MAGURA
KISHOREGANJ
NARAIL
GOPALGANJ
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1.4 Approach and Methodology

The UTIDP Project is aimed for substantial development of infrastructure and services for the Pourashava with optimum provision of opportunities for Pourashava dwellers and making scope for extending services to surrounding areas.

The current project is preparing a Master plan of the Pourashava, where the existing condition and different problems are identified, studied and analyzed and the probable solutions are to be sought to ameliorate the same. The study moves through a process of data collection-analysis and fixation of objectives for planning. The approach is based on field survey for data collection and collection of information from secondary sources.

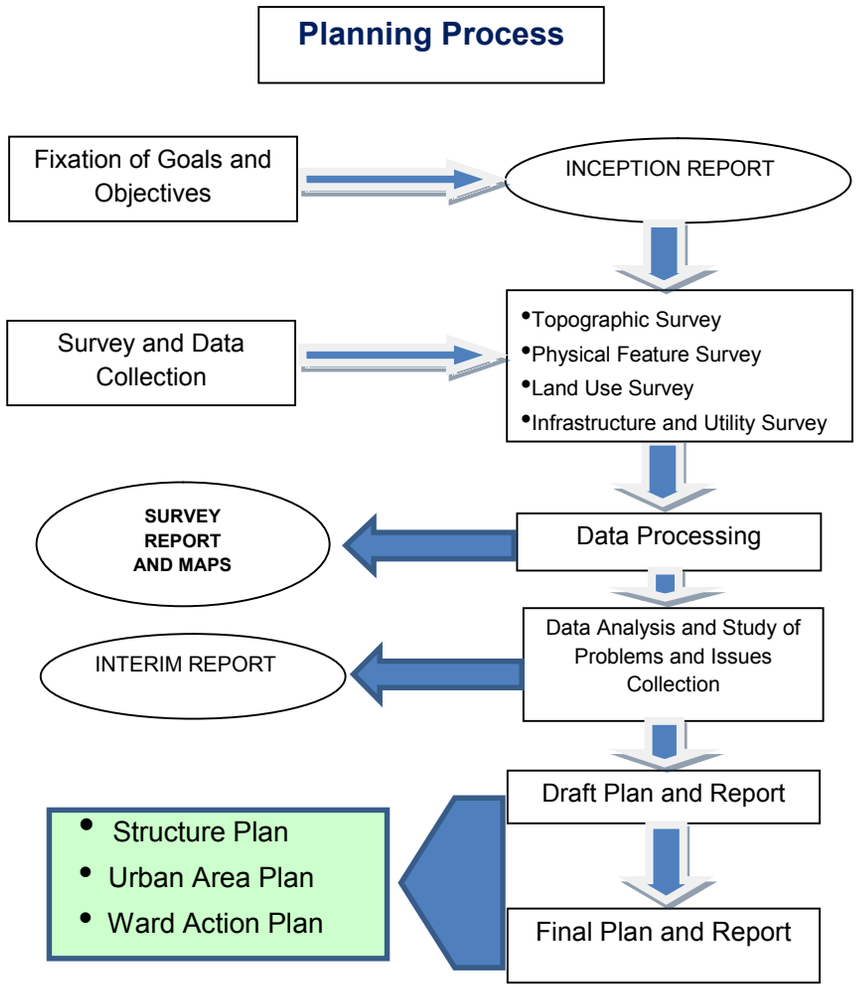


Figure 1.1: Flow Chart of Planning Process

The data is presented through maps, text and tabular form. Than the survey report and maps are prepared and submitted. Analysis of collected data is carried out to identify the nature and extent of problems prevailing in the Pourashava in order to fix the objectives of the actions to be undertaken in the form of planning and the interim report prepared and submitted. Through the process, involvement of the stakeholders has been ensured to make the planning as much sustainable as possible. For this purpose, continuous formal and informal discussions and meetings have been carried out throughout the project period using participatory approach. The discussions serve two purposes, first, a sense of belongingness develops within the minds of the stakeholders, particularly among the citizens, about the master plan to be prepared, and secondly, identification of problems and finding their solutions

become easier with the participation of stakeholders, as the local stakeholders are more knowledgeable about local problems and possible solutions of those problems.

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

1.5 Scope of Work

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

1. Visits have been made to the Pourashava at different stages of work of the preparation of Master Plan.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

17. A total list of primary and secondary roads, drains and other social infrastructures for each Pourashava for a plan period of next 20 years has been made. Examining and classifying according to the existing condition, long, medium and short term plans have been proposed and estimated cost for improvement of drain and road alignment and other infrastructures have been prepared.

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

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

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

1.6 Organization of the Master Plan Report

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

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

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

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

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

PART – A
STRUCTURE PLAN

CHAPTER – 2

INTRODUCTION TO STRUCTURE PLAN

Chapter – 2
INTRODUCTION TO STRUCTURE PLAN

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

2.1 Background of the Pourashava

Chhatak Pourashava located in Sunamganj district, is the only urban area of Chhatak Upazila. The Pourashava is located within 25°3'21'' and 25°0'34'' North Latitude and 91°40'53'' and 91°38'8'' East Longitude. The location of the Pourashava within Sunamganj District is shown in Map 2.1. Chhatak was established as a Thana headquarters in 1908 and upgraded to Upazila in 1982 was graded as "C" class Pourashava on 1997. It was upgraded as an ''A" class pourashava on September 18, 2005. Chhatak is the second largest Upazila of Sunamganj Zilla in respect of population. Nothing is definitely known about the origin of the Upazila name. It is learnt that the area was very rich in producing oranges and lemons. Moreover fruits such as lemons and oranges were brought here by boat from Jaintia hills for sale in the local markets. The boatman and the passengers of the boats used 'Chhata' (in Bengali) meaning umbrella to protect themselves from sun and rain. The market where fruits were sold is called Chhatar Bazar. It is generally believed that the Upazila might have derived its name as Chhatak from the above word 'Chhata'.

Because of the physiographic characteristics of the region, the settlements are clustered either on higher grounds or built up linearly following the roads or embankments as low lands including the agricultural lands mostly remain under water during the rainy season. The locations, history, geology, settlement pattern all have important implications in the Master Plan of Chhatak Pourashava.

2.2 Vision of the Structure Plan

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

2.3 Objectives of the Structure Plan

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

- Description of the Pourashava's administrative, economic, social, physical environmental growth, functional linkage and hierarchy in the national and regional context; catchments area; population; land use and urban services; agencies responsible for different sectoral activities, etc.
- Identification of urban growth area based on analysis of patterns and trends of development, and projection of population, land use and economic activities for next 20 years.

*As per the Local Government (Pourashava) Act 2009, the Pourashavas in Bangladesh are categorized mainly into A, B, and C classes based mainly on annual income of the Pourashava.

- Identification and description of physical and environmental problems of Chhatak Pourashava.
- Discussion of relevant policies to analyze and find out potential scopes for the use in the present exercise and also find out constraints and weakness of the existing policy to suggest appropriate measures for the development and management of Chhatak Pourashava.
- To provide land use development strategies.
- To provide strategies and policies for sectoral as well as socio-economic, infrastructural and environmental issues of development.
- To discuss about implementation issues including institutional capacity building and strengthening of Pourashava, resource mobilization etc.

2.4 Concepts, Content and Format of the Structure Plan

Concepts

Structure Plan is a kind of guide plan, or framework plan, or an indicative plan that is presented with maps and explanatory texts in a broader planning perspective than other components of Master Plan. Structure Plan indicates the broad magnitudes and directions of urban growth, including infrastructure networks, the placement of major facilities such as hospitals and upazila complex. A Structure Plan is not intended to specify detailed lot by lot land use or local road configurations and development proposals. Rather it identifies the areas where growth and change are such that more detailed local and action plans are needed. Structure Plan does not require excessive effort in gathering data and it is flexible and dynamic and can be changed to accommodate demanded changes. The present Structure Plan is an overall long term strategic plan for the Pourashava *Shahar* (Town), Chhatak.

Structure Plan is the first component of the Master Plan package. The other two lower level components are Urban Area Plan and Ward Action Plan. Structure Plan lays down the framework of the future plan including strategy and the sectoral policies. The Urban Area Plan and the Ward Action Plan detail out development proposals under the framework of Structure Plan.

Content and Format of the Structure Plan

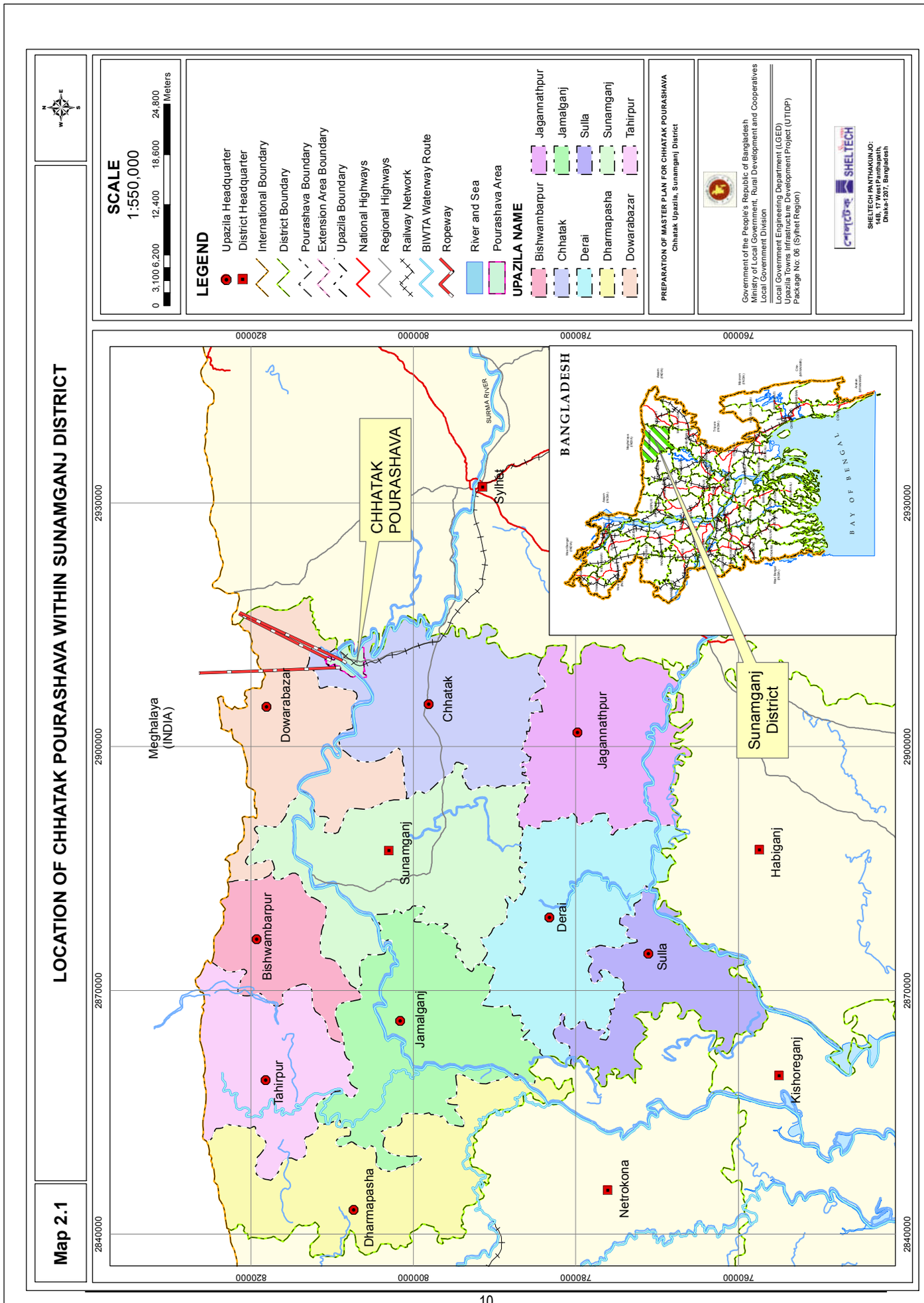
The Structure Plan is an indicative plan that gives a brief on the future development of an area with policy guidelines. It is a long-term plan with flexibility in the sense that it sets down a broad framework for future development, but not the details. The format of a Structure Plan comprises written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

2.5 Duration and Amendment of the Structure Plan

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

2.6 Structure Plan Area

The total area under the Structure Plan of Chhatak is 3094.59 acre (12.52 sq. km.). This area includes the whole pourashava area and some extension areas. The extended area will ensure better road network and better control on the surrounding area of the pourashava.


Map 2.1
LOCATION OF CHHATAK POURASHAVA WITHIN SUNAMGANJ DISTRICT
SCALE
1:550,000
0 3,100 6,200 12,400 18,600 24,800 Meters
LEGEND
Upazila Headquarter
District Headquarter
International Boundary
District Boundary
Pourashava Boundary
Extension Area Boundary
Upazila Boundary
National Highways
Regional Highways
Railway Network
BIWTA Waterway Route
Ropeway
River and Sea
Pourashava Area
UPAZILA NAME
Bishwambarpur
Chhatak
Derai
Dharmapasha
Dowarabazar
Jagannathpur
Jamalganj
Sulla
Sunamganj
Tahirpur
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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. 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14/B, 17 West Panthapath,
Dhaka-1207, Bangladesh
CHHATAK POURASHAVA
Sylhet
SURMA RIVER
Meghalaya (INDIA)
Dowarabazar
Chhatak
Sunamganj
Jagannathpur
Habiganj
Bishwambarpur
Derai
Sulla
Jamalganj
Tahirpur
Kishoreganj
Dharmapasha
Netrokona
Sunamganj District
BANGLADESH
BAY OF BENGAL
2840000
2870000
2900000
2930000
760000
780000
800000
820000

CHAPTER – 3

EXISTING DEVELOPMENT STATUS OF CHHATAK POURASHAVA

Chapter – 3
EXISTING DEVELOPMENT STATUS OF CHHATAK POURASHAVA

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

3.1 Social Development

Development is a dynamic issue. Measurement of social development essentially requires time series data. Consultant collected only recent data of the project area by means of sample survey (5% of total households) with no reference to previous situation. Without having previous data on the same parameters of social issues, it is not possible to make a comparison and hence a judgment about social development. The population census reports are the only sources of information for Pourashava level data, but they cover only a selected number of issues that are not sufficient to make a qualitative judgment of social improvement. As the consultant has no option, it only makes a review of social development based on available population census data of 1991 and 2001 and presents the current situation using the sample socio-economic survey data. This social review indicates positive social development in Chhatak Pourashava. As per household survey present average household size of the Pourashava is 5.5; which is higher than the national average of 4.5. Around 29% of the people are found illiterate during the socioeconomic survey in 2010. So emphasis is needed to enrich the literacy rate in this pourashava. Situation of employment pattern is not that bad as about 93% of the population is found being employed. Generation of employment here will be comparatively easier here in this pourashava as there are some industries are in production here.

3.2 Economic Development

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

The principal criterion to judge the economy of an urban center 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. From the land use survey it is reveled that, although about 41% of the Pourashava area is under agricultural activity but only 5.36% people are engaged with agriculture/forestry/livestock and about 2.32% in agricultural laborers. So a very small 7.68% of the total population of this pourashava is engaged in agriculture for their livelihood. It is revealed from the sample survey on all categories of people, 6.01% are engaged in public and private sector services, 5.94% are businessman. In the population 6.37% is found to be unemployed. This is quite low comparing to other Pourashavas in Sylhet Division. As there are some large industries like Chhatak Cement Factory and Lafarge Cement Factory are located here, the unemployment level is lower here. About 21% of the population is found to be laborers. So the industries here play a vital role in the economy of the Pourashava and surroundings.

3.2.1 Economic Activities

Industry

It is already stated that some large industries are located in the pourashava area. One of the oldest industrial units in the country, Chhatak Cement Company Ltd. was established in 1941. In order to raise its production capacity from 135000 tons to 233000 tons, the Factory uses limestone imported from Meghalaya, India and from its own quarry-Takerghat Limestone Mining Project. There has also paper and pulp mills, stone crushing mills and other private cement industries named, Lafarge cement factory, Lime Factory, Jalalabad Gas Plant, Railway Slipper Factory, Akiz cement Factory (Under construction) etc. From the physical feature survey total 137 industrial structures are found. There are also some sawmills, Rice mill, Flour mill etc. As well as the work generated in extracting gas, the town also have a number of small scale industries powered by natural gas, including the largest cement plant in Bangladesh (Chhatak Cement Factory). Large scales industries are located at Ward No. 01, 02, 03 and 05. And other small manufacturing and processing units are located at Ward No. 07 and 09. About 287.44 acre of land occupies by industrial activities in Chhatak Pourashava.

Commerce

Total 658 commercial buildings are identified in the project area. These commercial buildings include market, wholesale market, retail shop, katcha bazaar, hat, corner shop etc. Maximum commercial structures are at Ward no. 07, 06 and 03 where the markets are located.

Services

The household survey shows, out of the employed population, 6.17% is engaged in business, 2.30% is employed in government/autonomous organizations.

Agriculture

Sample survey by the consultant reveals that about 194 male income earners in the Pourashava are engaged in farming occupation. The farmers and farm laborers work in farm lands, both, within and outside the Pourashava. It is evident from land use survey of the Pourashava that about 41% of the Pourashava lands are still under agriculture.

Informal Sector Economic Activities

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

3.2.2 Existing Employment Pattern

Out of the employed population, 6.17% is engaged in business, 2.30% is employed in government/autonomous organizations. There are 1.74% land lord farmers and 2.32% landless farmers within surveyed households. About 6.37% of the working force is unemployed. Of the total surveyed population, 16.30% is student and male out numbered its opposite sex.

3.3 Population

According to Pourashava source, its area is 9.81 sq. km (2424.09 acre) while according to population census 2001 urban area in Chhatak Pourashava was 11.80 sq. km (2915.83 acre). From the area

demarcation using the gazette notification of pourashava area and latest survey technology the total area is found to be 10.10 sq.km (2495.83 acre). This difference arises because of the method of area demarcation. As in this project the latest and more accurate survey method is applied the outcome is more correct. So, the area of the pourashava is 2495.83 acre. The population according to BBS 2001 is 34172 with 18229 male and 15943 female. Male female ratio of this area is114:100. The growth rate was 2.39% which very high than the national growth rate (1.54%). The following table shows the projected present population of Chhatak Pourashava.

Table 3.1: Population Distribution in Chhatak Pourashava

Ward No.	Area (Acre)	Population 2001 (BBS)	Density (ppa)	Population 2011(estimated)	Density (ppa)
Ward No. 1	170.59	1909	12	2418	15
Ward No. 2	135.71	3503	26	4437	33
Ward No. 3	327.52	2797	9	3543	11
Ward No. 4	509.81	4617	10	5848	12
Ward No. 5	553.67	4415	8	5592	11
Ward No. 6	127.38	4643	37	5880	47
Ward No. 7	245.57	5207	22	6595	27
Ward No. 8	82.47	2932	36	3714	46
Ward No. 9	343.11	4149	13	5255	16
Total	**2495.83**	**34172**	**14**	**43282**	**18**

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

Note: Medium Growth rate for Population projection has been considered as 2.39%.

Size and Type of the Family

Average household size of the project area is about 5.57 and is greater than the national average of about 4.5. It reflects that natural population control program has no positive impact in the project area. Households having 4-5 members are 45.60% of the total households followed by 21.20% of 2-3 family members and 19.20% of 6-7 family members.

Age Group and Sex Ratio

The maximum population is in age group 16-25 years. Female outnumbers male in this age group. On the other hand maximum female population falls within the age group 26-35 years which is 26.54%. The average sex ratio (males per 100 females) for the project area is 100:114 which is higher than the national average (100:106).

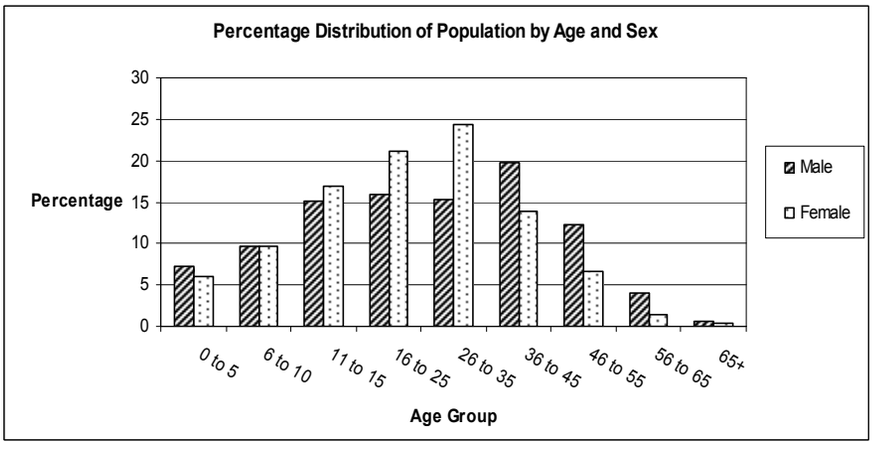


Figure 3.1: Percentage Distribution of Population by Age and Sex at Chhatak Pourashava

Marital Status

In Chhatak Pourashava, percentage of married and unmarried population is almost equally distributed. A negligible percentage of population is widow or widower but as usual female out numbers the male. There are eight male and 34 female divorced respondents.

Religious Status

Total 80.70% people of the study area belongs to the Muslim community and the remaining 19.20% population is Hindu.

Education

More than 28.72% of the total population is illiterate, according to the socio-economic survey finding. Of them only 23.22% of the male population has no education whereas female percentage is 35.03%. About 19.31% population of surveyed population of Chhatak Pourashava has only primary level of education which is the highest. Only a small percentage (14.5%) of population has educational background up to SSC level.

Monthly Income and Expenditure of the Household

Monthly household income and expenditure of the households indicate socio-economic status of people living in an area. This also allows determination of the household saving rate. Here income means income of a household for a month from all sources such as production, property, salary and business and expenditure means amount of money that a household spends for all types of consumption. Maximum number of household (about 12.8%) earned tk.8001-tk.10000/month where 11.6% spends the same amount of money as monthly expenditure. Only 1.6% of family has earning level of 20001-50000/month.

Migration pattern

About 66.80% of the respondents are living here from the birth. Again, 7.6% respondent live Chhatak pourashava more than 20 years and 6% respondent live here from 11 to 20 years. The household survey also represents that, for the purpose of business 24.8% household was migrated at Chhatak and 7.20% household was migrated here for service or transfer.

3.4 Physical Infrastructure Development

Buildings and Structures

More than 41 percent residential structure of the area is katcha, 29.76% is semi-pucca and the remaining 29.20% is pucca. The most agglomeration of residential buildings is at Ward no. 09. But maximum of the residences are katcha (19.68%) in nature. Among total 268 pucca residential building in Chhatak Pourashava the highest number of pucca residences (27.39%) are concentrated at Ward no. 07. Minimum concentration of residential structure has been found at Ward no. 02 (3.77%).

About 44.53% of these commercial buildings are semi pucca, 29.48% are of katcha and all the remaining is pucca in nature. Maximum commercial structures are at Ward no. 07, 06 and 03 where the markets are located. Large scales industries are located at Ward No. 01, 02, 03 and 05. And other small manufacturing and processing units are located at Ward No. 07 and 09. About 16.253 acre of land occupies by manufacturing and processing industries in Chhatak Pourashava.

All Administrative structures of Chhatak Pourashava are mainly located in Ward no. 06 and 07. Total 3.508 acre of land occupies by different educational institutes at Chhatak Pourashava. Chhatak Degree College and Technical School and College in the Chhatak Pourashava located at Ward no. 05.

Transport and Communication

Chhatak is a small, almost Triangle shaped urban center that has developed as two old bazars. A number of major roads connect the town with different urban centers including district headquarters. Major roads start from an intersection at the center of the town, known as Chhatak Traffic Point or Chhatak Point. The two major roads are coming from two different directions in this area. The routes coming from different places are (i) Sylhet to Chhatak Traffic Point and (ii) Sunamganj to Upazila Parishad Road. All the roads meet together at Chhatak Traffic point of the town. The roads from Sunamganj to Chhatak (Upazila Parishad Road) are appeared from South direction where as road from Sylhet to Chhatak (RHD road) is appeared from south east direction, Apart from major roads, a large number of local roads having width varying from 10 ft. to 15ft, provide access to individual houses and establishments and connect them to major roads. What about railway connection? Chhatak has well developed railway connectivity. There is 2.75 km railway line within the pourashava, which comes from Dhaka to Chhatak via Sylhet, Other than these there is a ropeway connecting Chhatak with Bholaganj near the Indian border. This ropeway is used to collect and transport stones from the stone quarry located at Bholaganj. Initially this was established to transport lime stone from Meghalaya, India for Chhatak Cement Factory. This facility is operated by Bangladesh Railway.

Utility Services

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

Electricity

Almost 5000 households of the Pourashava area enjoy electricity facility. As Ward no. 05 is the most active area total 202 electric poles are located within this zone. Map 3.6 is represented the utility and municipality service of Chhatak Pourashava. For the Pourashava area 5 MW to 3.35 MW electricity are used.

Telecommunication

Bangladesh Telephone and Telegraph Board provide the services to Chhatak but the service is very poor. At present like all over the country the mobile phones of different companies have gaining importance. All the six companies have their networks coverage in Chhatak.

Water Supply

Chhatak Pourashava has no piped water supply system. Nominal percentage has private tap water collection system. Pourashava dose not provides any deep tube wells for water supply. Shallow tube wells are the main source of water collection. From the physical feature survey there are only 71 shallow tube wells within the Pourashava. The highest (36.76%) of tube wells are present at Ward No. 06.

Solid-waste Disposal

Condition of solid waste management at Chhatak Pourashava is not so good. Chhatak Pourashava has only 24 dustbins which are located in Ward No. 06 and 07. But these are not well maintained. In most cases garbage is thrown here and there due to the lack of dustbins. Garbage of kitchen markets is dumped at nearby dustbins or vacant places. Total 1 truck and 4 pushcarts are used for waste collection and waste dumping to the dumping sites in Chhatak Pourashava. Total 19 people are engaged for this job. There are two waste dumping sites in Chhatak Pourashava, one is located at east Kamargaon and another is located beside of Patrol Pump in Chhatak Pourashava.

Gas Supply

Total 26.65 Km of gas supply network has been found in Chhatak Pourashava. Lowest length of gas supply network is found in Ward No. 1 (31.63 meter) and the highest in Ward No. 5 (5.52 Km)

Drainage

Drainage condition of the pourashava is not that good at all. According to socio-economic survey only about 28% of the households availes pucca drainage facility and 70.08% has no drainage facility at all. Surma River passes through the pourashava. It has been observed from the physical features survey that about 8 km of river and khal covering an area 379.26 acre, passing through the project area. The river is through the central part of the pourashava area. Apart from the natural drainage system, large number of ponds and ditches (275) observed in the area. These also play an important role to retain the storm water during monsoon and contribute to make the area partially flood free.

3.5 Environmental Issues

Sunamganj district may well have the widest variation in geomorphology and soils of the whole of Bangladesh. Steep hills exceeding 300 m in height with shallow, stony, and rocky soils, and perennially wet basins with peat soil occur within a few km from each other. Most of the land, however, consists of different kind of river floodplain and outwash plains bordering the hill ranges.

Bangladesh lies in the southern vicinity of the Shillong plateau, which is the center of a strong seismic activity in the whole region. This seismic center greatly affects almost the whole of Bangladesh and causes huge damage in Sylhet, north-Bengal districts (Rangpur, Dinajpur) and Mymensingh-Dhaka belt of the country. Bangladesh has some major fault lines, including the Dauki fault, Madhupur fault and the tectonic plate boundaries. The tectonic framework of Bangladesh indicates that Sylhet due to the presence of Dauki fault system of eastern Sylhet, the deep-seated Sylhet fault and proximity to the highly disturbed southeastern Assam with the Jaflong thrust, the Naga thrust and the Disang thrust, is a zone of high seismic risk. Sylhet region is located in the seismic zone 3 and so it is highly vulnerable to earthquake. In the last 150 years, three earthquakes of magnitude greater than 7.5 occurred in Sylhet (Ansary, 2002). Sylhet has gone 100 years without a major quake. This seismic gap raises the prospect of a powerful earthquake striking this region sooner rather than later. And as Chhatak is located along the tectonic plate boundary it is more vulnerable for earthquake devastation. Strong mitigation measures should be suggested in the Master Plan of the Pourashava.

3.6 Institutional Capacity

The implementation of the Master Plan will require strengthening of the capacity of the Pourashava Authority. Although the capacity building is going in different ways by the government, the institutional capacity building for implementing the Master Plan of the Pourashava has not yet been seriously considered. This will be an important task for the government to restructure the organogram and include the required technical staff with appropriate job description for addressing the issues of implementing the Master Plan.

Existing Manpower

Chhatak is an “A” class Pourashava. According to Pourashava manual there should be 96 official engaged in an “A” class Pourashava to manage the engineering, administrative, health, family planning, conservancy works within the Pourashava area (Appendix- 3). In this organogram Mayor will be in top position. Senior Executive Officer will coordinate the three major divisions. These divisions are Engineering division (headed by Assistant Engineer), Administrative division (headed by Secretary), Conservancy, health and family planning division (headed by Health Officer). In this organogram both full time and contractual official will be engaged.

Existing manpower scenario of Chhatak Pourashava is in bad shape. There is acute shortage of manpower in each section of the Pourashava. Pourashava has only 08 officials against 89 officials mentioned in Pourashava manual organogram. There is no Chief Executive Officer, Executive Engineer, Secretary, Health Officer. Sub Assistant Engineer of Chhatak Pourashava coordinates the engineering and administrative division. The works of the conservancy division is executed by the contractual staffs, health and family planning section is not well established at Chhatak Pourashava.

Pourashava Town Planning and Implementation Capacity of Master Plan

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

Conservancy and Health Services

Conservancy service of Chhatak Pourashava is not so good. Pourashava has only 24 dustbins which are located in Ward No. 06 and 07. But these are not well maintained. In most cases Garbage are throwing here and there due to the lack of dustbins. Garbage of kitchen markets is dumped at nearby dustbins or vacant places. As mentioned earlier, a total of 1 truck and 4 pushcarts are used for waste collection and waste dumping to the dumping sites in Chhatak Pourashava. There is no CBO based house to house waste collection system introduced in this Pourashava. Total 19 people are engaged for this job. There are two waste dumping sites in Chhatak Pourashava, one is located at east Kamargaon and another is located beside of Patrol Pump in Chhatak Pourashava. Conservancy department of the Pourashava is not established yet. Staffs are recruited on contract basis to convey the work of conservancy service.

In Chhatak Pourashava there are found three structures for Health care services, there is a government hospital named Upazila Health Complex at Ward No. 07, one clinic named Mary Stopes at Ward No. 06 and a railway Hospital at Ward No. 05. Total 0.543 acre of land is occupied by Health facilities in Chhatak Pourashava. In the pourashava Chhatak Cement Factory Hospital, Lafarge Surma Cement Hospital and Paper mill Hospital serves their employees.

Logistic Support/Equipment

According to the Pourashava manual an “A” class Pourashava will get logistic support/equipment to continue the work properly. This includes one jeep, one road roller (5-7 ton), two trucks/tractors, two motor cycle, three by cycles (according to the needs of the Pourashava), one mixture machine, one type writer machine, one photocopier machine and one duplicate machine. Chhatak Pourashava got almost all of these logistic supports from government except the jeep and truck/tractor. Additionally they have one Computer and printer for there official support.

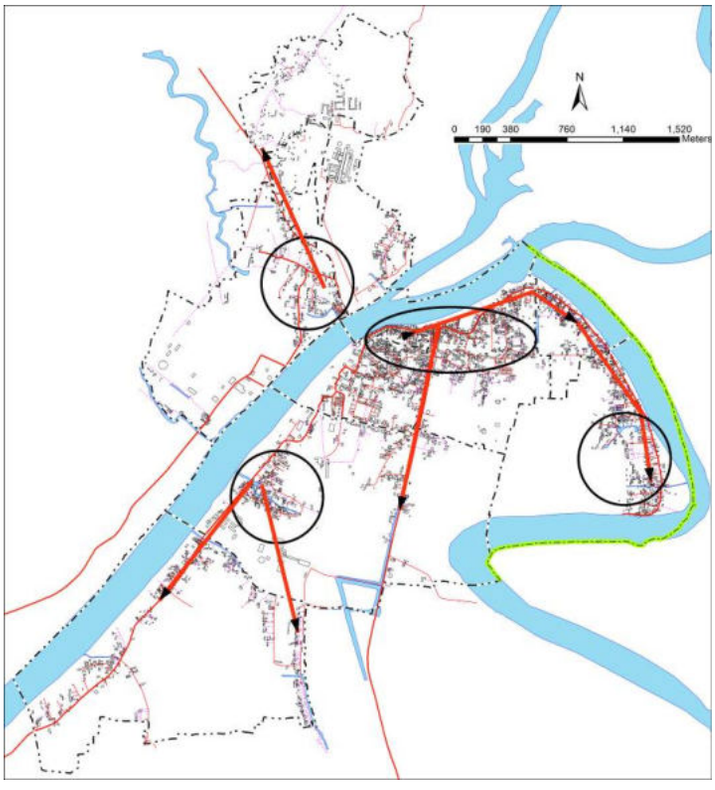
3.7 Urban Growth Area

As the Map 3.1 shows, the direction of physical growth in the town is towards the Southern direction. Accessibility is a major driving force for behind physical growth. Another important factor is flood free high land. Physical growth usually follows major thoroughfare and higher grounds. The general land level of the town is almost uniform everywhere. Therefore, accessibility is the leading factor to direct physical growth. The main thoroughfare of the town is the R&H road of Chhatak from Sylhet road; this road is running through the market place of the town. The present growth direction also follows Chhatak point to Sunamganj Road of Pourashava Boundary. The commercial activities are expanded along the road. However, minor developments follow the recently developed Tatikona road from Chhatak bazar towards Tatikona road. But as the area around the road is low and in agricultural use, so there is also possibility of future development.

3.8 Catchment Area

Chhatak has good communication linkage with Sylhet City, Sunamganj town and other adjoining area by road communication. The Pourashava is located at only 68 Km from Sunamganj town and 32 km from Sylhet city. The adjoining growth centers are Dowara Bazar, Companiganj, Bishwanath etc. These are smaller growth centers near the pourashava area. Buses, tempos, Auto rickshaws and other motorized vehicles are easily available in the pourashava. As mentioned earlier a number of major roads connect the town to different urban centers including district headquarters and divisional head quarters. The waterway is used mainly for freight transport for the industries located in the pourashava area.

Future Growth Direction of Chhatak Pourashava



Source: Observation by the consultants based on the physical feature survey, 2010.

3.9 Land Use and Urban Services

The general land uses of the project area are shown in Table 10.1 in Chapter 10. In the land use pattern of the Pourashava, 16 types of land uses are found. Agricultural land use (40.77%) dominates the Pourashava area, followed by water bodies (18.50%), residential (13.89%), industrial (11.52%) and circulation network (2.37%). Other land uses are negligible here. Settlements are found particularly in the areas of higher elevation following linear pattern along side the roads. The trend of settlement growth is greater in areas close to the main road. Apart from core area, in most of the other areas, residential developments have taken place as dispersed settlements on high lands. Dispersed settlements make provision of services difficult.

Chhatak pourashava lacks the required amount of urban services. The following table shows the present status of urban services in the area.

Table 3.2: Number of Urban Services in Chhatak Pourashava

Urban Service	Number
Upazila Headquarter	1
Pourashava Office	1
Union Parishad Office	2
Other Government Office	7
Ansar Camp	1
Police Station	1
Railway Station	1
Industrial Area	3
Hospital	3
Fire Service	1
Post Office	1
Gas Transmission	2
Telephone Exchange	1
Electric Sub-Station	1
Kindergarten	3
Primary School	13
High School	5
College	1
Vocational Training Institute	1
Madrasa	7
Mosque	35
Eidgah	5
Graveyard	13
Temple	7
Cemetery	1
Filling Station	1
Community Center	2
Cinema Hall	1
Club	1
Kitchen Market	2
Para Transit Stand	1
Playground	2

Source: Physical feature survey, 2010

The number of educational institutions is higher in the pourashava with 13 primary schools, 5 high schools, 1 vocational training institute, 7 madrasas and 1 college. But the area allocated to these facilities and the spatial distribution is not up to the standard. That is why the level of education is not that much higher in the pourashava. Service facilities like railway station, hospital, fire service station, post office is available in the pourashava which is good for its development. But more of health services should be provided to serve the need of the people during the Master Plan period of 20 years.

3.10 Pourashava Functional Linkage with the Regional and National Network

Any development initiative at the local level must relate to the national level plans in order to achieve cohesion and integrity with overall development of the country to attain the national development objectives. The present system of national level planning hardly links the local level plans. The present system of allocation of resources in national development budget is a top down approach, which is highly influenced by political objectives. As a result, urban sector is not yet considered a priority sector and due to resource constraint, many problems of the Pourashavas remain unresolved. Therefore, it is

important to establish a linkage between the local plans and the national development plan so that aspirations of the people can be realized. This necessitates for a bottom up approach of development planning and the budget allocation. Budget should be allocated according to the priority list of the projects prepared by the Pourashava that is supposed to reflect the needs of the Pourashava people as the list can be prepared by the councilors and the Mayor who are directly elected by the people.

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

The proposed developments will induce new investments in trade and industry and lead to generation of more employment in the service, construction, transport and informal sectors. This will directly assist in reducing poverty. It will help absorb additional work force of rural areas as a result of natural growth of population. Agricultural sector has limitations in absorbing labor force.

3.11 Role of Agencies for Different Sectoral Activities

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

Development Schemes Implemented by the GOs

Chhatak is agriculture based urban area and Upazila Agriculture Office has a significant influence on its agricultural sector. Central Government use subsidy for the betterment of the farmers. Local office distributes fertilizer to the poor farmers 20 kg per head through the Pourashava. Pourashava authority sometimes distributes that fertilizer to the farmer 10 kg per head to balance between demand and allocation by agriculture office. Besides, agriculture office also arranges some training workshop for the farmers about the modern techniques of the cultivation and how to increase more production. Upazila Fisheries and Livestock Office distribute fish fry and fertilizers for fish and vaccination of poultry and other livestock to the people with free of cost though its rate is not mentionable. They also arrange training session to train the people. Upazila Parishad sometimes takes initiatives for the forestation and distribution of saplings. Upazila Health Complex only implements a few activities like vaccination, training on child and mother health etc. Electrification of Chhatak is directed by Polli Biddutayan Board (Rural Electrification Board- REB) has a master plan to avail 100% electrify the whole Upazila including the Pourashava area. The master plan includes priority basis electrification to the residents and the commercial establishments.. According to census 2001, a total of 89.2% of the dwelling households reported to have moderately satisfied with electricity connection in the entire Upazila. Local Government and Engineering Department (LGED) have an upcoming project of construction of road, culverts and box culvert within the Pourashava. And LGED of Chhatak is responsible for maintenance of Chhatak.

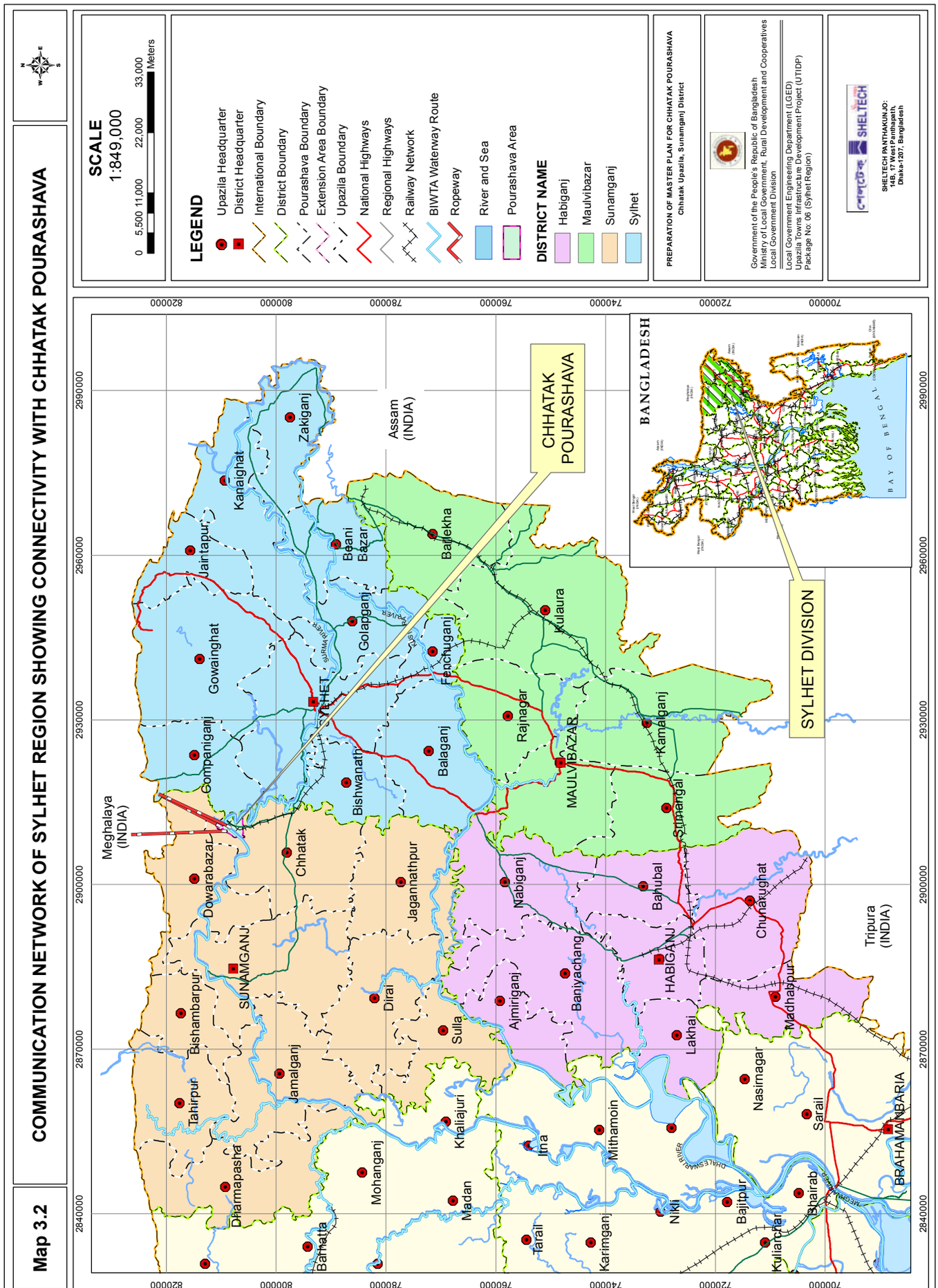
Development Schemes Implemented by the NGOs

Different NGOs at Chhatak Pourashava provide mainly micro credit service. ASA only provide micro credit service and money transfer service of western union. Grameen bank of Chhatak Pourashava

provides microcredit and house loan service for the poor people. BRAC along side micro credit program provides other type of program for the wellbeing of the local people.

Development Schemes Implemented by Private Sector

Main development activity by the private sector is setting up industries in and around the pourashava area. A huge amount of pourashava land is under the ownership of large private entrepreneurs like Lafarge, Akiz etc. These private organizations set industries and thus help in the development to Chhatak Pourashava.


Map 3.2
COMMUNICATION NETWORK OF SYLHET REGION SHOWING CONNECTIVITY WITH CHHATAK POURASHAVA
SCALE
1:849,000
0 5,500 11,000 22,000 33,000 Meters
LEGEND
Upazila Headquarter
District Headquarter
International Boundary
District Boundary
Pourashava Boundary
Extension Area Boundary
Upazila Boundary
National Highways
Regional Highways
Railway Network
BIWTA Waterway Route
Ropeway
River and Sea
Pourashava Area
DISTRICT NAME
Habiganj
Maulvibazar
Sunamganj
Sylhet
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
CHHATAK POURASHAVA
SYLHET DIVISION
BANGLADESH
Meghalaya (INDIA)
Assam (INDIA)
Tripura (INDIA)
SYLHET
MAULVIBAZAR
SUNAMGANJ
HABIGANJ
BRAHAMANBARIA
Zakiganj
Kanaighat
Jaintapur
Gowainghat
Companiganj
Dowarabazar
Tahirpur
Bishambarpur
Jamalganj
Dharmapasha
Barhatta
Chhatak
Jagannathpur
Dirai
Sulla
Mohanganj
Khaliajuri
Madan
Bishwanath
Balaganj
Golapganj
Bianibazar
Fenchuganj
Balaganj
Rajnagar
Kulaura
Kamalganj
Sumangal
Nabiganj
Ajmiriganj
Baniyachang
Bahubal
Lakhai
Ima
Mithamoin
Karimganj
Tarail
Chunarughat
Madhabpur
Nasimagar
Sarail
Nikli
Bajitpur
Kuliarchar
Bhairab
River
Surma River
Kushiyara River
Dhalai Swar River
Meghna River
82000
80000
78000
76000
74000
72000
70000
2990000
2960000
2930000
2900000
2870000
2840000

CHAPTER – 4

CRITICAL ISSUES FOR PLANNING

Chapter – 4
CRITICAL ISSUES FOR PLANNING

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

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

4.1 Socio-Economic and Demographic Issues

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

4.2 Transportation and Communication

Communication network plays the very important role in development of settlements. Houses and other establishments always prefer road side lands to have easy access to different places. Chhatak Pourashava is not yet developed as a large town. The Pourashava has a very low traffic volume. Traffic Conflict is not common and frequent in Chhatak town. Some traffic congestion occurs at the Traffic Point More near Chhatak Bazar. This is due to the narrow intersection and unplanned parking of vehicles. Without planning a transport network for the Pourashava area as a whole, a standard transport network and an efficient traffic management system for the future can not be ensured. The nature of problems and deficiencies are identified below.

a. Unplanned and Narrow Road

Roads in the town are being developed without using any planning standard and network plan. As a result, narrow roads with tortuous pattern are common. Narrow roads and poor maintenance of those roads are major problems for traffic movement in the town. New houses and other structures are cropping up along these sub-standard narrow roads. This is likely to poise traffic movement problems in the future, when development becomes more intense and density of population increases. The existing narrow roads require widening and improvements of pavement. Some road segments within the Pourashava are built in an unplanned manner. These segments will require improvement as per future traffic volume and required space for turning lane.

b. Traffic Congestion

Higher traffic volume is found in the pourashava area on major roads. Some conflict arises at points like Keshabpur Bazar, Chhatak Bazar due to the slow moving vehicles. As the Dhaka – Sunamganj Highway is going to pass through Chhatak Pourashava it will create much congestion in the near future.

c. Unplanned and Inadequate Bus, Truck, and Tempo Terminal/Stand

No well designated bus stand or terminal is found in the pourashava area. Buses usually stand at the side of Chhatak – Sylhet Highway near Power Grid Co. No truck terminal is also found here in the pourashava area. This is not good for the industrial development of the pourashava as it will need multi-modal transport system to be used to sustain the present industrial boom in the pourashava. Only one para transit stand has been found in Ward No. 3 at the side of Bangla Bazar Road. These types of smaller vehicles are parked haphazardly near Chhatak Bazar and create traffic congestion. So well designated and distributed para transit stands is a necessity for the pourashava.

4.3 Urban Utilities

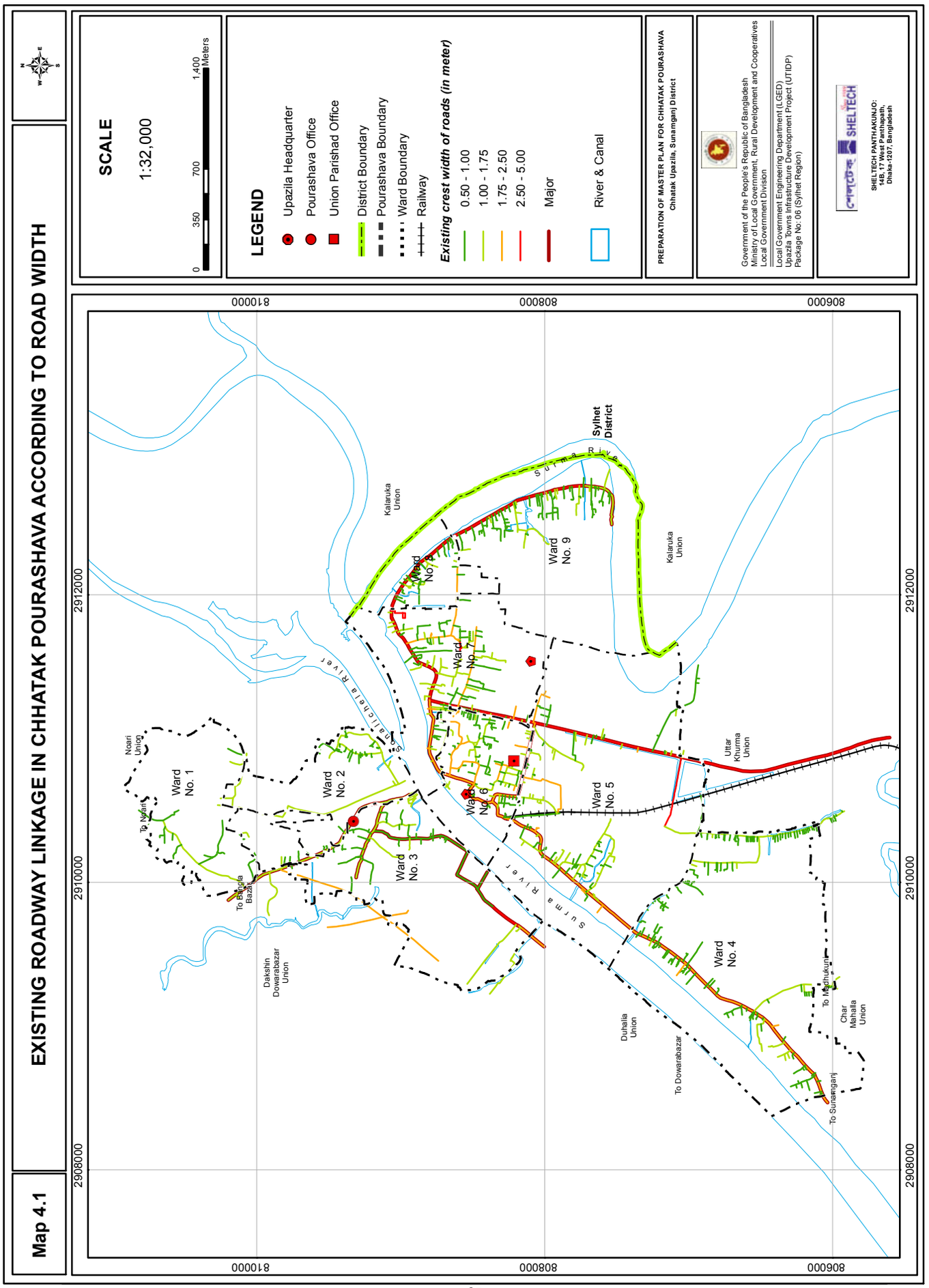
A key issue related to the sustainable development of planning area providing a minimum quality and standard of living, pertains to the availability of and accessibility to basic infrastructure facilities, viz. water, power, sewerage, drainage and solid waste management. The present state of infrastructure problems in the Pourashava may become a cause of crisis. At present, state of telecommunications and power scenario in Chhatak Pourashava is not so good. There is no water supply facility in this Pourashava. Thus critical need of advance action and arrangement is required for adequate provision of physical infrastructure.

4.4 Drainage and Environment

Majority of the population at Chhatak Pourashava is deprived of drainage facility. Uncollected waste is washed out into the roadside drains and natural canals. Blockage of drains by solid waste reduces the carrying capacity of drains and natural canals and become a source of pollution. Pourashava has very limited resources to clean the drains. It has been observed that in some areas, domestic sewage conveys directly to these water channels. Water logging is a problem at some parts of Chhatak Pourashava, causing water logging for 5-7 days each time during heavy rainfall between June and November every year.

4.5 Other Related Issues

Chhatak Pourashava is located on the downstream of the proposed Tipaimukh Dam in India. Since the river Kushiyara flowing from the upper portion of Sylhet region is an international river and Bangladesh is the lower riparian country, unilateral withdrawal of water of the river will gradually turn the lush-green fertile soil of this region into a sandy dry waste land and remain so for a major portion of the year (November-May) disrupting agriculture, irrigation, drinking water supply, navigation etc. It will further lower the already low ground water level and bring misery to the people inhabiting the region. Scarcity of water may cause siltation on river beds. When high rainfall will occur in the catchments area of the dam, enormous quantity of sediment laden flood water will be released, which will cause severity of flood in the Kushiyara channels, which would already be raised for low flow of water during dry months. This will further raise the water level causing floods in the adjoining additional areas. Cautionary measures are to be made available to face such challenges, if that happens ever.


Map 4.1
EXISTING ROADWAY LINKAGE IN CHHATAK POURASHAVA ACCORDING TO ROAD WIDTH
SCALE
1:32,000
0
350
700
1,400
Meters
LEGEND
Upazila Headquarter
Pourashava Office
Union Parishad Office
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Existing crest width of roads (in meter)
0.50 - 1.00
1.00 - 1.75
1.75 - 2.50
2.50 - 5.00
Major
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Noari Union
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
Kalaruka Union
Uttar Khurma Union
Dakshin Dowarabazar Union
Duhalia Union
Char Mahalia Union
Sylhet District
Surma River
Kalni River
To Noari
To Bus Stand Bazar
To Dowarabazar
To Madhukunj
To Sunamganj
2908000
2910000
2912000
806000
808000
810000

Disaster Issues

As Chhatak is located along the tectonic plate boundary, so it is more vulnerable for earthquake devastation. Mitigation measures are to be suggested in the Plan of the Pourashava town. In the planning and designing of the drainage system, the aspect of flooding has to be considered seriously. Water logging is another issue to be considered here. For its unplanned manner of development and inadequate drainage network it is necessary to concentrate on this issue specially to mitigate in future.

4.6 Land Use Control

A Land Use Plan of the town was prepared in 1990 by Urban Development Directorate (UDD), but it was never brought into practice due to lack of regulatory measure for implementation. Instead, discretionary decisions are used in case of land use decisions. The Land Use Plan at that time was prepared for the Upazila Headquarters by UDD, but the Pourashava administration remained under the administrative control of the Ministry of LGRD & C. So conflict and lack of legal basis in implementation prevailed. In the present context of socio-economic demand and land use dynamics in the country, development of a Pourashava without a Master Plan can not be imagined.

4.7 Laws and Regulations

Absence of adequate planning and development control is a problem in all urban areas of Bangladesh and Chhatak is no exception. A number of legislative measures are there to help the administration of urban area, urban development and management. But all these enacted planning laws could not be enforced and many of them are not efficient in regulating planning. Due to lack of proper implementation and enforcement, these laws remain inactive. Some weaknesses in the implementation are also observed in some conditions. So it has turned into a critical problem for the implementation of plans for towns and cities. A substantial portion of national resource is invested in building construction in both public and private sectors. In order to ensure optimum return of this investment and to achieve satisfactory performance of the buildings in terms of safety, serviceability, health, sanitation and general welfare of the people, building construction needs to be controlled and regulated. Legislative measure for such control has been provided in the East Bengal Building Construction Act, 1952 and from time to time, regulations have been promulgated by the government under the Section 18 of this Act. As per law, it is mandatory to get any structure approved from appropriate authority before construction. Permission to building construction in Pourashava is administered by this authority within its jurisdiction. However, as elsewhere in the country, noncompliance to these rules is also observed here.

a. Weak Local Government

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

b. Public Participation in Plan Making Process

The planning and development Acts of earlier times had contained a little scope for the authorities concerned to seek public opinion on their city/town plans prepared before they are sent to the government for final approval. Not having any scope for public participation is against the democratic norms of a modern society. The authority must involve people in the planning and development process, and hear their views, needs and grievances to mitigate problems. This vital aspect should be incorporated in the Ordinance through revision.

c. Coordination of Activities of Public Sector Development Agencies

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

d. New Rules for Practicing Planning Standards

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

e. Betterment fee

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

f. Penalty for Violation of Plan Provisions

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

4.8 Existing Problems and Weaknesses in the Development

The major problems that currently exist in Chhatak Pourashava include the following:

a. The Pourashava town has a weak economic and revenue base that does not support improvement in the socio-economic well being of the people. The Pourashava authority for lack of resources, fails to make required investments in the development of physical infrastructure to improve the quality of life of the people living in the town.

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

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

CHAPTER – 5

REVIEW OF POLICIES, LAWS AND REGULATIONS

Chapter – 5
REVIEW OF POLICIES, LAWS AND REGULATIONS

5.1 Introduction

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

5.2 Review of Relevant National Policies

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

5.2.1 Directives of The Local Government (Pourashava) Act 2009 for Preparing the Master Plan

The Pourashava Ordinances at different times since 1960's till the present time have iterated that a Pourashava as it gets established must prepare its Master Plan for planned development of the municipal town. So far, three ordinances have been made in the year 1967, 1977 and 2008, all suggesting for planned development. The Pourashava Ordinance 2008 was later modified and enacted as The Local Government (Pourashava) Act 2009 in the national Parliament on October 6, 2009. The 2009 Act made provision for having the Master Plan prepared by a Pourashava within five years of its inception. The Master Plan of a Pourashava town is aimed for ensuring planned development, and should include the following:

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

Actions Suggested in the Act to Prepare Master Plan

The Local Government (Pourashava) Act 2009 suggests for having qualified Town Planner in it's Organogram of Manpower to undertake the job of preparing the Master Plan of the Pourashava. Until such qualified Town Planner is not available in the Pourashava, the Pourashava may require a competent national government authority to prepare such plan for the Pourashava. The Act also makes it contingent to form a Town Planning Committee within the capacity of it's manpower to execute the Master Plan of the Pourashava Town. Chhatak Pourashava has no Town Planner and Town Planning Committee at the moment. This makes the Pourashava dependent on having the Master Plan currently being prepared by LGED.

5.2.2 National Land Use Policy 2001

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

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

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

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

5.2.3 National Housing Policy, 1993

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

The policy declares that in housing activities, the government will continue to remain as a facilitator in housing sector. The government intends to provide housing only to the poor and the rootless classes of the society. The policy makes commitments to encourage private organizations, NGOs and CBOs in housing development, income generation and environmental improvement under local planning. The preparation of Master Plan of the Pourashavas is, therefore, a step forward to address the various development issues including housing for mass people at local level.

5.2.4 Population Policy 2004

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

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

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

5.2.5 Transportation Policy 2004

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

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

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

5.2.6 National Environment Policy 1992

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

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

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

Industrial Sector

The following environmental measures are important:

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

Health Sector

The following environmental issues are important:

- Supply of safe drinking water in the Pourashava area and introduction of low cost healthy sanitation system.
- Control of pollution in all kinds of water bodies by municipal, industrial and toxic materials.
- Ban on carrying waste during day time and in open garbage trucks.
- Steps to be taken to protect public health and environment from all activities harmful for human health.
- Inclusion of environment in the academic syllabi.

Energy Sector

The following are some relevant policies:

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

Transport and Communication Sector

The important aspects are:

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

Population Sector

The important aspects are:

- Conduct study on the impact of population growth on environment and take appropriate measures to mitigate the problems of population growth.
- Prepare manpower utilization plan to make planned and effective use of human resources congenial to environment.
- Emphasize participation of women in environment conservation.
- Appropriate measures are needed to safeguard health of the poor and save them from the adverse effects of environmental degradation.

5.2.7 Industrial Policy 2005

The key aspects of the Industrial Policy 2005 are to:

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

5.2.8 National Tourism Policy 1992 and 2010

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

- To create interest in tourism among the people
- To preserve, protect, develop and maintain tourism resources
- To take steps for poverty-alleviation through creating employment
- To build a positive image of the area concerned
- To identify sectors for private capital investment
- To arrange entertainment and recreation
- To strengthen solidarity and integrity among the peoples

5.2.9 Agriculture Policy 1999

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

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

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

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

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

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

5.2.10 Urban Forest Policy 1994

Representing an amendment of the forest policy of 1979, current national forest policy was enacted in 1994 and officially announced on 31st May 1995. The policy was formulated to initiate a 20-year Forestry Master Plan (FMP). The plan provides a framework for optimizing the forestry sector's ability to stabilize environmental conditions and assist economic and social development. Three imperatives were identified: sustainability, efficiency and people's participation. Important objectives are:

- To afforest about 20% of the total area of the country by initiating various afforestation programs in forest lands, fallow lands, lands not useful for agriculture, hinter lands and other possible areas to meet the basic needs of the present and future generations and to ensure greater contribution of the forestry sector to economic development;
- To enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals.
- To strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources
- To provide for and implement afforestation programs on both public and private lands.

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

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

5.2.11 National Plan for Disaster Management, 2008-2015

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

- Align the strategic direction of disaster management programs with national priorities and international commitments.
- Articulate the vision and goals for disaster management
- Outline the strategic direction and priorities to guide the design and implementation of disaster management policies and programs.
- Create a cohesive and well-coordinated programming framework incorporating government, non-government and private sector.
- Ensure that disaster management has a comprehensive and all-hazards focus comprising disaster risk reduction and emergency response.
- Illustrate to other ministries, NGOs, civil society and the private sector how their work can contribute to the achievements of the strategic goals and government vision on disaster management.

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

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

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

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

5.2.13 Review of Relevant Laws and Regulations

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

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

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

5.2.13.2 Bangladesh National Building Code (BNBC) 1993

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

5.2.13.3 The Building Construction Act 1952

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

Preparation of Master Plan

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

Building Construction Rules

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

Power to Removal of Construction (Section 3B)

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

Restriction on Cutting of Hills (Section 3C)

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

Removal of Unauthorized Building (Section 7)

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

Appeal

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

Observation on the Building Construction Act

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

5.3 Applicability of the Acts, Regulations and Policies in the Pourashava Master Plan

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

Table 5.1: Important Provisions of Different Acts, Policies and Rules Having Relevance with the Preparation of Pourashava Master Plan

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

Act/Ordinance, Policies, Rules	Relevance with Pourashava Master Plan
	natural disaster, identify and control all sources of pollution and degradation, ensure environment friendly development in all sectors, ensure sustainable, long term and environment friendly use of all national resources, and get involved with international initiatives on environmental issues.
Industrial Policy 2005	To set up planned industries considering the real domestic and export demand discouraging unplanned industries, provide necessary assistance for producing environment-friendly products with the objective of creating a pollution-free environment, and enrich the industrial sector with the proper utilization of various natural and mineral resources. To prioritize the expansion and development of agro-based and agricultural processing industries, and assist in the expansion of poultry, dairy and goat-sheep industry as agricultural industries; and provide women entrepreneurs with all necessary assistance in establishing such industries.
National Tourism Policy 1992 and 2010	To create interest in tourism among the people, preserve, protect, develop and maintain tourism resources, take steps for poverty-alleviation through creating employment, build a positive image of the area concerned, arrange entertainment and recreation, identify sectors for private capital investment, and strengthen solidarity and integrity among the peoples.
Agriculture Policy 1999	To strengthen land zoning program, ensure maximum utilization of land through bottom up planning and people's participation, stop fertile agricultural land being used for non-agricultural purposes, and discourage acquisition of land in excess of requirement for non-agricultural purposes.
Urban Forest Policy 1994	To afforest about 20% of the total area of the country by initiating various afforestation programs in forest lands, fallow lands, lands not useful for agriculture, hinter lands and other possible areas to meet the basic needs of the present and future generations and to ensure greater contribution of the forestry sector to economic development; enrich biodiversity in the existing degraded forests by conserving the remaining natural habitats of birds and animals; Strengthen agriculture by extending assistance to those sectors related with forest development, especially by conserving land and water resources; and implement afforestation programs on both public and private lands.
National Plan for Disaster Management, 2008-15	To align the strategic direction of disaster management programs with national priorities and international commitments, articulate the vision and goals for disaster management, outline the strategic directions and priorities to guide the design and implementation of disaster management policies and programs, create a cohesive and well-coordinated programming framework incorporating government, non-government and private sector, and ensure that disaster management has a comprehensive and all-hazards focus comprising disaster risk reduction and emergency response.
National Plan of Action for Person's With Disabilities (PWDs) as well as Autism, 1995	To establish separate ticket counters in railway station, bus terminals, river ports, steamer terminal, airport and airways office to facilitate easy availability of tickets for the PWDs, fill up 10 percent reserved quota for employment in government jobs by orphans and PWDs, construct a ramp in all the government offices to facilitate easy

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

CHAPTER – 6

PROJECTION OF FUTURE GROWTH BY 2031

Chapter – 6
PROJECTION OF FUTURE GROWTH BY 2031

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

6.1 Projection of Population

The detail of how the estimation of population is made is discussed below.

Basis of Population Projection Method

It is a difficult task to collect detailed information of population for a recently declared Pourashava in Bangladesh. Perhaps no single factor is more important for planning than the size and composition of a region's population and the way it changes in the future. Estimation of future population for a specific period of 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 the particular area of a Pourashava and same is the case for Chhatak.

The population figures collected from secondary sources, especially for the Pourashava were very much ambiguous. So for the final projection, several discussions were made with experts and BBS officials. Following the annual growth rate for the study area available from the 2001 Population Census, the projection up to the year 2031 with five years interval has been made.

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

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

Where,

P_o = the base year population(2001, 34172),

P_n = the projected year population (2031, 69439)

t = time period (30 Year),

r = annual growth rate (2.39%).

Assumptions

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

The important issues to be considered are;

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

Shortcomings

The data found from several sources is arranged in different formats according to their requirement and analysis. So, comparison of data between different sources is very difficult. As a result, projection with various sources of information on population shows variable results in the calculation.

Migration information is not available in population census by BBS as 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 been made here as alternate of population projection.

Findings

The existing estimated population of Chhatak Pourashava is 64508 in the year 2011 within an area of 2495.83 acres. According to 2001 Population Census, it was 34172. With an annual growth rate of 2.39%, the forecasted population of Chhatak Pourashava will be 69439 in the year 2031. The gross density of the area will be 93 ppa (person per acre). Due to the maximum concentration of residence in Ward No. 06, the density of population is the highest (246 ppa). Table 6.1 shows the details of population projection.

Table 6.1: Population Projection with Density for Chhatak Pourashava Up to 2031

Ward No.	Area	Year 2001		Year 2011		Year 2016		Year 2021		Year 2026		Year 2031	
		Popn.	PPA	Popn.	PPA	Popn.	PPA	Popn.	PPA	Popn.	PPA	Popn.	PPA
Ward No. 1	170.59	1909	12	2418	15	2722	16	3064	18	3449	21	3882	23
Ward No. 2	135.71	3503	26	4437	33	4994	37	5620	42	6325	47	7118	53
Ward No. 3	327.52	2797	9	3543	11	3988	13	4488	14	5051	16	5685	18
Ward No. 4	509.81	4617	10	5848	12	6582	13	7408	15	8337	17	9383	19
Ward No. 5	553.67	4415	8	5592	11	6293	12	7082	13	7970	15	8970	17
Ward No. 6	127.38	4643	37	5880	47	6618	52	7448	59	8382	66	9433	75
Ward No. 7	245.57	5207	22	6595	27	7422	31	8353	35	9401	39	10580	44
Ward No. 8	82.47	2932	36	3714	46	4180	51	4704	58	5294	65	5958	73
Ward No. 9	343.11	4149	13	5255	16	5914	18	6656	20	7491	22	8430	25
Total	**2495.83**	**34172**	**14**	**43282**	**18**	**48713**	**20**	**54823**	**22**	**61700**	**25**	**69439**	**28**

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

Note: *Medium Growth rate for Population projection has been considered as 2.39%. Popn=Population and PPA=Persons Per Acre*

6.2 Identification of Future Economic Opportunities

The town has good prospects to local economic uplift 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 may be arranged for prospective young and educated entrepreneurs to encourage them to invest in manufacturing, in particular.

Second, local entrepreneurs may go for consumer goods production targeting local market.

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

To raise the rate of employment and reduce poverty, employment opportunities in the town have to be increased. All these problems and also others not revealed in the findings will have to be addressed in the proposed master plan of the Pourashava.

Table 6.2 shows the working force for Chhatak Pourashava. The total working force of Chhatak in 2001 was 19275. According to this figure and also information from the socioeconomic survey in the pourashava, further calculation has been done. It will be expected that the total figure will rise to 51786 in the year 2031, where as excluding the students and housewives at that time, it will be 22664. For a balanced development of an area it will be necessary to create employment opportunities for the estimated work force. It will also expect that after the economic improvement of Chhatak, the participation of female work force in economic activities should be increased.

Table 6.2: Projected Working Force for Chhatak Pourashava up to the Year 2031

Year	Working Force (Including Housewife & Student)			Working Force (Excluding Housewife & Student)		
	Male	Female	Total	Male	Female	Total
2001	10371	8904	19275	1665	6492	8156
2011	17127	15520	32647	2749	11315	14064
2016	21181	19386	40567	3400	14134	17534
2021	22397	20873	43270	3595	15219	18813
2026	23585	22429	46014	3785	16353	20138
2031	26544	25242	51786	4260	18404	22664

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

***Note**: i. Population from the year 15-59 has been considered as working force*

ii. 16.05% of the working force has been considered as student and 72.91% of female as housewife.

However, it is extremely difficult to make any precise projection about future economy of this small urban center. Considering the present level of economic activities, no major change is anticipated in the local economy in the near future. The town has good prospects to local economic improvement provided appropriate government policies and initiatives are taken. People have money, but they will have to convert it into capital. The following suggestions may be considered. *First,* training on entrepreneurship may be arranged for prospective young and educated entrepreneurs to encourage them to invest in manufacturing, in particular. *Second*, local entrepreneurs may go for consumer goods production targeting local market. *Third,* prospective investors may also explore possibilities of investment in agriculture sector for local as well as export market, particularly, in fisheries, poultry and horticulture.

As stated earlier remittance is an important source of income mainly in Sylhet region. Remittance is a very important source of income in Chhatak Pourashava. It is mainly invested on land, which is considered the safest investment, as the land value never falls. Without investment in basic industries, it is unlikely that the local economy will experience a major boost in the near future. Both government and private initiatives will bring prospective improvement of the economy through proper policy for utilization of the remitted money inflow. It is the high time to create some special incentive packages for their investment make a rewarding role in the economy of the country. Some policy initiative should be established to steer remittances towards the formal banking sector to stop the leakages of about 20 percent (The Daily Star, 2 April ’08) remittances through unofficial channels. Private Banks in the country have taken initiative in this direction. To raise the rate of employment and reduce poverty, employment opportunities in the town have to be increased.

6.3 Projection of Land use

Projected land use is a critical component to a comprehensive plan. The forecast determines the amount of land needed to accommodate future growth, and includes the land required for residential, commercial and industrial uses. In some instances, a community may have enough vacant lands within its boundary to accommodate its forecasted population increases and land use demands. In other instances, there may be a need to consider land outside a community's boundaries to accommodate this increase. The projection and demand on land requirements as per the planning standard approved by the PMO office of UTIDP project are given in Table 6.3 and details are discussed in Part B, Chapter-10 and Section 10.1.2 of this report.

Table 6.3: Land Use Requirement for Chhatak Pourashava

Type of Land Use	Area (acre)	Total	
		Area (acre)	%
Residential Zone*	1388.78	2268.69	90.90
Commercial Zone	90.13		
Industrial Zone	173.60		
Administration	28.00		
Education and Research zone	105.69		
Open Space	155.29		
Transportation Facilities	8.71		
Utility Services	21.14		
Health Services	23.89		
Community Facilities	23.89		
Urban Deferred	249.58		
Circulation Network, Agriculture and Water Body		227.13	9.10
Pourashava Area		**2495.83**	**100.00**

Source: Estimation by the consultants based on the standard provided by the PMO, UTIDP.

** Assumed net density 50 persons per acre.*

CHAPTER – 7

LAND USE ZONING POLICIES AND DEVELOPMENT STRATEGIES

Chapter – 7
LAND USE ZONING POLICIES AND DEVELOPMENT STRATEGIES

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

7.1 Broad Planning View of Structure Plan

Chhatak is one of the most important Pourashava in Sunamganj District. It is a very well known and old urban center of the region. It is not very far from Sylhet Divisional city. Having large industrial establishments within the pourashava area it has great influence to the region and surroundings of the pourashava. This is why the Structure Plan envisions the pourashava as an industrial town. With more industrial development this pourashava has the potential to become a large city in future. So it is expected that agglomeration of urban activities will happen here. Density of population will rise and the main earning source of the people will be industrial activities.

7.2 Zone of Structure Plan Area

To guide long term growth within the Structure Plan Area by means of demarcation of the future growth areas and indication of potential locations of major development zones are broadly classified into eight categories. Total area of Structure Plan is 3094.59 acre which is more than the existing administrative area of the pourashava. This is to provide good accessibility and ensuring control over the surrounding area of the pourashava.

Table 7.1 shows the policy zones of Structure Plan, its area and percentage coverage. Details of the description of structure planning zones are given in the following paragraphs. Map 7.1 shows the structure plan of Chhatak Pourashava. A larger map is attached with the report in Appendix – 1.

Table 7.1: Policy Zones of the Structure Plan of Chhatak Pourashava

Zoning	Description of the Zone	Area (acre)	%
Core Area	This area is also known as built-up area. This is defined as the area which has the highest concentration of services; it also has the highest population concentration and density. It will absorb most population growth during the Land use Plan (2011-2021) period.	169.75	5.49
Fringe Area	This zone is developing areas which will take further decades to reach the population densities of the urban core area. Low initial densities in these areas do not justify supply of a full range of services as they will initially be underused. However, it is essential that planning and reservation of rights of way, at least for primary networks, be undertaken soon to enable provision when justified by increased density levels and allowed by resources.	745.19	24.08
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.	74.93	2.42
New Urban Area	This zone will be the required additional area for future planned urban development as per population projection. New facilities and	491.57	15.88

Zoning	Description of the Zone	Area (acre)	%
	services like road, drains, footpath, waste transfer station and other civic services will be provided. This area is proposed to grow within 2031.		
Agriculture	Agricultural land (also *agricultural area*) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. The land under annual crops, such as cereals, other technical crops, potatoes, vegetables, and melons; also includes land left temporarily fallow; land under permanent crops (e.g., fruit plantations); areas for natural grasses and grazing of livestock.	867.58	28.04
Water body	Water body containing an area equals to or more than 0.25 acres including those of khal, irrigation canal and river will be treated as this category.	454.08	14.67
Major Circulation	Major circulation contains major road network and railways linkage with regional and national settings.	191.24	6.18
Hill	In this zone any kind of development like structure, road etc. is prohibited. This zone includes environmentally vulnerable hilly area.	100.25	3.24
Total		**3094.59**	**100**

Source: Structure Plan of Chhatak Pourashava, 2013

7.2.1 Core Area

Core area is the built-up area of the pourashava. It has the highest concentration of services like the Chhatak Pourashava Office, main commercial area, Chhatak Thana etc. The Chhatak-Sylhet highway runs through this area. It covers a total of 169.75 acres (5.49%) land of the Structure Plan Area. It will be the main location of interest for business purposes with all the necessary services in the future. Core Area will be located in the Chhatak Bazar area. Figure 7.1 shows the location of this zone.

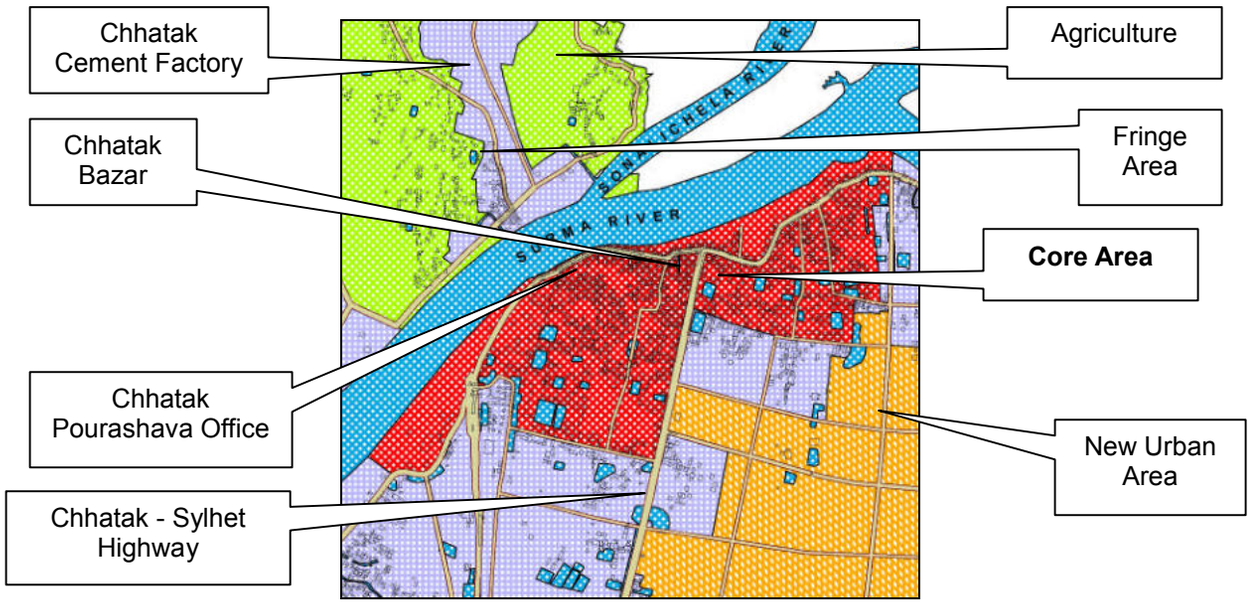


Figure 7.1: Core Area at Chhatak Bazar

7.2.2 Fringe Area

Fringe Area is urban area that has probability of converting into Core Area in the future. A total of 745.19 acre (24.08%) area is proposed under this zone. In the Structure Plan, Fringe Area is distributed throughout the pourashava area. It is shown in Map 7.1.

7.2.3 Peripheral Area

A Peripheral Area is proposed in the southern extension that is proposed near Dakshin Nijgaon mouza. This area is proposed to include an existing village. The following figure shows the Peripheral Area of Chhatak Pourashava.

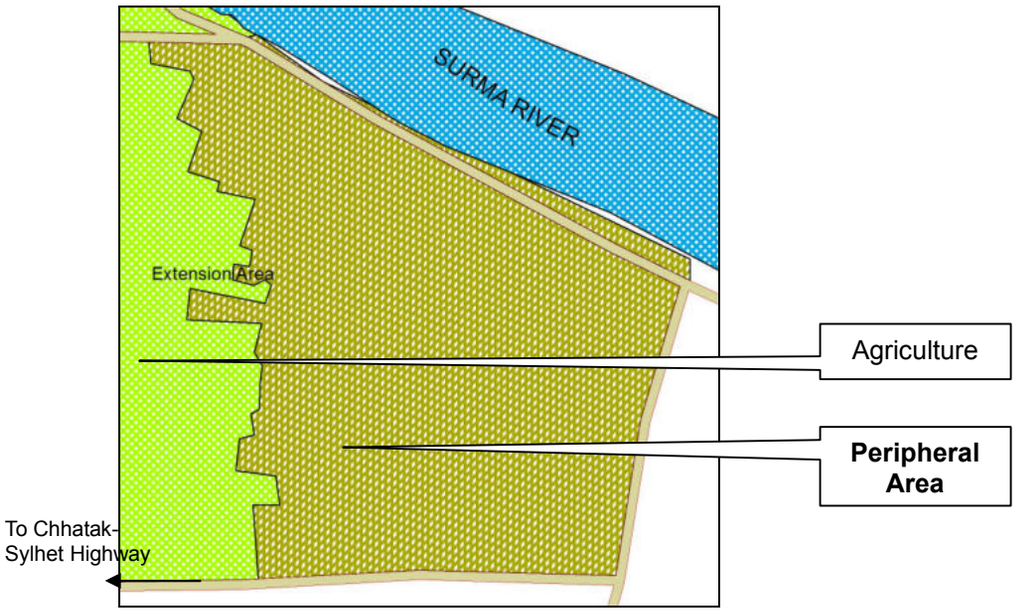


Figure 7.2: Peripheral Area in the proposed extension area

7.2.4 New Urban Area

Three major 'New Urban Area' have been proposed in the Structure Plan of Chhatak Pourashava. The largest one is located in the present agricultural land located at between Mogalpara and Chhatak – Sylhet Highway. The second one is located at the proposed extension located at the southern part of the pourashava. And the third and the last one of the New Urban Area is located at Kumna Mouza in Ward No. 4. Figure 7.3 and 7.4 shows the New Urban Area.

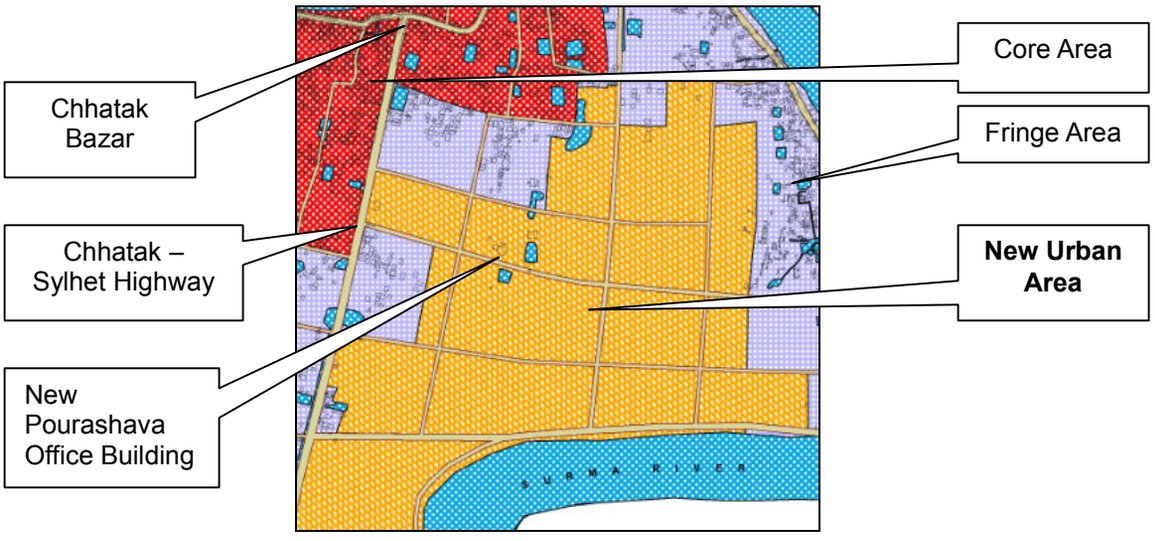


Figure 7.3: New Urban Area near Mogalpara

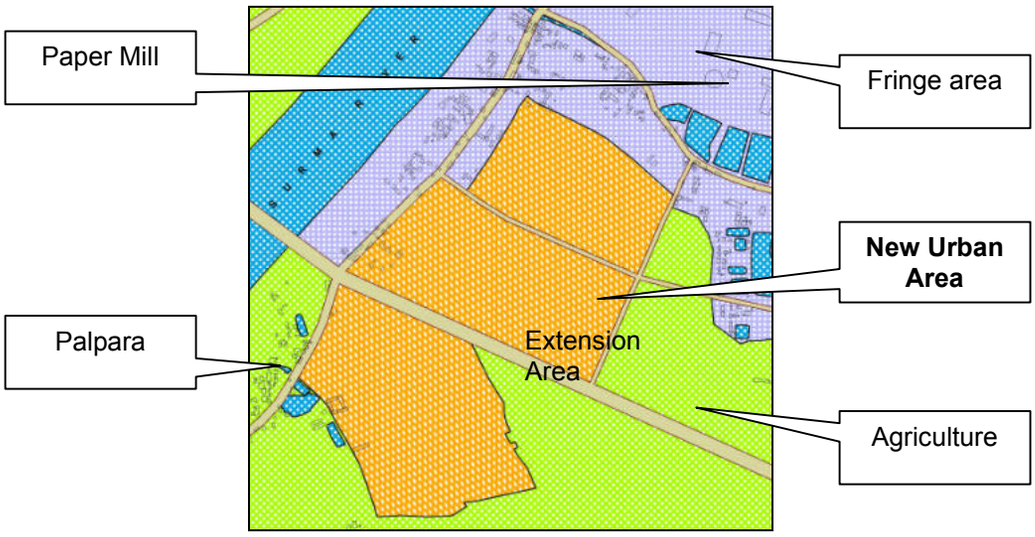


Figure 7.4: New Urban Area at Kumna Mouza in Ward No. 4

7.2.5 Agriculture

About 28% of the Structure Plan area is kept under this zone. It will help retaining the existing rural characteristics of the pourashava and thus reduce environmental pollution incurred by the future industrial activities.

7.2.6 Water body

Total 454.08 acre area, which covers 14.67% of Structure Plan area, is declared as water body (Map 7.1). It includes water bodies containing an area equals to or more than 0.2 acre and also those of khal, irrigation canal and river. The water bodies will be used as reservoir of water in the future and also as an important component of the drainage network.

7.2.7 Major Circulation

This zone is a linear one including the proposed major roads. In the Structure Plan a comprehensive network of road is designed. This network will help easy access to various parts of the pourashava and beyond. A total of 191.24 acre land is proposed under this zone.

7.2.8 Hill

This zone includes the areas which are environmentally vulnerable to be developed in the future. The existing condition will prevail here during the Structure Plan period. The hilly areas at the northern part of the pourashava in Ward No. 1 are proposed under this zone.

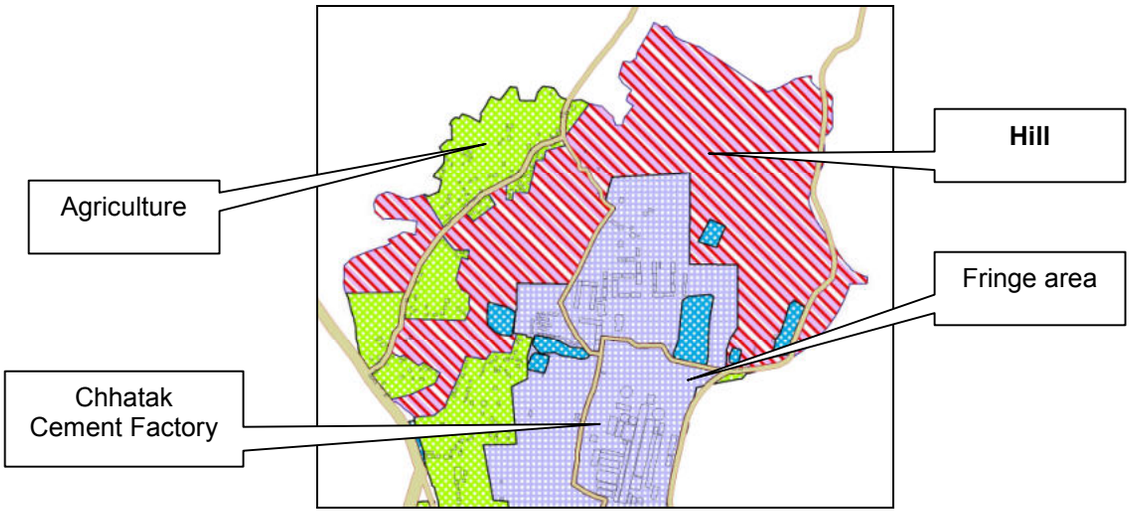
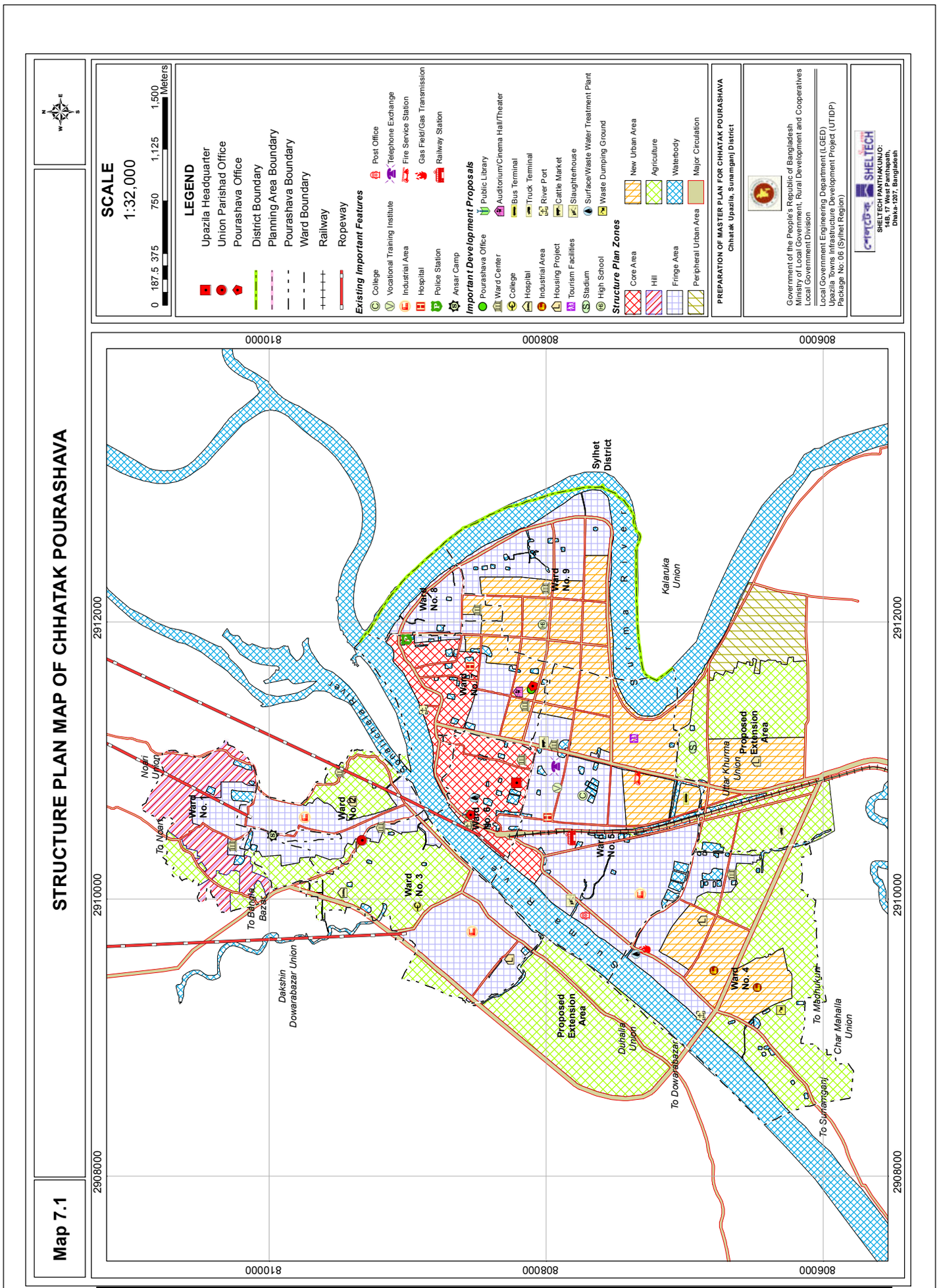


Figure 7.5: Hill near the Chhatak Cement Factory


Map 7.1
STRUCTURE PLAN MAP OF CHHATAK POURASHAVA
SCALE
1:32,000
0 187.5 375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Important Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
High School
Public Library
Auditorium/Cinema Hall/Theater
Bus Terminal
Truck Terminal
River Port
Cattle Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Structure Plan Zones
Core Area
Hill
Fringe Area
Peripheral Urban Area
New Urban Area
Agriculture
Waterbody
Major Circulation
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
2908000
2910000
2912000
806000
808000
810000
Sylhet District
Kalaruka Union
Utar Khurma Union
Proposed Extension Area
Duhalia Union
Char Mahalla Union
Daksin Dowarabazar Union
Nogri Union
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
To Nogri
To Bazar
To Dowarabazar
To Madhukun
To Sunamganj
Kalantiabara River
Surma River

7.3 Strategies for Optimum Use of Urban Land Resources

7.3.1 Optimum Use of Urban Land Resources

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

Table 7.2: Policy for Optimum Use of Urban Land Resources

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

7.3.2 Plans for New Area Development

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

Table 7.3: Policy for New Area Development

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

7.3.3 Areas for Conservation and Protection

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

Table 7.4: Area for Conservation and Protection

Type of Land	Means of Implementation	Implementing Agency
Loss of Productive Agricultural Land The Master Project has a vast area of agricultural land in the northern side of this project. After implementation of the project, environment of agriculture will be converted into un-productive urban and semi-urban area	The EIA Guidelines of DOE emphasized on the avoidance of productive agricultural land for any development project. Therefore, it will be wise to consider more economical use of land to avoid fertile lands. The town expansion and land acquisition should be based on the growth rate of population. According to population projection for the year 2031, the present residential land use area will grow with increasing density. So a large share of agricultural land can be spared at least for the time being.	-Chhatak Pourashava -DOE.
Low Land, Pond and Drainage Path A total of 180 ponds with an area equal or more than 0.25 acres within the Pourashava is declared as retention area. In no way permission for filling up of these ponds should be given. Pourashava should acquire these ponds at suitable time to use them for retention and emergency use.	This area is declared as water body in the Master Plan. As per the guideline of Wetland Conservation Act 2000, this area will be conserved as water body. According to population projection for the year 2031, the present residential land use area can be developed with increasing density up to this year. So a large share of water body can be spared.	-Chhatak Pourashava -Water Development Board
Historic Sites: All the historic sites in Chhatak Pourashava.	The historic sites should be preserved. Pourashava authority will form a committee to preserve these areas from encroachment when the Department of Archaeology will be responsible for its renovation.	– Chhatak Pourashava – Department of Archaeology

7.4 Policies for Development

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

7.4.1 Policies for Socio-economic Sector

Population

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

Strategy:

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

Table 7.5: Policy for Population Sector

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

Economic Development and Employment Generation

Economic development of any place is associated with generation of employment. The generation of employment depends on the rate of investment in various sectors of an economy. An urban economy of any town starts building up with investment in the basic sector that leads to the building up of the non-basic sector. Chhatak has large investments in industrial activities. Some important industries of the country are located here in the pourashava. There is a lack of small scale industries there.

Strategy:

- Creating basic sector investment climate and leading the local economy forward through promotion of Small and medium Enterprises (SME).
- Creating suitable environment to establish large scale industries by channeling funds to establish good infrastructure network.

Table 7.6: Policy for Economic Development and Employment Generation

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

Housing

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

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

Strategy:

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

Table 7.7: Housing Sector Improvement

Policy	Executing Agency
Policy House/1: Provision of necessary services and facilities to promote housing at private sector.	-Ministry of LGRDC -Chhatak Pourashava
Justification: It is more difficult to provide housing on public sector initiatives, as it involves funding and land acquisition that takes a long time.	

Policy	Executing Agency
By providing infrastructure and services, general people can be encouraged to build their own houses.	
House/2: Housing zone land owners can be involved in a participatory development approach, where Pourashava will provide infrastructure and the cost will be shared by land owners.	-Ministry of LGRDC -Chhatak Pourashava

Social Amenities and Community Facilities

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

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

Strategy:

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

Table 7.8: Social Amenities and Community Facilities

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

7.4.2 Physical Infrastructure Sector

Transport

By far, transport is the most important means to revitalize an urban centre. Intra and inter urban transportation facilities create economies of scale for prospective investors and enables easy and comfortable mobility of the residents. Easy and cheaper transportation of raw materials and finished goods create good investment climate for manufacturing enterprises that lead to development of the

service sector firms. New employment generates and the non-basic sector expands leading to thriving urban centre. To create transportation facilities, quality inter-Upazila and inter-District road network will have to be created that makes movement faster and easy. With good transport infrastructure, economic development may become attractive. Besides, quality of local roads will have to be upgraded to encourage people live in the town. Once population starts increasing, it will expand local consumer market and will attract new investments in consumer goods production.

Strategy:

- Creation of efficient communication for easy transportation of goods and passengers within and beyond the town.

Table 7.9: Policy for Transport Sector

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

Utility Service:

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 Pourashava.

Strategy:

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

Table 7.10: Policy for Utility Services

Policy	Executing Agency
Policy-Utility/1: Exploration of alternative sources of water to ensure sustainable supply.	- LGED - Chhatak Pourashava
Justification: Amid constant rise of urban population, it is time to explore alternative sources of water like, rain water harvesting and surface water supply.	
Policy-Utility/2: Involvement of beneficiaries in solid waste management.	- Chhatak Pourashava, - NGOs and CBOs
Justification: Involvement of beneficiaries in solid waste management will make the operation more effective and reduce financial	

Policy	Executing Agency
responsibility of the Pourashava.	
Policy-Utility/3: Exploring re-use and recycling of waste materials to extract resources.	- Chhatak Pourashava, - NGOs and CBOs
Justification: Re-use and recycling of waste materials will produce resources and reduce cost of waste management.	
Policy-Utility/4: Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.	- LGED - Chhatak Pourashava - NGOs and CBOs
Justification: Motivation will encourage people to adopt healthy sanitation and reduce health risks.	
Policy-Utility/4: Protection of natural drainage system and preparation of hierarchical drainage network.	- LGED - Chhatak Pourashava
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.	

7.4.3 Environmental Issues

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

Natural Resources

The Pourashava is not endowed with many natural resources that can be conserved. Among the meager natural resources that are available, 919 numbers of ponds and 9.11 km of natural drainage canals can be mentioned. These resources need to be protected and conserved to ensure sustainability in drainage and water supply of the Pourashava.

Strategy:

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

Table 7.11: Policy for Natural Resources

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

Environmental Protection

It is necessary to protect the environment of the pourashava from future pollution as there is no mentionable pollution found in the area. That's why policies should be given to continue this condition in the future.

Strategy:

- Preservation and designation of open spaces for ensuring ambient air quality.
- Proper management of waste generated in the pourashava.

Table 7.12: Policy for Environmental Protection

Policy	Executing Agency
Policy-Environment /1: All existing playgrounds, parks must be preserved and new parks, playgrounds must be designated in the Master Plan.	- Chhatak Pourashava
Justification: This will ensure the good air quality in the Pourashava area.	
Policy-Environment /2: Waste transfer station and dumping site must be developed and maintained by the pourashava.	-Chhatak Pourashava
Justification: This will ensure good environmental condition in the pourashava.	

Chapter – 8

IMPLEMENTATION ISSUES

Chapter – 8
IMPLEMENTATION ISSUES

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

8.1 Institutional Capacity Building of the Pourashava

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

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

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

The present plan package imposes a large number of development projects on Chhatak Pourashava for implementation. Pourashava will not only be the custodian of the plan, it will also directly implement much of the development projects. Besides, it will also be responsible for monitoring and implementation of the development projects by other urban development and service giving agencies. This situation calls for strengthening of the existing capability of Pourashava.

8.1.1 Staffing and Training

As a traditional system of the Pourashava, engineer and secretary are appointed directly by the Ministry of Local Government and other staffs are appointed locally through the approval of the Ministry after the advertisement on the newspapers. In Chhatak Pourashava, the revenue income is too low. That's why it is not capable to pay the salary of all the officials and staffs. The salary is

recovered from the government grant and BMDF allocation. This is the main reason for under staffing of the Pourashava.

There is no proper arrangement for staff training. As a result, the staffs are mostly unskilled. They can not deliver proper service to the citizens.

8.1.2 Lack of Automation

Most works in the Pourashava are done manually. Such practice delays works and deprives the citizens from services. This is also a source of mal-practice and corruption. Modern office and working equipment should be installed. Use of modern technology will increase efficiency in planning and record keeping, finally expedite decision making process.

8.1.3 Town Planning Capacity

8.1.3.1 Institutional Framework (Proposed by UGIIP, LGED)

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

1. **Engineering Div** : a) Development, maintenance & quality control Section
   b) Water supply, sewerage, drainage and waste disposal Section
2. **Planning Div** : a) IT Section
   b) Planning Section
   c) Beautification and recreation Section
3. **Administrative Div** : a) Administrative Section
   b) Revenue Section
4. **Accounts Div** : a) Budget, accounts and Audit Section
5. **Public Health Div** : a) Food and Beverage Control Section
   b) Health and Public Welfare Section
   c) Pourashava Hospital and Clinic Section (optional)

According to the divisions and their relevant sections the manpower should be set up for each category of Pourashava. The above committee has also chalked out the detail scope of work for each division. The scope of proposed Planning Division is given in Figure 8.1.

8.1.3.2 Lack of Pourashava Town Planning Capacity

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

After detail study the Bangladesh Institute of Planners (BIP) recently proposed an organogram of Planning Section/Division for different categories of Pourashavas. Analyzed this proposed organogram the consultant has suggested the following modified Organogram for Chhatak as a B class Pourashava. Figure 8.2 shows the major division and their inter linkage for an “A” class Pourashava.

TOWN PLANNING DIVISION

Information & Technology Section	Planning Section	Recreational Section
Activities of Information Technology -Information and Technology Management **Task to Execute Information and Technology Management** -Establishment of network system among all the divisions of the Pourashava -Providing assistance and technical support (software and hardware support) for accounting, tax assessment, tax collection, preparing water supply bill etc. -Establishing, marinating and updating of Pourashava website. -Providing support for MIS. -Establishing GIS set up and database for practicing in Pourashava activities.	**Planning Functions** -Master Plan -Planning Development Projects -Land Development Projects -Building Control -Social Development Plan -Commercial Projects **Steps to execute the functions** **Master plan:** -Preparation of Master Plan, establishing legal basis of the Master Plan and execution of development control on the activities as per Master Plan -Review of Master Plan on a regular interval. -Controlling development projects in excess of land earmarked in the Master Plan. -Preparing and implementing phase-wise development projects, social development projects, commercial projects etc. -Undertaking development projects and controlling implementation of those projects in terms of transport network planning and drainage Master Plan and initiatiation of updating those projects on a regular basis each year. **Building Control** -Approval of design for construction/reconstruction of buildings and collection of fees as per the rules. -Implementation of control system related to inspection of building construction and completion and change in building design.	**Functions Concerning Recreation** -Govt. wetland, govt. fishing grounds, pond and low lands; -Tree Plantation, Afforestation; -Park, Playground, open spaces; -Beautification (Landscaping) **Task to execute the works** **Water Bodies and Low Lands:** -Take initiatives to establish infrastructure and facilities for recreational purpose by using govt. wetland, fishing ground, pond and ditch within the Pourashava. -Hand over the responsibility to the appropriate private sector management and fix proper charge fee and ensure its collection which is require for maintaining and operational management of wetland facilities. **Landscaping** -Construction and maintaining aesthetic beautiful substance, sculpture, fountain etc in suitable place of the town which express the local heritage, art, culture, history and education. -Take beatification activities, implementation and maintenance of road side area, major intersection, open space, Pourashava office premise area, in front of important establishment and open space in front of different govt. organizations. -Initiate the activities for agreement with different private bank, insurance, mobile company and other different organizations for the beatification of the town. **Environmental Preservation, Park etc.** -Arrange tree plantation program each year within the Pourashava, afforestation, arrange tree exhibition and take initiatives and implementation for inspiration of tree plantation within Pourashava. -Take initiative and preserve park, playground and open space within the Pourashava.

Figure 8.1: Scope of Work for Planning Division

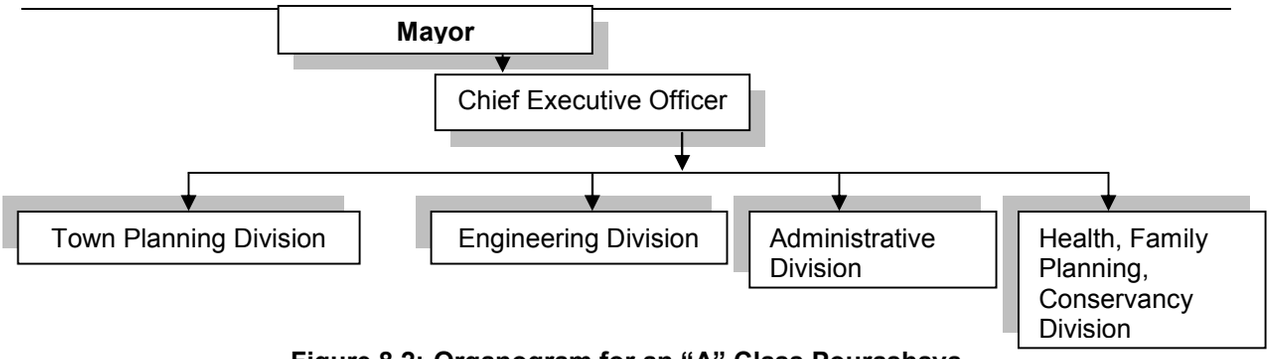


Figure 8.2: Organogram for an "A" Class Pourashava

Again, Figure 8.3 shows Town Planning Division for a "A" class Pourashava. Here four posts for professional personnel, urban planners are created. Urban planner will be the head of the division and three other planners will appointed as assistant urban planners. These four planners will play the leading role in Town Planning Division for the Pourashava. And ensure the planned development of the Pourashava planning.

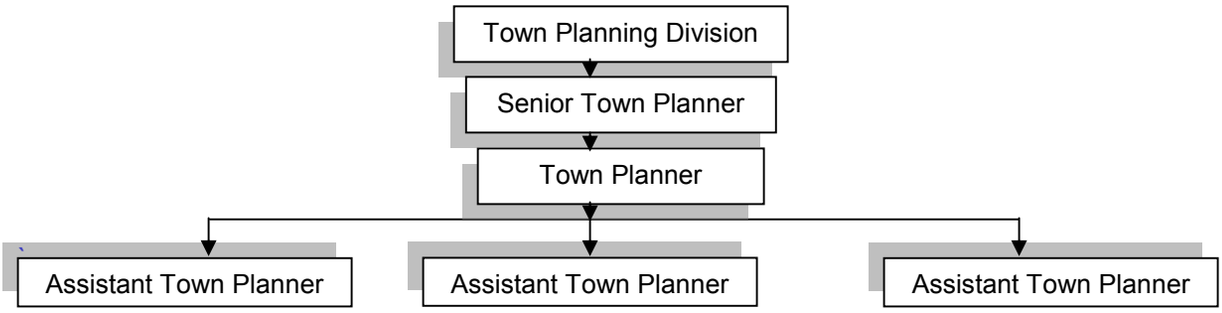


Figure 8.3: Proposed Town Planning Division for "A" Class Pourashava

Distribution of Plans Including Report

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

Support for Planned Urbanization

For creating planned urbanization, Pourashava may:

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

Community Mobilization Program

Following are the community mobilization support activities:

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

- Support to accelerate the Pourashava Standing Committee activities.

Urban Governance Improvement Action Programme (UGIAP)

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

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

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

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

Citizen Awareness and Participation

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

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

Urban Planning and Environmental Improvement

Master plan is a guideline and detail urban planning activities are being prescribed in the plan. To produce a livable environment in the Pourashava premises, following initiatives should be taken:

- Recruitment of staffs and establish Planning Department related to administrative structure, meeting and meeting minutes preparation.
- Master Plan, Base Map verification and update landuse plan preparation.
- Approval of building plan and development control.
- Introduction of environment and public health activities.

Urban Poverty Reduction

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

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

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

Income Generating Activities

The income generating activities include:

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

Transparency and Accountability

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

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

8.1.4 Legal Aspects

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

8.1.5 Good Governance in Legal Provisions

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

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 Pourashava.

The Pourashava/Municipal Act/Ordinances prepared at different times since 1960's have iterated for the preparation of Master Plan by the Pourashava/Municipality for its planned development. So far

urban local government Ordinances/Acts made in 1967, 1977, 2008 and 2009, all suggested for planned development. The Local Government (Pourashava) Act 2009 has made the provision of having a Master Plan prepared by a Pourashava within five years of its inception. The function of the Pourashava also includes that it ensures planned development following the rules of the act. But there is no provision for public participation in the Act. In all these legal documents, people's role has been ignored which is the violation of the norms of good governance.

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

8.1.6 Financial Issues

Governance in Chhatak Pourashava

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

The Ministry of LGRD and Cooperative has undertaken a number of projects in respect of establishing governance in upgrading Pourashava 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 Pourashava accounts staff for enabling introduction of automation in accounts system. But all these services have not yet reached Chhatak Pourashava.

Revenue Management

The Pourashava still follows a traditional management system in tax collection and revenue management though a scheme of computerized automotive financial system has already been introduced in this Pourashava. Assessment section is responsible to asses the tax of the Pourashava and tax collection, and license and bazar section are responsible to collect the tax of the Pourashava. Tax automation system is not established here yet. The public is mainly informed about tax collection during the presentation of annual budget. They may, however, get information from the councilor or Pourashava accounts office.

Pourashava's Financial Capacity and Plan Execution

The main focus of Pourashava financial governance is to establish automation in entire financial management. This includes computerization of accounts system, holding tax management, and billing of different service charges. Software for above functions will be supplied and installed in the Pourashavas covered by financial automotive projects. The projects will also provide training to the relevant staff for functioning of the systems. With the implementation of these projects people will be able to know instantly about the status of their tax payment, bill payment, and licensing. This will not only make the functions of the Pourashava easy, but also will free the citizens for paying bribe, and experiencing hassle.

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

8.1.7 Monitoring, Evaluation and Updating

An important step for implementation of the Plan is land use clearance. Land use clearance will be needed for every physical component whether it may be public or private. The Pourashava will provide such clearance. To ensure the future development according to the proposals prescribed in the Urban Area Plan and Ward Action Plan, the Pourashava must maintain the following guidelines during the land use clearance.

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

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 Pourashava. But Chhatak Pourashava 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 Pourashava, monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing as and when it is required.

8.1.8 Periodic Review and Updating

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

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

8.2 Resource Mobilization

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

8.3 Concluding Remarks

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

PART – B
URBAN AREA PLAN

Chapter – 9

INTRODUCTION TO URBAN AREA PLAN

Chapter – 9
URBAN AREA PLAN

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

9.1 Goals and Objectives of Urban Area Plan

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

The preparation of Master Plan for Chhatak Pourashava is aimed towards its future development and covers the areas that are likely to become urban in future. Aims of Master Plan are:

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

9.2 Methodology and Approach to Planning

The base map supporting for land use survey was obtained from the physical feature survey that contained all categories of physical features within the planning area (Chapter 3 of Survey Report). During physical feature survey, all structures and the functions of principal buildings were picked up and depicted on the map. The physical features were superimposed on a mouza map and printed for land use survey on the map. The map was carried to the field by investigators for detailed plot to plot land use survey (Chapter 4 of Survey Report). The field investigators carrying the map visited each and every plot and the structures therein and noted their uses in writing and marking them on the map with coloring pencil. They also verified the land use names put during the physical feature survey. Back in the office, the common land uses of plots were delineated in the map as per land use format given in the ToR. The delineated zones were then digitized and a new land use map was prepared for the entire planning area. After land use demarcation, field checking was done to correct possible errors. On the basis of these collected survey data and after projection of future needs the Urban Area Plan is prepared on a plot to plot basis. Thus it becomes a more rigid plan than the Structure Plan. The objectives of the Urban Area Plan have been attained through:

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

9.2.1 Delineation of Planning Areas

For delineation of Master Plan area, it is necessary to identify the possible future urban growth locations. The objective of project area demarcation is to determine the boundary of the area and mark

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

Table 9.1: Ward-Wise List of RS Mouza Sheets within Pourashava Area

Ward No.	Mouza Name	JL No.	Sheet No.	Area (Acre)
Ward No. 1	Fakir Tilla	71	2	166.06
			4	4.53
Ward No. 2	Fakir Tilla	71	2	3.74
			3	77.10
			4	54.88
Ward No. 3	Fakir Tilla	71	2	37.87
			3	97.05
	Noari	75	0	172.93
	Tangagaon	76	0	19.67
Ward No. 4	Ganarkhai	213	0	119.31
	Kumna	215	0	313.04
	Purba Kamar Gaon	219	0	0.00
	Uttar Madhabpur	220	0	77.45
Ward No. 5	Noari	75	0	191.97
	Tangagaon	76	0	20.82
	Kumna	215	0	108.04
	Purba Kamar Gaon	219	0	221.60
	Dakshin Nijgaon	225	1	11.25
Ward No. 6	Noari	75	0	110.14
	Baghbari	216	1	17.24
Ward No. 7	Baghbari	216	1	42.70
	Mondali Bog	217	00 Kha	202.87
Ward No. 8	Mondali Bog	217	00 Kha	82.47
Ward No. 9	Tatikona	218	0	225.58
	Dakshin Nijgaon	225	1	117.53
Total				**2495.83**

Source: Field Survey, 2010

9.2.2 Content and Form of Urban Area Plan

The Urban Area Plan is presented in both map and textual format. The plan map is presented in 1:1980 or 1 inch to 165 feet scale, superimposed on latest cadastral map having plot boundaries and plot numbers within mouzas. The plan is accompanied by an explanatory report supported by necessary figures, maps and data. The report explains the various plan proposals and other components of the plan. Total area under Urban Area Plan is equal to the Structure Plan area of 3094.59 acre. It is more than the existing pourashava area which includes proposal for two extension areas.

The Urban Area Plan of the Master Plan of Chhatak Pourashava contains several components. These are

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

Chapter – 10

LAND USE PLAN

Chapter – 10
LAND USE PLAN

The Land Use Plan is the main part of the Urban Area Plan and is planned for the period of first 10 years. The proposals in the Land Use Plan will be implemented through the 1st and 2nd phase development programs 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.

10.1 Existing and Proposed Land Use

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

10.1.1 Existing Land Use

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

The land uses of the project area are shown in Table 10.1. In the land use pattern of the Pourashava, 16 types of land uses are found. It is clearly evident from the table that two types of land uses are dominant at Chhatak, of which agricultural land use occupies 40.77% of the Pourashava area, followed by water body 18.50. Other major uses area residential (13.89%) and industrial (11.52%).

Table 10.1: Existing Land Use Classification of Chhatak Pourashava

Land Use Type	Area (Acre)	%
Agricultural	1017.56	40.77
Circulation Network	59.15	2.37
Commercial	25.93	1.04
Community Service	8.36	0.34
Educational Facility	12.18	0.49
Governmental Services	46.03	1.84
Industrial	287.44	11.52
Miscellaneous	96.22	3.86
Mixed Use	10.73	0.43
Recreational Facilities	6.37	0.26
Residential	346.78	13.89
Service Activity	8.87	0.36
Transport and Communication	0.99	0.04
Urban Green Space	12.62	0.51
Vacant Land	94.86	3.80
Water Body	461.74	18.50
Total	**2495.83**	**100.00**

Source: Land use Survey, 2010.

10.1.2 Estimation of Land Requirement

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

Housing

Housing is the most significant segment of urban development scenario. The future housing area need to be based on a recommended planning standard of 150 persons per acre. With this standard, the estimation shows, the land required to accommodate total projected population of 69439 in the year 2031 will be 694.39 acre. But survey of existing land use has identified 346.78 acre of land currently under housing use with a high density of population (net density about 125 persons per acre).

Table 10.2: Estimation of Housing Land Requirement

Use/Facility	Recommended Standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
General Housing	150 persons/acre	694.39	346.78	347.61
	100 persons/acre	347.20		

Source: Land use survey 2010 and estimation by the consultants

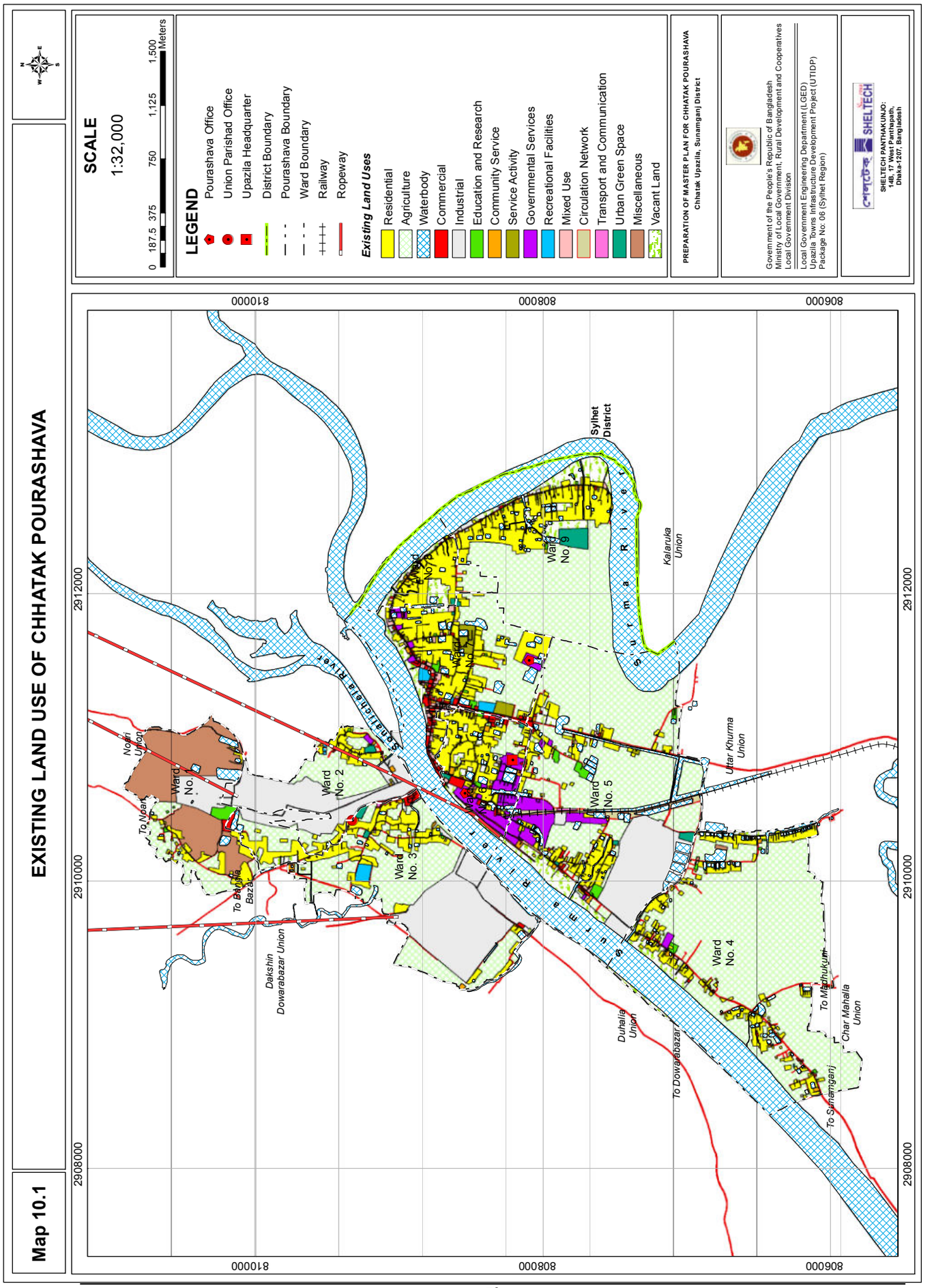
Commerce and Shopping

Market facilities are usually provided privately on commercial basis depending on the trend of sale of goods. So it is not possible to fix a standard or project actual area for these services. The standard for commercial use can only be applied if ever these facilities are provided by the Pourashava. However, for the sake of current planning, land can be earmarked as per standard at appropriate locations, where commercial facilities may be developed privately or publicly. The estimated need of commercial acre in 2031 is 90.13 acre. At present there is a total of 25.93 acre land under commercial activities. So, an additional 64.20 acre land is required to fulfill the need of the citizens in 2031. Table 10.3 shows the detail.

Table 10.3: Estimation of Land Requirement for Commerce and Shopping

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Wholesale market	1.00 acre/ 10000 population	6.94	25.93	64.20
Neighborhood/Local market	1.00 acre/per neighborhood Market	9.00		
Retail sale Market	1.0 acre/ 1000 population	69.44		
Super Market	1.50 – 2.50 acre/per super market	2.50		
Total		**90.13**	**25.93**	**64.20**

Source: Land use survey 2010 and estimation by the consultants


Map 10.1
EXISTING LAND USE OF CHHATAK POURASHAVA
SCALE
1:32,000
0 187.5 375 750 1,125 1,500 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
SHELTECH
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
Sylhet District
Kalaruka Union
Uttar Khurma Union
Duhalia Union
Char Mahalla Union
Dakshin Dowarabazar Union
Noari Union
To Noari
To Bazar
To Dowarabazar
To Madhukunj
To Sunamganj
Surma River
Sonatilakha River
2912000
2910000
2908000
806000
808000
810000

Industry

According to approved planning standard, the total land for industries is estimated to be 173.60 acre with 104.16 acre for small scale industries and the remaining 69.44 acre for cottage industries. No additional land is required for industrial activities. Table 10.4 shows the details.

Table 10.4: Estimation of Land Requirement for Industries

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Small scale	1.50 acre /1000 population	104.16	287.44	-113.84
Cottage/agro-based	1.00 acre /1000 population	69.44		
Total		**173.60**	**287.44**	**-113.84**

Source: Land use survey 2010 and estimation by the consultants

Education

Estimation of land according to standard indicates that there will be a land requirement of 105.69 acre to accommodate educational facilities by the year 2031. If the already available 23.08 acre of existing land uses under various education facilities is deducted from it then, there will be need of additional 82.61 acre of land for education facilities as shown in Table 10.5.

Table 10.5: Estimation of Land Requirement for Education Facilities

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Add. Requirement
Nursery	0.5 acre/10,000 population	3.47	0.52	2.95
Primary School/ kindergarten	2.00 acre/5000 population	27.78	3.55	24.22
Secondary/High School	5.00 acre/ 20,000 population	17.36	5.66	11.70
College	10.00 acre/20,000 population	34.72	10.15	24.57
Vocational Training Center	5 - 10 acre / Upazila	5.00	2.24	2.76
Other	5.00 acre/ 20,000 population	17.36	0.95	16.41
Total		**105.69**	**23.08**	**82.61**

Source: Land use survey 2010 and estimation by the consultants

Health

Health facilities are available to the people of the pourashava but not to the required extend. The Pourashava requires 23.89 acre of land for the health facilities in the end of the Master Plan period of 20 years in 2031. Table 10.6 shows the detail.

Table 10.6: Estimation of Land Requirement for Health Facilities

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Upazila health complex/ hospital	10 -20 acre/Upazila HQ	10.00	4.95	5.05
Health center/ Maternity clinic	1.00 acre/ 5,000 population	13.89	0.86	13.02
Total		**23.89**	**5.82**	**18.07**

Source: Land use survey 2010 and estimation by the consultants

Administration

Estimation of land according to standard indicates that there will be a land requirement of 28 acre to accommodate administrative facilities by the year 2031. If the existing 11.86 acre land under various administrative facilities is deducted, additional 16.14 acre of land for administrative facilities will be required. Table 10.7 shows the details.

Table 10.7: Estimation of Land Requirement for Administration

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Upazila complex	15.00 acre	15	11.39	3.61
Pourashava office	3 – 5 acre	3	0.47	2.53
Jail/Sub-Jail	10 acre/Upazila HQ	10	0.00	10.00
Total		**28**	**11.86**	**16.14**

Source: Land use survey 2010 and estimation by the consultants

Community Facilities

For various community facilities, the total land requirement has been fixed at 23.89 acre. No additional land is required for mosque, church and temple. Table 10.8 shows the details.

Table 10.8: Estimation of Land Requirement for Community Facilities

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Mosque/Church/ Temple	0.5 acre /20,000 population	1.74	7.60	-5.86
Eidgah/ Graveyard	1.0 acre/20,000 population	3.47	15.69	-12.22
Community center	1.00 acre /20,000 population	3.47	0.67	2.80
Police Station	3 – 5 acre/Upazila HQ	5.00	2.06	2.94
Police Box/outpost	1.00 acre/20,000 population	3.47	0.00	3.47
Fire Station	3 – 5 acre/Upazila HQ	5.00	2.09	2.91
Post office	0.5 acre /20,000 population	1.74	0.16	1.57
Total		**23.89**	**28.28**	**-4.39**

Source: Land use survey 2010 and estimation by the consultants

Open Space/ Recreational Facilities

Only 5.23 acre of land is used as playgrounds in Chhatak Pourashava. The total land required for various open space recreation facilities recommended by client stands at 155.29 acre. The facilities include, play field/ground, parks of various categories and stadium/sport complex. Table 10.9 shows the detail.

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

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Play field/ground	3.00 acre/20,000 population	10.42	5.23	5.18
Park	1.0 acre /1000 population	69.44	0.00	69.44
Neighborhood park	1.00 acre /1000 population	69.44	0.00	69.44
Stadium/sports complex	5 – 10 acre/Upazila HQ	6.00	0.00	6.00
Total		**155.29**	**5.43**	**149.87**

Source: Land use survey 2010 and estimation by the consultants

Utilities

A number of utility establishments are required in a town to run services properly. From the standards if is found that a total of 21.14 acre of land is required for supporting the estimated population in the year 2031. This will require additional 16.00 acre of additional land to fulfill the needs.

Table 10.10: Estimation of Land Requirement for Utility Facilities

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Water supply	1.00 acre /20,000 population	3.47	0.00	3.47
Gas	1.00 acre /20,000 population	3.47	0.00	3.47
Solid waste disposal site	1.00 acre /20,000 population	5.00	0.00	5.00
Waste transfer station	4– 10 acre/Upazila HQ	2.25	0.00	2.25
Electric sub-station	1.00 acre /20,000 population	3.47	3.96	-0.49
Telephone exchange	1.00 acre/20,000 population	1.74	0.31	1.43
Fuel Station	0.5 acre /20,000 population	1.74	0.87	0.87
Total		**21.14**	**5.14**	**16.00**

Source: Land use survey 2010 and estimation by the consultants

Transport and Communication

Estimation of land according to standard indicates that there will be a land requirement of 20.74 acre to accommodate transport and communication facilities by the year 2031. Table 10.11 shows the details.

Table 10.11: Estimation of Land Requirement for Transport and Communication

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
Bus terminal	1.0 acre /20,000 population	3.47	0.00	3.47
Truck terminal	0.50 acre /20,000 population	1.74	0.00	1.74
Launch/steamer terminal	1.00 acre /20,000 population			
Railway station	4.00 acre / per Station			
Baby taxi/tempo stand	0.25 acre /one baby taxi/tempo stand	1.00	0.41	2.50

Use/Facility	Recommended standard	Land in Acre		
		Estimation	Existing Land	Additional Requirement
	0.25 acre /one baby taxi/tempo stand			
Rickshaw/van stand	0.25 acre /one baby Rickshaw stand	1.50	0.00	1.00
Total		**8.71**	**0.41**	**8.29**

Source: Land use survey 2010 and estimation by the consultants

10.2 Land Use Proposals

Bangladesh is one of the most densely populated countries in the world. The land area of the country remains static amid continuously increasing population. Such a situation calls for strict regulation to utilize its scarce land resources for non-agricultural purposes. Increase in urban population means more demand for houses, roads, schools, hospitals, factories, bazars, shops, business centers, offices and other service facilities. Providing all these facilities require land and that is at the cost of valuable agricultural land, as the country has hardly any fallow land to accommodate all these land uses. Chhatak Pourashava is a small industrial town with huge density of population. Industrial expansion is evident and possible here in this pourashava. This will require much land and urban services to be provided here. A conservative and rational standard of space use and their proper application in planning, designing and development is, therefore, followed in the land use proposals.

10.2.1 Designation of Future Land Use

Designation of the future land uses in the Land use Plan is an important task of planning as it will ensure the compliance with the Structure Plan guidelines and provide the details of land use pattern along with transport and drainage network and utility lines. The existing uses and new proposals of land uses for future development have been identified and designated on the map for compliance by law. The land use categories with quantity of land required are based on the sector based needs for now and in future. The implementation of the plan will require cooperation and collaboration of relevant authorities and agencies, and the Pourashava being the custodian of the Plan will safeguard the status of the Plan. Map 10.2 shows the Land Use Plan of Chhatak Pourashava. A larger sized map is attached with this report in Appendix - 2.

10.2.2 Land Use Zoning

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

10.2.2.1 Types of Land Use Zoning

In land use zoning, the entire area of a town is divided into suitable land use zones to create congenial and livable environment and thereby enhance land value. In Bangladesh such land use zoning is incorporated as a part of the master plan / land use plan/urban area plan. Before submitting building plans for approval an applicant must secure land use permit from the Pourashava. 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 Pourashava can control,

a) The height of building/structure,

b) The area of a land parcel that must be left vacant, and
c) The use of a buildings and land.

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

Area Zoning

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

Density Zoning

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

Height Zoning

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

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

10.2.2.2 Classification of Land Use Zoning

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

Table 10.12: Proposed Land Use Categories for Urban Area Plan of Chhatak Pourashava

SL.	Land use Category	Remarks	Area (Acre)	%
1	Urban Residential Zone	Urban Residential area is a land use in which housing predominates. These include single family housing, multi-family residential, or mobile homes. Zoning for residential use may permit some services or work opportunities or may totally exclude business and industry. It may permit high density land use.	547.38	17.69
2	Rural Settlement	Rural settlement includes the low dense residential area which is scattered and rural in nature. It may permit only low density uses. Aiming to control the growth in this zone, less service and facilities will be provided.	282.11	9.12
3	Commercial Zone	The land used for commercial activities is considered as commercial land use. These activities include the buying and selling of goods and services in retail businesses, wholesale buying and selling, financial establishments, and wide variety of services that are broadly classified as "business". Even though these commercial activities use only a small amount of land, they are extremely important	81.69	2.64

SL.	Land use Category	Remarks	Area (Acre)	%
		to a community's economy. Commercial land includes established markets and areas earmarked for markets.		
4	Mixed Use Zone	Mixed land use refers to the area without a dominant land use (Residential, commercial, industrial etc.).	33.19	1.07
5	General Industrial Zone	Green and Orange A categories as per The Environment Conservation Rules, 1997	0.00	0.00
6	Heavy Industrial Zone	Other toxic and pollutions Industries (Orange B and Red categories as per The Environment Conservation Rules, 1997)	320.39	10.35
7	Government Office	All Government Offices except large scale service based offices as Civil Surgeon Office, DC Office, Police Box, Police Fari, Police Station, LGED Office, Pourashava Office, Settlement Office, Union Parishad Office, Upazila Headquarter, BADC Office, Fisheries Office, Ansar/VDP Office, Agriculture Office, Zila Parishad Office, Post Office ,Telephone Exchange Office and Other Government Offices.	45.04	1.46
8	Education & Research Zone	All kinds of educational institutes like Primary/secondary/other Schools/ Colleges etc are mentioned to calculate the land use for education and research purpose.	38.13	1.23
9	Agricultural Zone	Agricultural land denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources in agriculture. It includes productive land (single, double and triple cropped), seed bed, fisheries, poultry farm, dairy farm, nursery, horticulture etc.	570.96	18.45
10	Water body	Equal or More than 0.25 acre and justification by the consultant and wet land will merge with water body	452.86	14.63
11	Open Space	Playground, Botanical Garden, Stadium, Zoo etc. (Facilities without or with minimum building structure)	213.50	6.90
12	Recreational Facilities	Facilities other than those mentioned to Open Space and indoor based facilities with designated building structure i.e. Cinema Hall, Theater Hall etc.	0.20	0.01
13	Circulation Network	Road and Rail communication	243.25	7.86
14	Transportation Facilities	Under transport and communication land use both transport and communication services are considered. This category includes airport, bus terminal/ stand, ferry ghat, filling station, garage, launch terminal, post office, passenger shed, telephone exchange, ticket counter, transport office etc.	55.29	1.79
15	Utility Services	Utility services include Overhead Tank ,Power Office/Control Room, Public Toilet, Sewerage Office, Waste Disposal ,Fire Service, Water Pump House ,Water Reservoir, Water Treatment Plant etc.	8.68	0.28
16	Health Services	This land will be used to provide health facility.	17.55	0.57
17	Community Facilities	All community facilities including funeral places and other religious uses	26.42	0.85

SL.	Land use Category	Remarks	Area (Acre)	%
18	Historical and Heritage Site	The entire mentionable historical and heritage site.	0.00	0.00
19	Restricted Area	A Restricted Area is an area where no one but certain people can enter. Here the areas which are not accessible for the general public except some high ranked personnel are considered as restricted area.	1.58	0.05
20	Hill	This is the area where the land level is high to form hills. Any kind of development destroying the hilly natural environment is prohibited.	99.70	3.22
21	Urban Deferred	Optional depending on the Pourashava and the Consultant's judgment	56.67	1.83
22	Forest	Designated Forest Area	0.00	0.00
23	Beach	Sea Beach	0.00	0.00
24	Miscellaneous	Any other categories which are not related to above 23 categories.	0.00	0.00
Total			**3094.59**	**100.00**

Source: Land Use Plan of Chhatak Pourashava

According to the proposed land use zoning categories shown in table 10.12, the amount of land for each land use category was calculated. 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 Miscellaneous Use for the corresponding land use category and shall not be permitted unless unanimously decided otherwise by the appropriate authority. In such situations, the use shall get permission in the category of New Use. The following is a short description of recommended land use zones. Land Use Plan of Chhatak Pourashava is given in Map 10.2 and Appendix – 2.

The amount of lands associated into various land use category varies from existing to proposed Land Use Plan. To preserve the rural characteristics of the residential pattern a new type of residential land use is included into the land use plan termed Rural Settlement. The higher amount of agricultural land will ensure less reduction of agricultural land. This will help retaining the delicate natural environment of the pourashava. Comparison of existing and proposed land use is shown in the following table.

Table 10.13: Comparative Scenario of Existing and Proposed Land Uses of Chhatak Pourashava

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	346.78	13.89	Urban Residential Zone	547.38	21.93
			Rural Settlement	209.02	8.37
Commercial	25.93	1.04	Commercial Zone	81.69	3.27
Mixed Use	10.73	0.43	Mixed Use Zone	33.19	1.33
Industrial	287.44	11.52	General Industrial Zone		
			Heavy Industrial Zone	320.35	12.84
Governmental Services	46.03	1.84	Government Office	45.04	1.80
Educational Facility	12.18	0.49	Education & Research Zone	38.13	1.53
Agricultural	1017.56	40.77	Agricultural Zone	259.38	10.39
Water Body	461.74	18.50	Water Body	443.56	17.77
Urban Green Space	12.62	0.51	Open Space	123.70	4.96

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Vacant Land	94.86	3.80			
Recreational Facility	6.37	0.26	Recreational Facility	0.20	0.01
Circulation Network	59.15	2.37	Circulation Network	200.97	8.05
Transport and Communication	0.99	0.04	Transportation Facilities	39.60	1.59
Service Activity	8.87	0.36	Utility Services	8.68	0.35
			Health Services	17.55	0.70
Community Service	8.36	0.34	Community Facilities	26.09	1.05
Restricted Area	0.00	0.00	Urban Deferred	1.58	0.06
Miscellaneous	96.22	3.86	Hill	99.70	3.99
Total	**2495.83**	**100.00**	**Total**	**2495.83**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

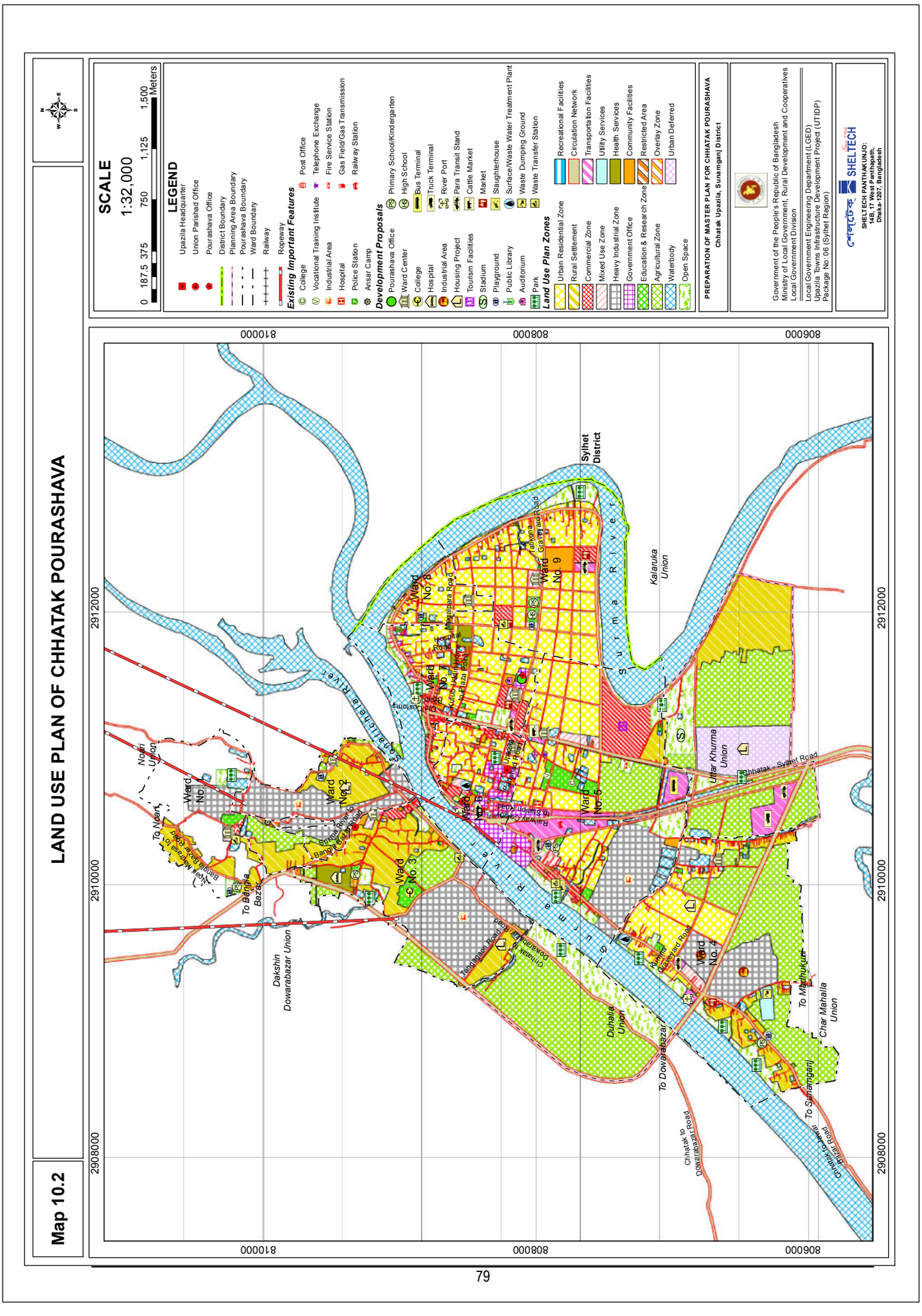
Urban Residential Zone

Urban Residential Zone includes almost the whole existing residential area. The land proposed under this category is less than the requirement calculated in Table 10.2. The requirement will be met including both Urban Residential Zone and the Rural Settlement. A low income housing project is proposed under this zone. It will ensure housing for the lower income people of the pourashava. From the survey it was found that around 20% of the households have income less than 5000 Tk. These families will need housing so that they can provide good input to the future development of the pourashava. Walkup small sized flats with open space and other facilities will be constructed in this area so that the housing need of the lower income households is met. Table 10.14 shows the detail of the proposal.

Table 10.14: Description of Proposed Low Income Housing Project in Chhatak Pourashava

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Low Income Housing Project	38.71	Ward No. 4	Kumna-215(00)	98-101, 110-118, 130-136, 148-155, 157-165, 483, 485-504, 509, 523-588, 590, 614, 666-702, 726, 874-876, 881, 1069, 1070		Land Acquisition	Construction & Establishment
Total	**38.71**						

Source: Land Use Plan of Chhatak Pourashava


Map 10.2
LAND USE PLAN OF CHHATAK POURASHAVA
SCALE
1:32,000
0 187.5 375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Overlay Zone
Urban Deferred
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj District
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Ministry of Local Government, Rural Development and Cooperatives
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Upazila Towns Infrastructure Development Project (UTIDP)
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SHELTECH
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
2908000
2910000
2912000
806000
808000
810000
Sylhet District
Surma River
Kalanka Union
Uttar Khurma Union
Duhala Union
Char Mahalia Union
Dakshin Dowarabazar Union
Nodri Union
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
Chhatak - Sylhet Road
Chhatak to Dowarabazar Road
To Dowarabazar
To Sunamganj
To Madhukunj
To Bangla Bazar
To Nearby Upazila Road
Railway Colony
Railway Station
Old Customs
Kutubi Jame Masjid
Kutubi Main Road
Kutubi Plaza Point
Kutubi Magalbara Road
Kutubi Bazar
Kutubi Bazar Road
Kutubi Graveyard Road
Kutubi Graveyard
Kutubi Kalibarir Road
Kutubi Kalibarir Road
Kutubi Kalibarir Road

Rural Settlement

Most of the Pourashavas have some rural characteristics. So in land use category for UTIDP Master Plan the residential settlements within the agricultural belt are categorized as rural settlements. These settlements have usually temporary type of structures. Rural Settlement will have a total area of 209.02 acre. A total of 2 new Low Income Housing Project is proposed under this zone. These will be used as living place for the labors working in the industries. As these projects are under Rural Settlement, the structure height will not be more than 2 storeys. Table 10.15 shows the details.

Table 10.15: Low Income Housing Project Under Rural Settlement in Chhatak Pourashava

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Low Income Housing Project	20.73	Ward No. 2	Fakir Tilla-071(03)	932, 940	Land Acquisition & Construction	Further Development If necessary	
			Fakir Tilla-071(03)	1726-1731, 1733-1741, 1744-1747, 1749-1773, 1783, 1847-1849			
	11.28	Ward No. 3	Noari-075(00)	584-586, 606	Land Acquisition & Construction	Further Development If necessary	
			Tangagaon-076(00)	1-15, 17, 18, 39, 41-46, 48-51, 53-62, 148-150, 154, 155			
Total	**32.01**						

Source: Land Use Plan of Chhatak Pourashava

The Urban Residential Zone and the Rural Settlement will form the future residential land use of the pourashava. The proposed total amount of residential land under these two categories is 755.10 acre which fulfills the requirement fixed by the land use standard provided by PMO. The following table shows the change in gross and net density of Chhatak Pourashava.

Table 10.16: Change in Gross and Net Density of Chhatak Pourashava Over the Master Plan Period

Variables	Ward No. 1	Ward No. 2	Ward No. 3	Ward No. 4	Ward No. 5	Ward No. 6	Ward No. 7	Ward No. 8	Ward No. 9	Total
Area (Acre)	170.59	135.71	327.52	509.81	553.67	127.38	245.57	82.47	343.11	2495.83
Existing Residential Area (Acre)	14.07	14.68	46.53	43.19	39.37	37.29	67.18	26.55	57.91	346.78
Population in 2011	2418	4437	3543	5848	5592	5880	6595	3714	5255	43282
Population in 2031	3882	7118	5685	9383	8970	9433	10580	5958	8430	69439
Gross Density (2011)	15	33	11	12	11	47	27	46	16	18
Gross Density (2031)	23	53	18	19	17	75	44	73	25	28
Net Density (2011)*	172	303	77	136	143	158	99	140	91	125
Net Density (2031)*	276	486	123	218	228	253	158	225	146	201
Proposed Residential Land Use (Acre)**	25.74	48.92	94.50	111.47	142.10	36.07	94.71	39.01	162.59	755.10
Proposed Net Density (2011)***	94	91	38	53	40	164	70	96	33	58
Proposed Net Density (2031)***	151	146	61	85	64	262	112	153	52	92

** Based on existing residential land use area*

*** Proposed residential land use include Urban Residential Zone and Rural Settlement*

**** Based on proposed residential land use. All density is in PPA (Persons per acre)*

Commercial Zone

The commercial zone is intended to provide locations, where commercial activities including retails and wholesale can be set up and function without creating hazards to surrounding land uses. This zone has an area of 81.69 are (3.27%) and will allow commercial uses as listed in Annexure- A. As per planning standard it requires 90.13 acre land for commercial activity. Proposed amount is lower than the estimation. This is to provide higher amount of land in industrial activities, so that the broad view of the Structure Plan can be achieved. A location for establishing tourism facilities like hotel, motel etc. a shopping mall, 4 local markets and a cattle market is proposed under this zone. The following table shows the detail of these proposals.

Table 10.17: Description of proposed Commercial Facilities in Chhatak Pourashava

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Tourism Facilities	32.60	Ward No. 5	Purba Kamar Gaon-219(00)	9, 10, 222-236, 260-262, 266-269, 272, 273, 275, 292-294, 305, 306, 316-356, 358-377, 412-414, 416-418, 431, 444, 445, 447-450, 453, 99999	Land Acquisition	Construction & Establishment	
Shopping Mall	3.55	Ward No. 7	Mondali Bog-217(00 Kha)	459, 461-464, 496-502, 527	Land Acquisition	Construction & Establishment	
Local Market	1.31	Ward No. 4	Kumna-215(00)	790-792, 794, 795, 802-804, 819		Land Acquisition	Construction & Establishment
	0.82	Ward No. 5	Tangagaon-076(00)	156	Land Acquisition & Construction	Further Development If necessary	
			Baghbari-216(01)	203-206			
	4.67	Ward No. 9	Dakshin Nijgaon-225(01)	103, 104, 107-118, 121-124, 126, 127		Land Acquisition	Construction & Establishment
			Tatikona-218(00)	335, 338, 339, 430, 431			
	1.26	Ward No. 9	Tatikona-218(00)	119, 124, 130, 141-143		Land Acquisition	Construction & Establishment
Cattle Market	0.85	Ward No. 5	Purba Kamar Gaon-219(00)	10, 12, 17	Land Acquisition	Construction & Establishment	
Total	**45.05**						

Source: Land Use Plan of Chhatak Pourashava

Mixed Use Zone

Mixed use zones have been recommended to allow some flexibility in development. In a small town like Chhatak, as the trend shows, an exclusive commercial land use is unlikely to function properly. In the Land Use Plan of Chhatak Pourashava a total of 33.19 acre of land is proposed under this category. A total number of 9 ward centers comprising ward councilors office, corner shop, community center, health center, local club, police outpost and post box are proposed. For the mixed character of land use in the ward centers this proposal is delineated under Mixed Use Zone. The proposed ward

centers cover a total area of 15.24 acre of land. The detailed description of these ward centers comprising their areas, locations (ward, mouza, plot), phases are given in Table 10.18.

Table 10.18: Description of Proposed Ward Centers in Chhatak Pourashava

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Ward Center	1.63	Ward No. 1	Fakir Tilla-071(02)	330	Land Acquisition	Construction & Establishment	
Ward Center	1.11	Ward No. 2	Fakir Tilla-071(04)	1715, 1716	Land Acquisition & Construction	Further Development If necessary	
	1.87	Ward No. 3	Fakir Tilla-071(03)	894, 895, 946, 948	Land Acquisition & Construction	Further Development If necessary	
	1.42	Ward No. 4	Uttar Madhabpur-220(00)	55, 57, 70, 75, 77, 85-89, 118, 99999		Land Acquisition	Construction & Establishment
	0.84	Ward No. 5	Purba Kamar Gaon-219(00)	10-12, 19, 96	Land Acquisition & Construction	Further Development If necessary	
	1.69	Ward No. 6	Baghbari-216(01)	381, 386, 387	Land Acquisition & Construction	Further Development If necessary	
	2.51	Ward No. 7	Mondali Bog-217(00 Kha)	464, 496-498, 500-502, 509-511, 527	Land Acquisition	Construction & Establishment	
	1.10	Ward No. 8	Mondali Bog-217(00 Kha)	363, 364, 366-368	Land Acquisition	Construction & Establishment	
	3.09	Ward No. 9	Tatikona-218(00)	156, 175, 176, 178-182, 185, 189-193	Land Acquisition	Construction & Establishment	
Total	**15.24**						

Source: Land Use Plan of Chhatak Pourashava

Heavy Industrial Zone

Heavy Industrial Zone is proposed in various locations of the pourashava. It will occupy a total area of 320.35 acre. Two new industrial areas are proposed under this zone, one near the Kumna Graveyard Road and the other one is at the side of the road going to Modhukuni. 'Orange B' and 'Red' category industries according to the Environmental Conservation Rules 1997 can be established here. The proposed highway of 100 ft. will ensure faster development of this zone. Central effluent treatment plant must be installed there. To establish this zone extensive survey can be done on the first phase of the Master Plan and then the construction can be done within the second phase to start operating at the third phase. The establishment of these two industrial areas will make the Structure Plan view into reality. Table 10.19 shows the industrial area proposed under Heavy Industrial Zone.

Table 10.19: Description of Proposed Industrial Areas in Chhatak Pourashava

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Industrial Area	41.49	Ward No. 4	Kumna-215(00)	732-735, 738, 739, 747, 781, 788, 796, 797, 799-802, 804-854, 856-871, 890, 893-910, 912-935, 937, 938, 950, 955, 989-1004, 1009, 1010, 1014, 1071-1073, 1078-1086		Land Acquisition	Construction & Establishment
Industrial Area	16.55	Ward No. 4	Kumna-215(00)	71, 74-78, 88-91, 96-101, 561, 562, 696-699, 701-732, 736-745, 747-750, 874	Land Acquisition	Construction & Establishment	
Total	**58.05**						

Source: Land Use Plan of Chhatak Pourashava

Government Office

A total of 45.04 acre land is kept under this zone. This is to incorporate the existing and proposed government offices in the pourashava. A pourashava office is under construction in this pourashava which is kept under this zone. Table 10.20 shows the detail.

Table 10.20: Description of Pourashava Office

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Pourashava Office	2.88	Ward No. 7	Mondali Bog-217(00 Kha)	509-513, 515, 521, 522, 527	Land Acquisition & Completing Construction	Further Development If necessary	
Total	**2.88**						

Source: Land Use Plan of Chhatak Pourashava

Education and Research Zone

Education is called the backbone of the nation. That is why consultants were much careful to provide enough educational facilities in the Pourashava. In the Land Use Plan a total of 38.13 acre (1.53%) of land is proposed, which is lower than the estimated requirement (105.69 acre) from the set standard. This is to ensure a concentrated development in the pourashava. The permitted land uses under this category is given in Annexure – A. A women's college, a high school and six primary schools have been proposed under this zone. Details of these proposals are shown in table 10.18. Map 10.2 shows this zone in this pourashava.

Table 10.21: New Development Proposals in Education and Research Zone

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Women's College	5.97	Ward No. 3	Noari-075(00)	48, 49, 51, 54, 55, 69, 72-79, 82, 86, 90, 92-95, 97, 600	Land Acquisition	Construction & Establishment	
High School	2.41	Ward No. 9	Tatikona-218(00)	136-138, 147, 148, 152, 205-210, 238	Land Acquisition & Construction	Further Development If necessary	
Primary School	1.11	Ward No. 1	Fakir Tilla-071(02)	330, 372-374	Land Acquisition & Construction	Further Development If necessary	

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
	1.22	Ward No. 3	Fakir Tilla-071(03)	721-724, 774	Land Acquisition	Construction & Establishment	
	1.11	Ward No. 4	Ganarkhai-213(00)	156-159, 166-168, 211, 212	Land Acquisition	Construction & Establishment	
	1.22	Ward No. 5	Baghbari-216(01)	83-91, 93		Land Acquisition	Construction & Establishment
	1.60	Ward No. 9	Tatikona-218(00)	149, 152-156, 175, 176, 183-185, 191, 192, 205	Land Acquisition & Construction	Further Development If necessary	
	1.26	Ward No. 6	Baghbari-216(01)	415, 416, 425, 426, 432, 524, 99999	Land Acquisition & Construction	Further Development If necessary	
			Baghbari-216(02)	601-604			
Total	**15.90**						

Source: Land Use Plan of Chhatak Pourashava

Agricultural Zone

The Pourashava has a vast area of agricultural land that demands formation of a separate zone for agricultural activities. Agricultural Zone is primarily meant for agriculture; land uses related to it and land uses that support it. The total area under this zone has been earmarked as 259.38 acre (10.39%) that includes existing and proposed land uses.

Water Body

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 0.20 acre (142 in numbers with 444.15 acre area) will be preserved under this zone. The Land Use Plan of Chhatak Pourashava proposes 443.56 acre land which is 17.77% of the total area to be preserved under this zone. Water bodies will act as retention areas during monsoon season as well as primary drainage channel for the drainage network plan.

Open Space

Open spaces provide life in a plan. Without it, the plan will be a monotonous one and the life of people of whom the plan is shaping, will loose its purpose. In the Land Use Plan of Chhatak pourashava the consultants have tried to provide enough land under this category so that people can have their recreational needs served at the best. In the Land Use Plan a total of 123.70 acre of land, which is 4.96% of the total Pourashava area, has been proposed as Open Space. The estimation from the standards demands 155.29 acre of open spaces for the pourashava, which is higher than the proposed amount of land. If the estimated amount is proposed then it would have covered 6.22% of the total area of the pourashava. This may have reduced the highly potential land for development and thus reduce the pace of growth of the area which the Master Plan is trying to achieve. It is expected that this amount of land will be suffice to support the need for open spaces during the Master Plan period of 20 years. Some new proposals are made under this zone. A stadium and central park, a river-view park, 6 playgrounds and 5 local parks are proposed under this zone. Other than these 7 locations have been proposed at the bank of Surma River to be kept as green belt to save it from illegal encroachment. Table 10.22 shows the details about these proposals. Map 10.2 shows the open space zone of Chhatak Pourashava.

Table 10.22: New Development Proposals for Open Space in Chhatak Pourashava

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Stadium	13.81	Extension Area				Land Acquisition	Construction & Establishment
Central Park	21.07	Ward No. 5	Purba Kamar Gaon-219(00)	359-362, 377, 401, 409-414, 417, 418, 422-427, 452		Land Acquisition	Construction & Establishment
		Extension Area					
River-view Park	9.65	Ward No. 9	Dakshin Nijgaon-225(01)	151, 152, 181-185	Land Acquisition & Construction	Further Development If necessary	
			Tatikona-218(00)	405-409, 425, 438			
Playground	1.83	Ward No. 1	Fakir Tilla-071(02)	370, 372, 373	Land Acquisition	Construction & Establishment	
	0.93	Ward No. 2	Fakir Tilla-071(04)	1734-1741	Land Acquisition	Construction & Establishment	
	1.22	Ward No. 4	Ganarkhai-213(00)	156, 157, 212, 213, 218-220	Land Acquisition	Construction & Establishment	
	1.32	Ward No. 5	Baghbari-216(01)	87, 88, 167-169, 173, 193, 521	Land Acquisition	Construction & Establishment	
Playground	0.53	Ward No. 8	Mondali Bog-217(00 Kha)	305, 306, 347, 348	Land Acquisition	Construction & Establishment	
	0.96	Ward No. 9	Tatikona-218(00)	135-137, 208-210, 237, 238	Land Acquisition	Construction & Establishment	
Green Belt	10.78	Ward No. 4	Ganarkhai-213(00)	1-3, 45-56, 82, 97, 101-118, 158-166, 171, 182-184, 187, 191, 356, 358-362	Land Acquisition & Construction	Further Development If necessary	
	8.11	Ward No. 4	Kumna-215(00)	23, 24, 27-29, 32-35, 38, 39-52, 55-62, 758, 759-771, 1058-1061	Land Acquisition & Construction	Further Development If necessary	
	3.56	Ward No. 4	Kumna-215(00)	1058-1060	Land Acquisition	Construction & Establishment	
	0.13	Ward No. 3	Tangagaon-076(00)	24, 25, 62	Land Acquisition	Construction & Establishment	
	1.22	Ward No. 5	Tangagaon-076(00)	156		Land Acquisition	Construction & Establishment
		Ward No. 5	Baghbari-216(01)	205, 207, 208, 211-214, 216, 529			
		Ward No. 5	Kumna-215(00)	1, 3, 5-8, 10, 11			
	5.80	Ward No. 5	Noari-075(00)	613		Land Acquisition	Construction & Establishment
		Ward	Kumna-	1060, 1095			

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
		No. 5	215(00)				
	2.90	Ward No. 5	Tangagaon-076(00)	156		Land Acquisition	Construction & Establishment
Local Park	4.68	Ward No. 1	Fakir Tilla-071(02)	327, 489, 492	Land Acquisition	Construction & Establishment	
		Ward No. 2	Fakir Tilla-071(03)	926, 985			
	4.02	Ward No. 3	Fakir Tilla-071(03)	633, 711, 712, 715-720, 792-799, 803, 804, 807		Land Acquisition	Construction & Establishment
	3.40	Ward No. 4	Ganarkhai-213(00)	191-193	Land Acquisition	Construction & Establishment	
			Kumna-215(00)	767-776, 1061			
	1.41	Ward No. 6	Baghbari-216(01)	392-394, 397-399	Land Acquisition & Construction	Further Development If necessary	
	2.80	Ward No. 7	Mondali Bog-217(00 Kha)	101-103, 532	Land Acquisition & Construction	Further Development If necessary	
Total	**86.33**						

Source: Land Use Plan of Chhatak Pourashava

Recreational Facility

This zone has a negligible amount of land under it. It consist the only existing cinema hall of the pourashava area. Total land under this zone is 0.20 acre which is 0.01% of the total area of the pourashava.

Circulation Network

The road network is mainly considered as Circulation Network. National highway, pucca/semi- pucca/ katcha road, footpath, flyover, over- bridge, underpass, bridge, culvert, railway, railway bridge all are included into Circulation Network. Total 200.97 acre land which covers 8.05% of total area of Chhatak Pourashava is proposed under this zone. At present only 59.15 acre of land is used as Circulation Network.

Transportation Facilities

A total of 39.60 acre land is kept under this zone. This is higher than the estimated standard value. This higher amount of transportation facilities will ensure good communication with various parts of the country. Being an industrial town it will require to be connected swiftly with all parts of the country. So, a higher amount of land is kept under this zone. A bus terminal, a truck terminal, 3 river ports and 6 para transit stands are proposed under this zone. Details are in Table 10.23.

Table 10.23: New Transportation Facilities

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Bus Terminal	7.81	Ward No. 5	Purba Kamar Gaon-219(00)	8, 150, 162, 163, 175-188, 190, 192-194, 196-204	Land Acquisition & Construction	Further Development If necessary	
Truck Terminal	11.56	Extension Area	Dakshin Nijgaon No. 225		Land Acquisition & Construction	Further Development If necessary	
River Port (Passenger)	0.59	Ward No. 7	Mondali Bog-217(00 Kha)	61, 532	Land Acquisition & Construction	Further Development If necessary	
River Port (Freight)	2.03	Ward No. 4	Kumna-215(00)	66, 67, 757-759, 1058, 1059	Land Acquisition & Construction	Further Development If necessary	
	1.26	Ward No. 6	Noari-075(00)	613	Land Acquisition & Construction	Further Development If necessary	
			Baghbari-216(01)	225, 416, 517, 524			
Para Transit Stand	1.35	Ward No. 4	Kumna-215(00)	78, 79, 80, 87, 88, 91, 95, 96, 97, 101, 102, 104	Land Acquisition	Construction & Establishment	
	0.70	Ward No. 5	Baghbari-216(01)	172, 173, 182, 190, 191, 527, 726, 99999	Land Acquisition	Construction & Establishment	
	0.57	Ward No. 6	Baghbari-216(01)	415, 99999	Land Acquisition & Construction	Further Development If necessary	
	1.38	Ward No. 7	Mondali Bog-217(00 Kha)	448, 450-452, 455-459	Land Acquisition & Construction	Further Development If necessary	
	2.47	Ward No. 9	Tatikona-218(00)	258, 297, 334, 335, 428-430		Land Acquisition	Construction & Establishment
			Dakshin Nijgaon-225(01)	89, 91-93, 97, 98, 103, 104, 110, 111, 127			
	4.14	Extension Area	Dakshin Nijgaon No. 225		Land Acquisition	Construction & Establishment	
Total	**33.86**						

Source: Land Use Plan of Chhatak Pourashava

Utility Services

It incorporated all utilities and service facilities except the health service. For an example water treatment plant, water reservoir, water pump house, public toilet, fire service, waste disposal, sewerage office, power office or control room and over head tank. In survey stage this type land use was defined as service activity. A surface water treatment plant, a slaughterhouse, a waste dumping ground and 4 waste transfer stations have been proposed under this zone. This zone will cover a total area of 8.68 acre.

Table 10.24: New Land Use Proposal for Utility Services

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Surface Water Treatment Plant	0.87	Ward No. 6	Baghbari-216(01)	432-434, 447, 488, 603	Land Acquisition & Construction	Further Development If necessary	
Slaughterhouse	0.83	Ward No. 5	Tangagaon-076(00)	156	Land Acquisition & Construction	Further Development If necessary	
			Baghbari-216(01)	203-206			
Waste Dumping Ground	5.73	Ward No. 4	Ganarkhai-213(00)	238-244, 248-252, 298-304, 317-320	Land Acquisition & Construction	Further Development If necessary	
			Kumna-215(00)	1084-1088			
Waste Transfer Station	0.44	Ward No. 1	Fakir Tilla-071(02)	330	Land Acquisition	Construction & Establishment	
	0.35	Ward No. 3	Noari-075(00)	295-299	Land Acquisition & Construction	Further Development If necessary	
	0.28	Ward No. 5	Tangagaon-076(00)	155	Land Acquisition & Construction	Further Development If necessary	
			Baghbari-216(01)	204-208			
	0.17	Ward No. 9	Tatikona-218(00)	119, 124	Land Acquisition	Construction & Establishment	
Total	**8.68**						

Source: Land Use Plan of Chhatak Pourashava

Health Services

A total of 17.55 acre land is kept under this zone, which is 0.70% of the total area of the pourashava. This amount is lower than the estimated standard, because small community health center will be established with the ward centers that are proposed under Mixed Use Zone. Those will add to this zone and the standard will be met to support the need of the people during the Master Plan period. Under this zone the existing Upazila Health Complex is proposed to be extended. A new hospital is proposed too. Table 10.25 shows the details of these proposals.

Table 10.25: New Land Use Proposal for Health Services

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Extension of Health Complex	2.79	Ward No. 7	Mondali Bog-217(00 Kha)	383, 393-400	Land Acquisition	Construction & Establishment	
Hospital	9.21	Ward No. 3	Fakir Tilla-071(02)	467	Land Acquisition	Construction & Establishment	
			Fakir Tilla-071(03)	710-712, 724-739, 774	Land Acquisition	Construction & Establishment	
Total	**12.00**						

Source: Land Use Plan of Chhatak Pourashava

Community Facilities

Community services include community center, club house, fire service, health facilities, religious centers, other community services etc. In addition to these all funeral places and other religious uses are incorporated into this category. This zone will have a total area of 26.09 acre (1.05%). A new auditorium is proposed under this zone which will have an area of 1.70 acre. Table 10.26 shows the details of this proposal.

Table 10.26: New Land Use Proposal for Community Facilities

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Auditorium	1.70	Ward No. 7	Mondali Bog-217(00 Kha)	489-495, 513, 514, 527	Land Acquisition	Construction & Establishment	
Total	**9.93**						

Source: Land Use Plan of Chhatak Pourashava

Hill

This zone is proposed here in Chhatak Pourashava as the hills located within the pourashava area should be given distinctive definition. This zone is environmentally not suitable for development. Most of these hills are under the ownership of Chhatak Cement Factory. They might think of destroying these hills and extend their industries at that zone. But it will be disastrous to the environment of this town.

Table 10.27: Schedule of the Land Use Zone 'Hill'

Type of Land Use	Mouza – JL (Sheet)	Plot No.	Area (Acre)
Hill	Fakir Tilla-071(02)	294-297, 321-327, 329, 330, 372, 399, 402, 481, 488, 489, 492, 493	99.70
	Fakir Tilla-071(04)	1850-1852	

Source: Land Use Plan of Chhatak Pourashava

Urban Deferred

Urban Deferred zone is kept in the Land Use Plan to be reserved for incorporate the future development trend of the Pourashava. If any entrepreneur wants to establish industry in this area this area can be used for this purpose. This area will be reserved for industrial, residential or commercial development of the future. The total area under this use has been proposed as 1.58 acre within the pourashava boundary. Some more land is proposed under this zone in the proposed extension areas. A real estate housing project is proposed in the Dakshin Nijgaon extension of the Master Plan. Table 10.27 shows the detail.

Table 10.28: New Land Use Proposal for Real Estate Housing Project

Type of Facilities	Area (Acre)	Ward No.	Mouza – JL (Sheet)	Plot No.	Phase-wise development		
					First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year)
Real Estate Housing	56.67	Extension Area	Dakshin Nijgaon No. 225			Land Acquisition	Construction & Establishment
Total	**56.67**						

Source: Land Use Plan of Chhatak Pourashava

10.2.3 Land Use Permission

One of the major purposes of land use zoning is to restrict an area for a particular use meant for the zone. This is intended to maintain a disciplined land use distribution and development. But there are many uses other than the use meant for the zone that are considered for permit in the zone. Sometimes such applications are accommodated to support or assist the area, with conditions imposed in giving land use permit, sometimes strict restrictions are maintained by refusal of applications. Detailed lists of permissible uses have been provided in Annexure- A according to land use categories. The list has been provided by the PMO of UTIDP (client).

Development Permit is the most important function of Pourashava and for that matter of any City Development Authority. Master plan will have no bearing unless development can be channelized to its desirable direction through effective permit procedure. Master plan has developed its plan using GIS database and other advanced computer software of world standard. The necessary planner to handle this database is sufficiently available in the country. This combination provides pourashava the unique opportunity to make its plan permit procedure fast, well managed and transparent. This is also in line with the idea of digital Bangladesh pronounced by the present government.

a. Computerization of the Permit procedure

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

b. Land use Permit

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

- Senior Town Planner
- Town Planner
- Assistant Town Planner
- Assistant Town Planner

Structure of Land use Permit Authority

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

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

Land use Permit Planner

Land use Permit will be issued with the signature of Land use Permit Planner [LPP] appointed by the Mayor, Pourashava from among the Planners not below the rank of Assistant Town Planner. Land use

Permit issued by the LPP/s shall be considered null and void, even if signed, unless the use sought for, is in conformity with the land use options of the respective zone that contains the plot.

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

Land use Permit Committee

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

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

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

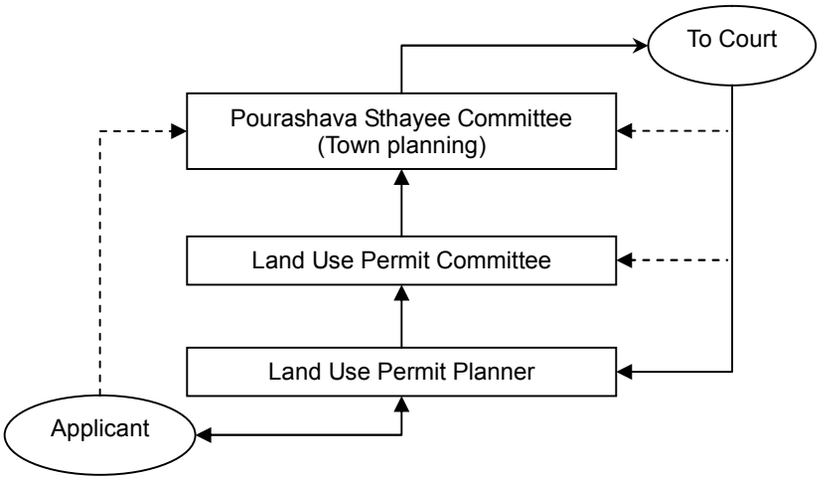


Figure 10.1: Structure of Land use Permit Authority Showing Linkages

Pourashava Sthayee Committee (Town Planning, Public services and development)

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

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

Pourashava Sthayee Committee shall decide whether the proposed New Uses should be permitted or denied; in case of Conditional Permit impose the conditions to comply; accept variances for specific

cases and so forth. Besides, Pourashava Sthayee Committee shall decide strict conditions to nonconforming uses and the action against its violation if it so happens.

Land use Permit Option:
For a plot seeking land use permit there can be three possible options; (i) Land use permitted; (ii) Land use conditionally permitted, or (iii) Land use restricted.

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

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

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

Land use Permit Procedures
Land use permit procedure is a product of a number of interlinking activities. The whole process has been shown in a flow diagram for clearer understanding in Figure 10.2. The procedure is commenced with the submission of formal application by the applicant to the Mayor of Pourashava. The applicant must submit along with other information and documents a mauza map showing his plot including plot no, mauza name etc. The concerned official designated as Land use Permit Planner (LPP), will then check the compliance of the land use desired by the applicant with the land use zone containing his plot and the uses permitted therein. Four situations may be possible:

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

If the desired use is listed as Permitted or Overlaid then it will be permitted without any question. If the desired use is listed as Conditionally Permitted the LPP would refer it to the LPC for further action. In case of desired use not found in the permitted or conditionally permitted lists of the zone, the LPP shall reject the desired land use as it is not allowed in the zone. At this stage if the rejection decision taken by the LPP is not satisfactory to the applicant, he/she can appeal to the Pourashava Sthayee Committee. If the decision of the Committee goes in favor of the applicant, LPP shall then issue the

permit. Pourashava Sthayee Committee may also ask the applicant to make some modifications to make his/her claim appropriate for approval. The applicant may comply accordingly and apply afresh.

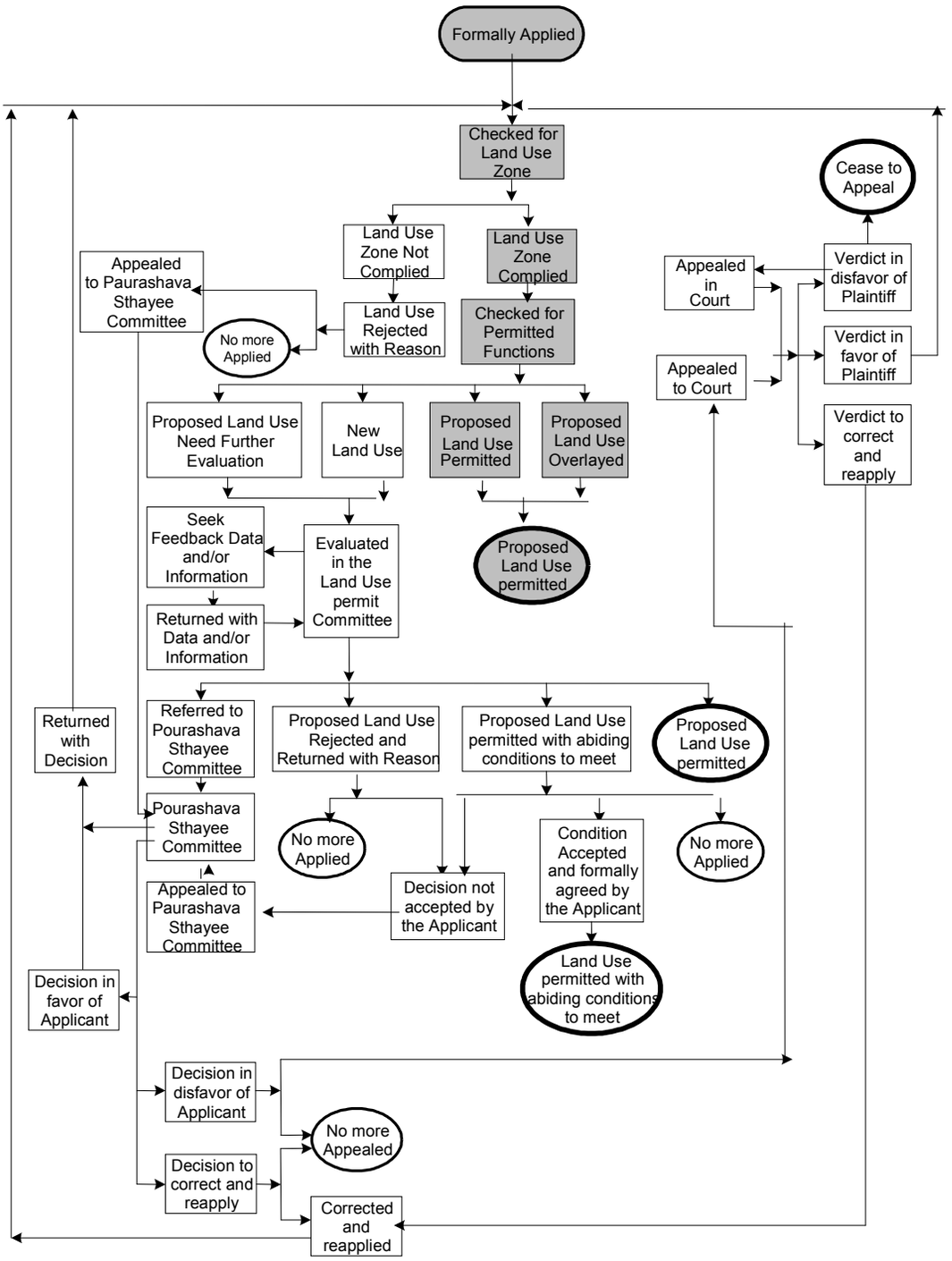


Figure 10.2: Flow Diagram Showing Activity Linkage of Plan Permit Procedure

If the applicant is not satisfied with the decision of the Pourashava Sthayee Committee he/she may go to the court for decision. If the LPP is convinced that the desired use should be allowed for the greater interest of the people and therefore, deserves to be considered under New Use category, he may recommend it to the LPC furnishing reasons in favor. The LPC if convinced by the reasoning will send the case to the Committee with recommendation to permit desired land use in the New Use category. Following necessary study and investigation if the Committee is also convinced about permitting the

use as recommended by the LPC, they may decide so and authorize the LPP to issue permit for the desired land use in the New Use category.

10.3 Plan Implementation Strategies

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

10.3.1 Land Development Regulations to Implement the Land Use Plan

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

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

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

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

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

b. Building Permission and Construction Approval

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

c. Building Permission in Proposed Development Areas

The Master Plan proposes a number of development projects. Many of the lands under these development projects are under private ownership. No development in these lands by their owners will

be allowed. They will remain in the present form till they are taken over by the respective authority for development or the development project is abandoned.

d. Parking in Commercial and Mixed Use Areas

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

e. Rules for Realization of Betterment Fee

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

f. Planning Rules for Real Estate Companies

With the increase in population, there will be further rise of land based real estate activities. But there is no provision in the Pourashava Ordinance to control the activities of real estate companies. It is needed that infrastructure and services provided in the housing plans of the real estate projects be standardized to secure interest of the buyers. Strict vigilance is needed against any fraudulent practices that might affect public interest.

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

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

g. Minimum Road Width

Building Construction Rules, 1996, should be amended in the following way by incorporating the minimum road width standard. To ease future traffic movement, it is necessary to keep provision for wider roads in the present plan. It is an uphill task to widen roads after development has taken place along the road. So it is wiser to reserve wider right of way for new roads now. Building Construction Rules, 1996 has determined the minimum road width as 12 ft. or 3.65 meter for roads in general and approximately 10 ft. for private roads. The consultants feel that this standard is not enough in view of future increase in population density and traffic. For safeguarding and easing future traffic movement the consultants have set the minimum width for any road for common use as 20 ft. or 6 meter and 16

ft. or 4.77 meter for private_roads. However, in the built up areas, where development has already blocked the scope for developing such wide roads, the consultant recommends the minimum road width provisions of BC Rules, 1996. The new road width provision will be applicable in new areas. In the areas, where there already exist roads of less than 20 ft., the land owners on either side of the road will equally share the space needed to increase the road width to 20 ft. The land owners must leave the space vacant for taking it over by the Pourashava for widening of the road at some later date. No proposal for construction should be permitted on the vacant space reserved for road widening though the land will remain under its current ownership till it is taken over by the authority. In the light of the above recommendations, necessary amendment will have to be brought in the BC Rules, 1996 applicable to the secondary and small towns only.

h. Low Land, Pond and Drainage Path

No low land that retains water for certain period of the year can be filled up and no obstruction to natural or man made drainage system shall be allowed. Prior permission of Chhatak Pourashava will be required for filling up of any low lands. The Pourashava shall accord such permission based on prevailing laws. All ponds should not be allowed to be filled up as they are a good source of urban water supply as well as serve as open space. As per the Wetland Conservation Act 2000, the use of these water bodies can not be changed without prior permission of the authority.

i. Security Areas - Police Stations

Police Station has to be safe guarded from any possible incompatible development.

j. Radio, Television, Water Treatment and Pump Station and Power Station Sites

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

10.3.2 Implementation, Monitoring and Evaluation of the Land Use Plan

Monitoring and evaluation is a very important part of plan implementation. Monitoring helps check if the plan is being implemented properly. It also measures the level of implementation of the plan. If the plan implementation is not on track, corrective measures can be taken to put the execution on track. After expiry of any plan, evaluation is made about the errors and omissions. Such evaluation helps take corrective measures in the next plan. Such monitoring and evaluation must be carried out from within the Pourashava. But Chhatak Pourashava 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 Pourashava, its monitoring of plan implementation will be seriously affected. However, plan evaluation can be accomplished by means of out sourcing.

Updating of Plans

The plan package needs to be updated regularly to make it respond to the spatial changes over time. But such updating would require relevant technical professional and fund that are highly lacking in Chhatak Pourashava. There is no planner or planning section in the Pourashava. Updating would require service of senior level planners that Pourashava would not be able to provide. This service will have to be procured by out sourcing and the Pourashava is not even capable to accomplish this financially either. This will create problem when the plans or its components gets obsolete or need to be changed. Another problem would arise when the duration of plans ends. A new set of plans would have to be prepared replacing the old ones. This problem, however, can be overcome by undertaking another planning project by LGED. So, for regular updating and changes and plan implementation

monitoring, the Pourashava should immediately move for setting up a planning section with planner(s) and other staff.

Chapter – 11

TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

Chapter – 11
TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN

11.1 Introduction

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

11.2 Approach and Methodology

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

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

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

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

Data on road pattern and condition of roads with their problems and road width were collected from the physical feature survey and verified through field visits. Data were also collected from socio-economic survey of the households. Information on road ownership was collected from the

Pourashava, LGED and RHD. The same sources also provided information about future road projects in and around the Pourashava. Information about traffic conflict and accident were collected from the field and from Thana (police station). Mapping of major roads has been done using physical feature survey data and by thorough reconnaissance survey of roads.

11.3 Existing Conditions of Transportation Facilities

The existing condition of transportation network and facilities are briefly discussed in this section in order to ascertain the future needs.

11.3.1 Roadway Characteristics and Functional Classification

The roadway characteristics with their functional classification are presented here to understand the present condition of transportation network and system.

11.3.1.1 Major Road Network

Chhatak is a small, almost Triangle shaped urban center that has developed as an old bazar. A number of major roads connect the town with different urban centers including district headquarters. Major roads start from an intersection at the center of the town, known as Chhatak Traffic Point or Chhatak Point. These two major roads coming from two different directions in this area are:

- Sylhet to Chhatak Traffic Point
- Sunamganj to Upazila Parishad Road

All the roads meet together at Chhatak Traffic point of the town. Two roads are coming from two directions. The roads from Sunamganj to Chhatak (Upazila Parishad Road) are appeared from South direction, road from Sylhet to Chhatak (RHD road) is appeared from south east direction, Apart from major roads, a large number of local roads having width varying from 10 ft. to 15ft, provide access to individual houses and establishments and connect them to major roads. Map- 5.1 shows the road network of Chhatak Pourashava.

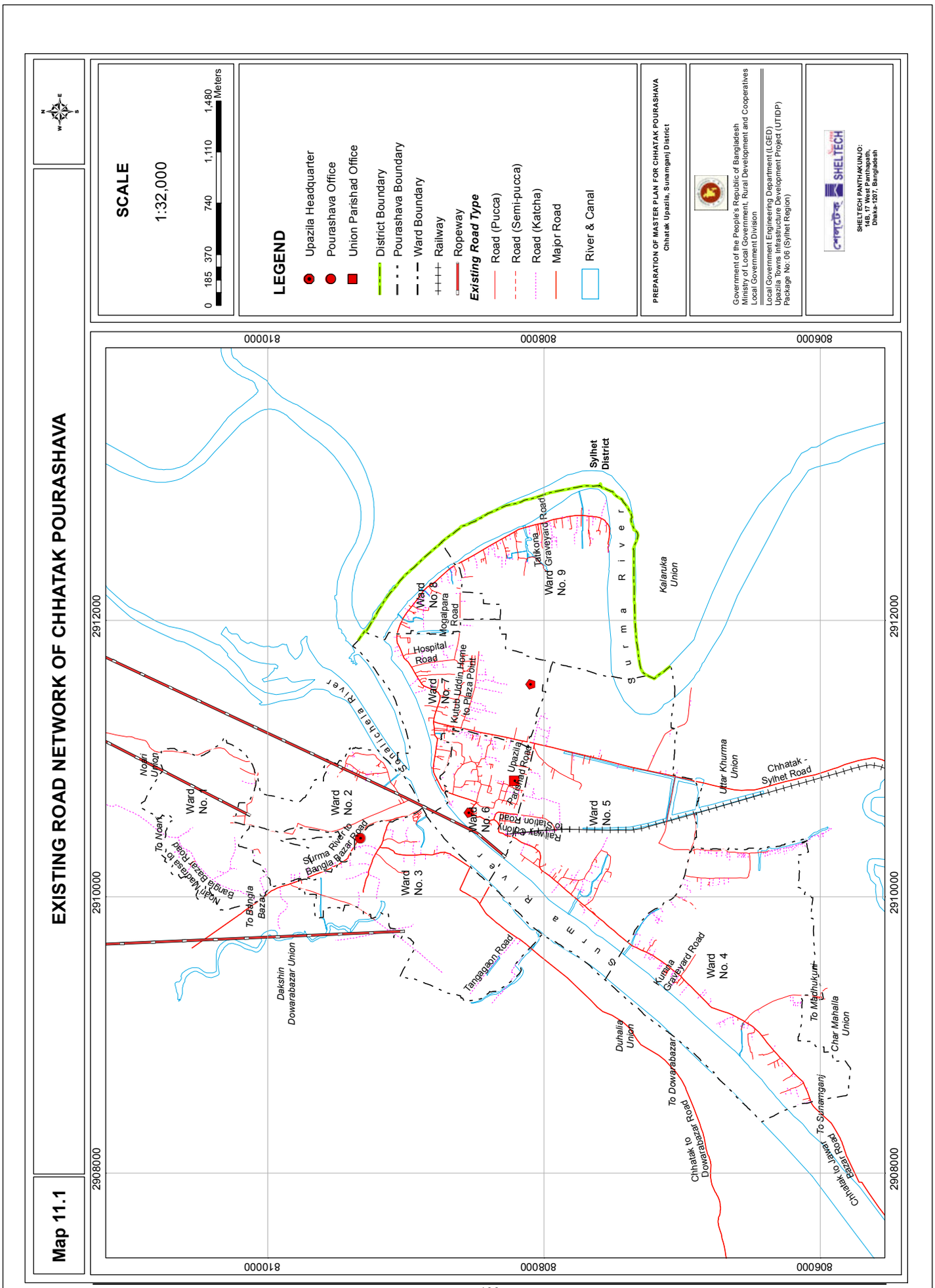
11.3.1.2 Roads in Chhatak Pourashava

According to the physical feature survey, the total length of roads in the Pourashava area is 65.16 km. There are katcha, semi-pucca and pucca roads within the Pourashava area. Of them 22.51 km. is katcha, 0.97 km. semipucca and 41.67 km. is pucca road.

Table 11.1: Ward-Wise Distribution of Road Network

Ward No.	Katcha Road (Km)	%	Pucca Road (Km)	%	Semipucca Road (Km)	%	Total	%
Ward No. 1	2.16	9.58	1.24	2.99	0.00	0.00	3.40	5.22
Ward No. 2	0.66	2.93	3.64	8.73	0.19	19.74	4.49	6.89
Ward No. 3	3.52	15.63	4.52	10.85	0.00	0.00	8.04	12.34
Ward No. 4	5.02	22.28	6.27	15.04	0.24	24.18	11.52	17.68
Ward No. 5	3.33	14.79	7.43	17.83	0.19	19.89	10.95	16.81
Ward No. 6	1.61	7.14	5.56	13.35	0.10	10.47	7.27	11.16
Ward No. 7	2.84	12.60	7.31	17.53	0.25	25.71	10.39	15.95
Ward No. 8	1.18	5.25	1.77	4.25	0.00	0.00	2.95	4.53
Ward No. 9	2.21	9.81	3.93	9.44	0.00	0.00	6.14	9.42
Total	**22.51**	**100.00**	**41.67**	**100.00**	**0.97**	**100.00**	**65.16**	**100.00**

Source: Physical feature survey, 2009.


Map 11.1
EXISTING ROAD NETWORK OF CHHATAK POURASHAVA
SCALE
1:32,000
0 185 370 740 1,110 1,480 Meters
LEGEND
Upazila Headquarter
Pourashava Office
Union Parishad Office
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Road Type
Road (Pucca)
Road (Semi-pucca)
Road (Katcha)
Major Road
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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 Town Infrastructure Development Project (UTIDP)
Package No. 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
SHELTECH
Surma River
Kalauka Union
Sylhet District
Uttar Khurma Union
Duhalia Union
Char Mahalia Union
Dakshin Dowarabazar Union
Nodi Union
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
Kalauchera River
Surma River
Railway Station Road
Upazila Parishad Road
Hospital Road
Mogalpara Road
Kutubi Uddin Home to Plaza Point
Tatkona Graveyard Road
Ward No. 9
Chhatak - Sylhet Road
To Noari
To Bangla Bazar
Noari Marfatia Jame Mosjid Bangla Bazar Road
Surma River to Bangla Bazar Road
Tangagaon Road
Kumaia Graveyard Road
To Madhukunj
To Dowarabazar
To Sunamganj
Chhatak to Dowarabazar Road
Chhatak to Lakhai Bazar Road
2912000
2910000
2908000
806000
808000
810000

Roads of Roads and Highways Department

The Pourashava has about 2 km of roads within the town owned and maintained by the Roads and Highways Department (RHD). This road passes through the heart of the town to connect other urban centers and Sylhet via Gobindaganj. The width of this road is 31 ft, while the right of way is 72 ft. Another 1.882 km. RHD road exits from Surma River to Bangla Bazar Road having 10-12 Feet width.

LGED Roads

LGED maintains about 5.87 km of roads within the Chhatak Pourashava. There are two major road constructed by LGED .These are Upazila Parishad to Ganarkhai road and Surma river to Bangla Bazar road.

Important Local Roads

The Pourashava has so far developed 43.79 km of katcha roads within its area with different widths. The Pourashava is also responsible for maintaining these roads. The authority has named many of these roads after renowned local personalities. From the physical feature survey, there are found some local roads named College Road, Bazar Road, Fakir Tilla road, Ganarkhai to paper mill road, Health complex road, Madhukuni road, Tatikona road, Tangagaon road and so on.

11.3.2 Modal Share of vehicular traffic

Majority of the people choose non-motorized vehicle to go their desired destinations and hence NMT is the most widely used transport mode for Chhatak like most of other Pourashava. Two types of NMT dominate whole status of the modal choice namely, rickshaw and bicycle, covering 53.87% and 18.31% of the total transport mode respectively. The third favorite mode is Car, Jeep Microbus which covers 12.69% of total transport mode. Figure 5.8 shows the details of modal choice of the poura people.

The traffic volume survey at Chhatak Traffic point intersection represents that almost 73.28% traffic is NMT. Again, the number of NMT is 4136 which shares 54.19% of total traffic movements through Court point intersection. In both intersection non motorized transport are dominating in percentage. It is evident from traffic volume survey is that almost 63% traffic is MT and 42.47% traffic is NMT.

Again, modal share of traffic movements are also varied in different flow direction in Traffic Point intersection. The NMTs are higher than MTs in Thana road to Bus stand direction. And in rest of the directions also NMTs are higher than MTs. In case of Court point intersection MTs are lower than NMTs in all directions, except Traffic Point to Sylhet road direction. The highest 896 traffic exists at Traffic point to Upazila Parishad Road direction.

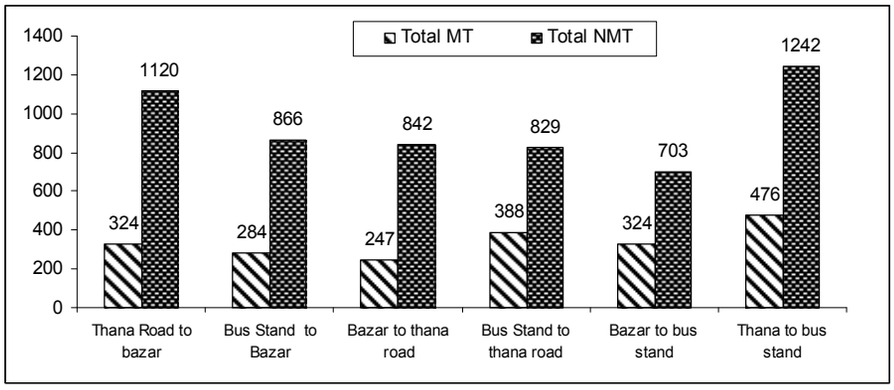


Figure 11.1: Directional Composition of MT and NMT Composition at Chhatak Bazar Intersection

Source: Traffic and Transportation Survey, 2010

11.3.3 Intensity of Traffic Volume

Traffic flow is not uniform in all roads. For obvious reasons, flow is higher in busy areas of the main town, and low in peripheral areas. The bazar areas and the areas adjacent to the Pourashava have the highest traffic flow. Traffic volume study gives information about traffic flow at important roads of the town. The mobility of Chhatak Traffic point Intersection to Sylhet Road and to Upazila Parishad road is the highest. Everyday over 2842 vehicles of different kinds move towards this direction. The next two destinations are Thana road to bus stand and Thana road to bazar road. Almost 3162 vehicles pass through this road.

11.3.4 Level of Service: Degree of Traffic Congestion and Delay

The extent of traffic congestion and delay caused by various conditions are presented in this section for better understanding the requirements in the future plan.

11.3.4.1 Traffic Congestion

Traffic conflict is common and frequent in towns, where there is combination of transport vehicles-slow and fast-in the streets. Major conflicts occur in the places, where intensity of traffic movement is high, on street parking is made and on street loading or unloading of goods are taken place. The consultant studied the traffic movement all over the town and has identified three main points where the Traffic Conflict is the highest. These are located at Chhatak traffic point intersection, court point intersection and Govindaganj Point. At these points, the slow moving vehicles like, rickshaws and vans come in conflict with motor vehicles, creating traffic congestion. As the number of slow moving vehicles is higher the conflicts are usually frequent.

11.3.4.2 Delay

It is observed that, peak period takes on average 10-15% excess time than off-peak period in Chhatak Pourashava due to congestion, narrow road and improper design, poor traffic management, on street parking and loading and unloading goods in Chhatak Bazar.

11.3.5 Facilities for Pedestrians

No footpath has been found in the pourashava area.

11.3.6 Analysis of Existing Deficiencies

An analysis of existing deficiencies is made here for taking care in the future plan.

11.3.6.1 Roadway capacity Deficiencies

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

Narrow Road Width

The roads within the pourashava area are quite narrow. The Sylhet – Chhatak Highway has the highest road width, but cannot use that effectively because of encroachments. Internal roads are very narrow with most of them having around 6-8 ft. width. Some roads have lower crest width. Map 4.1 (in Chapter 4) shows the roads of the pourashava according to road width.

Tortuous Road and Missing Link

A major characteristic of spontaneously developed roads is that they are tortuous in their shapes. This is because land owners allow roads to follow the alignment of the edges of the tortuous plot boundaries. Another problem of community initiated roads is that they are not in a well linked network.

Sometimes links to nearby roads are missing. This causes people to travel comparatively longer distances to reach a nearby destination.

11.3.6.2 Operation, Safety, Signal and other Deficiencies

Like any other Upazila town, Chhatak Pourashava has no traffic management system. There is no traffic point and traffic island or signal posts as well as no traffic police in the streets.

11.3.7 Condition of other Mode of Transport (Rail/Water/Air)

Both railway and waterway network plays vital role in the communication system of the pourashava.

11.3.7.1 Railway Network

Chhatak has well developed railway connectivity. Daily two trains go from Chhatak to Sylhet carrying passenger. Two freight trains also travel from Chhatak to Sylhet daily. These are used to carry the raw materials of cement production and the produced cement to the other parts of the country. The total length of railway in the pourashava area is 2.75 km. At present the passenger rail is not in good shape for its longer journey time and deteriorating condition. Good communication via road has also attracted the passengers to shift from rail to road.

11.3.7.2 Waterway Network

Surma River passes through Chhatak Pourashava. It is a Class-II waterway of BIWTA, which means it can be used for water transport throughout the year. Currently it is used by the industries to transport raw materials and finished product. Only one route is available for passenger transport using steamer, which is Chhatak-Sunamganj route. It is not a listed route of BIWTA. A steamer comes from Sunamganj at 12 PM and leaves Chhatak at 2 PM daily. There are some informal river journey made by the laborers of the industries from Jagannathpur, Derai and some other surrounding localities. A huge number of poor people use shallow engine boats to travel to Chhatak.

11.3.7.3 Air Communication

There is no helipad or airport in the pourashava.

11.3.7.4 Ropeway

There is a ropeway connecting Chhatak with Bholaganj near the Indian border. This ropeway is used to collect and transport stones from the stone quarry located at Bholaganj. This facility is operated by Bangladesh Railway. The collected stones are transported to various industries located within the country via railway. There is also privately owned and operated ropeway connection of Lafarge Cement Factory and Chhatak Cement Factory. Ropeway of Lafarge Cement Factory connects it with the limestone quarry located at Magalaya in India and the ropeway of Chhatak Cement Factory is used to collect it via Bholaganj.

11.4 Future Projections

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

11.4.1 Travel Demand Forecasting for Next 20 Years

Road is one of the most critical areas of the current planning project under UTIDP. The main problem of present road network in the Pourashava is that there is no systematic planning of the roads, whether highway or local roads. There is no logical links of roads and no plan to link the important activity areas where mobility is high. The present level of transport infrastructure at the Upazila Town in Bangladesh is not satisfactory. Reviewing different previous planning proposals in Bangladesh and

other similar countries and after discussions with experts and LGED officials of this project a set of standard for basic infrastructure and services at Upazila level towns has been finalized. Accordingly different standards have been suggested for different types of Pourashava roads at Chhatak, which are as follows:

Table 11.2: Geometric Design Standards of Roads Proposed by LGED

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

Source: UTIDP, LGED.

According to the volume of internal and external traffic movements in Chhatak the Consultants have established a road hierarchy based on the functional area within the Pourashava and as well as the external and internal linkage. This hierarchy will be established as per the geometric design standard provided by the PMO office of LGED and suggestion of the consultation with the Pourashava.

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

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

11.4.2 Transportation Network Considered

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

11.5 Transportation Development Plan

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

11.5.1 Plans for Road Network Development

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

Table 11.3: Proposal for Road Standard in Chhatak Pourashava

Roads 7-15% of the total built up area		
Road Type	**Widening**	**New Construction**
Pourashava primary roads	ROW 80-120ft	ROW 80-120 ft
Pourashava secondary roads	ROW 40 -60ft	ROW 40-60 ft
Tertiary Road	ROW 25ft	ROW 30 ft
Access Road/ Local Road	ROW 20ft	ROW 20 ft

Source: Upazila Towns Infrastructure Development Project

Standard Road Design

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

Functions of Roads

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

11.5.1.1 Road Network Plan

A highway is under construction through Chhatak Pourashava to connect Dhaka with Sunamganj. This road is proposed to be 120 ft RoW. Another primary road of 80 ft. RoW is proposed here to act as bypass road.

Pourashava Primary Road

Three types of primary road are proposed in the pourashava area. The Chhatak–Sylhet Highway will be 120 ft wide without any service road from the southern entry point of the pourashava at Dakshin Nijgaon mouza to Sylhet. The part of Chhatak-Sylhet Road which is inside the Structure Plan area will be of 80 ft. RoW. Another primary road of 80 ft. RoW will be the Surma River to Bangla Bazar Road. A new primary road of 100 ft. RoW is proposed which will start from the end point of 120 ft. primary road at Dakshin Nijgaon mouza and end at the Surma River to Bangla Bazar Road. Figure 11.2, 11.3 and 11.4 shows typical layout of the primary roads.

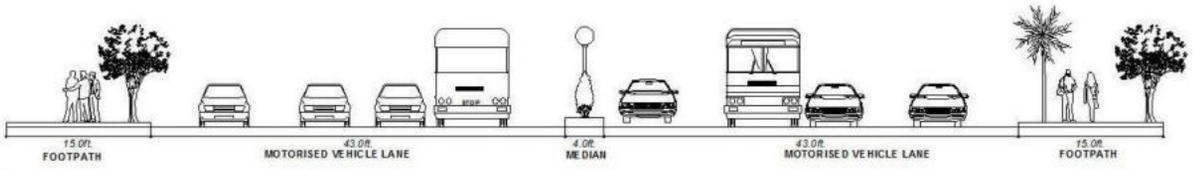


Figure 11.2: Primary Road of 120 ft RoW

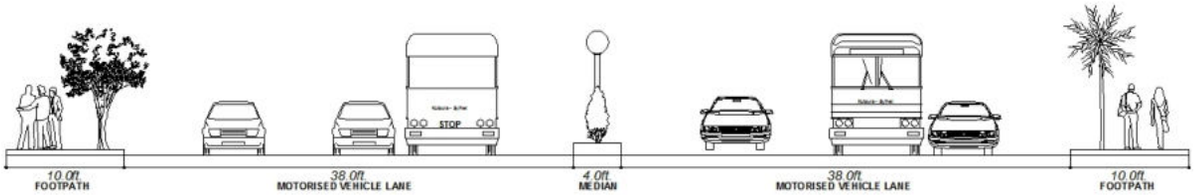


Figure 11.3: Primary Road of 100 ft RoW

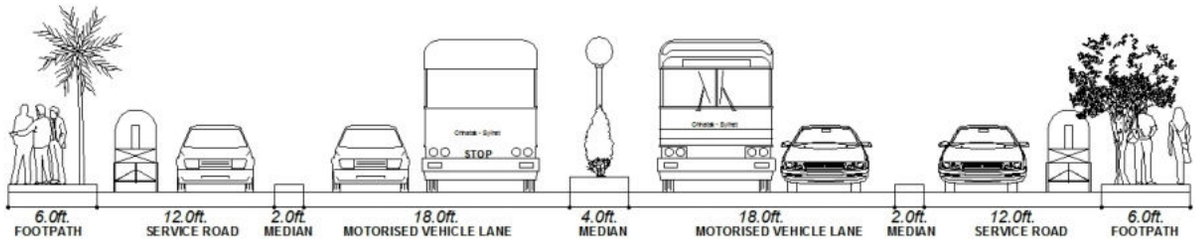


Figure 11.4: Primary Road of 80 ft RoW.

Pourashava Secondary Road

Secondary roads will have two widths, 60 ft and 40 ft. The 60 ft. secondary road will mainly be the existing major road that runs at the bank of the river Surma. Existing development pattern may prove it difficult to widen this road to 60 ft. but it is a necessity and it should be done within the Master Plan period. 60 ft. secondary roads are also proposed to connect Chhatak with Dowarabazar and Jawar Bazar. The secondary road that is proposed to connect Ward No. 2 and Ward No. 3 (Proposed Id NS78) which goes through Chhatak Cement Factory will be constructed in consultation with the cement factory authority. This road should be open all the time for movement of general people. Secondary roads of 40 ft. RoW are proposed to provide internal connections. Typical design for secondary roads is shown in the following two figures.

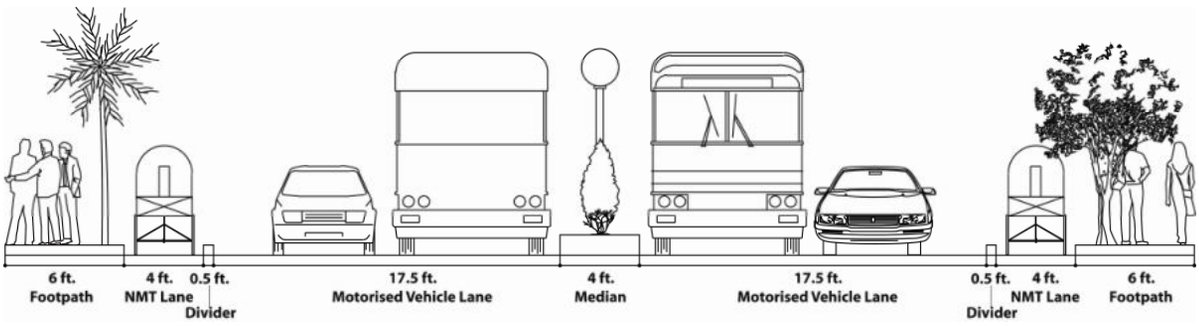


Figure 11.5: Secondary Road of 60 ft RoW.

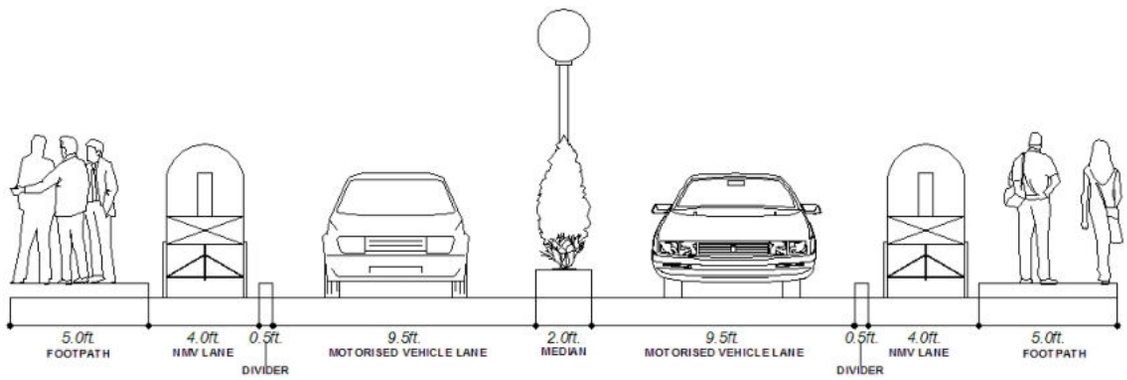


Figure 11.6: Secondary Road with 40 ft RoW.

Pourashava Tertiary Road

Total tertiary road is 14.96 km with 30 ft RoW. These roads will be used to connect the various functions of the pourashava and the wards. Figure 11.7 shows a typical layout of tertiary road with 30 ft RoW.

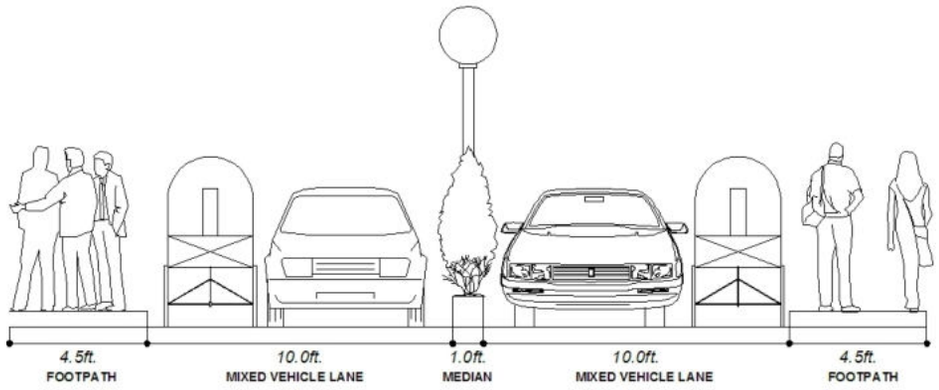


Figure 11.7: Tertiary Road with 30 ft RoW.

Access Road

Total 22.74 Km of access road is proposed in the Road Network Plan of Chhatak Pourashava. The RoW for access roads will be 20 ft. These roads will provide connectivity for households and in some cases connection to groups of houses. Figure 11.8 shows a typical layout of access road with 20 ft RoW.

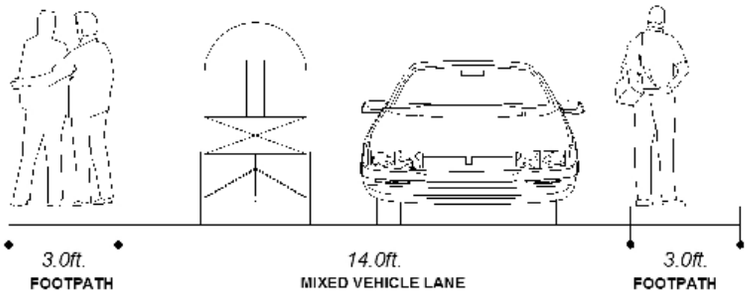


Figure 11.8: Access/Local Road with 20 ft RoW.

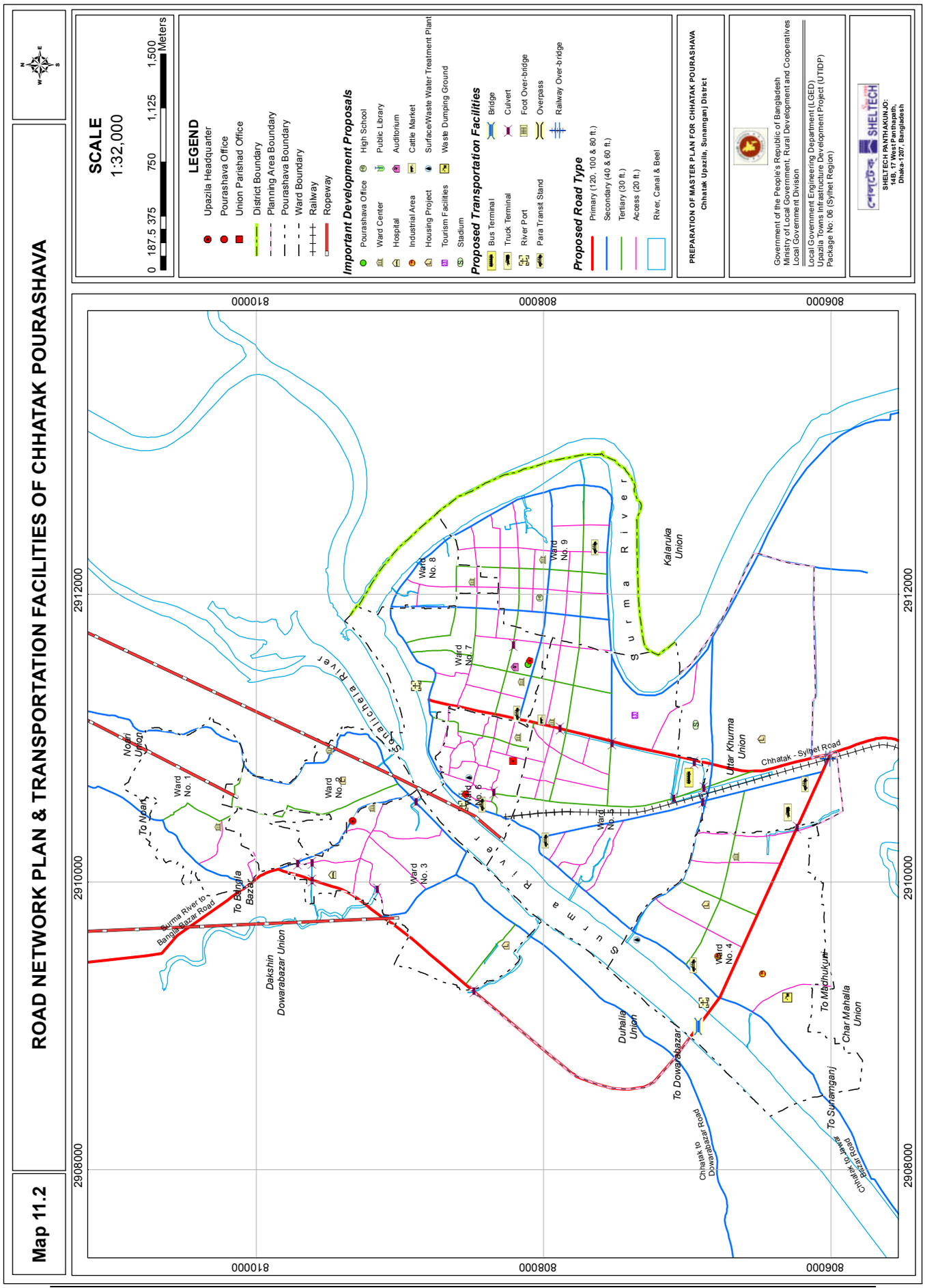
11.5.1.2 Proposal for Improvement of the Existing Road Networks

Most of the roads in Chhatak Pourashava are very narrow and it creates some transportation problem. To improve this situation about 36 km road is proposed for widening in the Road Network Plan. The highest 14.03 km (39.12%) road is proposed for widening up to 20 ft, which will function as access road/local road. Then 7.39 km (20.59%) road is proposed for widening up to 60 ft, which will function as secondary road. Secondary road of 40 ft. RoW is proposed for 4.51 Km which is 12.57% of the total road widening proposal for Chhatak Pourashava in the Traffic and Transportation Management Plan. Tertiary road of 30 ft. RoW is proposed for 7.17 Km (19.98%). Widening proposal for primary roads are 80 ft and 100 ft. (1.98 km and 0.79 km). Table 11.4 shows the summary of road widening proposal.

Table 11.4: Summary of Road Widening Proposal at Chhatak Pourashava

Type of Road	Proposed RoW	Length (Kilometer)	Percentage
Primary	80 ft.	1.98	5.52
	100 ft.	0.79	2.21
Secondary	40 ft.	4.51	12.57
	60 ft.	7.39	20.59
Tertiary	30 ft.	7.17	19.98
Access	20 ft.	14.03	39.12
Total		**35.87**	**100.00**

Source: Road Network Plan of Chhatak Pourashava


Map 11.2
ROAD NETWORK PLAN & TRANSPORTATION FACILITIES OF CHHATAK POURASHAVA
SCALE
1:32,000
0 187.5 375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Pourashava Office
Union Parishad Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Important Development Proposals
Pourashava Office
High School
Ward Center
Public Library
Hospital
Auditorium
Industrial Area
Cattle Market
Housing Project
Surface/Waste Water Treatment Plant
Tourism Facilities
Waste Dumping Ground
Stadium
Proposed Transportation Facilities
Bus Terminal
Bridge
Truck Terminal
Culvert
River Port
Foot Over-bridge
Para Transit Stand
Overpass
Railway Over-bridge
Proposed Road Type
Primary (120, 100 & 80 ft.)
Secondary (40 & 60 ft.)
Tertiary (30 ft.)
Access (20 ft.)
River, Canal & Beel
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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.: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
SHELTECH
806000
808000
810000
2908000
2910000
2912000
Surma River
Kalaruka Union
Uttar Khurma Union
Duhalia Union
Char Mahalla Union
Dakshin Dowarabazar Union
Noari Union
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
Chhatak - Sylhet Road
To Noari
To Bangla Bazar
Surma River to Bangla Bazar Road
To Dowarabazar
To Madhukunj
To Sunamganj
Chhatak to Dowarabazar Road
Chhatak to Jakiganj Bazar Road
Kalaruka River

The following table shows the detailed scenario of road widening proposal of roads over 500 meter length.

Table 11.5: Details of Road Widening Proposal at Chhatak Pourashava**

Road Type	Width		Road Id		Length (m)	Phase-wise Development		
	Existing Width (ft.)	Proposed RoW	Existing Id	Proposed Id		First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Third Phase (Beyond 10th year)
Primary	18.04	80 ft.	1	WP1	703.13	Phase 1		
Primary	18.04	80 ft.	1	WP1	1095.00	Phase 1		
Primary	13.12	100 ft.	402	WP402	792.76		Phase 2	
Primary	18.04	80 ft.	1	WP1	568.63	Phase 1		
Secondary	16.40	60 ft.	2	WS2	788.23	Phase 1		
Secondary	16.40	60 ft.	2	WS2	819.46	Phase 1		
Secondary	11.48	40 ft.	110	WS110	838.87	Phase 1		
Secondary	19.68	60 ft.	174	WS174	1002.48	Phase 1		
Secondary	14.76	60 ft.	339	WS339	531.90	Phase 1		
Secondary	9.84	40 ft.	421	WS421	712.72	Phase 1		
Secondary	16.40	60 ft.	2	WS2	1021.69		Phase 2	
Secondary	19.68	60 ft.	174	WS174	770.49	Phase 1		
Secondary	11.48	40 ft.	551	WS551	666.20		Phase 2	
Secondary	9.84	40 ft.	537	WS537	772.29		Phase 2	
Secondary	6.56	40 ft.	128	WS128	558.19			Phase 3
Secondary	6.56	40 ft.	128	WS128	866.08			Phase 3
Secondary	13.12	60 ft.	224	WS224	1336.86		Phase 2	
Tertiary	6.56	30 ft.	105	WT105	798.41			Phase 3
Tertiary	9.84	30 ft.	227	WT227	545.22		Phase 2	
Tertiary	11.48	30 ft.	551	WT551	1221.48		Phase 2	
Access	11.48	20 ft.	11	WA11	557.34		Phase 2	
Access	8.20	20 ft.	70	WA70	628.39			Phase 3
Access	6.56	20 ft.	148	WA148	592.67			Phase 3
Access	9.84	20 ft.	422	WA422	551.84		Phase 2	
Access	9.84	20 ft.	394	WA394	576.73		Phase 2	
Access	8.20	20 ft.	7	WA7	545.01		Phase 2	

*** Road length≥ 500 meter incorporated here. Details of all roads are given in Appendix and Ward Action Plan.*

11.5.1.3 List of Proposed New Roads

New roads have been proposed in the Road Network Plan of Chhatak Pourashava to establish the missing links, propose new links and make a comprehensive and well established road network. Primary road of 100 ft wide is proposed 1.96 km, which is 7.24% of the total new road proposal in the Road Network Plan. Secondary roads comprise 60 ft. (3.20 Km or 11.83%) and 40 ft (3.05 km or 10.56%) wide road. Highest length of new road is proposed as access road, which will be 8.71 km or 32.20%. Tertiary road of 30 ft. RoW is proposed 7.80 Km, which is 28.81% of the total proposal of new roads. Table 11.6 shows the summary of road widening proposal. Table 11.7 shows the detailed scenario of new road proposal of Chhatak Pourashava. Map 11.2 shows the road network plan of the pourashava.

Table 11.6: Summary of New Road Proposal in Chhatak Pourashava

Type of Road	Proposed RoW	Length (Kilometer)	Percentage
Primary	80 ft.	0.00	0.00
	100 ft.	1.96	7.24
Secondary	40 ft.	5.39	19.92
	60 ft.	3.20	11.83
Tertiary	30 ft.	7.80	28.81
Access	20 ft.	8.71	32.20
Total		**27.06**	**100.00**

Source: Road Network Plan of Chhatak Pourashava

Table 11.7: New Road Proposal in Chhatak Pourashava**

Road Type	RoW (ft.)	Proposed Id	Length (m)	Phase-wise Development		
				First Phase (1st to 5th yr)	Second Phase (6th to 10th yr)	Beyond 10th year
Primary	100 ft.	NP150	1289.28	Phase 1		
Primary	100 ft.	NP150	554.96	Phase 1		
Primary	100 ft.	NP150	1650.58	Phase 1		
Secondary	60 ft.	NS67	957.67			Phase 3
Secondary	60 ft.	NS68	589.97			Phase 3
Secondary	60 ft.	NS78	561.30	Phase 1		
Secondary	40 ft.	NS88	865.47			Phase 3
Secondary	40 ft.	NS88	1153.41			Phase 3
Secondary	40 ft.	NS143	653.15	Phase 1		
Secondary	40 ft.	NS148	877.37			Phase 3
Secondary	40 ft.	NS69	810.92	Phase 1		
Secondary	40 ft.	NS69	604.22	Phase 1		
Secondary	40 ft.	NS66	644.10			Phase 3
Tertiary	30 ft.	NT59	626.86		Phase 2	
Tertiary	30 ft.	NT74	509.22		Phase 2	
Tertiary	30 ft.	NT75	1104.92			Phase 3
Tertiary	30 ft.	NT75	601.77			Phase 3
Tertiary	30 ft.	NT86	1116.92		Phase 2	
Access	20 ft.	NA135	515.32		Phase 2	
Access	20 ft.	NA146	620.61			Phase 3
Access	20 ft.	NA146	599.43			Phase 3
Access	20 ft.	NA179	907.00		Phase 2	

*** Road length≥ 500 meter are incorporated here. Details of all roads are given in Appendix and Ward Action Plan.*

11.5.2 Plans for Transportation Facilities

The consultants have proposed some terminal and parking facilities, pedestrian facilities etc in the Traffic and Transportation Management Plan of the pourashava.

11.5.2.1 Parking and Terminal Facilities

Various types of terminal facilities and a parking facility are proposed in the master plan. These proposals are shown in Map11.2 and the description is given below.

Bus Terminal

Chhatak is a very important urban center. It has influence in the national economy. That is why it has direct bus service with Dhaka, the capital city. But there is no designated bus terminal at present, for which buses park on the major road and create serious congestion. The consultants proposed a bus terminal of 7.81 acre of land at Purba Kamar Gaon mouza in Ward No. 5. This bus terminal will have

all the latest facilities like public announcement system, bus information board etc. It is expected that this terminal will be able to serve the people during the Master Plan period.

Truck Terminal

As there are heavy industries in Chhatak Pourashava and there is provision for new industries, it will need new truck terminal. At present there is no truck terminal which creates problem like congestion, mis-management etc. So a truck terminal is proposed with 11.56 acre of land which will be located near the proposed 100 ft. road.

River Port (Passenger)

It is already stated that Surma River in Chhatak Pourashava is a Class-II waterway of BIWTA, which means it can be used for water transport throughout the year. Currently unauthorized water transports are used to communicate using this river. To introduce a better transport environment the consultants have proposed a passenger port in the river so that this communication system improves. This will help in the improvement of the present passenger transport system. Table 10.23 of Chapter 10 shows the details of this proposal.

River Port (Freight)

Surma River is highly used for transporting cement by the cement industries located within the pourashava area. It is also used to transport stones from the railway operated ropeway service. At present the whole river bank is used for loading and unloading of goods in an unplanned manner. This causes serious problem in river transport here. To facilitate this freight transport and to provide more flexibility two new river port for freight transport have been proposed here in the pourashava. Detail of these two proposed ports is given in Table 10.23 of Chapter 10.

Para Transit Stands

Para transits like auto-rickshaw, tempo, microbus etc. are very popular in Chhatak Pourashava. Tempo is now a major and cheap transport mode in small towns that play important role in commuter transportation. No formal or designated place for para transit modes is found within the pourashava. This creates various problems like congestion on the major parts of the pourashava area. This is why designated spaces are allocated to develop para transit stands in the pourashava in a distributed manner. This will ensure easy access to these modes for people living at distant parts of the pourashava.

Total 5 para-transit stands will be established in Chhatak Pourashava, which will cover a total area of 10.61 acre. Location of Taxi/Tempo Stand is given in Map 11.2 and detail of this proposal is given in Table 10.23 of Chapter 10.

11.5.2.2 Development of Facilities for Pedestrians, Bicycles and Rickshaws

Footpath

Footpath has been recommended along all the roads in the proposed Road Network Plan of the Pourashava. Depending on the RoW of the proposed road, the width of footpath may vary from 4 ft to 15 ft (Figure 11.2-7). This will definitely update the existing condition of not having footpath in the pourashava area.

Foot Over-bridge/Zebra Crossing

Foot over-bridge and zebra crossings should be constructed at important points so that pedestrian safety is ensured.

Non-motorized Traffic Lane (NMT)

Non-motorized traffic lane is also proposed in the pourashava. In the proposed layouts for primary and secondary roads, separate lanes for NMTs are proposed. Width of NMT lane will be 4 ft.

11.5.2.3 Bridges and Culverts

Some bridges and culverts are proposed in the Traffic and Transportation Management Plan of Chhatak Pourashava. The following table shows the number of proposed bridges and culverts in the Master Plan. These proposed bridges and culverts are shown in Map 11.2 and in a larger map in Appendix – 3.

Table 11.8: Proposed Bridges and Culverts in Chhatak Pourashava

Type of Bridge/Culvert	Proposal Status	
	Existing	Proposed
Bridge	0	1
Railway Bridge	2	0
Railway Over-bridge	0	1
Culvert	16	15
Total	**18**	**17**

Source: Traffic and Transportation Management Plan of Chhatak Pourashava

11.5.2.4 Other Transportation Facilities

Roundabout/Channelization

Roundabouts and channelization should be designed at important points like the Chhatak Traffic Point and on the joining point of the proposed 100 ft. road with Sylhet - Chhatak Highway.

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 deployed at critical intersections.

11.6 Transportation System Management Strategy (TSM)

This section describes transport management strategy (TSM) in respect of facilities and operations, traffic flow and safety, and traffic management in Chhatak Pourashava.

11.6.1 Strategies for Facility Operations

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

Traffic Engineering

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

Roadside Interference

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.

11.6.2 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 ensure 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 should be introduced.

Driver Training and Testing

Effective driver training and testing is important for achieving safe roads. 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 can be done for this purpose.

Education and Publicity

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. 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. Publicity is an indispensable part of any nation’s road safety strategy. Boy Scouts and local NGOs can be engaged for this purpose.

Vehicle Safety

Vehicles without fitness pose threats to the life of the people by reducing the safety. Proper inspection of the vehicles should be done on a regular basis so that the vehicles having poor condition can not run on the road.

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. Initially, 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.

11.6.3 Strategies for Traffic Management

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

- Road markings must be put on major roads and signals must be installed at intersections for good traffic management.
- Traffic police have to be assigned in major intersections.
- A traffic control committee may be formed to manage traffic in a day to day basis and also in special cases like festivals.
- Road signs should be put in every available location so that people can reach their destinations easily.

11.7 Plan Implementation Strategies

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

11.7.1 Implementation, Monitoring, Evaluation and Coordination of the Plan

Monitoring of Plan Implementation

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

Mobilization of Resources

Pourashava is already suffered from scarcity of resources. For implementing the development project under the plan, huge resources will be necessary. Presently, lion's share of the resources is provided by the government. But it will not be possible for the government to supply all the funds needed to implement plans of all the projects of the Pourashava. So, effort must be directed to mobilize own resources by the Pourashava. Holding tax is the most important sources of local revenue, there should be attempt to maximize holding tax collection. The Pourashava should collect hundred percent of its holding tax. Besides, to increase earning from holding tax, updating of holding information should be carries out regularly. In this revision, new structure should be brought under tax.

Institutional Arrangement

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

Chapter – 12

DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

Chapter – 12
DRAINAGE AND ENVIRONMENTAL MANAGEMENT PLAN

12.1 Drainage Management Plan

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

12.2.1 Goals and Objectives

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

The objectives of drainage planning are described as follows:

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

12.2.2 Methodology and Approach to Planning

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

- Survey the main drainage channels from their heads to the outfalls and to estimate their capacity to discharge water.
- Collect and analyze meteorological data over time in the area to determine the meteorological conditions and predict storm surges.
- Determine the efficiency of the present drainage systems and make recommendation to government.
- Organize a public enlightenment campaign to expose the adverse effects of dumping refuse in drainage channels, through a mass media meeting.
- Drainage channels were surveyed by leveling from the head of the channels to the outfall using a surveyor's level. A zero datum was chosen at the head of each channel. This zero height was then used to level the channel from the head to the toe or outfall. In areas where water flow was observed, the velocity of the flow was recorded. The flow velocity was

calculated by timing the flow rate within a 3-5m length of channel. In areas where sediment or refuse was observed to accumulate in the bottom of the channel, the thickness of such sediment or refuse was measured.

- A questionnaire was administered to local residents to collect information about flooding, refuse disposal and drainage channel patterns from local residents along flood prone areas. The answers to the questionnaire were statistically analyzed and use to decipher resident's opinion on the problem of flooding.

12.2 Existing Drainage System/ Network

12.2.1 Man-made Drains

Pourashava has only 10.85 Km drainage network at Chhatak Pourashava area. Of these 0.20 km is Katcha drain and 10.65 km pucca drain. Maximum people of the Pourashava deprived from drainage facility at Chhatak Pourashava. Table 12.1 shows ward wise length of drainage network in Chhatak Pourashava

Table 12.1: Ward Wise Length of Drainage Network in Chhatak Pourashava

Ward No.	Length in Km					
	Pucca	%	Katcha	%	Total	%
Ward No. 1	0.66	6.22	0.00	0.00	0.66	6.11
Ward No. 2	0.90	8.44	0.00	0.00	0.90	8.29
Ward No. 3	0.96	9.03	0.05	23.98	1.01	9.30
Ward No. 4	0.00	0.00	0.00	0.00	0.00	0.00
Ward No. 5	1.45	13.63	0.00	0.00	1.45	13.38
Ward No. 6	2.47	23.20	0.10	48.47	2.57	23.65
Ward No. 7	3.71	34.84	0.05	27.55	3.77	34.71
Ward No. 8	0.26	2.42	0.00	0.00	0.26	2.38
Ward No. 9	0.24	2.22	0.00	0.00	0.24	2.18
Total	**10.65**	**100.00**	**0.20**	**100.00**	**10.85**	**100.00**

Source: Physical Feature Survey, 2010

12.2.2 Natural Canal and River

General Description of River and Natural Canals

Surma River is the major water channel in the pourashava area. It divides the pourashava in two parts. It is about 8 Km in length and covers 379.26 acre or 15.2% land of the pourashava. Currently it is under illegal encroachment by the local people in various locations. This creates problems in the natural flow of water. In the implementation of the Master Plan, this issue should be given a priority.

Some other natural canals are found here in the pourashava which plays a vital role in the existing drainage system.

12.2.3 Analysis of Land Level and Topographic Condition

Total spot number taken at Chhatak Pourashava is 5799. Maximum height of Pourashava area is 42.05 meter and lowest height is 6.44 meter and average height of the area is 10.57 meter. Following table shows the summary of the topographic survey.

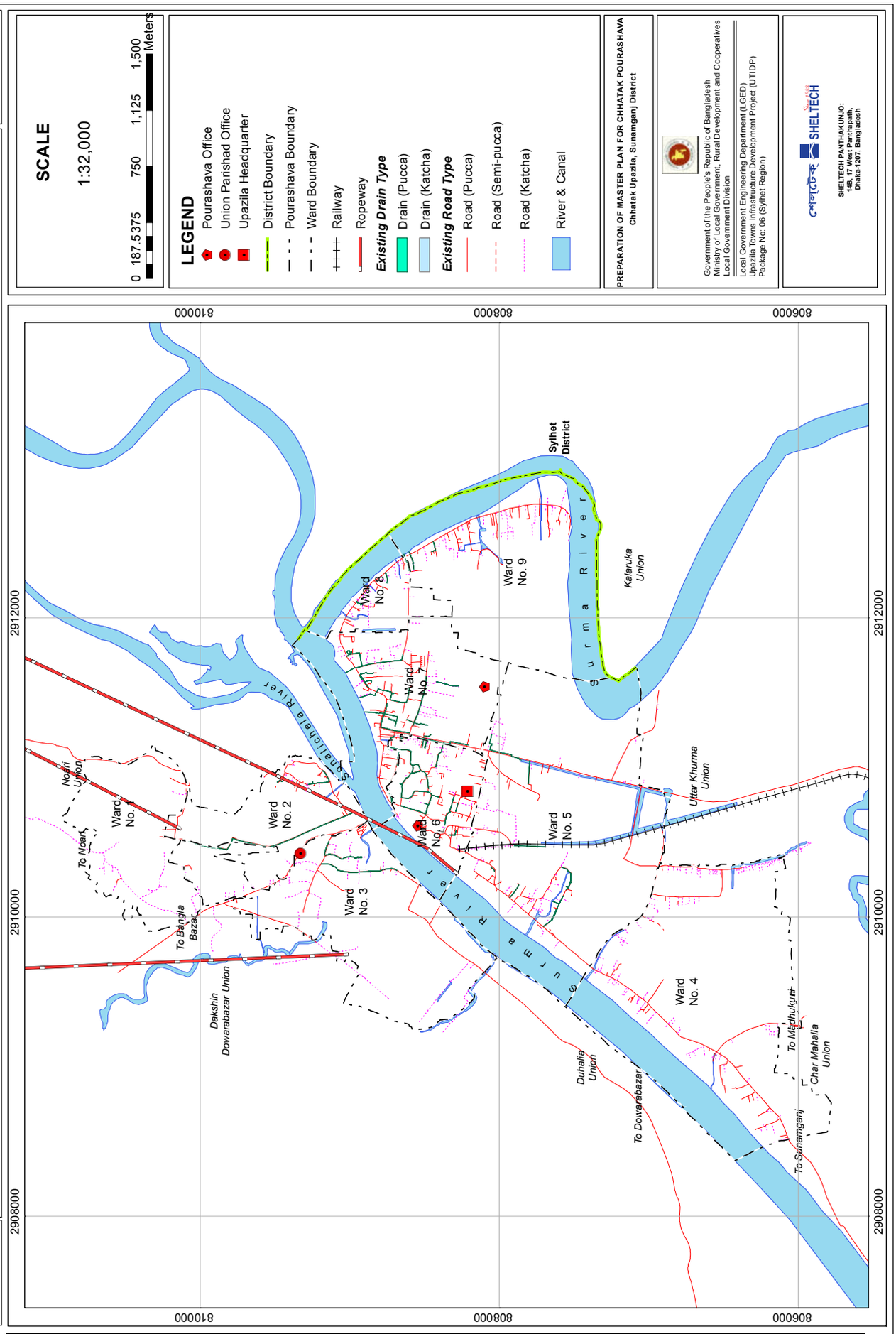
Table 12.2: Contour Derived from the Spot Elevation

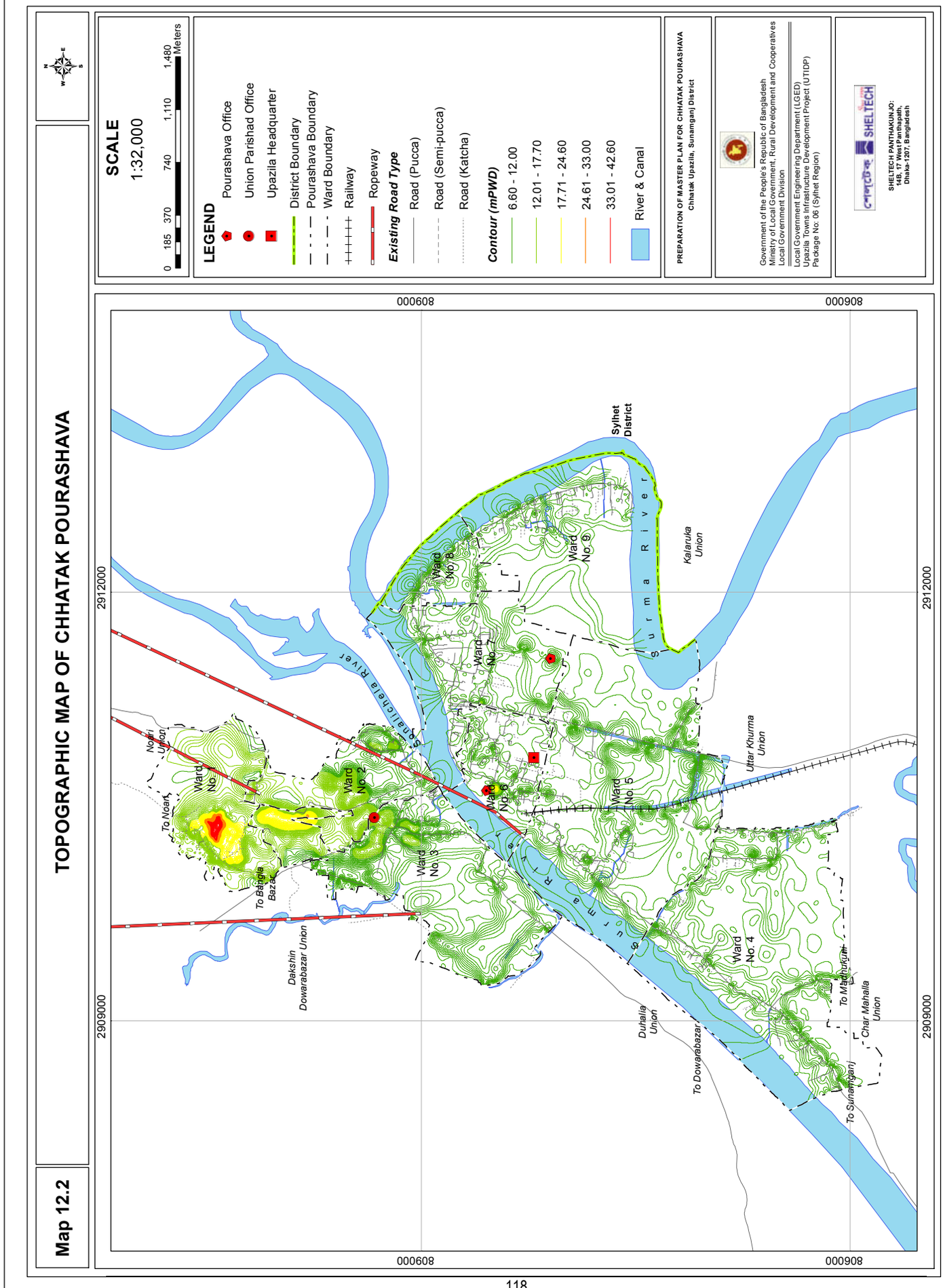
Spot Unit	Value
Total Spot Number	9044
Mean	7.14
Maximum Height	11.3
Minimum Height	0.46
Standard Deviation	1.1

Source: Topographic Survey, 2010

Map 12.1

EXISTING DRAINAGE NETWORK IN CHHATAK POURASHAVA




Map 12.2
TOPOGRAPHIC MAP OF CHHATAK POURASHAVA
SCALE
1:32,000
0 185 370 740 1,110 1,480 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Road Type
Road (Pucca)
Road (Semi-pucca)
Road (Katcha)
Contour (mPWD)
6.60 - 12.00
12.01 - 17.70
17.71 - 24.60
24.61 - 33.00
33.01 - 42.60
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14/B, 17, West Panthapath,
Dhaka- 1207, Bangladesh
000608
000908
2912000
2909000
Sylhet District
Kalaruka Union
Uttar Khurma Union
Dutalia Union
Char Mahalla Union
Dakshin Dowarabazar Union
Noari Union
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Ward No. 8
Ward No. 9
To Noari
To Bangla Bazar
To Dowarabazar
To Madhurjan
To Sunamganj
Surma River
Kalaichera River

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

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

12.2.4.1 Method Used

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

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

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

Calculation of Drainage Runoff:

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

$Q = CIA/360$

Where, Q = peak flow in m3 / sec
C = run-off coefficient
I = design rainfall intensity in mm/hr
A = Catchment area in hectares

Run – off coefficient

The run-off coefficient C is defined as the ratio of the rate of run–off to the rate of rainfall during the same time period and is dimensionless. Because, some rainfall is retained in depression or ponds and the run–off is prevented from reaching the drain due to obstructions, or infiltrates into the soil, the run – off coefficient is less than one. Table 12.2 shows the run-off coefficients, which are commonly used when using the rational method for the individual situations.

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

Rainfall Intensity:

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

Table 12.3: Common Run – Off Coefficients for Different Types of Area

Type of Drainage Area		Run – off Coefficient: C
Business	Downtown areas	0.70 – 0.95
	Neighborhood area	0.50 – 0.70
Residential	Single – family areas	0.30 – 0.50
	Multi – units, detached	0.40 – 0.60
	Multi – units, attached	0.60 – 0.75
	Suburban	0.25 – 0.40
	Apartment dwelling areas	0.50 – 0.70
Industrial	Light areas	0.50 – 0.80
	Heavy areas	0.60 – 0.90
	Parks, cemeteries, playgrounds	0.10 – 0.35
	Rail road yard areas	0.20 – 0.40
	Unimproved areas	0.10 – 0.30
	Streets; Driveways and roofs	0.10 – 0.95
Lawns	Sandy soil, flat, 2%	0.05 – 0.10
	Sandy soil, avg, 2 – 7%	0.10 – 0.15
	Sandy soil, steep, 7%	0.15 – 0.20
	Heavy soil, flat, 2%	0.13 – 0.17
	Heavy soil, avg, 2 – 7%	0.18 – 0.22
	Heavy soil, steep, 7%	0.25 – 0.35

Source: Handbook of Hydrology, by - David R. Maidment

12.2.4.2 Demand Analysis

Special attention is provided to ensure integrated natural and man made drainage network system. In the demand analysis land use, especially road network and alignment of khal are important basis for drainage network and area determination of drains.

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

Chhatak Pourashava is broadly classified into zones as per the land use, topography and slope of the pourashava. Then the drainage area, run off coefficient, time of concentration, rainfall intensity, coefficient factors, rainfall intensity and run off as per the assigned zone are calculated.

12.3 Plans for Drainage Management and Flood Control

12.3.1 Plan for Drain Network Development

Drainage Network Plan

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

Primary Drain

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

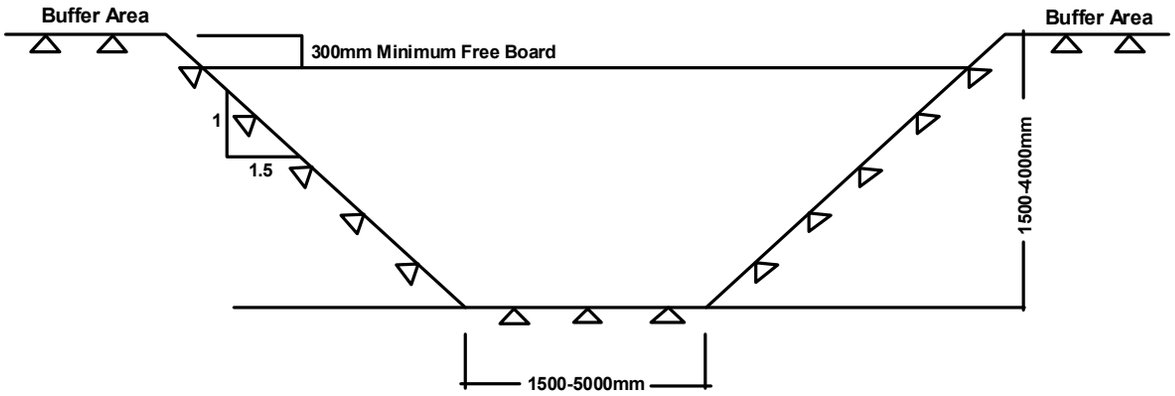


Figure 12.1: A typical earthen primary drain

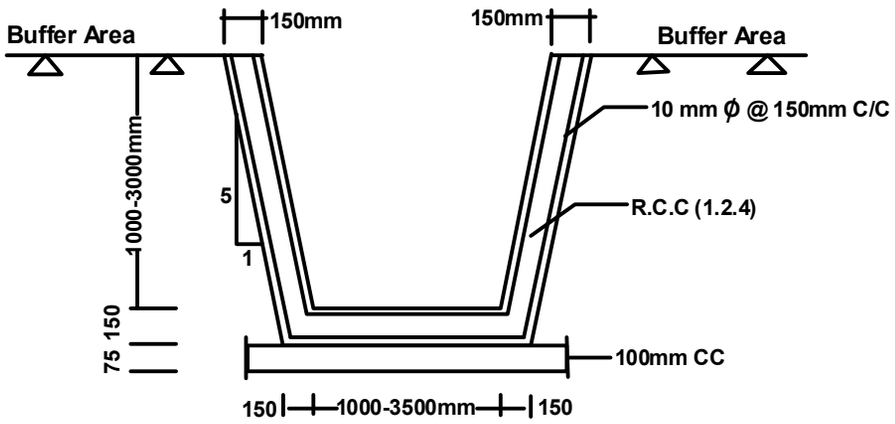


Figure 12.2: A typical RCC Primary Drain

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:

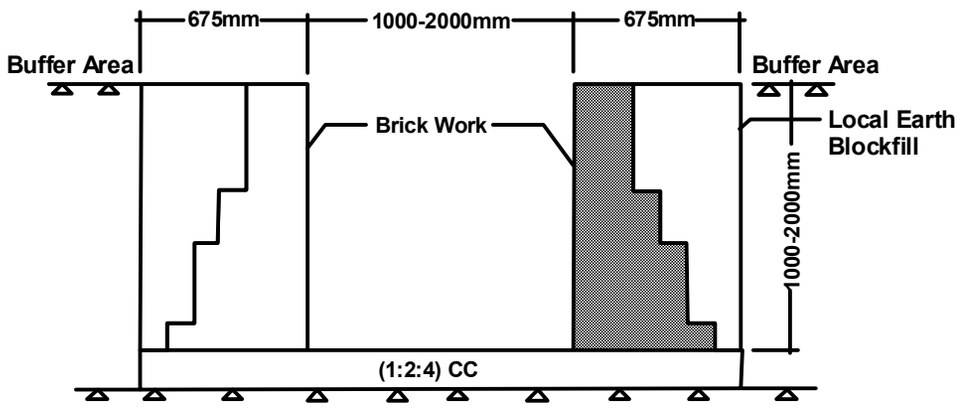


Figure 12.3: A Typical Secondary Drain

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:

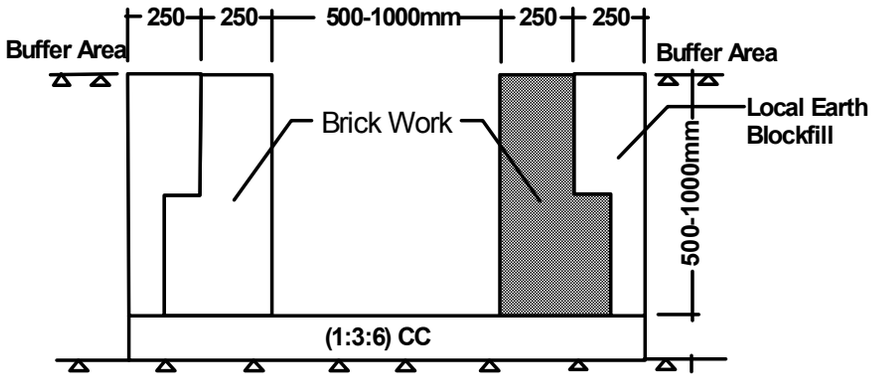


Figure 12.4: A typical tertiary drain

Quaternary Drain

Quaternary Drains had to be introduced in this particular project due to the complexity of the existing system. These drains are the smallest parts of a large drainage system. It takes the discharge of a small area to a tertiary drain. These are the smallest drains considering the depth and width.

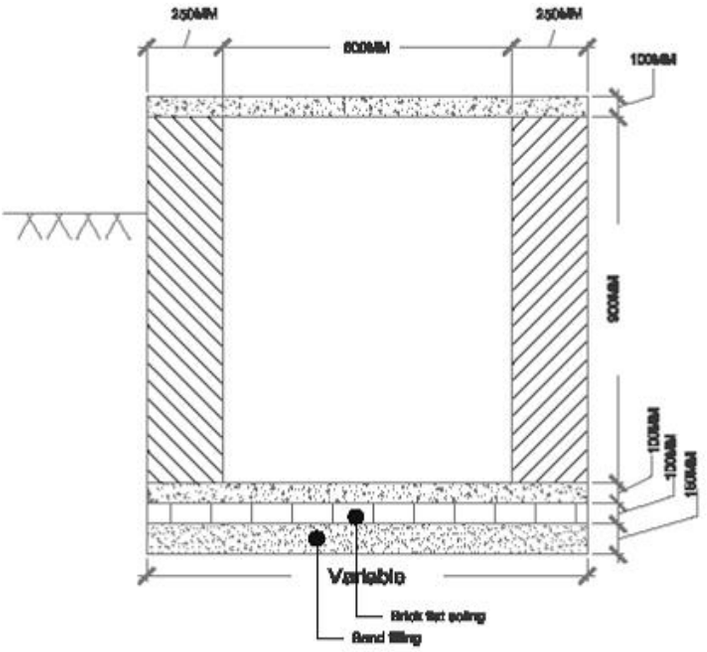


Figure 12.5: A typical quaternary drain

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

Plot Drains

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

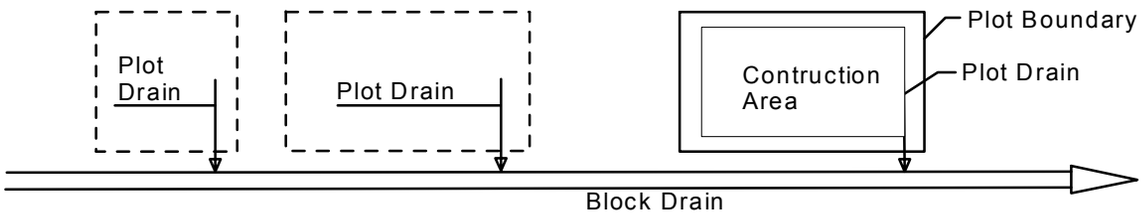


Figure 12.6: A sketch showing plot and block drain

Block Drain

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

Other Drainage Related Infrastructures

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

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

i) Bridges, Culverts and Box Culverts

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

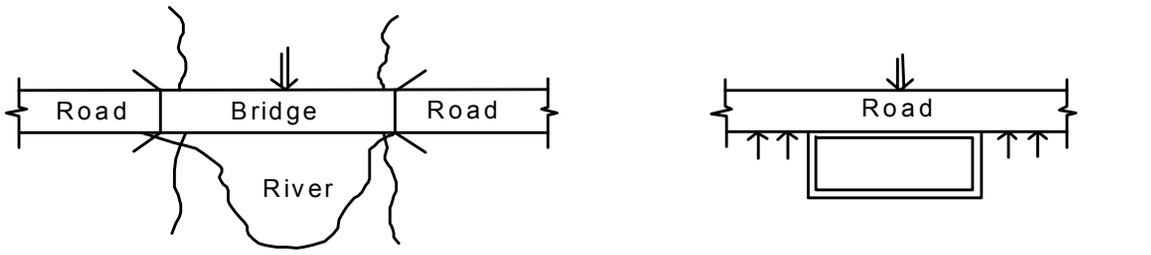


Figure 12.7: Bridge and culvert

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.

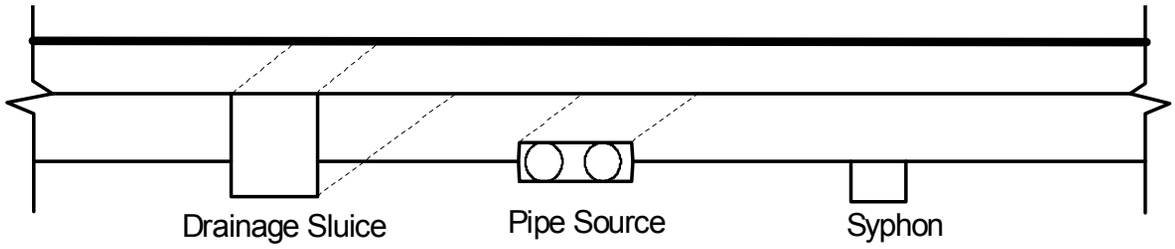


Figure 12.8: A schematic view of Drainage sluice, pipe sluice and siphon on embankment which relieve drainage congestion.

12.3.2 Outfall of Drains

At present there's no definite and designated outfall in Chhatak Pourashava area. The Drainage network plan proposes 23 outfalls in different khals in the pourashava. These are shown in Map 12.3.

12.3.3 Proposal for Improvement of the Existing Drain Networks

Based on the results of drainage study it is recommended for the existing drain that:

- Rehabilitate broken drains;
- Cover the open drains based on budget allocation.
- Fencing off some of the channels to prevent dumping of refuse.
- Construction of new channels and rehabilitation of old ones with enough drainage head.

- Construct a new pump drainage network for the area towards Lula River.
- Remove all un-authorized structures, which developed on drainage structures.

12.4 Drainage Network Plan

A total of 92.48 Km drain is proposed under the drainage network plan of Chhatak Pourashava. In this network 4.03 Km existing drain is kept. Total 88.45 Km of new drain is proposed to complete this network of drains. In the drainage network plan 12.74 km is primary drain, 36.68 km is secondary drain, 36.19 km is tertiary drain and 6.87 km is quaternary drain. The following table shows the summary of the drainage network plan proposal.

Table 12.4: Summary of Drainage Network Plan

Type of Drains	Existing Length			Proposed Length			Total Length		
	Meter	Kilometer	%	Meter	Kilometer	%	Meter	Kilometer	%
Primary	1243.20	1.24	30.82	11494.54	11.49	13.00	12737.74	12.74	13.77
Secondary	1435.56	1.44	35.59	35243.52	35.24	39.85	36679.09	36.68	39.66
Tertiary	1247.40	1.25	30.92	34943.79	34.94	39.51	36191.19	36.19	39.13
Quaternary	107.80	0.11	2.67	6766.26	6.77	7.65	6874.06	6.87	7.43
Total	**4033.96**	**4.03**	**100.00**	**88448.12**	**88.45**	**100.00**	**92482.08**	**92.48**	**100.00**

Source: Drainage and Environmental Management Plan of Chhatak Pourashava

12.4.1 Proposed Improvement of Existing Drains

4.03 km of existing drain is kept in the drainage network plan of which 1.24 km is primary, 1.44 km is secondary, 1.25 km is tertiary and only 107.80 meter is quaternary drain. Table 12.5 shows the details of the existing drains.

Table 12.5: Proposed Improvement of Existing Drains

Type of Drain	Existing Drain Id	Proposed Drain Id	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Primary	87	EP87	2.3 - 3.8	2.23 - 3.23	Ward No. 7	420.16
Primary	71	EP71	2.3 - 3.8	2.23 - 3.23	Ward No. 6	123.07
Primary	71	EP71	2.3 - 3.8	2.23 - 3.23	Ward No. 7	165.89
Primary	89	EP89	2.3 - 3.8	2.23 - 3.23	Ward No. 7	303.24
Primary	15	EP15	2.3 - 3.8	2.23 - 3.23	Ward No. 9	22.19
Primary	15	EP15	2.3 - 3.8	2.23 - 3.23	Ward No. 8	208.65
Secondary	37	ES37	2.35 - 3.35	1.12 - 2.12	Ward No. 6	233.20
Secondary	4	ES4	2.35 - 3.35	1.12 - 2.12	Ward No. 6	86.65
Secondary	70	ES70	2.35 - 3.35	1.12 - 2.12	Ward No. 6	146.02
Secondary	70	ES70	2.35 - 3.35	1.12 - 2.12	Ward No. 7	5.18
Secondary	4	ES4	2.35 - 3.35	1.12 - 2.12	Ward No. 6	60.07
Secondary	4	ES4	2.35 - 3.35	1.12 - 2.12	Ward No. 6	134.82
Secondary	10	ES10	2.35 - 3.35	1.12 - 2.12	Ward No. 5	221.17
Secondary	76	ES76	2.35 - 3.35	1.12 - 2.12	Ward No. 7	501.16
Secondary	27	ES27	2.35 - 3.35	1.12 - 2.12	Ward No. 5	47.29
Tertiary	69	ET69	1.5 - 2.5	0.64 - 1.00	Ward No. 7	201.32
Tertiary	68	ET68	1.5 - 2.5	0.64 - 1.00	Ward No. 6	71.80
Tertiary	68	ET68	1.5 - 2.5	0.64 - 1.00	Ward No. 7	41.96
Tertiary	30	ET30	1.5 - 2.5	0.64 - 1.00	Ward No. 6	27.59
Tertiary	30	ET30	1.5 - 2.5	0.64 - 1.00	Ward No. 7	145.39
Tertiary	29	ET29	1.5 - 2.5	0.64 - 1.00	Ward No. 6	59.63
Tertiary	29	ET29	1.5 - 2.5	0.64 - 1.00	Ward No. 7	33.09
Tertiary	34	ET34	1.5 - 2.5	0.64 - 1.00	Ward No. 6	66.57

Type of Drain	Existing Drain Id	Proposed Drain Id	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Tertiary	33	ET33	1.5 - 2.5	0.64 - 1.00	Ward No. 6	28.15
Tertiary	33	ET33	1.5 - 2.5	0.64 - 1.00	Ward No. 6	112.69
Tertiary	67	ET67	1.5 - 2.5	0.64 - 1.00	Ward No. 6	64.37
Tertiary	56	ET56	1.5 - 2.5	0.64 - 1.00	Ward No. 5	94.18
Tertiary	28	ET28	1.5 - 2.5	0.64 - 1.00	Ward No. 5	184.89
Tertiary	74	ET74	1.5 - 2.5	0.64 - 1.00	Ward No. 6	11.98
Tertiary	74	ET74	1.5 - 2.5	0.64 - 1.00	Ward No. 7	82.04
Tertiary	35	ET35	1.5 - 2.5	0.64 - 1.00	Ward No. 6	21.74
Quaternary	1	EQ1	0.25 - 0.85	0.30 - 1.10	Ward No. 6	107.80
						4033.96

Source: Drainage and Environmental Management Plan of Chhatak Pourashava

12.4.2 List of Proposed New Drains

New drains have been proposed in the drainage network plan of the pourashava to serve the future demand for drainage. Among the proposed 88.45 Km of new drains, 11.49 km is primary 35.24 km is secondary, 34.94 km is tertiary and 6.77 km is quaternary drain.

Table 12.6 shows the proposal of new drain having length more than or equal to 500 meter of drainage network plan of Chhatak Pourashava. Detail of all drains is given in Appendix – C.

Table 12.6: Proposals of New Drain**

Type of Drain	Proposed Drain Id	Proposed Width (m)	Proposed Depth (m)	Ward No.	Phasing	Length (m)
Primary	NP148	2.3 - 3.8	2.23 - 3.23	Ward No. 4	Phase1	1274.56
Primary	NP43	2.3 - 3.8	2.23 - 3.23	Ward No. 5	Phase1	1362.60
Primary	NP43	2.3 - 3.8	2.23 - 3.23	Proposed Extension Area	Phase1	1075.49
Secondary	NS440	2.35 - 3.35	1.12 - 2.12	Ward No. 2	Phase2	984.48
Secondary	NS88	2.35 - 3.35	1.12 - 2.12	Ward No. 5	Phase2	1077.22
Secondary	NS437	2.35 - 3.35	1.12 - 2.12	Ward No. 5	Phase3	539.34
Secondary	NS514	2.35 - 3.35	1.12 - 2.12	Ward No. 5	Phase1	700.29
Tertiary	NT503	1.5 - 2.5	0.64 - 1.00	Ward No. 1	Phase2	773.53
Tertiary	NT441	1.5 - 2.5	0.64 - 1.00	Ward No. 2	Phase1	746.17

Source: Drainage and Environmental Management Plan of Chhatak Pourashava

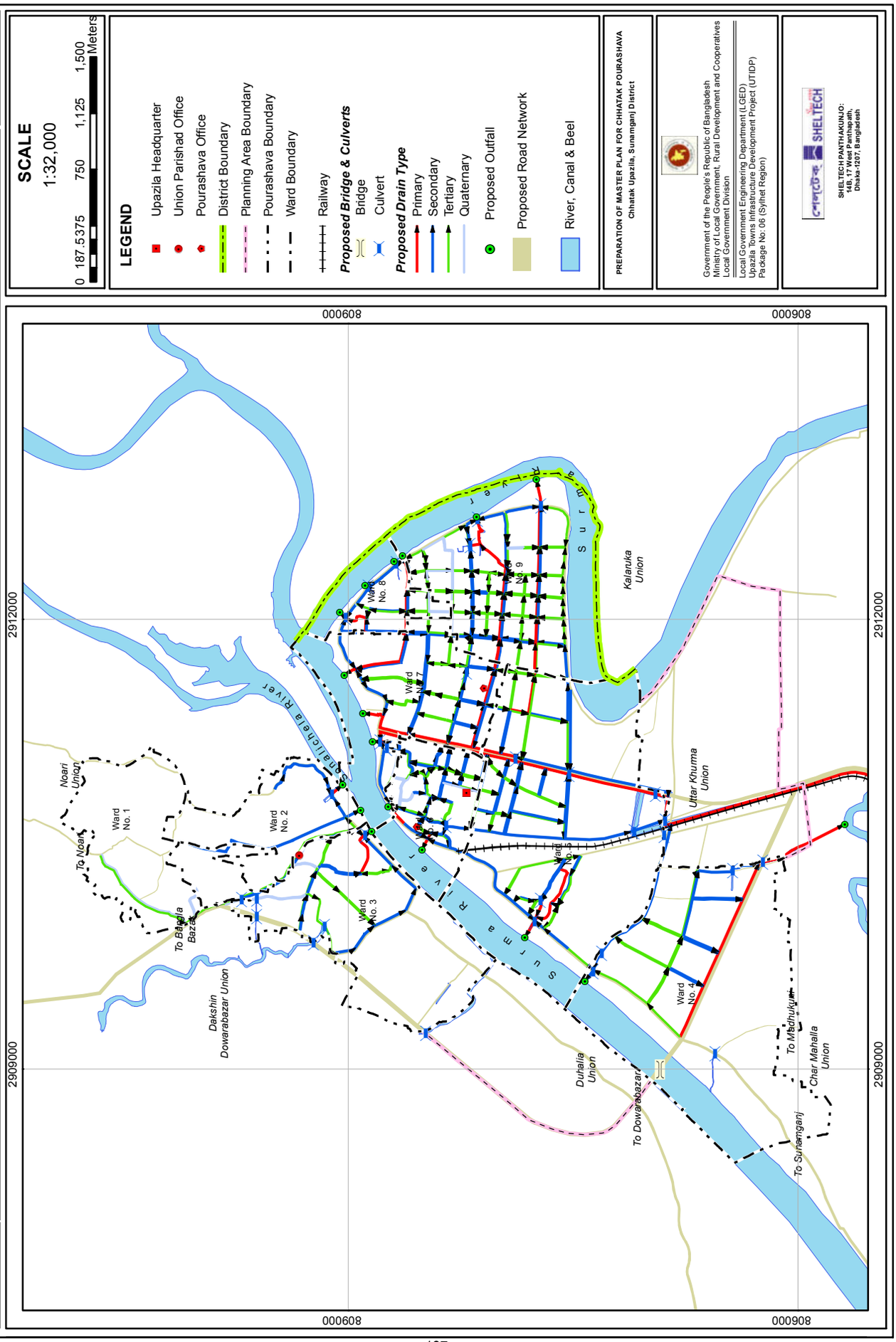
*** Drains having length ≥ 500 meter are incorporated here.*

12.4.3 Proposed Drainage Structures

A total of 151 box-culverts are proposed in the Master Plan of which 121 are newly proposed and the remaining 30 are existing. These will ensure proper management of waste water in the pourashava.

Map 12.3

DRAINAGE NETWORK PROPOSAL OF CHHATAK POURASHAVA



12.5 Environmental Management Plan

This section describes the goals and objectives, and methodology and approach for preparation of Environmental Management Plan.

12.5.1 Goals and Objectives

Urban planners today are becoming ever more involved with environmental concerns. Environmental planning coordinates development to meet objectives for clean air and water; removal of toxic and other wastes; recycling of resources; energy conservation; protection of wetlands, beaches, hillsides, farmlands, forests, and floodplains; and preservation of wildlife, natural reserves, and rivers. Historic preservation strives to keep important buildings and places as part of the permanent environment and uses them to finance the maintenance costs.

Every development work has both positive and negative impacts on environment. It is wise to consider the environmental impacts and its mitigation at planning stage. Environmental consideration at planning process can make the project sustainable for long period. The objectives of Environmental Study of Chhatak Structure Plan, Master Plan and Detailed Area Plan project are,

- to study the existing ecological system and environmental problems in the project area;
- to suggest the mitigation measures for all environmental problems;
- to provide the guidelines and assist the planners, engineers and consultants involved in this project in preparing environmentally sound Plan for Chhatak Town and
- to prepare an Environmental Management Plan (EMP) for future environmental management in the area.

12.5.2 Methodology and Approach to Planning

In environmental study, a multi-disciplinary approach is used for studying development project. The present environmental study is based on data collection and sharing with drainage and geology, transport engineering, socio-economic, economic and topographical survey components. A structured questionnaire prepared by LGED for environmental survey has been followed. Environmental study has been carried out through survey of biodiversity of flora and fauna, water pollution, local air pollution problem, drinking water sources, renewable energy, diseases, and major local environmental issues.

Secondary data has been collected from BWDB, UP Offices, Civil Surgeon Office, Thana Fisheries Office, District Agriculture Extension Office and Meteorological Department. Reports of national organizations were also considered as secondary sources of information.

12.5.3 Existing Environmental Condition

With the increase of housing along with population will produce impact on the environment. Rapid urbanization and numerous human activities will deteriorate the environment, if the infrastructure is not developed as per requirement. So, before planning and designing of any development project, possible adverse environmental impact should be studied. The whole range of potential impacts of the project of various environmental components due to various project activities should be identified qualitatively and in quantities, where they are possible. After identification of significant impacts and issues arising out of them, mitigation measures or project modification/ alternatives will have to be proposed to address the environmental impact issues. An environmental management plan should also be formulated for mitigation and protection of adverse effect of the project on the environment.

12.5.3.1 Geo-morphology

Geology, Soil, Sub soil Condition

Sunamganj district may well have the widest variation in geomorphology and soils of the whole of Bangladesh. Steep hills exceeding 300 m in height with shallow, stony, and rocky soils, and perennially wet basins with peat soil occur within a few km from each other. Most of the land, however, consists of different kind of river floodplain and outwash plains bordering the hill ranges. Bangladesh lies in the southern vicinity of the Shillong plateau, which is the center of a strong seismic activity in the whole region. This seismic center greatly affects almost the whole of Bangladesh and causes huge damage in Sylhet, north-Bengal districts (Rangpur, Dinajpur) and Mymensingh-Dhaka belt of the country. Bangladesh has some major fault lines, including the Dauki fault, Madhupur fault and the tectonic plate boundaries. The tectonic framework of Bangladesh indicates that Sylhet due to the presence of Dauki fault system of eastern Sylhet, the deep-seated Sylhet fault and proximity to the highly disturbed southeastern Assam with the Jaflong thrust, the Naga thrust and the Disang thrust, is a zone of high seismic risk. Sylhet region is located in the seismic zone 3 and so it is highly vulnerable to earthquake. In the last 150 years, three earthquakes of magnitude greater than 7.5 occurred in Sylhet (Ansary, 2002). Sylhet has gone 100 years without a major quake. This seismic gap raises the prospect of a powerful earthquake striking this region sooner rather than later. And as Chhatak is located along the tectonic plate boundary it is more vulnerable for earthquake devastation. Strong mitigation measures should be suggested in the Master Plan of the Pourashava.

Climate

Chhatak has a tropical climate and except for heavy rainfalls, the climate is much like other parts of the country. The mean annual rainfall is 3880 mm with the heaviest occurring during June-July period. Despite the higher rainfall, the climatic regime is similar to that of the remainder of the county. The cool and dry winter, December-February is followed by a hot and showery pre-monsoon period, March-May, and then the relatively cooler but very wet monsoon season, June-September. This is followed by a transitional humid and showery period up to the beginning of the winter. Chhatak is not affected by cyclones which periodically devastate coastal districts, but squally winds accompanying thunderstorms in March-May and in September-November often cause damage to katcha buildings. Frozen rain which accompanies these storms periodically causes serious damage to the crop in March-April.

Temperature

In summer (March-May) mean temperature is approximately 26.60 c while the winter mean is 19.7^{0}c. From mid November to late February, the weather is dry and relatively cool. The average temperature is between 18^{o}C to 21^{o}C, with extreme minima and maxima ranging between 5.6^{o}C and 32.8^{o}C. The period March-May is one of heat and increasing violent thunder showers. The average temperature is about 27^{o}C, with extreme minima and maxima ranging between 12.2^{o}C to 40.6^{o}C. June to September is the period of the true monsoon but humid conditions continue up to early November. The average temperature is 26^{o}C to 33^{o}C and extreme maxima about 37.8^{o}C during the monsoon period.

Humidity

The climate of Sunamganj district is marked by extreme humidity, the mean humidity which was recorded to be 76%. Monthly relative humidity at 9AM and 6 PM is tabulated in Table 12.7.

Table 12.7: Relative Humidity at 9 AM and 6 PM in (%)

Parameters	Months											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9AM.	78	75	63	70	84	85	86	85	86	85	74	79
6PM	67	57	51	63	79	82	83	84	85	84	75	73

Source: Meteorological Department, 2009.

Rainfall

Rainfall data of Chhatak Pourashava has been collected from Meteorology office. Chhatak Pourashava is located in Sunamganj region and local station of weather data of this region is in Sunamganj. It presents the highest annual rain fall was recorded in 2000 which was 4692 mm with monthly rain fall of 391mm. In this time period the lowest rain fall recorded in 1999 which was 3334 mm with average monthly rain fall of 277.8333mm.

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.

Hydrology

Chhatak Pourashava located within Sunamganj (Surma-Kushiyara) Basin is a part of Meghna Basin which is the smallest but one of the most unpredictable and chaotic basins in the world by hydrologic means. Sunamganj sub-basin actually comprises larger portion of northeast region of Bangladesh (83.5 percent). The basin is bordered by floodplain land from the Old Brahmaputra River on the west and from the Barak River on the east, by uplands of the Meghalaya Foothills on the north and by uplands and Piedmont floodplains along the south. The topography of the basin is irregular, falling from the piedmont hills near India across gently sloping plains to the Sunamganj Depression near the geographic center of the region. The interfluvial depressions, commonly known as the Haor are the dominant features of this basin. The large saucer shaped haor region covering an area of 8,000 sq.km., which is the largest single inland depression in the country. There are as many as 47 major haors in the whole haor region. The main streams traversing the Depression include Surma, Kalni, Kushiyara, Baulai and Dhanu River. Highly sinuous, meandering sand-bed channels with cohesive banks characterize the streams. As stated earlier the Surma River passes through the pourashava.

From May to October the entire central portion of the basin becomes deeply flooded in most years. Across the Sunamganj Basin, rainfall during the southwest monsoon ranges from around 1400 mm (about 65 percent of annual total in this particular region) in southwest to around 4100 mm (69 percent) in the northeast at the border of Meghalaya. In contrast, the northeast monsoon brings dry air into the region and rainfall in this season ranges from around 85 mm (4 percent) in the southwest to around 220 mm (4 percent) in the northwest. The spring reversal from around 493 mm (23 percent) in the southwest to around 1287 mm (21 percent) in the northeast, and the autumn reversal by decreasing sporadic rainfall, the rainfall ranging from around 171 mm (8 percent) in the southwest to around 316 mm (6 percent) in the northeast. All the surface water originating in the Barak, Meghalaya Foothills, Tripura Hills sub-basin actually enter to the Sunamganj (Surma-Kushiyara River) sub-Basin, flow towards the outlet of the whole Meghna Basin. Bhairab Bazar is considered as the outlet, which is 20 km. downstream of Bilapur, the joining point of the Surma and Kushiyara river system after being

bifurcated at Amalshid from the Barak River. The recorded maximum discharge of the Meghna Basin at Bhairab Bazar was 19, 800 m3/s.

12.5.3.2 Solid Waste and Garbage Disposal

Condition of solid waste management at Chhatak Pourashava is not so good. Chhatak Pourashava has only 24 dustbins which are located in Ward No. 6 and Ward No. 7. But these are not well maintained. In most cases Garbage are throwing here and there due to the lack of dustbins. Total 1 truck and 4 pushcarts are using for waste collection and dump waste to the dumping sites in Chhatak Pourashava. Total 19 people are engaged for this job. There are two waste dumping sites in Chhatak Pourashava, one is located at east Kamargaon and another is located beside of Patrol Pump in Chhatak Pourashava. These dumping sites are not maintained in a scientific manner which creates environmental pollution.

Household Waste Management System

Household waste is thrown to the dustbins by the citizens. This waste is then collected by the pourashava truck and dumped into the dumping site.

Market Waste

Garbage of kitchen markets is dumped at nearby dustbins or vacant places. CBO waste collection system is not yet introduced at Chhatak Pourashava.

Industrial waste

The heavy industries manage their waste on their own. To ensure less pollution, establishment of effluent treatment plant is necessary.

Clinical/ Hospital waste

Hospital waste is dumped to their own dustbin.

Toilet

There are two public toilets in the pourashava near the bank of the river Surma. These are not well maintained.

12.5.3.3 Brick Field

No brick field has been fond in the pourashava area.

12.5.3.4 Pollutions

Water

No excessive groundwater pollution has been found in the pourashava area. But the surface water is quite polluted there. Some people use surface water from Surma River for their daily necessity.

Air

Air pollution is a problem in the pourashava as some of the most air polluting industries is located there. These industries are not liable to produce high amount of air polluting particles. But the backward and forward linking industries like stone crushing and other industries produce air pollution.

Sound

Sound pollution is not a significant problem in the pourashava area. Although in some parts of the pourashava, sound pollution arises due to stone crashing. Railway is another source of sound pollution there.

Land Pollution

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

The development control rules in whichever form they are now available is not well practiced and implemented for cities and towns in Bangladesh. The relevant manpower is also weak and untrained. The political culture of Bangladesh does not very ardently follow and practice these for the common goal of the community in the context of both rural and urban development issues. Policy planning and advocacy planning did not match hand in hand to deliver these goods to the common people in the community to be aware of its lasting impact in context of planned development. The technocrats also played the role of bureaucrats and did not offer any viable work opportunities and solutions in the community. In consequence its impact led to frustrate the illustrated visions in the community. Ignorance and selfishness on the part of the local communities on land issues impede a great set back to development to portray the visions of their own planned community. In some cases corrupt officials did not implement the building construction rules and regulations mostly in unplanned communities. Therefore, traffic congestion, waste disposal, sanitation, water logging, immobility, infrastructure development could not be properly ensured, and all of these have led to environmental degradation and unplanned community development.

12.5.3.5 Natural Calamities and Localized Hazards

Erosion

Erosion is not found at extreme level in the pourashava.

Floods

Flash flood occurs at Chhatak Pourashava in one or more time in every two to four years interval and is caused by heavy rains. Last flood occurred at the pourashava in the year 2010.

Water Logging

There is water logging problem at Chhatak Pourashava, duration of water logging is 2-3 days and it mainly occurs between June and November every year. Inadequate drainage sections, in conventional drainage system, absence of inlets and outlets, indefinite drainage outlets, lack of proper maintenance of existing drainage system, blockage hampers the natural flow of water. Therefore, water remains stagnant in roads and build-up areas creating water logging.

Other Hazards

The proposed Tipaimukh dam on the Borak, in Monipur, India will indirectly affect Sunamganj region. Unilateral withdrawal of water in the upstream will create adverse affect on local agriculture that will lead to unemployment. Unemployment in rural areas of the Sunamganj region will push poor people to urban Sunamganj adding to the already overcrowding situation of the city. Slums and squatters will increase and that will create social problems.

The free flowing Surma and Kushyara rivers will slow down create navigational problems. This will affect urban based trading activities creating unemployment. Low water level in the river will reduce the city's ground water level causing ground water crisis in the city. This will also affect all dug wells, shallow tube-wells and bring misery to the people inhabiting the region which is known for abundance of water, lush green field of crops and fish sanctuary.

Scarcity of water will cause siltation on river beds. When high rainfall will occur in the catchment area of the dam, enormous quantity of sediment laden flood water will be released which will cause severity

of flood in the Surma-Kushiyara channels which would be already raised for low flow. This will further raise the water level causing floods in the adjoining additional areas.

12.6 Plans for Environmental Management and Pollution Control

The urban environment of Chhatak Pourashava includes both built and natural environment. Urbanization has some increased hazard on natural environment. Where the built environment overburdens the natural environment urbanization cannot be sustainable. The urbanization is vital for countries economic growth. Urban centers concentrate services, infrastructure, labor, knowledge, entrepreneurship and markets. Marketing cities are key generators of economic activities. The urban economics are critically important in national growth and the achievement of development goal. Urbanization is unavoidable. So in every phase of planning processes all these environmental issues shall be evaluated and proper measure shall be taken to minimize the adverse environmental impacts on land pollution, water and air quality, biodiversity resources and marine resources by energy usage, transport network, waste management, slum improvement, disaster etc.

12.6.1 Proposals for Environmental Issues

12.6.1.1 Solid Waste Management Plan

An improved sanitary and sewage system consists of a network of sewers for collection of sewage from the service areas of town and conveying those to the treatment plant. pourashava has got limited resource and affordability to maintain such a system, as such low-cost sanitary system comprising sanitary/unsanitary latrine is being followed all over the area. To identify the most suitable types of low-cost sanitary latrines for the community; to identify the constraints in installation and use of sanitary latrines and to monitor the behavioral changes as well as the health improvement after providing some sanitary facilities with the intensive motivational work for practicing appropriate defecation systems.

Criteria for Selection of Solid Waste Dumping Site

Usually the pourashava does not have its own solid waste disposal site. For selection of solid waste dumping site, the following criteria should be considered.

- At least two solid waste disposal sites should be selected and reserved so that when the first site is filled up, the second site would be used
- Site should be located to minimum fuel distance
- Site should not create any nuisance to the residential areas
- Site should be connected with main road and have sufficient width for truck movement.
- Infiltration of water into the dump should be prevented by covering the wastes with a layer of soil and sloping surface of the dump.

Land Requirement for Solid Waste Management

According to population estimation at present, of the Chhatak Pourashava it is 43282 and the population will stand at 69439 by 2031. According to JICA average per capita waste generation is 0.25 kg/capita/day. The generation of wastes increases by 46% in wet seasons from dry season (Source: Community Based Solid Waste Management through Public-Private-Community Partnerships: Experience of Waste Concern in Bangladesh by Iftekhar Enayetullah, October 30 to November 1, 2006). At present (on year 2011) Chhatak Pourashava per day solid waste generation of 16.13 metric ton in dry season and 23.55 metric ton during wet season. As per this assumption, at Chhatak Pourashava per day solid waste generation will be 57.47 metric ton at dry season and 83.91 metric ton during wet season by the year 2031.

CBO initiative has proved effective in household waste collection and should be encouraged. This is not only good in indiscriminate waste disposal but also low cost in terms that the beneficiaries themselves pay for the service. Suitable dumping site should be selected for sanitary land fill. Arrangements may also be made for waste recycling.

Solid Waste Management System

A community based system is proposed for proper solid waste management. The ward councilors will manage the collection system of solid waste from individual houses by rickshaw-van and then ensure proper dumping into the waste transfer stations nearer to them. The garbage truck of the pourashava will be used to transfer and dump all the collected solid waste from waste transfer stations to the waste dumping ground. In the dumping ground the proper management of the waste will be done to ensure no or minimum leaching. Medical waste will be collected from individual hospitals using separate truck and then incinerate in a managed environment in the dumping site.

A new waste dumping ground is proposed in the pourashava area in Ward No. 4. Map 12.4 shows the waste management system of the pourashava in brief. This map shows that how two vehicles can be used to collect and dump the collected waste from the proposed waste transfer stations. The shortest route for collecting waste from the points is analyzed and the route is derived.

12.6.1.2 Slaughterhouse

A slaughterhouse or abattoir or meatworks is a facility where animals are killed for consumption as food products. Slaughtering animals on a large scale poses significant logistical problems and public health requirements. Public aversion to meat packing in many cultures influences the location of slaughterhouses. In addition, some religions stipulate certain conditions for the slaughter of animals. Chhatak Pourashava does not have its own slaughterhouse. A slaughterhouse of 0.83 acre is proposed in Ward No. 5 of the pourashava. Detail is in Table 10.24 of Chapter 10.

Criteria for Selection of Slaughterhouse

For selection of slaughterhouse, the following criteria should be considered.

- Slaughterhouse should be located away from the residential areas.
- Site should be located at a suitable location so that it can easily access the main commercial area of the town.
- Site should not create any nuisance to the residential areas.
- Proper drainage facility should be provided with the slaughterhouse to prevent environmental degradation.

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

Field survey shows no public park in the town, except play grounds at the premises of educational institutions. Two playfields have been found in the pourashava other than those at the school premises. In the Land Use Plan a total of 110.85 acre of land, which is 4.44% of the total pourashava area, has been proposed as Open Space. Details of the proposals for open spaces are given in Chapter 10, Table 10.22 of this report. One stadium, 1 central park, 6 playgrounds and 5 local parks will be established in this pourashava area covering 86.33 acre of land. Map 12.5 shows the location of the open spaces in the Master Plan.

Mitigation:

- The river should be preserved for future sustainable source of surface water supply for the city when the city's ground water would be depleted.
- Its banks can serve as breathing space and recreation for the town dwellers.

- The river should be kept pollution free applying regulatory measures based on environmental regulations,
- No industry should be allowed within 100 m of the river bank.

Loss of Wetlands

Wetlands are mainly affected first by the urbanization process. Earth filling fills up the ponds, haors and chhoras. Waste water affects the aquatic ecosystem and makes the ponds and chhoras unproductive and as a result the aquatic plants, fishes and animals have to die or migrate to other places. There is no strict regulation on earth filling of ponds. The pourashava can fine only Tk.500 if some one fills the ponds. However, Wetlands Conversation Act exists in Bangladesh, which is applicable only to natural beels and khals. Wetlands play an important role as a reservoir of rain and flood water. They are also important to maintain the balance of ecosystems and for replenishing the ground water level through seepage.

Mitigation:

- Designate all ponds in Master Plan Map and protect the large ones according to the ecological importance and public interest.
- Protect the ponds as per regulatory framework of Master Plan.
- Avoiding wetlands during road alignment fixation.
- Stopping housing, industries and other development works in wetlands through earth filling.
- Stopping earth filling of ponds in the area through creation of public awareness.
- Strict implementation of Wetland Conversation Act, 2000.
- Strict implementation of Environment Conversation Act (ECA), 1995.
- Create new laws if existing one fails to stop land filling of ponds.

12.6.1.4 Ground Water Pollution

It was found from the environmental study that, ground water is the major source of drinking water in the study area. No threatening pollution was found in the area during the survey period. This is why it will be easier to extract and use ground water for future water supply system. The main challenge here will be keeping the ground water unpolluted in the coming future and ensuring enough ground water recharge.

Mitigation Measures:

Following mitigation measures may be adopted:

- Open spaces should remain open and green surface should be kept to ensure ground water recharge.
- Introduce and popularize rain water harvesting system.
- For faster recharge of ground water and to reduce the depletion, using of ground water recharge measures.

12.6.1.5 Surface Water Pollution

Various surface water sources of the town are regularly polluted by deliberate drainage of waste water in respect of pH, turbidity and coliform bacteria when compared with national standard. But present pollution level is low due to low density of population and no industrial agglomeration. The main sources of surface water pollution are urban waste water, sanitary sewage and solid waste dumping. To reduce this pollution a waste water treatment plant is proposed in the Master Plan. It will have a total area of 2.52 acre and will be constructed in Ward No. 4.

Mitigation Measures:

- Abolish katcha and hanging latrines.
- Encourage practice of sanitary latrines.
- Take measures against indiscriminate dumping of solid waste.
- Improve sanitation conditions of slaughter house, fish market and katcha bazar.
- Propaganda for public awareness.
- In future set up sewerage treatment plant to treat waste water.

12.6.2 Natural Calamities and Regular Hazard Mitigation Proposals

12.6.2.1 Protection Plans Addressing Natural Calamities

a. Flood Protection

The Surma River is subject to encroachment and it seriously hampered the natural flow of it. With implementation of Master Plan Project, it will ensure the natural flow by saving the River from encroachment. The whole project area will be free from water logging and flooding.

Enhancement Activities:

- Ensuring open channel and outfalls into the primary drains.
- Proper installment of surface water drainage system.

Responsible Organizations: BWDB and pourashava

b. Earthquake

Earthquake is among the most destructive and terrifying disaster that nature can unleash. Bangladesh sits on several seismically active faults are the focal point of tremors. Chhatak is located in the seismic zone 3 and so it is highly vulnerable to earthquake. Unplanned and unregulated urbanization and disregard to BNBC rules in building construction aggravate the situation more. With the implementation of SMP the planned urbanization will strictly follow the actual zoning plan and following of BNBC rule will minimize the earthquake damage. In DMDP Urban Area Plan Volume- II, (Part-3, Interim Planning Rules) development restriction considering the geological fault line areas states **"**Structures above 2 storeys situated within 500 meters of a geological fault is not allowed unless built to the BNBC standards for Seismic Zone 3 (BNBC Section 6 Chapter 2.25)"**.** Similar measures are also suggested for Chhatak Pourashava.

Enhancement Activities:

- Ensure all new buildings are designed and constructed following the guideline of BNBC.
- Development of a comprehensive plan for managing post earthquake situation.
- Train community workers who would carry out the initial search and rescue efforts.
- Launch a massive public awareness campaign.

Responsible Organizations: pourashava, MOFDM, Civil Defense, Fire Service and DOE.

c. River Erosion

Surma River is erosion prone in the pourashava area. Roads in the bank of it are regularly destroyed. This is why the consultants have proposed the roads on the bank of the river to be constructed as embankment and strengthened.

Enhancement Activities:

- Development of existing roads as embankments.

Responsible Organizations: BWDB, LGED and pourashava

12.6.2.2 Protection Plan Addressing Regular Hazards

Fire Hazard

Though fire hazard is low in the town it might increase in future with increased urbanization. Fire hazard will be severe when katcha housing will be built by low income poor people of the town. To avoid fire hazard following mitigation measures are recommended.

Mitigation Measures:

1. Set up modern fire extinguishing devises.
2. Discourage people from using low quality electrical wire in building and industries.
3. Ensure periodical checking of electrical lines.
4. Advise low income dwellers about cooking safety.
5. Create awareness among people about the dangers of fire hazard.

12.6.2.3 Protection Plan Addressing Encroachment and Other Relevant Issues

Implementation of SMP activities like roads, drainage, bridge/culvert, housing and industrial estates and bazars will radically change the natural topography and land use pattern of the area. The agricultural area will be converted into urban and semi-urban area. The present green scenic beauty will disappear; water bodies will be lost due to rapid urbanization.

Mitigation:

1. Careful planning to minimize the change of the area.
2. Avoid water bodies during construction of roads, housing and industrial estates.
3. Practice good architectural/engineering design during planning of housing estates, buildings and the intersections of main roads.
4. Enhancement of plantation and gardening to increase the scenic beauty of the town.
5. Preserve the ponds, chhoras and large water bodies.
6. Strict implementation of Environment Conversation Act(ECA), 1885
7. Propaganda for public awareness

Responsible Organizations: pourashava, DOE and Forest Department

12.7 Plan Implementation Strategies

12.7.1 Regulations to Implement the Drainage and Flood Plan

Management of a drainage system is more difficult than its construction. It requires not only an institutional set up but also huge resources for regular maintenance. The present engineering set up of the pourashava is highly inadequate to manage the future drainage network. It must be equipped not only with adequate manpower but also sufficient number of logistics and equipment will be necessary for sound maintenance of the drainage system. For Chhatak Pourashava with its meager revenue earning it will be extremely difficult to go for regular maintenance of the drainage system without government assistance. So, the pourashava must be provided with sufficient budget allocation to maintenance going on regularly. The next strategy will be to create awareness among the citizens not to dispose of solid waste in the drains and get them clogged. This can be done by regular publicity, engaging NGOs for motivation and the last imposing punitive measures like, fine on the waste disposer.

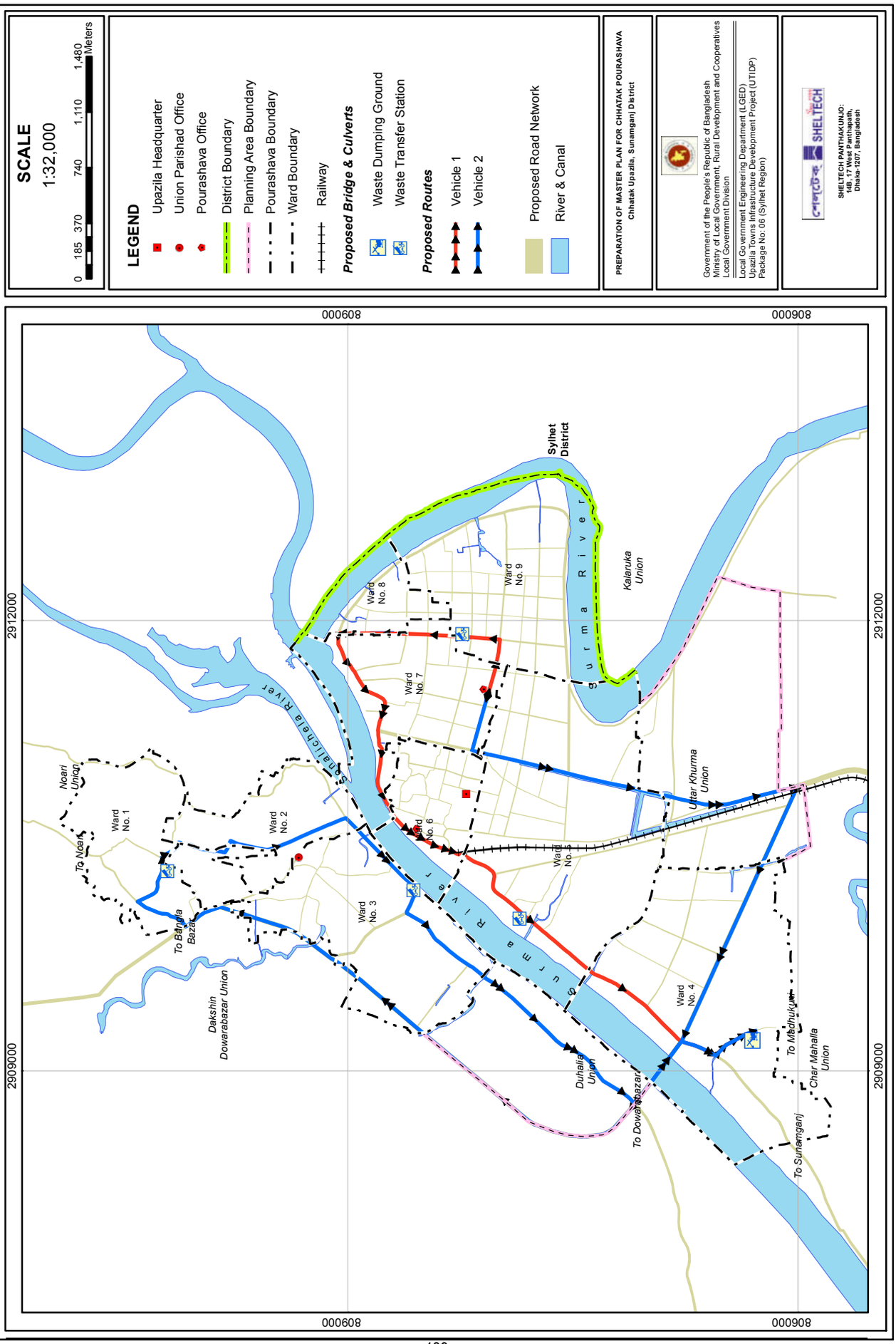
12.7.2 Implementation, Monitoring, Evaluation and Coordination of the Plan

For plan implementation the first requirement would be resources, which is highly lacking in the pourashava. It is a small pourashava with very limited holding tax realized. So, the first strategy will be to increase its revenue earning and non-revenue earning income. The strategy is to build capacity of

the pourashava 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.

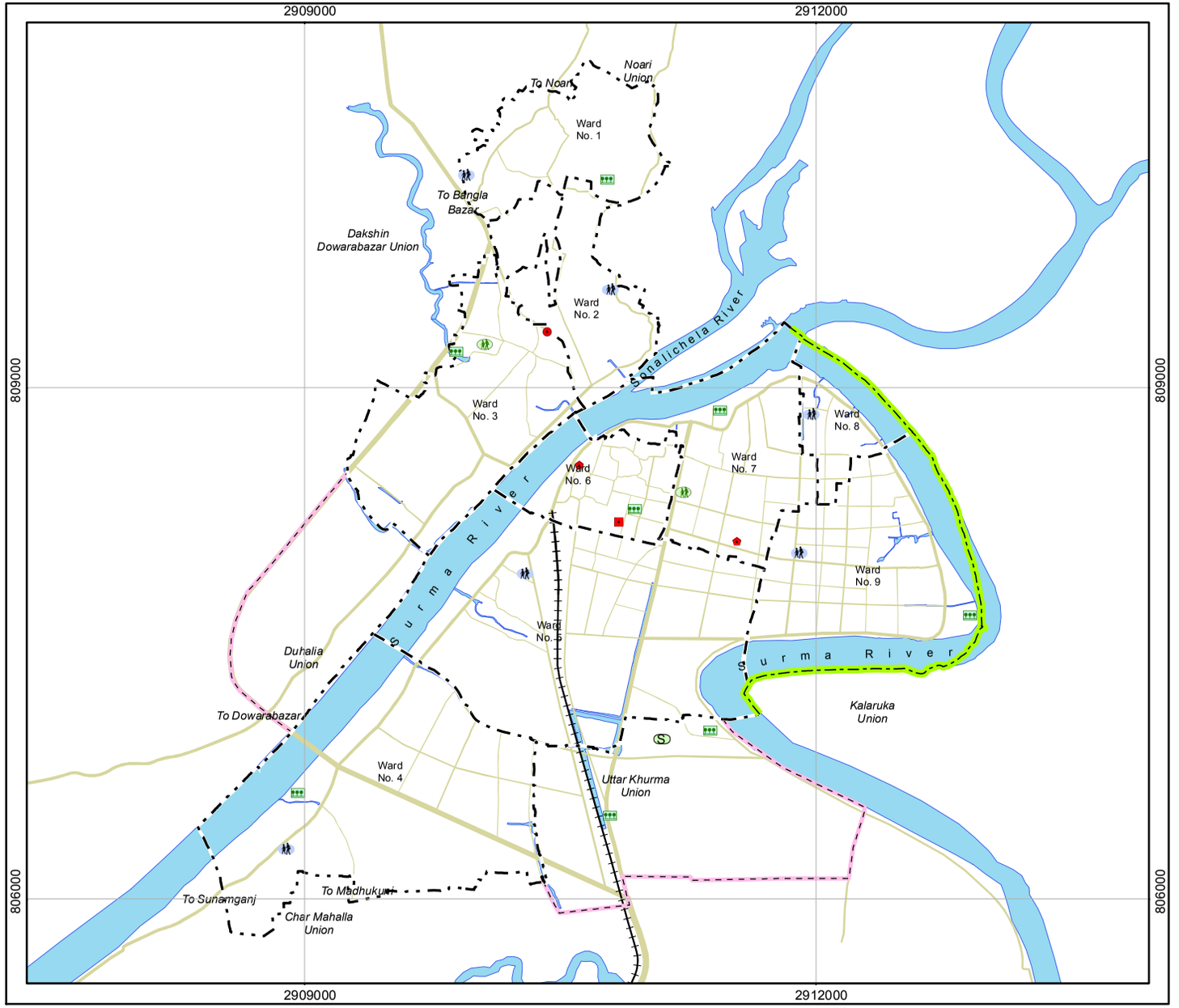
Map 12.4

A BRIEF VIEW OF PROPOSED SOLID WASTE MANAGEMENT SYSTEM OF CHHATAK POURASHAVA



Map 12.5

LOCATION OF EXISTING AND PROPOSED OPEN SPACES IN CHHATAK POURASHAVA



SCALE

1:32,000

0 180 360 720 1,080 1,440 Meters

LEGEND

- Upazila Headquarter
- Union Parishad Office
- Pourashava Office
- District Boundary
- Planning Area Boundary
- Pourashava Boundary
- Ward Boundary
- Railway
- Existing Playground

Proposed Open Spaces

- Stadium
- Playground
- Park
- Proposed Road Network
- River and Canals

PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)

SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh

Chapter – 13

PROPOSAL FOR ADDRESSING URBAN SERVICES

Chapter – 13
PROPOSALS FOR ADDRESSING URBAN SERVICES

This chapter describes the urban basic services development proposals for future development of the Pourashava. The proposals have been made at the town level, that is, the area under the urban area plan. The local level development proposals will be addressed in the Ward Action Plan. The development proposals deal with the basic urban services, like, water supply, drainage, sanitation, solid waste, telecommunication, electricity and gas, community facilities, education and health.

13.1 Utility Services

13.1.1 Water Supply

Chhatak Pourashava has no piped water supply system. Nominal percentage has private tap water collection system. Pourashava dose not provides any deep tube wells for water supply. Shallow tube wells are the main source of water collection. From the physical feature survey there are only 71 shallow tube wells within the Pourashava. The highest (36.76%) of tube wells are present at ward no 06.

Population of Chhatak Pourashava will be 69439 by the year 2031. The Upazila town has large number of ponds, rivers and chhoras. The town dwellers use their water for their daily necessities. Other than drinking and cooking purpose the use of these sources of water can be considered. In a project of DANIDA and DPHE for Water Supply and Sanitation for this type town the daily per capita consumption has been calculated as 53 liters (as per Chhatak Pourashava, 2010). So it will require much less amount of water supply for the Upazila town than a city consumption as assumed above. Use this statistics in Chhatak Pourashava; demand of daily water consumption will be 3680.27 cubic meters by the planning year, 2031. This is the scenario which the consultants have considered during the planning for water supply network.

At present groundwater is the main source of drinking and household water in the pourashava. But it will not be sufficient to serve the population of the pourashava during the Master Plan period on only groundwater. Other sources should be approached. So, the Master Plan proposes a network based water supply system that will exploit three sources of water during its period. These are:

- Groundwater
- Surface Water and,
- Rainwater

Surma River will be the main source of surface water for the proposed water supply system. For this a surface water treatment plant is proposed in Ward No. 6 with an area of 0.34 acre (see table 10.24 Chapter 10 for detail). Ward No. 4, 5, 6, 7, 8 & 9 will have the support of both groundwater and surface water. Ward No. 1, 2 and 3 will not have support from surface water. This is to reduce the use of surface water so that the navigability of Surma River does not worn out in the future. In these three wards located at the northern part of the pourashava rainwater harvesting should be encouraged. This will reduce pressure on groundwater that is to be extracted in future.

A total of 32.45 Km water supply network is proposed in Chhatak Pourashava. It is expected that the pourashava, with the help of DPHE, will be able to establish the water supply network within the period of the Master Plan. The following table shows the ward-wise distribution of proposed water supply network in Chhatak Pourashava. Inventory of proposed utility services network is given in Annexure – D.

Table: 13.1 Ward-Wise Distribution of Proposed Water Supply Network in Chhatak Pourashava

Ward No.	Water Supply Network		
	Length (m)	Length (km)	%
Ward No. 1	1223.75	1.22	3.77
Ward No. 2	3472.94	3.47	10.70
Ward No. 3	2553.27	2.55	7.87
Ward No. 4	1196.02	1.20	3.69
Ward No. 5	5837.13	5.84	17.99
Ward No. 6	4496.98	4.50	13.86
Ward No. 7	4978.55	4.98	15.34
Ward No. 8	1693.33	1.69	5.22
Ward No. 9	6996.68	7.00	21.56
Total	**32448.64**	**32.45**	**100.00**

Source: Master Plan of Chhatak Pourashava

13.1.2 Solid Waste Management

A waste dumping ground of 5.73 acre and a total of 4 waste transfer stations covering an area of 1.25 acre are proposed to facilitate the solid waste management system. Detail land use information of waste transfer station and waste dumping station is given in Table 10.24, Chapter 10, Part-B of this report.

13.1.3 Sanitation

As the field survey shows, the present sanitation system of the Pourashava is composed of a variety of types, like, hanging latrine, pit latrines of different types, water sealed latrines and septic tank based sanitary latrine.

Due to prohibitive expenditure one should not expect establishing network and treatment plant based sewerage system in the town by the Pourashava. So, for long the sanitary system of the Pourashava will remain on site. To promote healthy sanitation, Pourashava should promote low cost sanitary latrines in the town together with awareness building for healthy sanitation.

13.1.4 Electricity and Gas

Power Development Board (PDB) is mainly responsible for electricity supply in the Pourashava, supported by the Rural Electrification Board (REB). PDB works for power production and distribution, while REB is responsible for distribution only. Both, PDB and REB have their own plans for power supply in the town, which is executed in phases, depending on demand for power. In its infrastructure plan has shown the future power supply network of the town. The required electricity facility within the Pourashava 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 as per demand.

With the existing 26.65 km of gas supply network 10.09 km new gas supply network has been proposed for Chhatak Pourashava. Highest is proposed for Ward No. 9. No new gas supply line is proposed for Ward No. 1, 2, 3 and 4. The existing network will be enough to support the future need for gas in these wards. Table 13.2 shows the ward-wise summary of the gas supply network system in Chhatak Pourashava.

Table: 13.2 Ward-Wise Summary of Gas Supply Network in Chhatak Pourashava

Ward No.	Gas Supply Network								
	Existing Length (m)	Existing Length (km)	%	Proposed Length (m)	Proposed Length (km)	%	Total Length (m)	Total Length (km)	%
Ward No. 1	31.63	0.03	0.12	0.00	0.00	0.00	31.63	0.03	0.09
Ward No. 2	2311.43	2.31	8.67	0.00	0.00	0.00	2311.43	2.31	6.29
Ward No. 3	2251.18	2.25	8.45	0.00	0.00	0.00	2251.18	2.25	6.13
Ward No. 4	3643.29	3.64	13.67	0.00	0.00	0.00	3643.29	3.64	9.92
Ward No. 5	5073.87	5.07	19.04	2211.73	2.21	21.92	7285.60	7.29	19.83
Ward No. 6	4036.25	4.04	15.15	155.99	0.16	1.55	4192.24	4.19	11.41
Ward No. 7	5523.27	5.52	20.73	1921.38	1.92	19.04	7444.65	7.44	20.26
Ward No. 8	1412.03	1.41	5.30	719.15	0.72	7.13	2131.19	2.13	5.80
Ward No. 9	2364.70	2.36	8.87	5083.74	5.08	50.37	7448.44	7.45	20.27
Total	**26647.64**	**26.65**	**100.00**	**10092.00**	**10.09**	**100.00**	**36739.64**	**36.74**	**100.00**

Source: Master Plan of Chhatak Pourashava

13.1.5 Telecommunication

The town enjoys the networks of all mobile and PSTN telecommunication companies operating in the country. Besides, there also exist landlines of BTCL, the national telephone company. Due to easy and cheaper access to mobile phones, the demand for land lines has decreased substantially.

The following figure shows a tentative sketch of cross section showing the positions of various utility service networks.

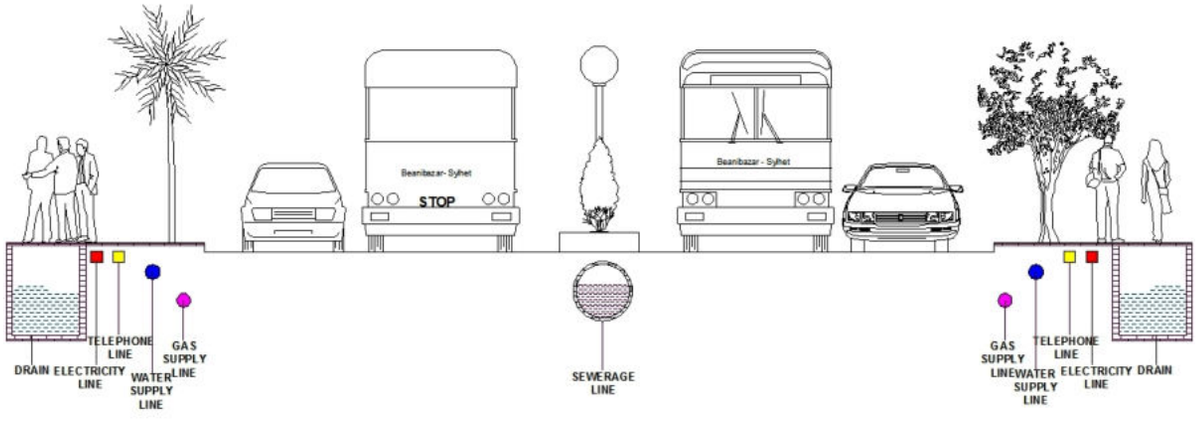


Figure 13.1: A schematic view of cross section of roads

13.2 Urban Services

13.2.1 Tourism Facilities

A tourist facility is a place where hotels and motels will be established exclusively. It will provide good recreational facility and also be a place from where the visiting tourist can have some idea about the pourashava and its surrounding. An area of 32.60 acre is kept in Purba Kamar Gaon mouza in Ward No. 5 for tourism facilities. This area will include hotel, motel and shopping mall etc.

13.2.2 Low Income Housing Project

A low income housing project is a subsidiary housing provided for low income people. Walk-up structures will be established to accommodate low income people in this project area. Small sized flats will be rented to the low income people and the ownership of the flats can be transferred to them after a specified period of time. Facilities will be provided according to the standards of low income housing in this country. Details of this project should be fixed by conducting detailed study on it.

In Chhatak Pourashava three low income housing projects of 38.71, 20.73 and 11.28 acre are proposed to be established in Ward No. 4, 2 and 3 respectively. Table 10.14 and 10.15 in Chapter 10 shows the details of the proposed low income housing projects in Chhatak Pourashava.

13.2.3 Ward Center

In the 9 wards of the Pourashava a total number of 9 ward centers are proposed. This will be a single structure comprising the following facilities in it.

Table: 13.3 Distribution of Facilities in Ward Center

Floor	Facilities
Ground Floor	Ward councilors office, corner shop, local club, police outpost and post box
1st Floor	Health center
2nd Floor	Community center

Source: Master Plan of Chhatak Pourashava

For the mixed character of land use in the ward centers this proposal is delineated under Mixed Use Zone. The proposed ward centers cover a total area of 15.24 acres of land. The detailed description of these ward centers comprising its area, location (ward, mouza, plot), phase is given in Table 10.18 of Chapter 10.

13.2.4 Industrial Area

Two industrial areas have been proposed in Chhatak Pourashava, one near the Kumna Graveyard Road and the other one is at the side of the road going to Modhukuni. ‘Orange B’ and ‘Red’ category industries according to the Environmental Conservation Rules 1997 can be established here. The proposed highway of 100 ft. will ensure faster development of these two industrial areas. Central effluent treatment plant must be installed here. To establish these two facilities, extensive survey can be done on the first phase of the Master Plan and then the construction can be done within the second phase to start operating at the third phase. The establishment of these two industrial areas will make the Structure Plan view into reality. Table 10.19 of Chapter 10 shows the details of the industrial areas proposed in this pourashava.

13.2.5 Market Facilities

Total 12.45 acre land is proposed as market facilities in Chhatak Pourashava. A shopping of mall of 3.55 acre, a cattle market of 0.85 acre and 4 local markets are proposed in the pourashava. These will be the main earning source for the pourashava.

13.2.6 Women's College

According to the suggestions made by a councilor in the final consultation meeting on the Draft Master Plan of Chhatak Pourashava a new women's college is proposed in Ward No. 3 of Chhatak Pourashava. It will be of 5.97 acre area and will be established in phase 2. Detail of this proposal is given in Table 10.21 of Chapter 10.

13.2.7 Educational Facilities

Other than the proposed women's college; one high school and six primary schools have been proposed in the Master Plan. The high school will have an area of 2.41 acre and is proposed to be established in Ward No. 9. The primary schools will be established in Ward No. 1, 2, 4, 5, 6, 9. In addition to these facilities the existing ones will be enough to support the future need.

13.2.8 Open Space

A total of 86.33 acre of land is proposed as open space in the form of new playground, park and stadium in Chhatak Pourashava. Table 10.22, Chapter 10, Part-B of this report shows proposed new land for new open space facilities in Chhatak Pourashava.

13.2.9 Health Facilities

The Upazila Health Complex will be the main health service provider for the people of the pourashava. It is proposed that this hospital should be extended. An additional 2.79 acre land is proposed for the extension of the existing health complex. As the town will expand in future, it will need more health facilities. This is why a new hospital is proposed in Ward No. 3 having a total area of 9.21 acre. Other than these each of the 4 proposed ward center will include community health center to provide primary health care facilities to the people. Table 10.25 of Chapter 10 shows the detail of these proposals.

13.2.10 Slaughterhouse

A slaughterhouse is proposed in the Master Plan of Chhatak Pourashava. It will be established in Ward No. 5 at Tangagaon and Baghbari Mouza. The slaughterhouse will have all the latest facilities and technologies in it. It will include animal sheds, by-product sheds, general and chemical stores, power station, offices, prayer room (Mosque) and staff dormitory etc. A full time veterinary doctor will be available to perform ante mortem and post mortem Inspections of the livestock. It will also have a small waste water treatment plant and proper drainage facility so that the surrounding environment free from its pollutions.

The proposed slaughterhouse will have a total area of 0.83 acre. It will be established in the first phase of the Master Plan period. Detail of the proposed slaughterhouse is given in Table 10.24 of Chapter 10.

13.2.11 Mosque, Eidgah and Graveyard

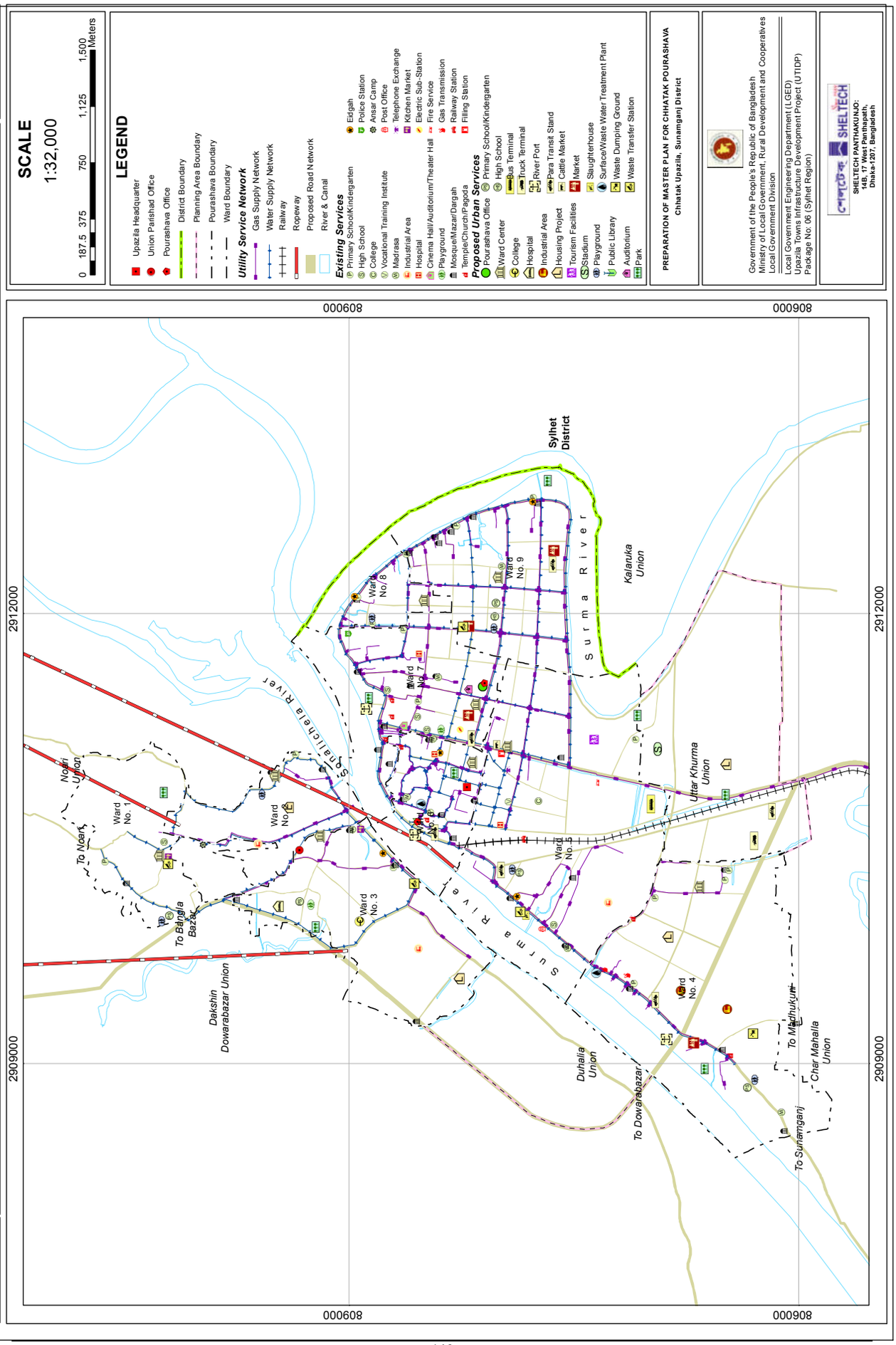
The allocated land has already been covered by existing mosques more than the standard determined for this service. So, additional land is not proposed for this purpose in this plan.

13.2.12 Auditorium

An auditorium of 1.70 acre is proposed in Ward No. 7 at Mondali Bog Mouza. It will also be used as a theater hall. Local theater groups can be formed based on the clubs in the ward centers that are proposed in the Master Plan. Plays and other programs can be arranged on this theater. The upazila chapter of the Shilpakala Academy can be established here. It can act as a cultural hub of the whole upazila. It is proposed to be established in the second phase of the Master Plan. Detail of this proposal is given in Table 10.26 of Chapter 10.

Map 13.1

URBAN SERVICES AND UTILITY NETWORK PLAN OF CHHATAK POURASHAVA



PART – C
WARD ACTION PLAN

Chapter – 14

WARD ACTION PLAN

Chapter – 14
WARD ACTION PLAN

14.1 Introduction

This chapter presents Part-C of the report which contains Ward Action Plan of each individual Ward. First, the issues prevailing in different Wards have been briefly described followed by description of Development Proposals in first ward action plan (1st to 5th year of planning period) for each Ward.

14.1.1 Background

The Ward Action Plans are prepared under the framework of Structure Plan and Urban Area Plan. The action plans contain details of development proposals at Ward level including the problems and opportunities existing therein and also include the proposals made in the upper level plan that is in the Urban Area Plan.

Ward Action Plan is a vital part of the current plan package as far as spatial development and development control is concerned. Absence of Ward Action Plan not only hampers undertaking of development projects by planning authority, but also leads to uncontrolled and unwanted spatial development in the private sector. Land use zoning is also provided in the Ward Action Plan to enable detailed view of proposed land use and development.

14.1.2 Content and Form of Ward Action Plan

The Ward Action Plan is detailed area plan based on the policy framework, guideline indication of Structure Plan and more detailed guideline of Urban Area Plan. The provision of Ward Action Plan is inherent in the Structure Plan with some specific purposes. The Ward Action Plan is to:

a. Provide basic micro level infrastructure and services in the study area through systematic planning, under the framework of Structure Plan and proposals of the Urban Area Plan;
b. Create congenial environment to promote economic activities;
c. Improve drainage system and protect natural water channels from encroachment; and
d. Create service centers to promote urban growth.

14.1.3 Linkage with Structure and Urban Area Plan

Ward Action Plan is the 3rd component of the Master Plan package. The other two upper level components are Structure Plan and Urban Area Plan. Structure Plan lay down the framework of the future plan including strategy and the sector based policies. The Urban Area Plan and the Ward Action Plan detail out development proposals under the framework of Structure Plan.

14.2 Derivation of the Ward Action Plan

The Ward Action Plan is derived from the conceptual framework, and guidelines and strategies for development under Structure Plan and detailed proposals of Urban Area Plan. Ward Action Plan is aimed to provide detailed infrastructure plan to guide the physical development of Chhatak town including its all economic and social activities. This plan adheres to the policy directives spelled out in the Structure Plan.

14.2.1 Revisiting Structure Plan and Urban Area Plan

To guide long term growth of the Pourashava, potential locations of major development areas are identified and the Structure Plan Area is broadly classified into nine categories, namely Established Urban Area, Sub Urban Area, New Urban Area, Recreational Facility, Circulation Network, Restricted Area, Urban Peripheral Area, Agriculture Area and Water Retention Area. The Urban Area Plan is prepared under the framework of Structure Plan and the infrastructure identified for improvement and development are listed as proposals in the Urban Area Plan. The broad classification of lands in the Structure Plan and detailed proposals in the Urban Area Plan form the basis for Ward Action Plan.

14.2.2 Prioritization

The prioritization of project proposals in Ward wise Action Plan are made on the basis of urgency for development depending on the needs of people and the town's requirement for infrastructure development.

14.2.3 Ward-wise Action Plan for Next Five Years

The Ward Action Plan is prepared for each of the nine Wards and is presented in order of their serial number. The Ward Action Plans are a series of detailed spatial development plans of different use and facilities. The plans comprise maps of scale 1 inch = 165 ft. and supported by explanatory report. The Ward Action Plans have been formulated for execution within a period of 5 years. They do not initially cover the entire Structure Plan area. While all sub-areas will eventually require Ward Action Plan, only priority areas are to be dealt with initially. The aim of a Ward Action Plan is to prevent haphazard urban development and ensure livable environment in areas that are likely to be urbanized soon. Initially Detailed Area Plan should be covered for only those areas where action is needed immediately or where development pressure is high.

14.3 Ward Action Plan for Ward No. 1

14.3.1 Demography

Ward No. 1 is located on the northernmost part of the Pourashava. It has comparatively lower density of population. As per the BBS 2001, this ward had a population of 1909 persons. Population projection shows a total population of 2418 for the year 2011 with a density of 15 persons per acre and it will be 23 persons per acre in 2031. Table 14.1 shows the detail.

Table 14.1: Population Statistics of Ward No. 1

Item	Year		
	2001	2011	2031
Area (acre)	170.59		
Population	1909	2418	3882
Density of Population (acre)	12	15	23

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009

Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.3.2 Critical Issues and Opportunities of the Ward

Critical Issues

Ward No. 1 is one of the smaller wards in this pourashava. It is hilly area with lower density of development and population. Critical issues of its development are described below.

- Lower amount of roads have reduced accessibility in this ward.
- Lack of basic services is acute here.
- Higher amount of hilly land reduced the potential for development.
- For undulated pattern of land it is difficult to provide utility services.

Development Opportunities

Ward No. 1 has some opportunities to development. Those are as follows.

- It is located very close to Chhatak Cement Factory which can act as growth incentive.
- The hilly landscape makes this ward the most beautiful part of the town.
- Chhatak – Bangla Bazar roads runs through the western part of the ward that provides good accessibility.

14.3.3 Ward Action Plan Proposals

14.3.3.1 Review of Existing Land Use

Out of total 170.59 acre of land of Ward No. 1, 29.50 acre of land i.e. 17.30% is used as agriculture. The residential use with 14.07 acre and it occupies 8.25% of total land, water body 3.77% (6.42 acre). Miscellaneous land use is the highest in this ward with 95.21 acre (55.81%). This land use includes the hilly areas of this ward. Other land uses are negligible here. Map 14.1 and Table 14.2 shows the existing land use pattern Ward No. 1 of Chhatak Pourashava.

14.3.3.2 Proposed Land Use Zoning

The category-wise proposals are presented here. Table 14.2 shows the amount of land existing and proposed uses in Ward No. 1.

Table 14.2: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 1

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	14.07	8.25	Urban Residential Zone	0.00	0.00
			Rural Settlement	25.74	15.09
Commercial	0.85	0.50	Commercial Zone	0.75	0.44
Mixed Use	0.06	0.03	Mixed Use Zone	1.63	0.96
Industrial	18.87	11.06	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	18.14	10.63
Governmental Services	0.00	0.00	Government Office	0.00	0.00
Educational Facility	3.35	1.96	Education & Research Zone	3.98	2.33
Agricultural	29.50	17.30	Agricultural Zone	0.00	0.00
Water Body	6.42	3.77	Water Body	5.82	3.41
Urban Green Space	0.00	0.00	Open Space	6.50	3.81
Vacant Land	0.00	0.00			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	2.22	1.30	Circulation Network	7.87	4.61
Transport and Communication	0.00	0.00	Transportation Facilities	0.00	0.00
Service Activity	0.00	0.00	Utility Services	0.44	0.26
			Health Services	0.00	0.00
Community Service	0.03	0.02	Community Facilities	0.02	0.01
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	95.21	55.81	Hill	99.70	58.44
Total	**170.59**	**100.00**	**Total**	**170.59**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

i. Urban Residential Zone

No land is assigned under this land use zone. This is because the northern part of Surma River in Chhatak Pourashava comprising Ward No. 1, 2 and 3 has less development and has rural characteristics. To keep this environment no Urban Residential Zone is proposed in these three wards.

ii. Rural Settlement

In this ward a total of 25.74 acre is proposed under Rural Settlement zone. The Urban Residential Zone and the Rural Settlement will form the future residential area of this ward. The net density of the year 2031 is 151. Table 10.16 shows the comparison of net density in this ward. Table 14.2 shows the details about existing and proposed land uses in Ward No. 1.

iii. Commercial Zone

In Land Use Plan a total of 0.75 acre of land covering 0.44% of the total area of the ward is proposed as Commercial Zone.

iv. Mixed Use Zone

Mixed Use Zone will cover 1.63 acre land (0.96%).

v. Heavy Industrial Zone

With the existing Chhatak Cement Factory the total area under this zone is 18.14 acre (10.63%).

vi. Education and Research Zone

With the existing and proposed educational institutions the total area under this zone is 3.98 acre (2.33%).

vii. Water Body

At present water bodies cover 6.42 acre of land. But in the Land Use Plan this has been reduced to 5.82 acre because, water bodies having area less than 0.2 acre; except the river and canals have not been included into it.

viii. Open Space

Total 6.50 acre land (3.81%) is kept under this zone.

ix. Circulation Network

With the existing 2.22 acre of roads, the proposed circulation network will have a total area of 7.87 acre. The circulation network will include primary, secondary and access roads.

x. Utility Services

A total of 0.44 acre land is proposed in this category.

xi. Community Facilities

Community facilities include the existing graveyards and mosques of the area that covers a total of 0.02 acre land. Map 14.2 shows the Land Use Plan of Ward No. 1.

xii. Hill

This zone includes the existing hilly area that is available there. Any kind of development is restricted here in this zone. It will cover a total land of 99.70 acre (58.44%).

14.3.3.3 Proposed Road Infrastructure Development

A very small amount of land is proposed in this ward. As most of the wards area is put to Hill, the development needs to be controlled. This is why less amount of road is proposed in this ward. Table14.4 and 14.5 shows the details of the proposed new roads and road widening proposal for this ward in the first Ward Action Plan.

Table 14.3: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 1

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	4.91	100.00	0.00	0.00	4.91	100.00
Tertiary	30 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Access	20 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Total		**4.91**	**100.00**	**0.00**	**0.00**	**4.91**	**100.00**

Source: Road Network Plan

Table 14.4: Details of the Proposals for New Roads in Ward No. 1

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Secondary	40 ft.	NS143		4.91

Source: Road Network Plan

14.3.3.4 Urban Services

a. Ward Center

A ward center is proposed in this ward comprising a total area of 1.63 acre of land. It will be constructed in the second phase of this Master Plan. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Educational Facility

A new primary school of 1.11 acre is proposed in Fakir Tilla mouza. It will be constructed in the first phase. Detail is given in Table 10.21.

c. Open Space

A park and a playground are proposed in this ward. The park will have an area of 4.68 acre and the playground 1.83 acre. The park will partially fall in Ward No. 2.

d. Water Supply

It is proposed to install a network based water supply system by withdrawing groundwater. A total of 77.56 meter of water supply network is proposed in the first Ward Action Plan. The source of water in this ward will be groundwater and rainwater. This is to reduce pressure on the surface water in Surma River.

e. Gas Supply

No gas supply network is proposed in the first phase of the Master Plan. This is because the consultants find that the existing network will be enough to support the need during the first phase of the Master Plan period.

f. Sanitation

It is apprehended that the government would not be able to provide network and treatment based sanitation system for the town. So the present system of sanitation will continue. However, the Pourashava must try to promote hygienic sanitation to ensure better public health. This system will be followed in all the wards of the pourashava.

g. Mosque/Graveyard/Eidgah

The existing mosques, graveyards, temples will be suffice to serve the future need.

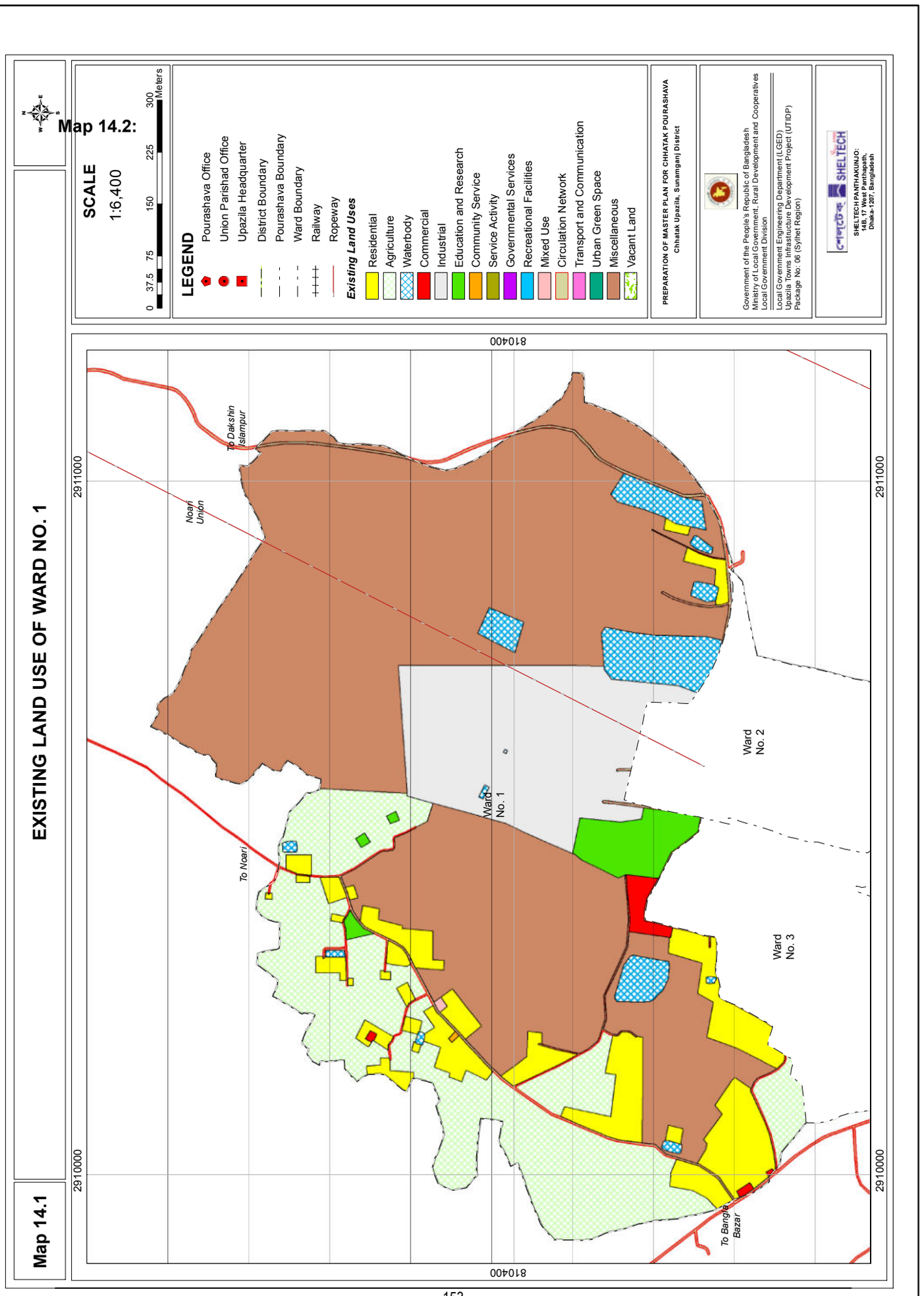
14.3.3.5 Drainage Development Plan

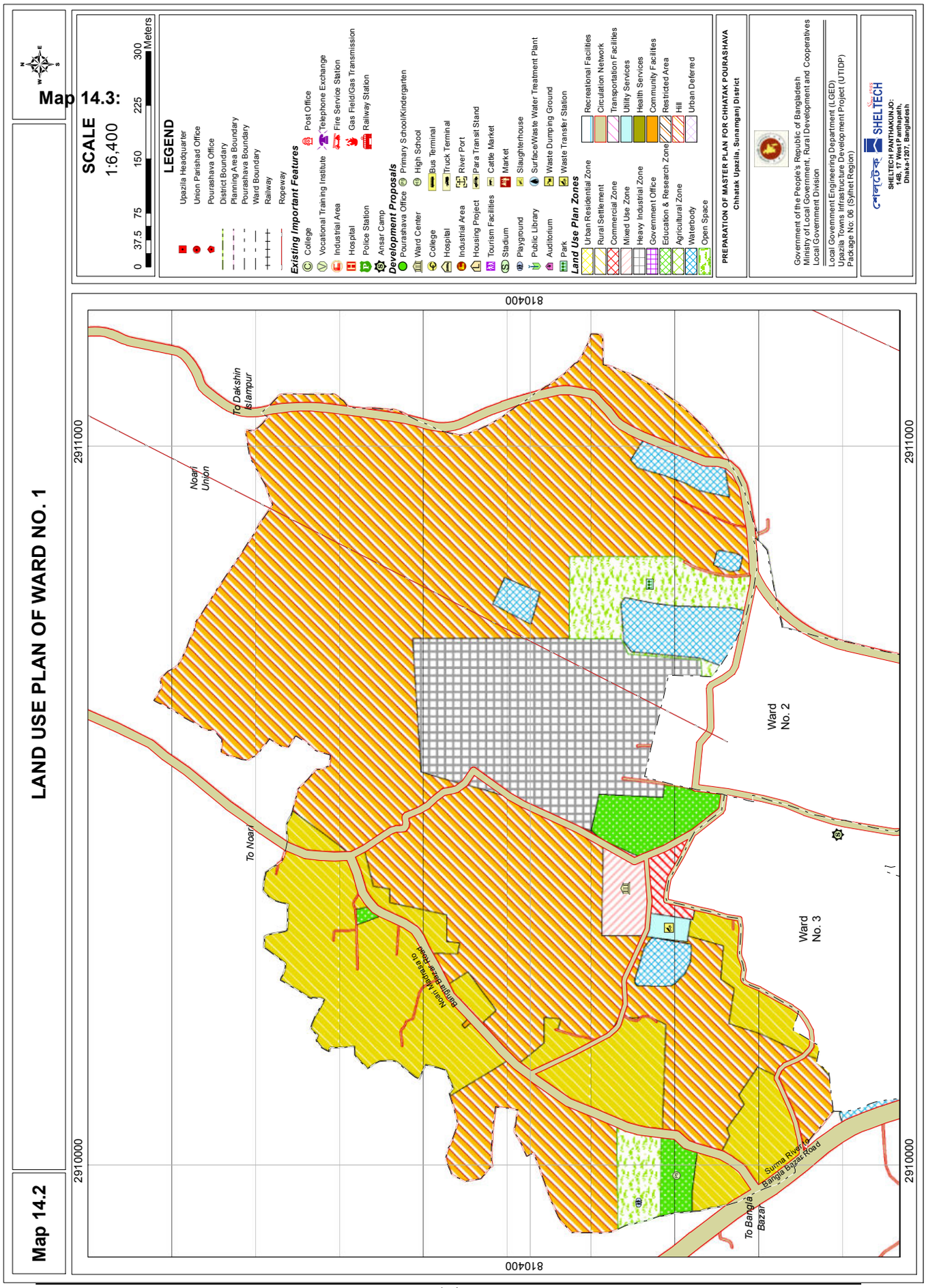
At present there is a total of 663 meter drainage channel in Ward No. 1. As the consultants tried to minimize the growth here to reduce environmental degradation, development proposals have been kept to the minimum. So, no new proposals have been made for this ward in the first Ward Action Plan.

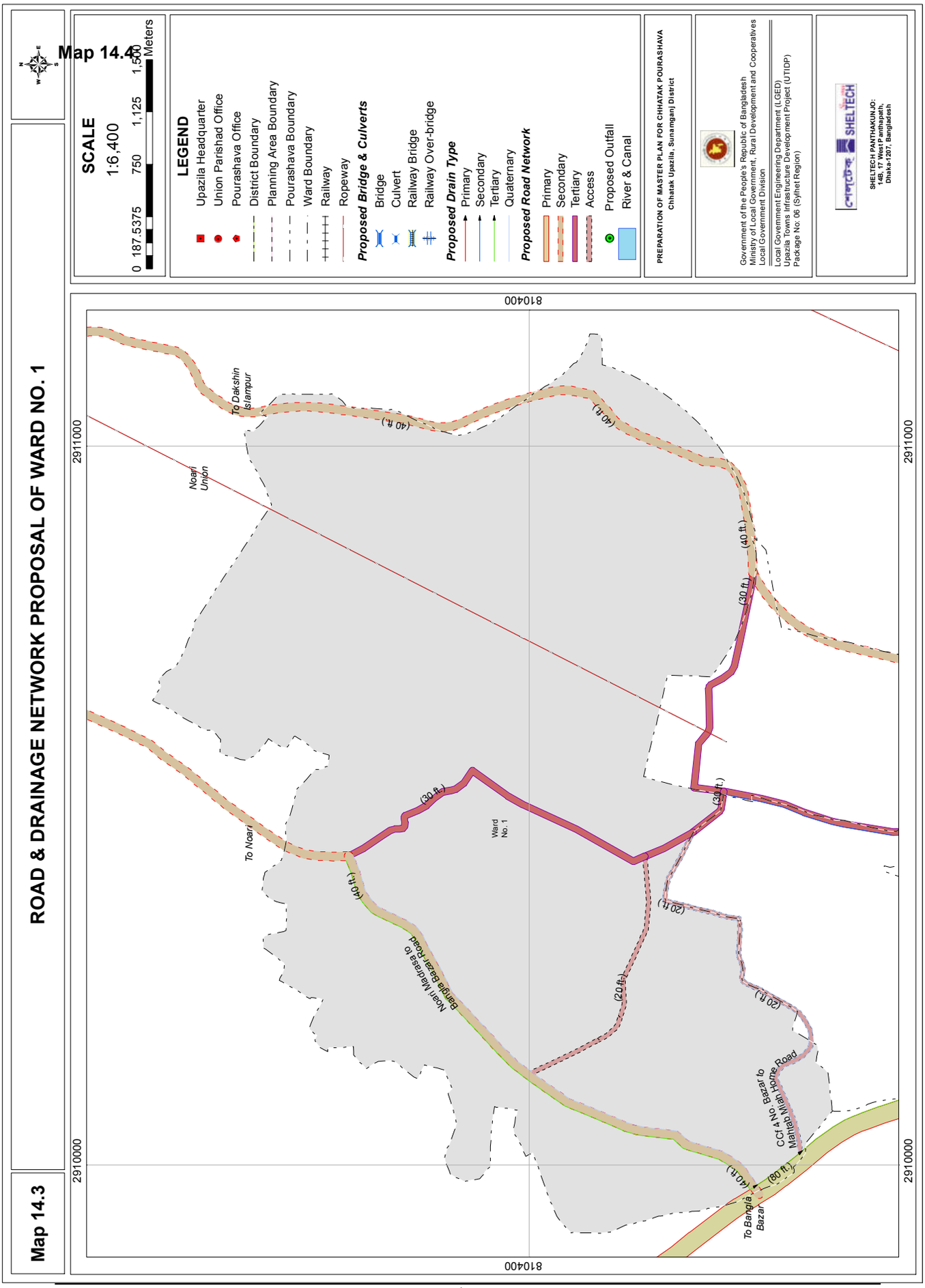
Table 14.5: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 1

Item	Length in meter
Available Drainage	663.00
Proposed Drainage (Primary)	0.00
Proposed Drainage (Secondary)	0.00
Proposed Drainage (Tertiary)	0.00
Proposed Drainage (Quaternary)	0.00

Source: Drainage & Environmental Management Plan

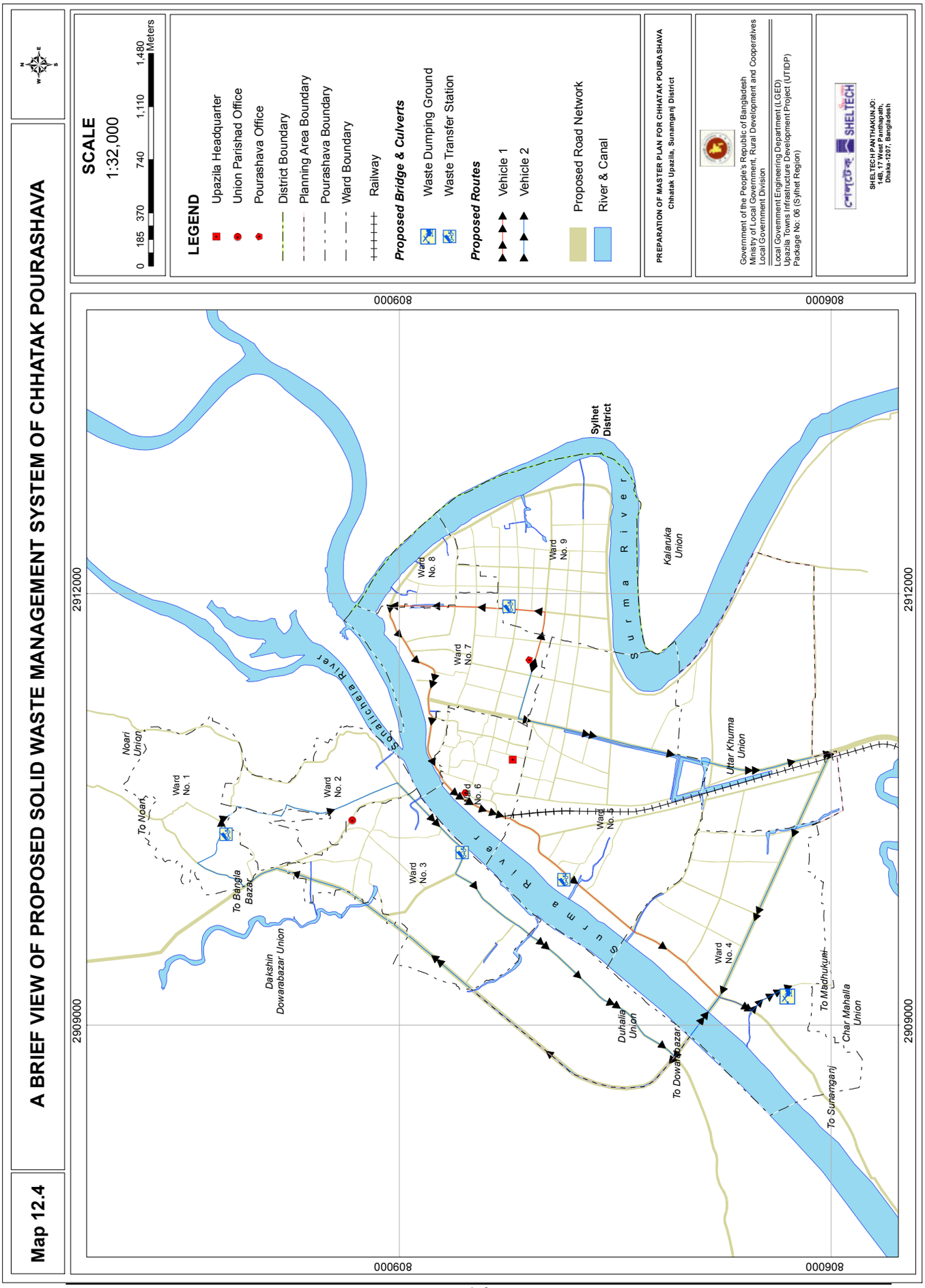

Map 14.1
EXISTING LAND USE OF WARD NO. 1
Map 14.2:
SCALE
1:6,400
0 37.5 75 150 225 300 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
1/B, 17 West Panthapath,
Dhaka-1207, Bangladesh
To Dakshin Islampur
Noari Union
To Noari
Ward No. 1
Ward No. 2
Ward No. 3
To Bangla Bazar
2911000
810400


Map 14.2
LAND USE PLAN OF WARD NO. 1
Map 14.3:
SCALE
1:6,400
0 37.5 75 150 225 300 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
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Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH
SHELTECH PANTHAKUNJO:
145, 17 West Panthapath,
Dhaka-1207, Bangladesh
To Dakshin Islampur
Noari Union
To Noari
Noari Bazar to Bongshi Bazar Road
Ward No. 2
Ward No. 3
Surma River
Bangla Bazar Road
To Bangla Bazar
2911000
810400


Map 14.3
ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 1
Map 14.4
SCALE
1:6,400
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quaternary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj District
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Local Government Division
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUN.IO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
810400
2911000
2910000
To Dakshin Islampur
Noari Union
To Noari
Ward No. 1
North Madrasa to Bangla Bazar Road
CCI 4 No. Bazar to Mahtab Miah Home Road
To Bangla Bazar
(40 ft.)
(30 ft.)
(20 ft.)
(80 ft.)

Map 12.4

A BRIEF VIEW OF PROPOSED SOLID WASTE MANAGEMENT SYSTEM OF CHHATAK POURASHAVA



14.4 Ward Action Plan for Ward No. 2

14.4.1 Demography

Ward No. 2 is the located at the northern part of the pourashava. Population here is higher than Ward No. 1 but the density is lower. In the year 2001, it had a population of 3503. Population projection shows that in the year 2011, the population of the Ward would be 4437 and the density only 11 persons per acre. In 2031 population of this ward will be 7118 with 18 ppa. Table 14.6 shows the detail.

Table 14.6: Population Statistics of Ward No. 2

Item	Year		
	2001	2011	2031
Area (acre)	135.71		
Population	3503	4437	7118
Density of Population (acre)	9	11	18

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009
Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.4.2 Critical Issues and Opportunities of the Ward

Critical Issues

Chhatak Cement Factory is located in Ward No. 2. The Surma River runs through the southern boundary of the ward. Critical issues of this ward are:

- Most of the land in this ward is under the ownership of Chhatak Cement Factory, which makes it difficult to provide land uses other than industrial.
- Narrow and bad condition of road has reduced the growth of the ward that it could've attained with the location based advantage of the industry.
- The residents have converted some water bodies into developed land which may create drainage problem in future.

Development Opportunities

The development opportunities of Ward No. 2 are discussed below.

- The cement industry located in this ward may induce higher growth here.
- The Surma River acts as drainage refuge for this ward.
- With roads and the water way of Surma River it has good connectivity with the surrounding areas.

14.4.3 Ward Action Plan Proposals

14.4.3.1 Review of Existing Land Use

The maximum land of this ward at present is used for agricultural purpose. It occupies 44.05 acre of land covering 32.46% of the total land of the ward. 69.03 acre i.e. 50.86% of land is put to industrial uses. Residential land use cover 10.81% and water bodies cover 0.88% land (1.20 acre) of this ward. Table 14.7 and Map 14.5 show the existing land use pattern of Ward No. 2.

Table 14.7: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 2

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	14.68	10.81	Urban Residential Zone	0.00	0.00
			Rural Settlement	48.92	36.05
Commercial	0.92	0.68	Commercial Zone	0.32	0.24
Mixed Use	0.00	0.00	Mixed Use Zone	1.11	0.81
Industrial	69.03	50.86	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	65.53	48.28
Governmental Services	0.64	0.47	Government Office	0.00	0.00
Educational Facility	0.12	0.09	Education & Research Zone	0.25	0.19
Agricultural	44.05	32.46	Agricultural Zone	4.71	3.47
Water Body	1.20	0.88	Water Body	0.66	0.49
Urban Green Space	0.97	0.71	Open Space	2.46	1.81
Vacant Land	0.00	0.00			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	3.30	2.43	Circulation Network	10.50	7.74
Transport and Communication	0.06	0.05	Transportation Facilities	0.03	0.03
Service Activity	0.11	0.08	Utility Services	0.00	0.00
			Health Services	0.00	0.00
Community Service	0.63	0.47	Community Facilities	1.22	0.90
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.00	0.00	Hill	0.00	0.00
Total	**135.71**	**100.00**	**Total**	**135.71**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.4.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

As in Ward No. 1, no land is proposed under this zone.

ii. Rural Settlement

In Land Use Plan a total of 48.92 acre of land covering 36.05% of the total area of the ward is proposed as Rural Settlement.

iii. Commercial Zone

In Land Use Plan a total of 0.32 acre of land covering 0.24% of the total area of the ward is proposed as Commercial Zone.

iv. Mixed Use Zone

A ward center of 1.11 acre is proposed in this ward within this land use zone.

v. Heavy Industrial Zone

A total of 65.53 acre land of this ward is under Chhatak Cement Factory.

vi. Education & Research Zone

A total of 0.25 acre land of this ward is under this zone.

vii. Agricultural Zone

In the Land Use Plan of Ward No. 2 of Chhatak Pourashava a total of 4.71 acre of land will remain under Agricultural Zone.

viii. Water Body

Water bodies having area more than or equal to 0.20 acre are included into the Land Use Plan. Total 0.66 acre of land covering 0.49% of the total area of the ward is proposed under this zone.

ix. Open Space

A total of 2.46 acre land is put to this zone of land use in this ward.

x. Circulation Network

With 3.30 acre of existing roads, the proposed circulation network will have a total area of 10.50 acre.

xi. Transportation Facilities

Transportation Facilities will cover 0.03 acre land in this ward.

xii. Community Facilities

A total of 1.22 acre of land is kept under this zone including the existing community facilities. No new community facility has been proposed. Map 14.6 shows the Land Use Plan of Ward No. 2.

14.4.3.3 Proposed Road Infrastructure Development

A total of 2.27 km of road development proposal has been made for Ward No. 2 in first Ward Action Plan of Chhatak Pourashava. About 2 km of secondary road of 60 ft. and 112.11 meter tertiary road of 30 ft. is proposed in the first Ward Action Plan for this ward. Table 14.8 shows the summary of the road development proposal.

Table 14.8: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 2

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	653.15	85.35	1507.34	100.00	2160.49	95.07
Tertiary	30 ft.	112.11	14.65	0.00	0.00	112.11	4.93
Access	20 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Total		**765.26**	**100.00**	**1507.34**	**100.00**	**2272.60**	**100.00**

Source: Road Network Plan

From the above table it can be seen that 653.15 meter secondary road of 60 ft. and 112.11 meter tertiary road of 30 ft. is proposed in this ward. Table 14.9 shows the details.

Table 14.9: Details of the Proposals for New Roads in Ward No. 2

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Secondary	60 ft.	NS78		7.15
Secondary	60 ft.	NS130		104.96
Secondary	40 ft.	NS143		653.15

Source: Road Network Plan

Total length of road widening proposal for this ward is 1.51 km. All this is proposed as secondary road of 60 ft. RoW. Table 14.10 shows the details of road widening proposal in first Action Plan of this ward.

Table 14.10: Road Widening Proposal in First Ward Action Plan for Ward No. 2

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Secondary	11.48	40 ft.	477	WS477	Transport Office to Fakir Tilla Road	417.43
Secondary	9.84	40 ft.	520	WS520		125.57
Secondary	9.84	40 ft.	421	WS421	Surma River to Bangla Bazar Road	712.72
Secondary	11.48	40 ft.	551	WS551		137.51
Secondary	11.48	40 ft.	551	WS551		114.12

Source: Road Network Plan

14.4.3.4 Urban Services

a. Ward Center

A ward center is proposed in this ward comprising a total area of 1.11 acre of land. It will be constructed in the first phase of this Master Plan. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Low Income Housing Project

A low income housing project is proposed in this ward. It will be constructed in the first phase of the plan period at Fakir Tilla mouza. It will have a total area of 20.73 acre.

c. Open Space

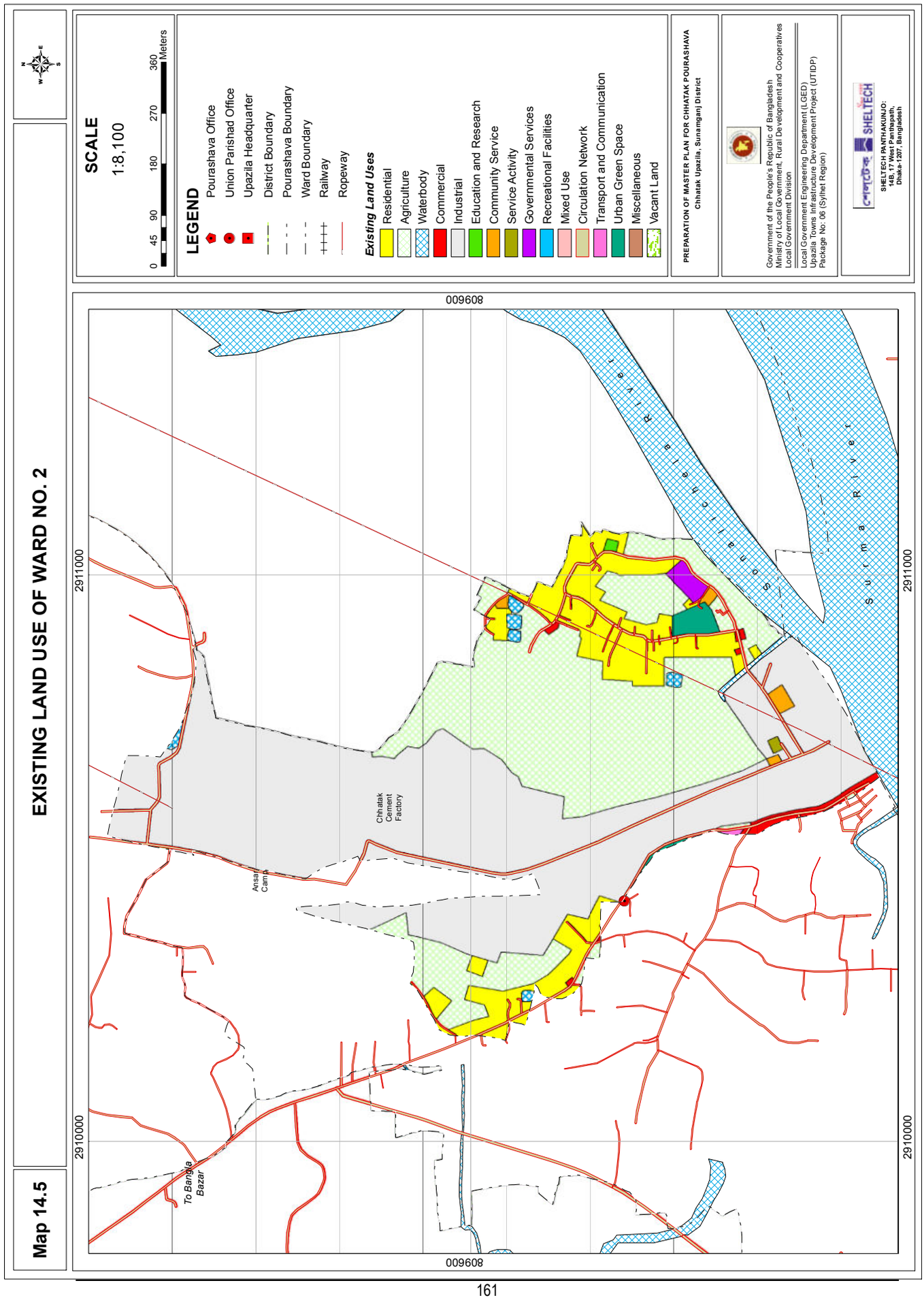
No designated open space is found in this ward. A playground of 0.93 acre and a local park of 4.68 acre fall in this ward. The local park partially falls in Ward No. 1.

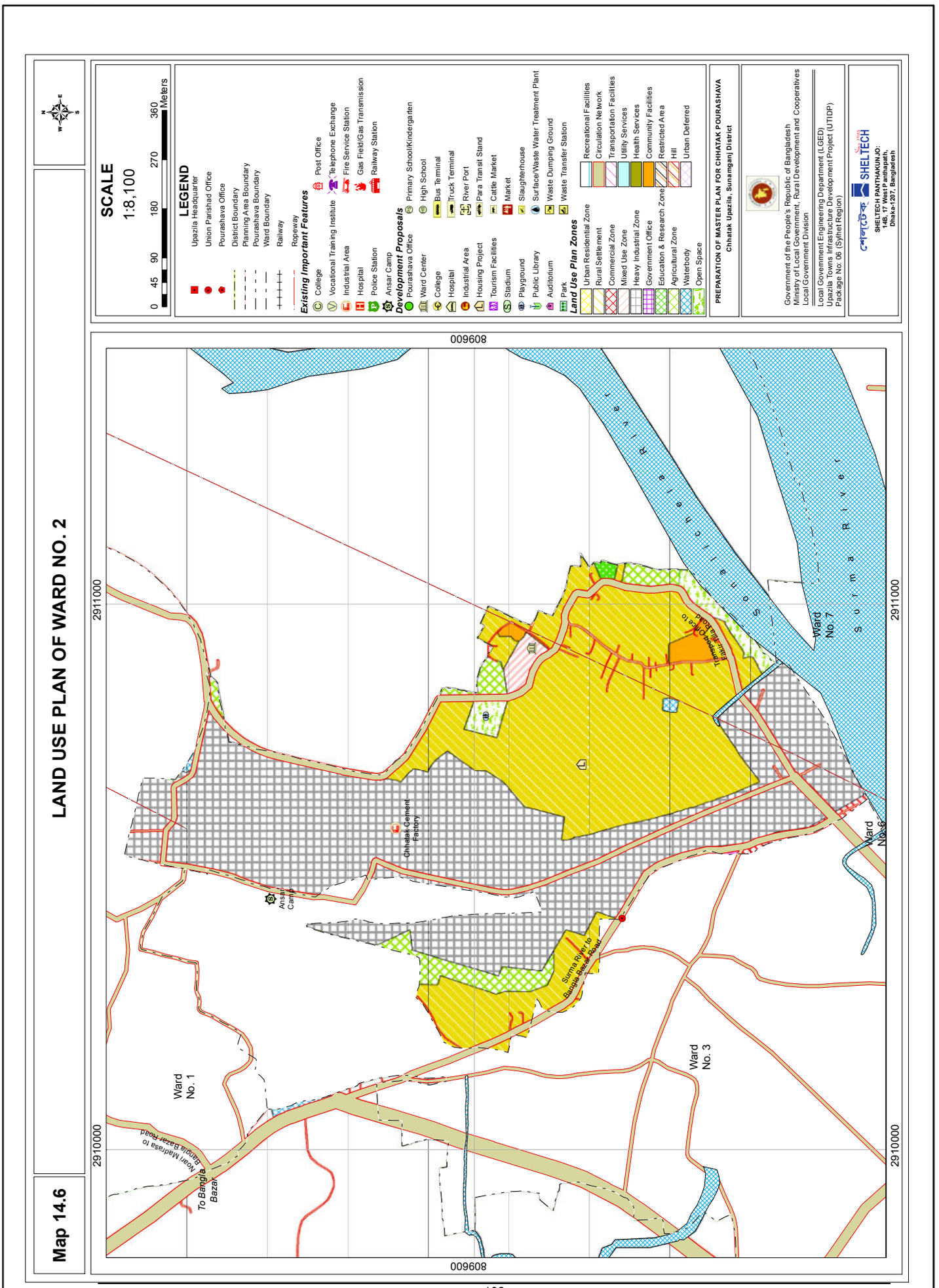
d. Water Supply

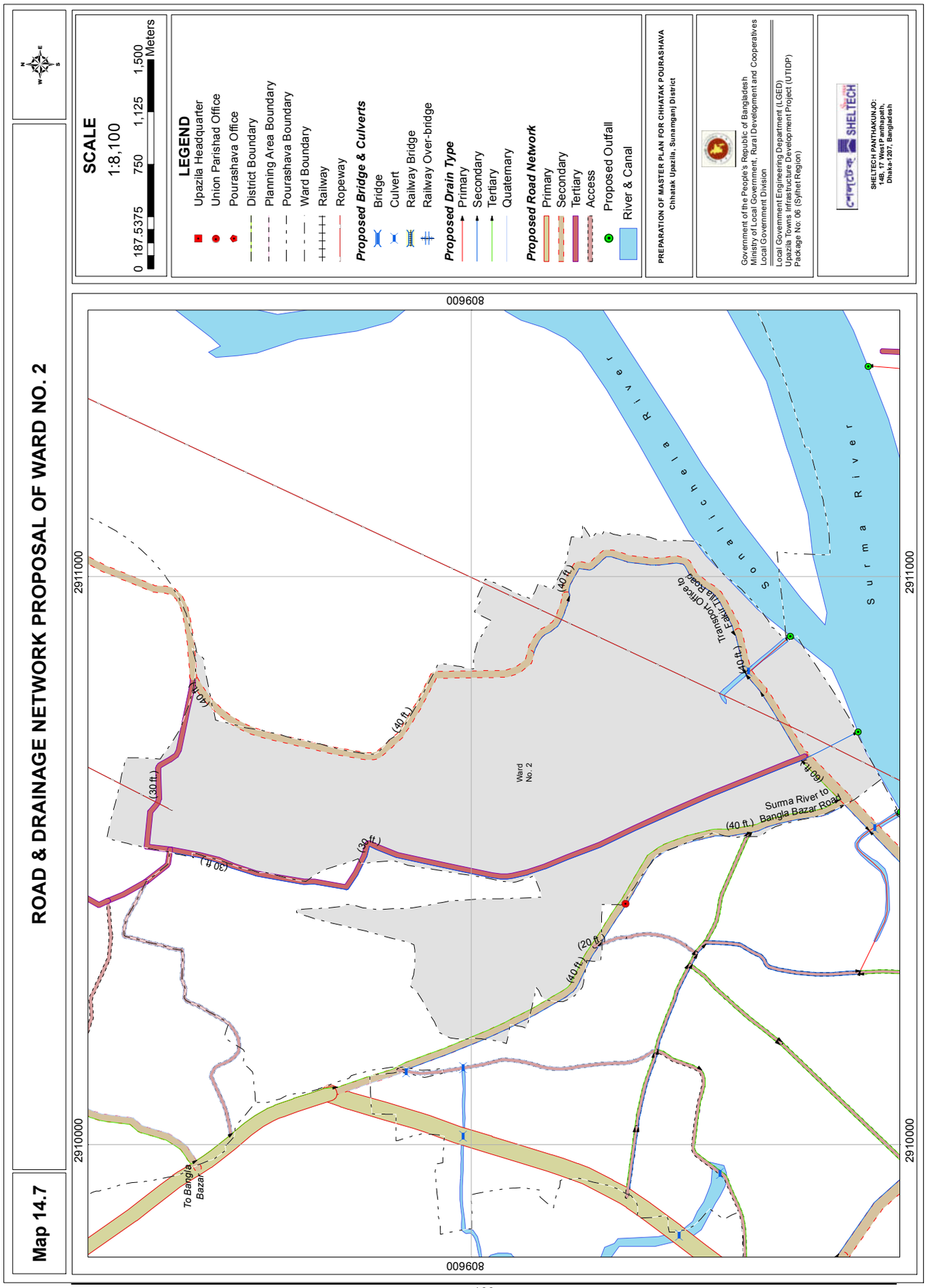
A total of 3.44 km water supply network line is proposed in the first Ward Action Plan of Ward No. 2. Annexure – D shows the detail of this proposal.

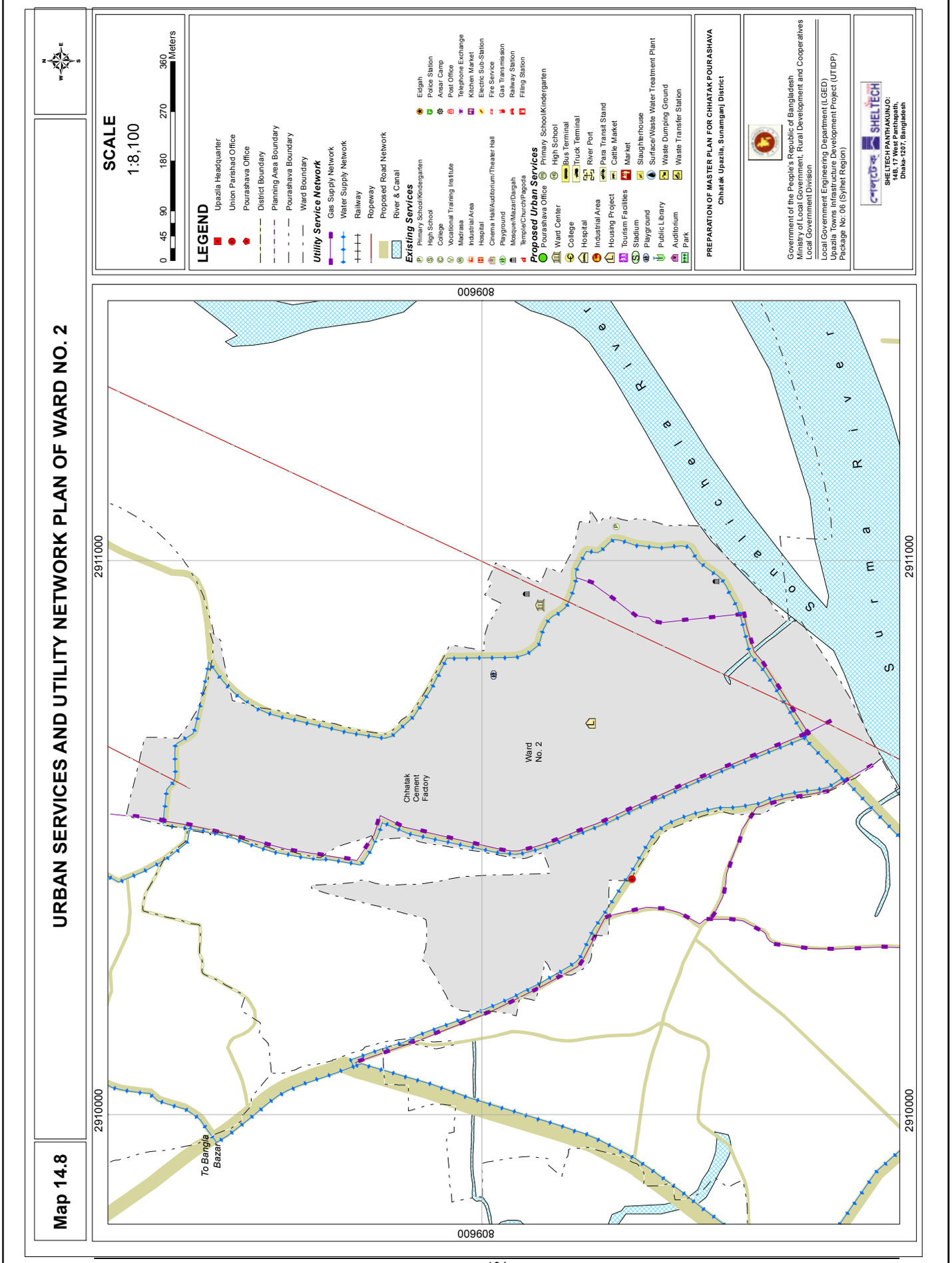
e. Sanitation

Sanitation system will be developed as proposed in Ward No. 1.


Map 14.5
EXISTING LAND USE OF WARD NO. 2
SCALE
1:8,100
0 45 90 180 270 360 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
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Ministry of Local Government, Rural Development and Cooperatives
Local Government Division
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
House # 48, Road # 4, Pallabi,
Dhaka-1207, Bangladesh
2911000
2910000
009608
Chhatak Cement Factory
Ansar Camp
To Bangla Bazar
Surma River
Chhatak Cherao Stream


Map 14.6
LAND USE PLAN OF WARD NO. 2
SCALE
1:8,100
0 45 90 180 270 360 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
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Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
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SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
009608
2911000
2910000
Ward No. 1
Ward No. 3
Ward No. 6
Ward No. 7
Surma River
Kushiara River
Chhatak Cement Factory
Ansar Camp
To Bangla Bazar
Noari Madrasa to Bangla Bazar Road
Surma River to Bangla Bazar Road
Temporary Ghat to Baulai Bila Road


ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 2
Map 14.7
SCALE
1:8,100
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quaternary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
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Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
009608
2911000
2910000
Sonachelia River
Surma River
Ward No. 2
Transport Office to Eakkattia Road
(40 ft.)
(30 ft.)
(60 ft.)
Surma River to Bangla Bazar Road
(20 ft.)
To Bangla Bazar


Map 14.8
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 2
SCALE
1:8,100
0 45 90 180 270 360 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Primary School/Kindergarten
High School
Ward Center
Bus Terminal
College
Truck Terminal
Hospital
River Port
Industrial Area
Para Transit Stand
Housing Project
Cattle Market
Tourism Facilities
Market
Stadium
Slaughterhouse
Playground
Surface/Waste Water Treatment Plant
Public Library
Waste Dumping Ground
Auditorium
Waste Transfer Station
Park
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14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
009608
2911000
2910000
Ward No. 2
Chhatak Cement Factory
To Bangla Bazar
Surma River

14.4.3.5 Drainage Development Plan

The existing drainage network is mostly dependant on Surma River. 899 meter man-made drainage facility has been found here. The proposed network comprising 95.66 m primary drain and 1160.85 meter secondary drain, 841.99 meter tertiary drain will eradicate this deficiency and provide a comprehensive network of drains for this ward. Table 14.11 shows the comparison of existing and proposed drain whereas Table 14.12 shows the details of drainage proposal in Ward No. 2.

Table 14.11: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 2

Item	Length in meter
Available Drainage	899.00
Proposed Drainage (Primary)	95.66
Proposed Drainage (Secondary)	1160.85
Proposed Drainage (Tertiary)	841.99
Proposed Drainage (Quaternary)	0.00

Source: Drainage & Environmental Management Plan

Table 14.12: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 2

Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP447	2.3 - 3.8	2.23 - 3.23	95.66
Secondary	NS443	2.35 - 3.35	1.12 - 2.12	130.47
Secondary	NS444	2.35 - 3.35	1.12 - 2.12	123.42
Secondary	NS445	2.35 - 3.35	1.12 - 2.12	406.15
Secondary	NS446	2.35 - 3.35	1.12 - 2.12	40.32
Secondary	NS449	2.35 - 3.35	1.12 - 2.12	0.08
Secondary	NS450	2.35 - 3.35	1.12 - 2.12	110.32
Secondary	NS453	2.35 - 3.35	1.12 - 2.12	83.07
Secondary	NS477	2.35 - 3.35	1.12 - 2.12	195.44
Secondary	NS525	2.35 - 3.35	1.12 - 2.12	71.57
Tertiary	NT441	1.5 - 2.5	0.64 - 1.00	746.17
Tertiary	NT442	1.5 - 2.5	0.64 - 1.00	95.81
Total				**2098.50**

Source: Drainage & Environmental Management Plan

Along with these drainage proposals it will be necessary to re-excavate all the encroached khals that serve as primary drains. The consultants have identified all existing khals that need to be re-excavated to allow smooth flow of water through them. Map 14.7 shows the drainage network plan of the ward.

14.4 Ward Action Plan for Ward No. 3

14.5.1 Demography

Ward No. 3 is the located at the north-western part of the pourashava. In the year 2001, it had a population of 2797. Population projection shows that in the year 2011, the population of the Ward would be 3543 and the density only 11 persons per acre. In 2031 population of this ward will be 5685 with 18 ppa. Table 14.13 shows the detail.

Table 14.13: Population Statistics of Ward No. 3

Item	Year		
	2001	2011	2031
Area (acre)	327.52		
Population	2797	3543	5685
Density of Population (acre)	9	11	18

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009

Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.5.2 Critical Issues and Opportunities of the Ward

Critical Issues

Critical issues for the development of Ward No. 3 are discussed below.

- Most of the land in this ward is under the ownership of Lafarge Cement Factory, which makes it difficult to provide land uses other than industrial.
- Narrow and bad condition of road has reduced the growth of the ward that it could've attained with the location based advantage of the industry.
- The residents have converted some water bodies into developed land which may create drainage problem in future.

Development Opportunities

The development opportunities of Ward No. 3 are discussed below.

- The cement industry located in this ward may induce higher growth here.
- The Surma River acts as drainage refuge for this ward.
- With roads and the water way of Surma River it has good connectivity with the surrounding areas.

14.5.3 Ward Action Plan Proposals

14.5.3.1 Review of Existing Land Use

Out of total 327.52 acre of total land 137.21 acre (41.89%) is used for agricultural purposes. With Lafarge Cement Industry in the ward the total area under industrial land use is 117.97 acre (36.02). Residential land uses cover 46.53 acres (14.21%) and water bodies occupy 7.47 acre (2.28%) area of the ward. A total of 5.61 acre of land is used for circulation network. Table 14.14 shows the comparison between the existing and proposed land uses of Ward No. 3.

Table 14.14: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 3

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	46.53	14.21	Urban Residential Zone	0.00	0.00
			Rural Settlement	94.50	28.85
Commercial	3.56	1.09	Commercial Zone	4.86	1.48
Mixed Use	0.23	0.07	Mixed Use Zone	1.87	0.57
Industrial	117.97	36.02	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	105.13	32.10
Governmental Services	0.00	0.00	Government Office	0.01	0.00
Educational Facility	0.17	0.05	Education & Research Zone	7.41	2.26
Agricultural	137.21	41.89	Agricultural Zone	56.19	17.16
Water Body	7.47	2.28	Water Body	6.83	2.08
Urban Green Space	1.50	0.46	Open Space	10.28	3.14
Vacant Land	3.01	0.92			
Recreational Facility	2.87	0.88	Recreational Facilities	0.00	0.00
Circulation Network	5.61	1.71	Circulation Network	26.17	7.99
Transport and Communication	0.17	0.05	Transportation Facilities	0.37	0.11
Service Activity	0.00	0.00	Utility Services	0.36	0.11
			Health Services	9.19	2.81
Community Service	1.23	0.38	Community Facilities	2.77	0.85
Restricted Area	0.00	0.00	Restricted Area	1.58	0.48
Miscellaneous	0.00	0.00	Hill	0.00	0.00
Total	**327.52**	**100.00**	**Total**	**327.52**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.5.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

No land is proposed under this zone in this ward.

ii. Rural Settlement

Total 94.50 acre of land is kept under this zone. This will help retaining the agricultural land in this ward.

iii. Commercial Zone

A total of 4.86 acre of land is proposed under this category. Commercial Zone will cover 1.48% of the total area of the ward.

iv. Mixed Use Zone

Mixed Use Zone will have a total area of 1.87 acre.

v. Heavy Industrial Zone

With the Lafarge Cement Industry the total area under this zone is 105.13 acre, which is 32.10% of the total area of the ward.

vi. Education and Research Zone

In Ward No. 3, 7.41 acre of land is kept under this zone.

vii. Agricultural Zone

A total of 56.19 acre land is kept under this zone which is 17.16% of the ward.

viii. Water Body

In Ward No. 3, 6.83 acre of land covering 2.08% area is proposed under water body, keeping the existing water bodies over 0.20 acre of area.

ix. Open Space

Consultants have proposed 10.28 acre of land under this land use category in this ward.

x. Circulation Network

To improve the efficiency of the ward more roads are proposed which will consume 26.17 acre of land that is almost 8% of the total area of this ward. For network improvement, widening of existing road and proposed new roads will be completed in three phases within the year 2031.

xi. Transportation Facilities

Transportation facilities will be needed to facilitate the movement of the people in future. In this ward, 0.37 acre of land is put to this use.

xii. Health Facilities

Land for Health Facilities will be 9.19 acre. A new hospital is proposed under this zone in this ward.

xiii. Community Facilities

Land for community facilities will be 2.77 acre comprising of the existing mosques, mazar, eidgah, graveyard, temple etc.

i. Restricted Area

This zone will have a total area of 1.58 acre in this ward. It contains the existing Ansar Camp.

Map 14.10 shows the Land Use Plan of Ward No. 3.

14.5.3.3 Proposed Road Infrastructure Development

In Ward No. 3, 1.33 km of road has been proposed in the first Ward Action Plan. Among these proposed road 309.18 meter will be primary road of 100 ft., 288.03 meter secondary road of 60 ft. and 733.31 meter tertiary road of 30 ft RoW. Table 14.15 shows the summary of road network proposal of first Ward Action Plan in this ward.

Table 14.15: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 3

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	100 ft.	309.18	35.52	0.00	0.00	309.18	23.24
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	0.00	0.00	288.03	62.61	288.03	21.65
Tertiary	30 ft.	561.30	64.48	172.01	37.39	733.31	55.11
Access	20 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Total		**870.49**	**100.00**	**460.04**	**100.00**	**1330.53**	**100.00**

Source: Road Network Plan

870.49 meter of new road has been proposed in the first Ward Action Plan. It will comprise 309.18 meter primary road of 100 ft. and 561.30 meter tertiary road of 30 ft. RoW. Table 14.16 shows the details about the proposed roads.

Table 14.16: Details of the Proposals for New Roads in Ward No. 3

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Primary	100 ft.	NP150		309.18
Secondary	60 ft.	NS78		561.30

Source: Road Network Plan

In this Ward Action Plan a total of 460.04 meter existing road is proposed to be widened. This will include 288.03 meter secondary road of 60 ft. and 172.01 meter tertiary road of 30 ft. Table 14.17 shows the details of road widening proposal in this Ward Action Plan.

Table 14.17: Road Widening Proposal in First Ward Action Plan for Ward No. 3

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Secondary	9.84	40 ft.	421	WS421	Surma River to Bangla Bazar Road	288.03
Secondary	6.56	60 ft.	286	WS286		172.01

Source: Road Network Plan

14.5.3.4 Urban Services

a. Ward Center

Ward center of 1.87 acre has been proposed in this ward. It will be constructed in phase 1. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Hospital

A hospital of 9.21 acre is proposed in this ward at Fakir Tilla mouza. It will be constructed in the second phase of the Master Plan.

c. Women's College

A new women's college is proposed in Ward No. 3 of Chhatak Pourashava. It will be of 5.97 acre area and will be established in phase 2. Detail of this proposal is given in Table 10.21 of Chapter 10.

d. Low Income Housing Project

A low income housing project is proposed in this ward with an area of 11.28 acres. It will be constructed in Noari and Tangagaon Mouza during the first phase of the Mater Plan period.

e. Primary School

A primary school of 1.22 acre is proposed in this ward, which will be constructed in the second phase of the Master Plan period.

f. Open Space

There is no existing open space in the ward. A green belt at the bank of the Surma River and a local park of 4.02 acre is proposed in this ward. Detail is given in Table 10.22 in Chapter 10, Part-B of this report.

h. Waste Management Services

Solid waste management is an important urban service. As density of population increases the volume of solid waste also increases proportionately. However, the income level is also another 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 it. But the present management system is not satisfactory and it may lead to problem in future. The consultant proposes one solid waste transfer station in this ward on an area of 0.36 acre. It is recommended that home collection system is introduced by creation of local CBOs based on the wards in the whole pourashava. This will cause organized collection of waste and prevent indiscriminate littering. Detail is given in Table 10.24 in Chapter 10, Part-B of this report.

g. Water Supply

Total length of proposed water supply network in the first phase is 2.48 km. Detail of this network is given in Annexure – D.

h. Sanitation

For sanitation the whole pourashava will follow the same system which is explained in the case of Ward No. 1.

i. Mosque/Graveyard/Eidgah

No new community facilities like temple, mosque, mazar etc. have been proposed in this ward.

14.5.3.5 Drainage Development Plan

There is 1009 meter manmade drainage facility at Ward No. 3. Existing drainage is mostly depending on natural drainage network. A total of 343.05 meter primary drain, 1277.67 meter secondary drain, 219.28 meter tertiary drain and 57.66 meter quaternary drain is proposed for the first phase of the planning period. Table 14.18 shows the comparison of existing and proposed drain whereas table 14.19 shows the details of drainage proposal in Ward No. 3. Map 14.11 shows the Road & drainage network proposal of Ward No. 3.

Table 14.18: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 3

Item	Length in meter
Available Drainage	1009.00
Proposed Drainage (Primary)	343.05
Proposed Drainage (Secondary)	1277.67
Proposed Drainage (Tertiary)	219.28
Proposed Drainage (Quaternary)	57.66

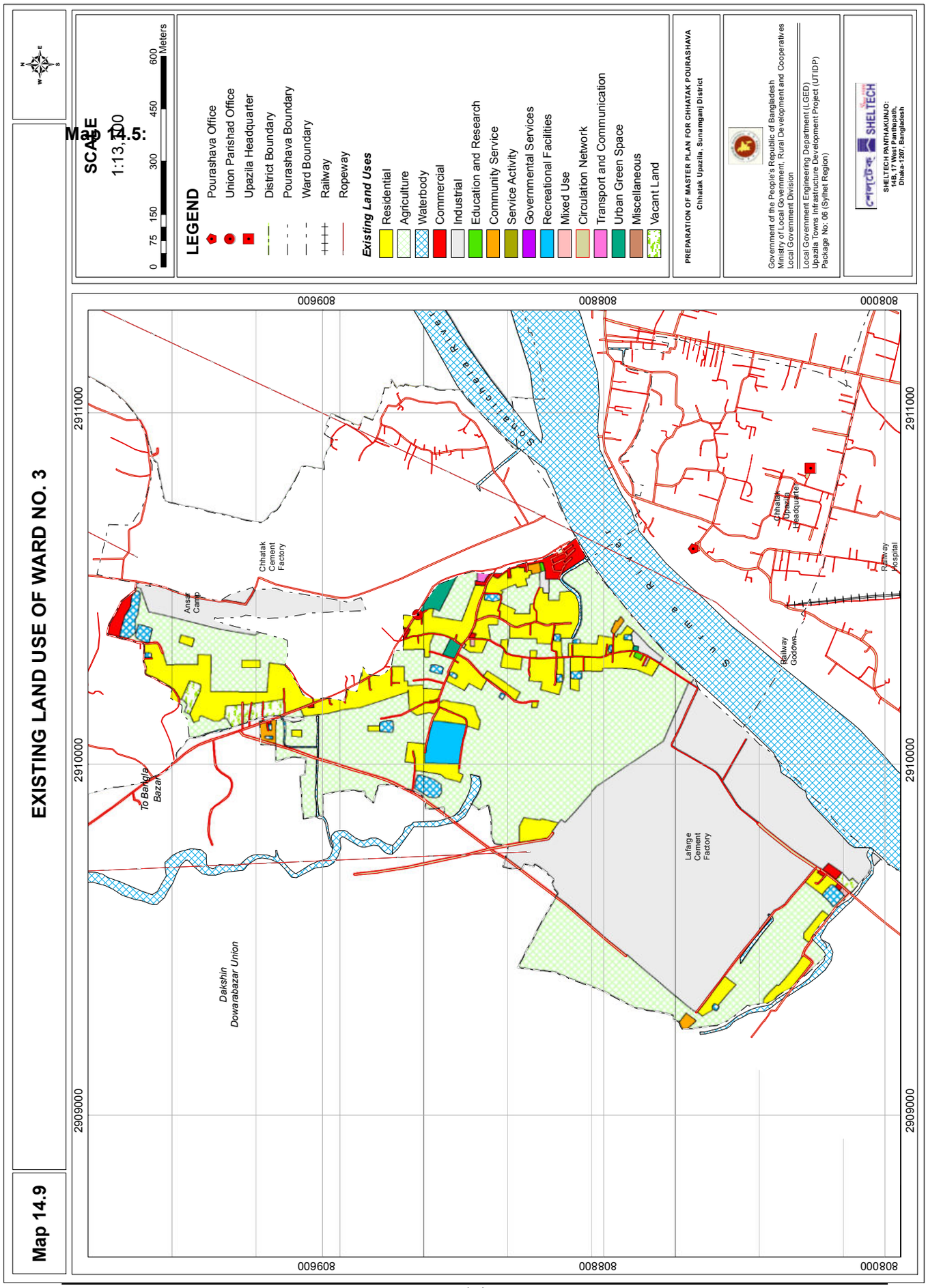
Source: Drainage & Environmental Management Plan

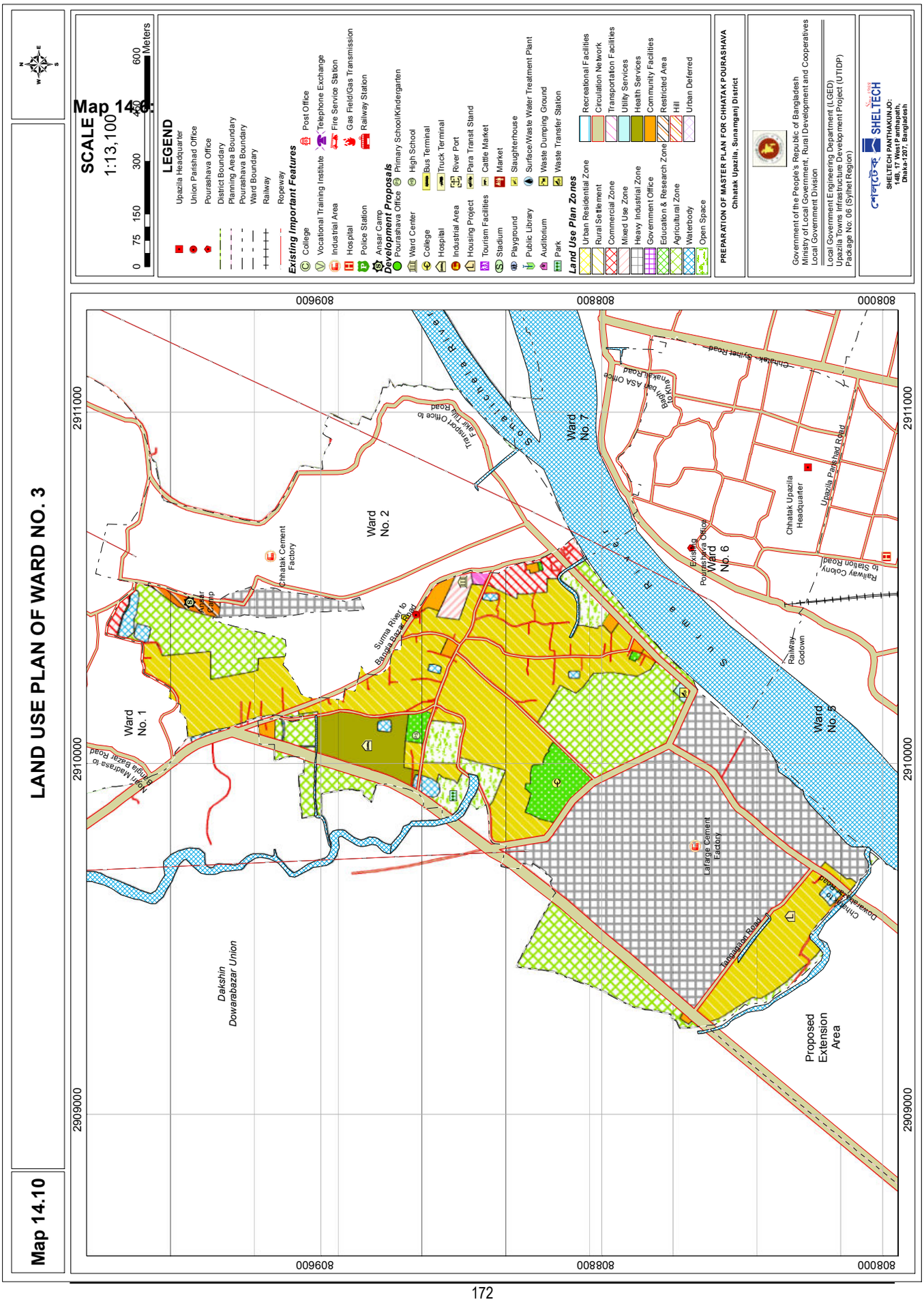
Table 14.19: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 3

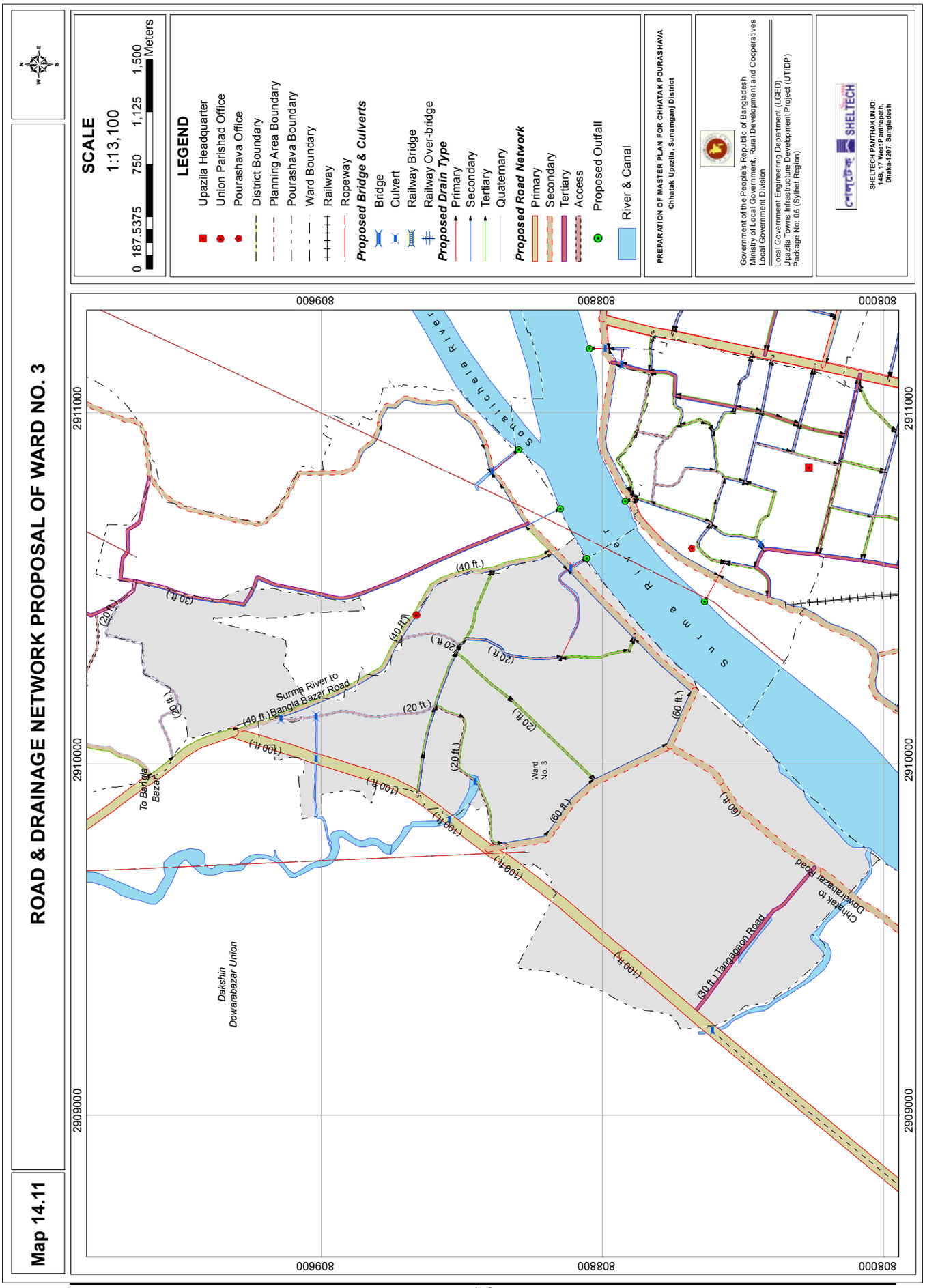
Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP455	2.3 - 3.8	2.23 - 3.23	343.05
Secondary	NS448	2.35 - 3.35	1.12 - 2.12	267.57
Secondary	NS449	2.35 - 3.35	1.12 - 2.12	63.85
Secondary	NS450	2.35 - 3.35	1.12 - 2.12	61.39
Secondary	NS453	2.35 - 3.35	1.12 - 2.12	270.89
Secondary	NS460	2.35 - 3.35	1.12 - 2.12	163.43
Secondary	NS461	2.35 - 3.35	1.12 - 2.12	219.67
Secondary	NS477	2.35 - 3.35	1.12 - 2.12	224.04
Secondary	NS521	2.35 - 3.35	1.12 - 2.12	6.84
Tertiary	NT441	1.5 - 2.5	0.64 - 1.00	219.28
Quaternary	NQ501	0.25 - 0.85	0.30 - 1.10	57.66
Total				**1897.67**

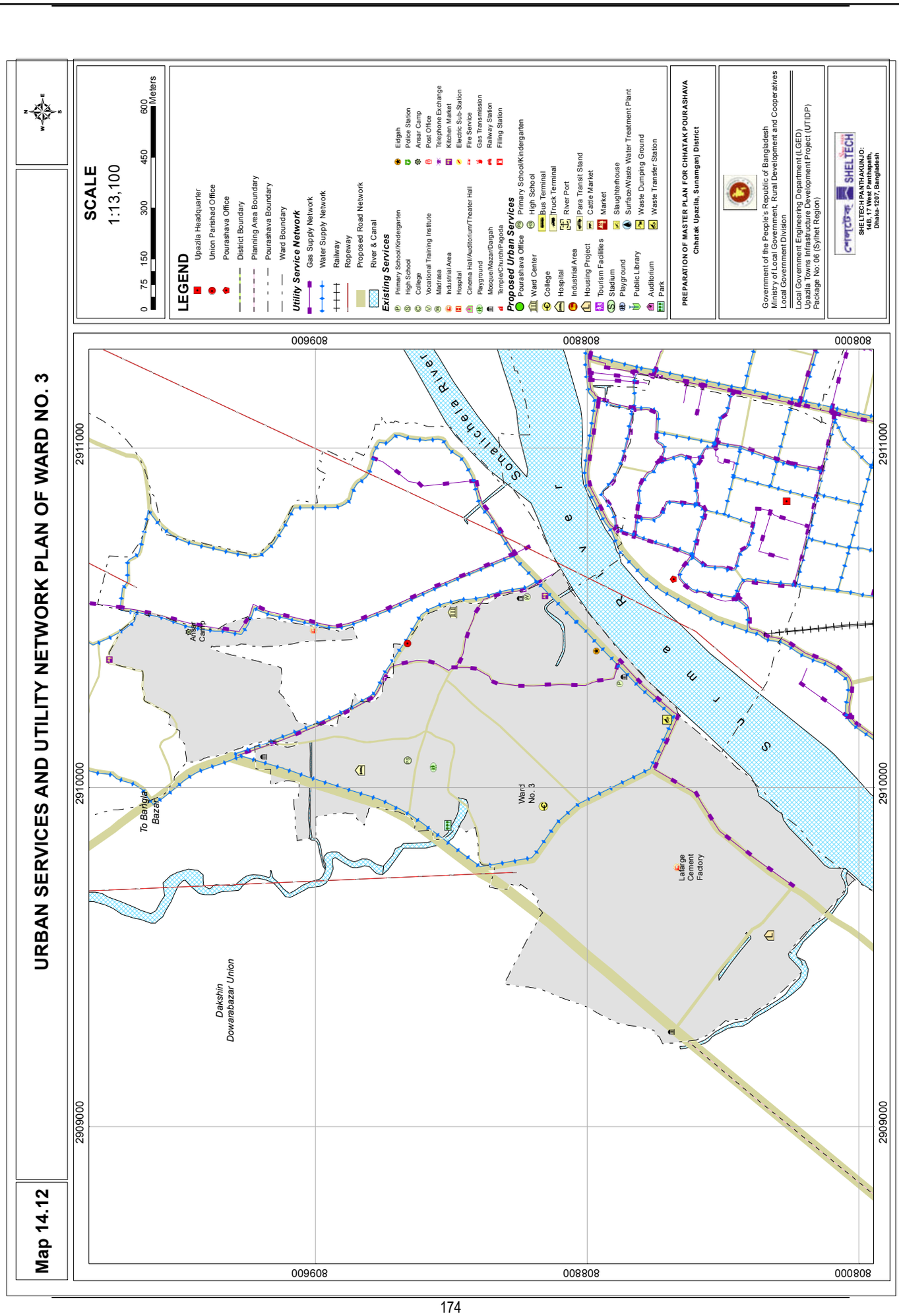
Source: Drainage & Environmental Management Plan

Map 14.5:


Map 14.9
EXISTING LAND USE OF WARD NO. 3
SCALE
1:13,100
0 75 150 300 450 600 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
809600
808800
808000
2911000
2910000
2909000
Chhatak Cement Factory
Ansar Camp
To Bandla Bazar
Dakshin Dowarabazar Union
Lafarge Cement Factory
Railway Godown
Chhatak Upazila Headquarter
Railway Hospital
Surma River


Map 14.10
LAND USE PLAN OF WARD NO. 3
Map 14.6:
SCALE
1:13,100
0 75 150 300 450 600 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Primary School/Kindergarten
Ward Center
High School
College
Bus Terminal
Hospital
Truck Terminal
Industrial Area
River Port
Housing Project
Para Transit Stand
Tourism Facilities
Cattle Market
Stadium
Market
Playground
Slaughterhouse
Public Library
Surface/Waste Water Treatment Plant
Auditorium
Waste Dumping Ground
Park
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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. 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
145, 17 West Panthapath,
Dhaka-1207, Bangladesh
Ward No. 1
Ward No. 2
Ward No. 3
Ward No. 4
Ward No. 5
Ward No. 6
Ward No. 7
Daksin Dowarabazar Union
Chhatak Cement Factory
Lafarge Cement Factory
Chhatak Upazila Headquarter
Existing Pourashava Office
Railway Godown
Proposed Extension Area
Surma River
Transport Office to Fatik Tila Road
Surma River to Bangla Bazar Road
Nogri Madrasa to Bangla Bazar Road
Upazila Parishad Road
Railway Colony to Station Road
Chhatak Bypass Road
Tahirpur Road
809600
808800
808000
2911000
2910000
2909000


Map 14.11
ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 3
SCALE
1:13,100
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quaternary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Sonaiichela River
Surma River
Surma River to Bangla Bazar Road
To Bangla Bazar
Ward No. 3
Dakshin Dowarabazar Union
Chhatak to Dowlatbazar Road
Tangagaon Road
(40 ft.)
(20 ft.)
(100 ft.)
(60 ft.)
(30 ft.)
2911000
2910000
2909000
808600
809600


Map 14.12
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 3
SCALE
1:13,100
0 75 150 300 450 600 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PATHAKUNJO:
House 17, Road 7, Block-B,
Niketon, Gulshan-1,
Dhaka-1207, Bangladesh
Sonaiichera River
Ward No. 3
To Bangla Bazar
Ansar Camp
Lafarge Cement Factory
Dakshin Dowarabazar Union
809600
808800
808000
2911000
2910000
2909000

14.6 Ward Action Plan for Ward No. 4

14.6.1 Demography

Ward No. 4 is located at the southern part of the Pourashava. In the year 2001, it had a population of 4617. Population projection shows that in the year 2011, the population of the Ward would be 5848 and the density only 12 persons per acre. In 2031 population of this ward will be 9383 with 19 ppa. Table 14.20 shows the detail.

Table 14.20: Population Statistics of Ward No. 4

Item	Year		
	2001	2011	2031
Area (acre)	509.81		
Population	4617	5848	9383
Density of Population (acre)	10	12	19

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009
Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.6.2 Critical Issues and Opportunities of the Ward

Critical Issues

Critical issues for the development of Ward No. 4 are discussed below.

- Average roadway width is 3.5 to 5 meter which is very narrow for the development of a ward.
- Only three major roads have been found for this ward that runs through the edges of the ward. Development here follows these three roads. Central part here is not developed and put to agricultural uses.

Development Opportunities

The development opportunities of Ward No. 4 are discussed below.

- Higher amount of agricultural land will induce higher agricultural development.
- The Surma River acts as drainage refuge for this ward.
- It is located close to Chhatak-Sylhet highway, which provides good access to the core part of the town.
- With roads and the water way of Surma River it has good connectivity with the surrounding areas.

14.6.3 Ward Action Plan Proposals

14.6.3.1 Review of Existing Land Use

Most of the existing land of this ward is put to agricultural purposes. This land use covers 66.85% area of this ward which is 340.79 acre. Water bodies cover a huge land which is 18.93% of this ward. Residential activities are found in 8.47% of land. Other land uses have been found to be in negligible quantity. Table 14.21 shows the comparison among the existing and proposed land uses.

Table 14.21: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 4

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	43.19	8.47	Urban Residential Zone	81.48	15.98
			Rural Settlement	31.29	6.14
Commercial	1.33	0.26	Commercial Zone	1.69	0.33
Mixed Use	0.65	0.13	Mixed Use Zone	5.12	1.00
Industrial	0.50	0.10	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	63.04	12.37

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Governmental Services	1.31	0.26	Government Office	0.00	0.00
Educational Facility	1.26	0.25	Education & Research Zone	2.78	0.54
Agricultural	340.79	66.85	Agricultural Zone	158.40	31.07
Water Body	96.49	18.93	Water Body	91.51	17.95
Urban Green Space	0.11	0.02	Open Space	30.58	6.00
Vacant Land	14.47	2.84			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	7.90	1.55	Circulation Network	33.44	6.56
Transport and Communication	0.00	0.00	Transportation Facilities	3.38	0.66
Service Activity	0.00	0.00	Utility Services	5.73	1.12
			Health Services	0.00	0.00
Community Service	1.07	0.21	Community Facilities	1.35	0.27
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.73	0.14	Hill	0.00	0.00
Total	**509.81**	**100.00**	**Total**	**509.81**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.6.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Total 81.48 acre land (15.98%) is put to this category of land use.

ii. Rural Settlement

In the Land Use Plan 31.29 acre land is earmarked as Rural Settlement.

iii. Commercial Zone

In the Land Use Plan 1.69 acre land is earmarked for commercial activities.

iv. Mixed Use Zone

A total of 5.12 acre of mixed use zone is proposed in Ward No. 4.

v. Heavy Industrial Zone

The total area under this zone is 63.04 acre (12.37%).

vi. Education and Research Zone

With the existing and proposed educational institutions in this ward the total area under this zone will be 2.78 acre, which is 0.54% of the total area.

vii. Agricultural Zone

Agricultural Zone will cover 31.07% of the ward, which is 158.40 acre of land.

viii. Water Body

The total area under this zone is 91.51 acre keeping the water bodies over 0.20 acre of area.

ix. Open Space

Total area under this zone is 30.58 acre which is 6.00% of this ward.

x. Circulation Network

With the existing and proposed roads the total area under Circulation Network will be increased from 7.90 acre to 33.44 acre. It will cover exactly 6.56% of the ward's area.

xi. Transportation Facilities

Transportation facilities will cover 3.38 acre of land which is 0.66% of the total area of the ward.

xii. Utility Services

Total 5.73 acre land is kept under this zone. A waste dumping ground is proposed under this zone.

xiii. Community Facilities

Community facilities will cover 1.35 acre of land which is 0.27% of the total area of the ward.

14.6.3.3 Proposed Road Infrastructure Development

In this ward a total of 3.28 Km road is proposed under this Ward Action Plan. It will be comprised of 1650.58 meter primary road of 100 ft, 838.87 meter secondary road of 60 ft and 799.23 meter tertiary road of 30 ft. RoW. Table 14.22 shows the summary of road network proposal in the first Ward Action Plan.

Table 14.22: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 4

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	100 ft.	1650.58	100.00	0.00	0.00	1650.58	50.36
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	0.00	0.00	838.87	51.56	838.87	25.59
Tertiary	30 ft.	0.00	0.00	788.23	48.44	788.23	24.05
Access	20 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Total		**1650.58**	**100.00**	**1627.09**	**100.00**	**3277.68**	**100.00**

Source: Road Network Plan

In Ward No. 4, 1650.58 meter primary road of 100 ft. RoW is proposed to be constructed. The following table shows the detail.

Table 14.23: Details of the Proposals for New Roads in Ward No. 4

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Primary	100 ft.	NP150		1650.58

Source: Road Network Plan

1627.09 meter existing road is proposed to be widened in the first Ward Action Plan for this ward. It will comprise of 838.87 meter secondary road of 60 ft and 799.23 meter tertiary road of 30 ft. RoW. Table 14.24 shows the details of the road widening proposals.

Table 14.24: Road Widening Proposal in First Ward Action Plan for Ward No. 4

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Secondary	16.40	60 ft.	2	WS2		788.23
Secondary	11.48	40 ft.	110	WS110		838.87

Source: Road Network Plan

14.6.3.4 Urban Services

a. Ward Center

Ward center of 1.42 acre has been proposed in this ward. It will be constructed in phase 3. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Low Income Housing Project

A total of 38.71 acre land is kept for this project. Walk-up structures will be constructed with small sized dwelling units so that the lower income people of the pourashava can afford it.

c. Local Market

A local market of 1.31 acre of land is proposed in Ward No. 4. It will be constructed in phase 3. Table 10.17 of Chapter 10 shows the details about this proposal.

d. Industrial Area

Two new industrial areas area proposed in this ward having area of 41.49 acre and 16.55 acre. The larger one will be constructed in phase 3 and the smaller one in 2.

e. Education Facility

Along with the existing educational facilities a new primary school has been proposed here in this ward. It will have a total area of 1.22 acre and constructed in the first phase.

f. Open Space

Some green belts, a playground and a local park are proposed in this ward. The green belts will have area of 10.78 acre, 7.11 acre and 3.56 acre. These open spaces will be developed as local parks to keep the bank of Surma River free from encroachment. The proposed playground will have an area of 1.22 acre and the local park 3.40 acre. Both will be constructed in phase 2.

g. River Port (Freight)

A river port for freight transport has been proposed in this ward having a total area of 2.03 acre. Detail of this proposal is in Table 10.23 of Chapter 10.

j. Para Transit Stand

A para transit stand of 1.35 acre is proposed here in the ward at Kumna Mouza. Detail is in Table 10.23 of Chapter 10.

k. Water Supply

Total length of proposed water supply network in the first phase is 0.94 km. Detail of this network is given in Annexure – D.

l. Waste Dumping Ground

The waste dumping ground of Chhatak Pourashava is proposed in this ward. It will have a total area of 5.73 acre. It will be constructed in the first phase of the Master Plan period. Details are given in Table 10.24 of Chapter 10.

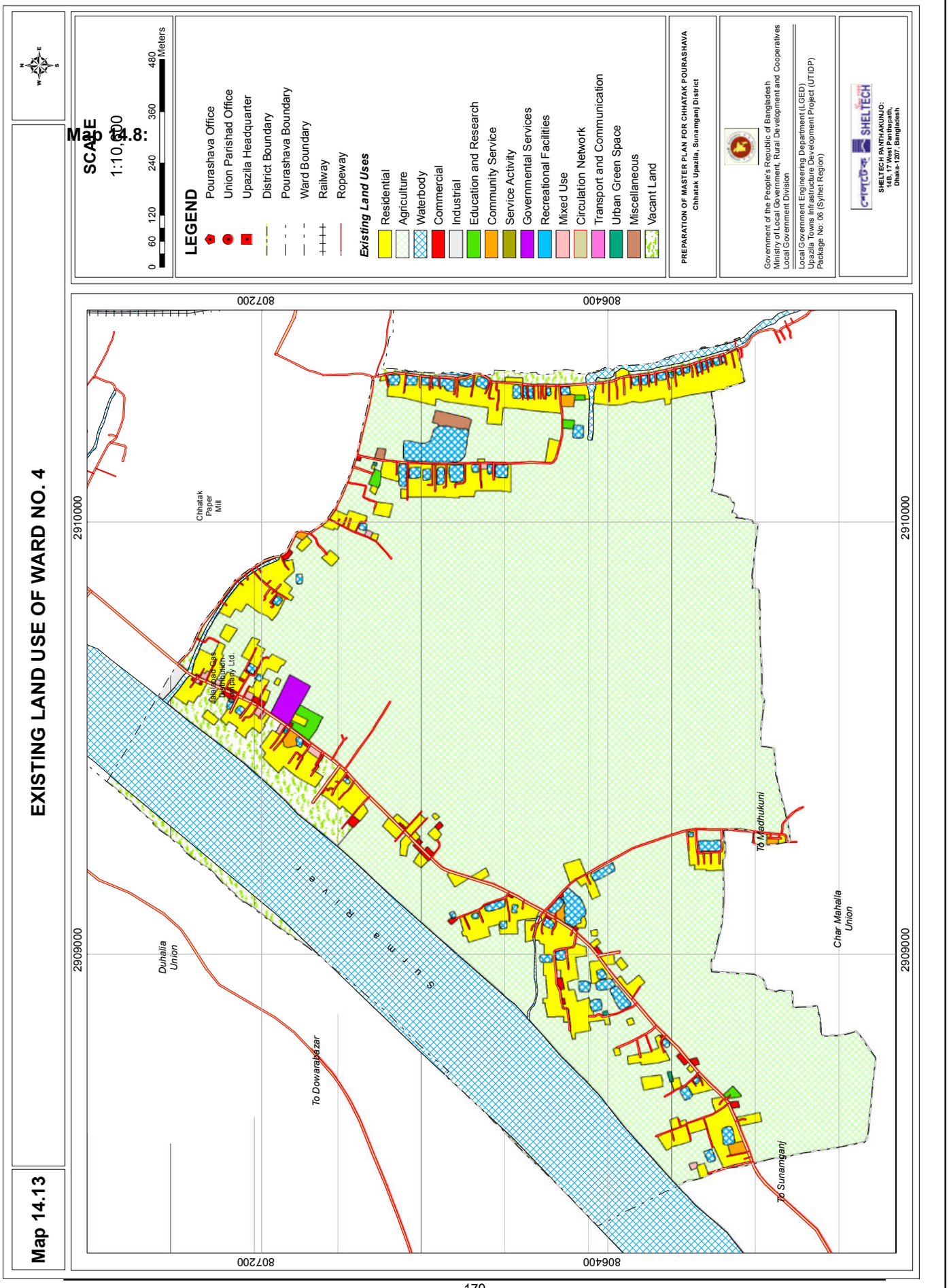
m. Sanitation

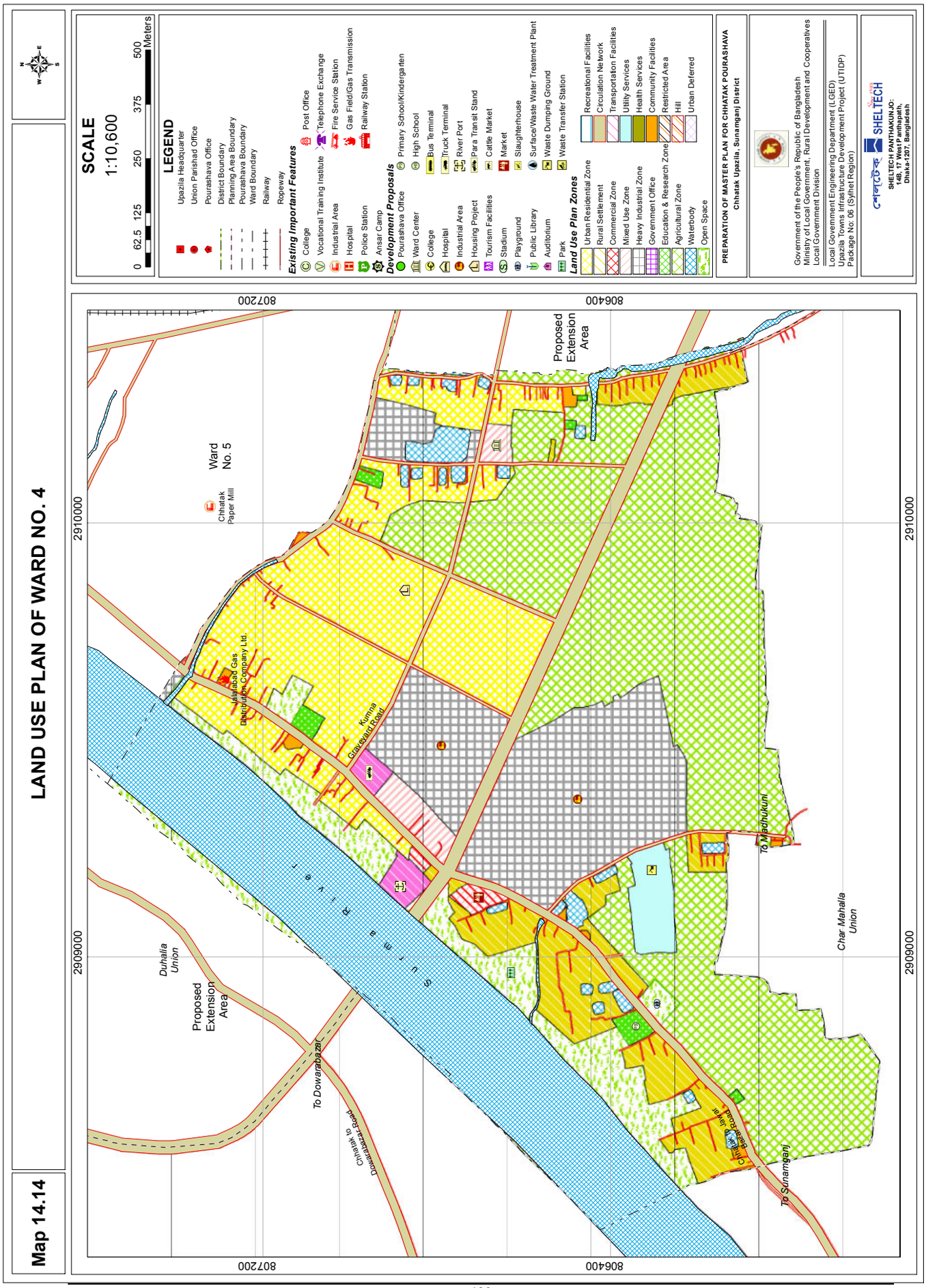
For sanitation the whole pourashava will follow the same system which is explained in the case of Ward No. 1.

n. Mosque/Graveyard/Eidgah

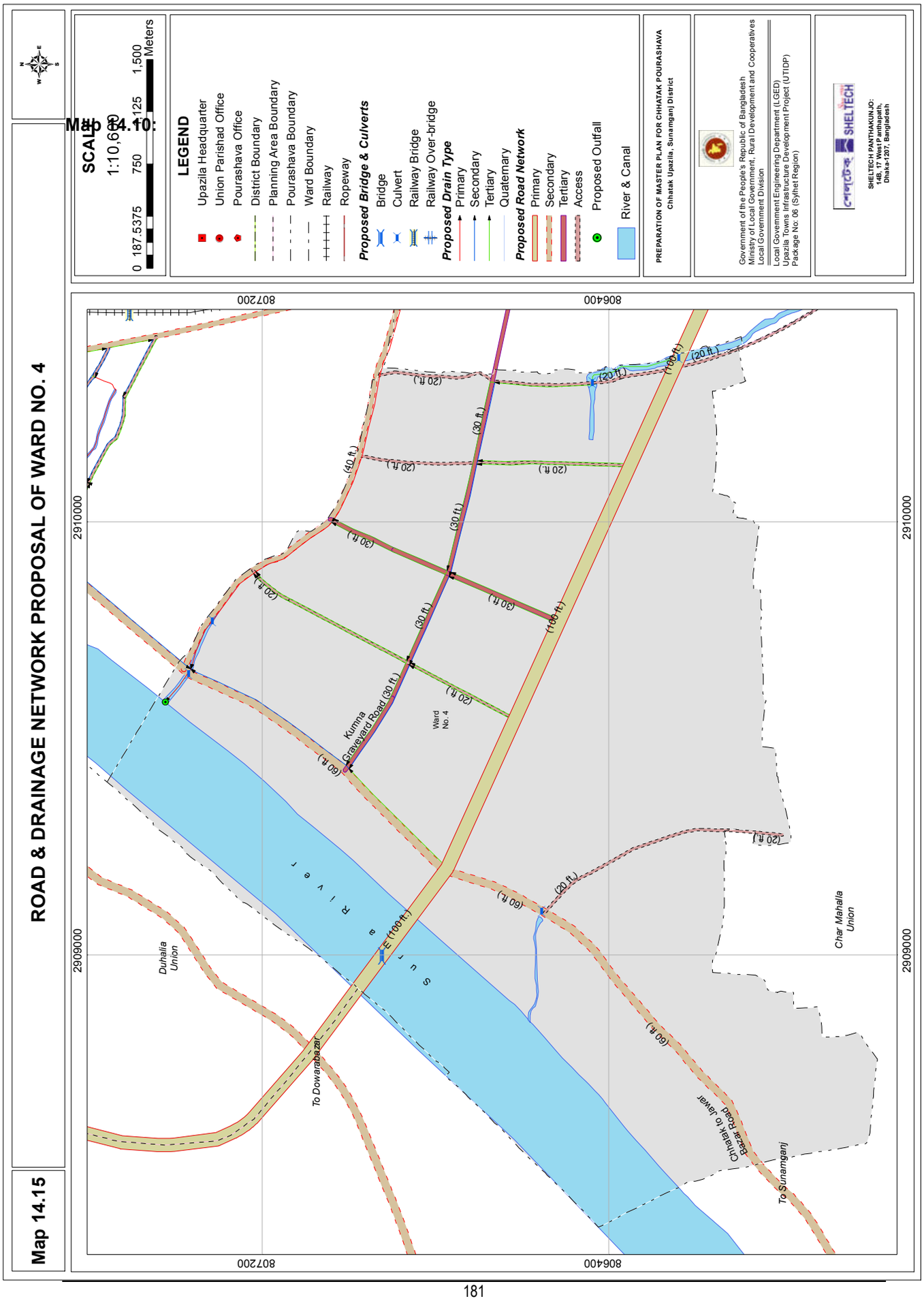
No new proposals for these facilities have been made here.

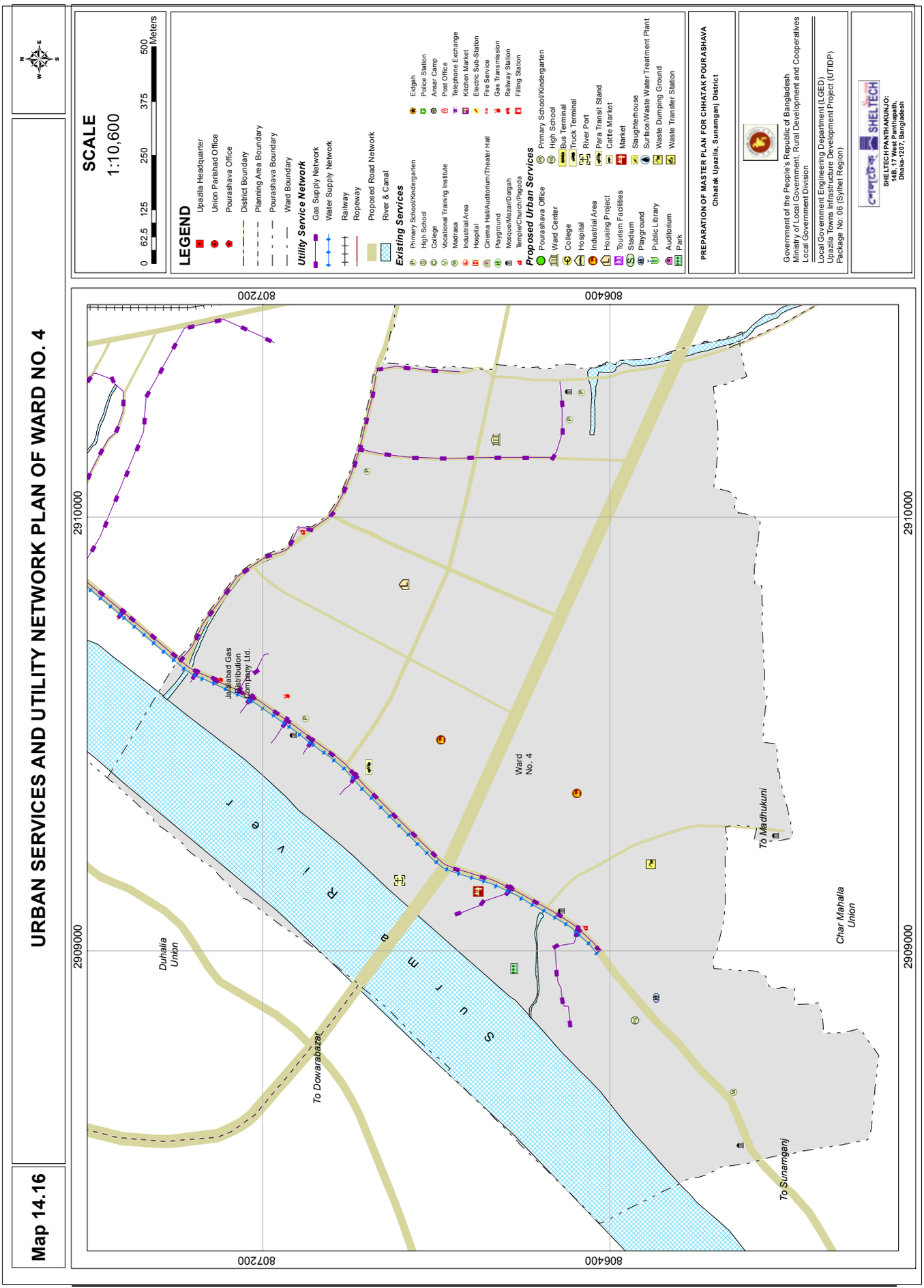
Map 14.8:


Map 14.13
EXISTING LAND USE OF WARD NO. 4
SCALE
1:10,000
0 60 120 240 360 480 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Chhatak Paper Mill
Jaintiapur Gas Transmission Company Ltd.
Duhalia Union
To Dowarabazar
To Madhukuni
Char Mahalla Union
To Sunamganj
2910000
2909000
807200
806400


Map 14.14
LAND USE PLAN OF WARD NO. 4
SCALE
1:10,600
0 62.5 125 250 375 500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Ward No. 5
Chhatak Paper Mill
Jalalabad Gas Distribution Company Ltd.
Kumma Graveyard Road
Proposed Extension Area
Duhalia Union
Proposed Extension Area
To Dowarabazar
Chhatak to Dowarabazar Road
Surma River
To Madhukuni
Char Mahalia Union
Chhatak to Jaiabar Bazar Road
To Sunamganj
807200
806400
2910000
2909000

Map 14.10:


ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 4
Map 14.15
SCALE
1:10,668
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quatemary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO;
145, 17 West Panthapath,
Dhaka-1207, Bangladesh
807200
806400
2910000
2909000
Kumna Graveyard Road (30 ft.)
Ward No. 4
Duhalia Union
Char Mahalla Union
To Dowarabazar
To Sunamganj
Chhatak to Jowar Bazar Road
(100 ft.)
(60 ft.)
(40 ft.)
(30 ft.)
(20 ft.)


Map 14.16
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 4
SCALE
1:10,600
0 62.5 125 250 375 500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
807200
806400
2910000
2909000
Jalalabad Gas Distribution Company Ltd.
Ward No. 4
To Madhukuni
To Dowarabazar
To Sunamganj
Duhalia Union
Char Mahalia Union

14.6.3.5 Drainage Development Plan

No existing drainage network is found in this ward. The present drainage is dependant on the natural slope and Surma River. To improve the drainage facilities total 1274.56 meter primary drain is proposed for this ward which will be connected with 950.94 meter secondary drain and 770.49.16 meter tertiary drain during the first Ward Action Plan. Table 14.25 shows the comparison of existing and proposed drain whereas table 14.26 shows the details of drainage proposal in Ward No. 4.

Table 14.25: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 4

Item	Length in meter
Available Drainage	0.00
Proposed Drainage (Primary)	1274.56
Proposed Drainage (Secondary)	950.94
Proposed Drainage (Tertiary)	770.49
Proposed Drainage (Quaternary)	0.00

Source: Drainage & Environmental Management Plan

Table 14.26: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 4

Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP148	2.3 - 3.8	2.23 - 3.23	1274.56
Secondary	NS141	2.35 - 3.35	1.12 - 2.12	485.75
Secondary	NS142	2.35 - 3.35	1.12 - 2.12	368.76
Secondary	NS513	2.35 - 3.35	1.12 - 2.12	96.44
Tertiary	NT140	1.5 - 2.5	0.64 - 1.00	31.40
Tertiary	NT143	1.5 - 2.5	0.64 - 1.00	423.72
Tertiary	NT161	1.5 - 2.5	0.64 - 1.00	315.36
Total				**2995.99**

Source: Drainage & Environmental Management Plan

Map 14.14 shows the drainage network plan of the Pourashava.

14.7 Ward Action Plan for Ward No. 5

14.7.1 Demography

Ward No. 5 is the located at the central part of the pourashava. In the year 2001, it had a population of 4415. Population projection shows that in the year 2011, the population of the Ward would be 5592 and the density only 11 persons per acre. In 2031 population of this ward will be 8970 with 17 ppa. Table 14.27 shows the detail.

Table 14.27: Population Statistics of Ward No. 5

Item	Year		
	2001	2011	2031
Area (acre)	553.67		
Population	4415	5592	8970
Density of Population (acre)	8	11	17

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009

Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.7.2 Critical Issues and Opportunities of the Ward

Critical Issues

Ward No. 5 is the largest ward of Chhatak Pourashava. Critical issues for the development of this ward are discussed below.

- Without a well developed road network the development is concentrated in the north-western part of the ward.
- The railway and Chhatak-Sylhet highway divides this ward into two parts.
- Bashundhara Paper Mill is located in this ward covering a huge amount of land of 76.64 acre. Currently it is out of production which made this huge amount of land as idle.

Development Opportunities

The development opportunities of Ward No. 5 are discussed below.

- Higher amount of agricultural land will induce higher agricultural development.
- The Surma River acts as drainage refuge for this ward.
- Chhatak-Sylhet highway runs through this ward which provides good accessibility.
- If the paper mill starts production then the growth of this ward will be tremendous.

14.7.3 Ward Action Plan Proposals

14.7.3.1 Review of Existing Land Use

Most of the existing land of this ward is put to agricultural purposes. This land use covers 46.22% area of this ward which is 255.93 acre. Water bodies cover a huge land which is 19.48% of this ward. Residential activities are found in 7.11% of land. With the Bashundhara Paper Mill Ltd, (although not in production yet) the industrial land use in this ward cover 76.64 acre land (13.84%). Other land uses have been found to be in negligible quantity. Table 14.28 shows the comparison among the existing and proposed land uses.

Table 14.28: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 5

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	39.37	7.11	Urban Residential Zone	133.53	24.12
			Rural Settlement	8.57	1.55
Commercial	2.74	0.49	Commercial Zone	40.79	7.37

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Mixed Use	0.71	0.13	Mixed Use Zone	9.48	1.71
Industrial	76.64	13.84	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	67.49	12.19
Governmental Services	20.51	3.70	Government Office	16.36	2.95
Educational Facility	4.50	0.81	Education & Research Zone	15.57	2.81
Agricultural	255.93	46.22	Agricultural Zone	37.81	6.83
Water Body	107.87	19.48	Water Body	108.29	19.56
Urban Green Space	1.93	0.35	Open Space	34.30	6.19
Vacant Land	22.74	4.11			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	18.01	3.25	Circulation Network	46.63	8.42
Transport and Communication	0.53	0.10	Transportation Facilities	29.58	5.34
Service Activity	0.51	0.09	Utility Services	1.10	0.20
			Health Services	0.70	0.13
Community Service	1.67	0.30	Community Facilities	3.47	0.63
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.00	0.00	Hill	0.00	0.00
Total	**553.67**	**100.00**	**Total**	**553.67**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.7.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

Total 133.53 acre land is allocated for this type of use in this ward.

ii. Rural Settlement

The settlements located in the agricultural area are proposed under this category of land use. A total of 8.57 acre of land (1.55%) is proposed as rural settlement.

iii. Commercial Zone

A total of 40.79 acre of land is proposed under this category.

iv. Mixed Use Zone

A total of 9.48 acre of mixed use zone is proposed in this ward.

v. Heavy Industrial Zone

Bashundhara Paper Mill is kept under this zone. The total area of this zone is 67.49 acre.

vi. Government Office

Including the Railway Office and Railway godown, the total area under this zone is 16.36 acre, which is 2.95% of the total area of the ward.

vii. Education and Research Zone

This zone will have an area of 15.57 acres in the Land Use Plan, including the Chhatak Degree College and the other educational institutions.

viii. Agricultural Zone

Agricultural Zone will cover exactly 6.83% of the ward, which is 37.81 acre of land.

ix. Water Body

The total area under this zone is 108.29 acre, which is 19.56% of the total area of the ward, keeping the water bodies over 0.20 acre of area.

x. Open Space

A total of 34.30 acre of land is proposed under this category of land use.

xi. Circulation Network

With the existing and proposed roads the total area under Circulation Network will be increased from 19.01 acre to 46.63 acre. It will cover 8.42% of this ward's area.

xii. Transportation Facilities

This zone will have a total area of 29.58 acre in this ward.

xiii. Utility Services

Utility Services Zone will have an area of 1.10 acre in this ward.

xiv. Health Services

Health Services Zone will have an area of 0.70 acre in this ward.

xv. Community Facilities

Community facilities will cover 3.47 acre of land which is 0.63% of the total area of the ward.

14.7.3.3 Proposed Road Infrastructure Development

In Ward No. 5, 2.81 km of road has been proposed in the first Ward Action Plan. Among these proposed road 1240.60 meter will be secondary road of 40 ft and 144.88 meter of 60 ft., 1179.99 meter tertiary road of 30 ft and 242.50 meter access road of 20 ft RoW. All these are proposed new road. Table 14.29 shows the summary of road network proposal and table 14.30 shows the detail of the proposed new roads of first Ward Action Plan in Ward No. 5.

Table 14.29: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 5

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	1240.60	44.18	0.00	0.00	1240.60	44.18
	60 ft.	144.88	5.16	0.00	0.00	144.88	5.16
Tertiary	30 ft.	1179.99	42.02	0.00	0.00	1179.99	42.02
Access	20 ft.	242.50	8.64	0.00	0.00	242.50	8.64
Total		**2807.97**	**100.00**	**0.00**	**0.00**	**2807.97**	**100.00**

Source: Road Network Plan

Table 14.30: Details of the Proposals for New Roads in Ward No. 5

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Primary	18.04	80 ft.	1	WP1	Chhatak - Sylhet Road	1095.00
Primary	18.04	80 ft.	1	WP1	Chhatak - Sylhet Road	145.61
Secondary	16.40	60 ft.	2	WS2		819.46
Secondary	11.48	40 ft.	110	WS110		9.24
Secondary	16.40	60 ft.	2	WS2		360.53
Secondary	6.56	40 ft.	120	WS120		135.64
Tertiary	16.40	30 ft.	2	WT2	Upazila Parishad Road	242.50

Source: Road Network Plan

14.7.3.4 Urban Services

a. Ward Center

Ward center of 0.84 acre has been proposed in this ward. It will be constructed in phase 1. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Tourism Facilities

A total of 32.60 acre land is kept in this ward to develop tourism facilities. This will include hotels, motels, commercial facilities etc.

c. Local Market

To support the daily need of the people of this ward a Local Market is proposed here with an area of 0.82 acre. It will be constructed during the first phase of the Master Plan.

d. Cattle Market

To increase the revenue of the pourashava a cattle market of 0.85 acre is proposed in it with an area of 0.85 acre. Detail of it is given in Table 10.17 of Chapter 10.

e. Education Facility

A primary school of 1.22 acre land is proposed in this ward. It will be constructed in the third phase of Master Plan period.

f. Central Park

The proposed central park of the pourashava falls partially in this ward. The remaining part falls in the proposed extension area. This park will have a total area of 21.07 acre.

g. Open Space

Three green belts have been proposed in this ward having area of 1.22, 5.80 and 2.90 acre. A playground of 1.32 acre is proposed in this ward.

h. Bus Terminal

A bus terminal of 7.81 acre is proposed in this ward. It will be constructed during the first phase of the Master Plan. Detail is given in Table 10.23 of Chapter 10.

i. Para Transit Stand

A para transit stand of 0.70 acre land is proposed in this ward. It will be constructed in the second phase of the ward.

j. Slaughterhouse

A slaughterhouse of 0.83 acre land is proposed in this ward. It will be established in the first phase of the Master Plan period. Detail of the proposed slaughterhouse is given in Table 10.24 of Chapter 10.

k. Water Supply

Total 4.26 km of water supply network is proposed in the first Ward Action Plan. Detail of water supply network is given in Annexure – D.

l. Sanitation

Sanitation system will be same for whole pourashava as described for Ward No. 1.

m. Waste Management Services

A waste transfer station of 0.28 acre land is proposed in this ward. It will be constructed in the first phase of the Master Plan.

n. Mosque/Graveyard/Eidgah

No new proposals of these facilities have been made here in this ward.

14.7.3.5 Drainage Development Plan

At present 1452 meter drain is found in the ward. Surma River and the existing canals play vital role in draining out storm water from this ward. Table 14.31 shows comparison of existing and proposed drain whereas table 14.32 shows the details of drainage proposal in this ward. Map 14.19 shows the drainage network plan of the pourashava.

Table 14.31: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 5

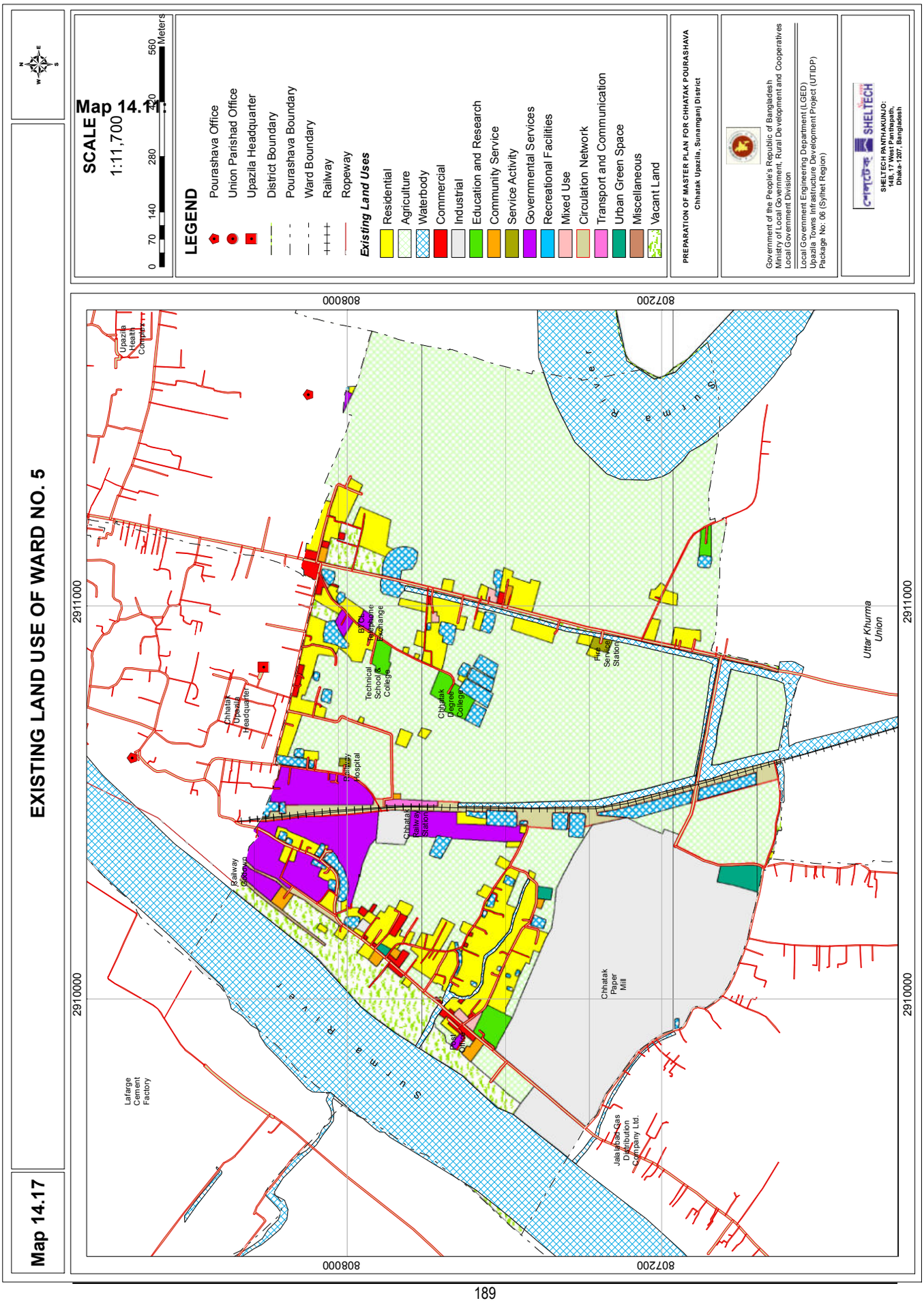
Item	Length in meter
Available Drainage	1452.00
Proposed Drainage (Primary)	1750.50
Proposed Drainage (Secondary)	2106.34
Proposed Drainage (Tertiary)	454.58
Proposed Drainage (Quaternary)	0.00

Source: Drainage & Environmental Management Plan

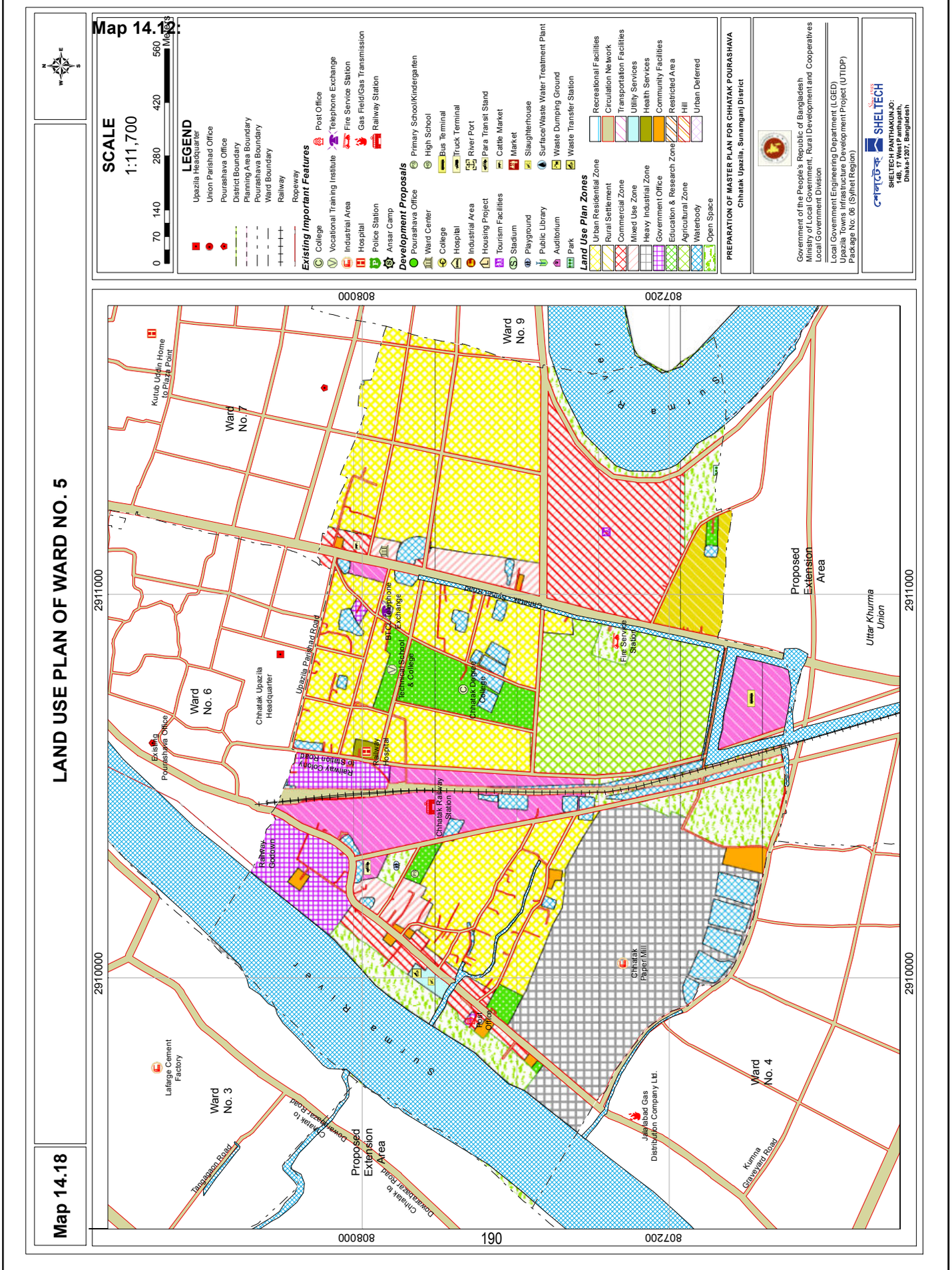
Table 14.32: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 5

Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP43	2.3 - 3.8	2.23 - 3.23	1362.60
Primary	NP58	2.3 - 3.8	2.23 - 3.23	257.34
Primary	NP516	2.3 - 3.8	2.23 - 3.23	130.56
Secondary	NS76	2.35 - 3.35	1.12 - 2.12	31.68
Secondary	NS85	2.35 - 3.35	1.12 - 2.12	233.97
Secondary	NS121	2.35 - 3.35	1.12 - 2.12	456.23
Secondary	NS122	2.35 - 3.35	1.12 - 2.12	355.07
Secondary	NS132	2.35 - 3.35	1.12 - 2.12	72.47
Secondary	NS139	2.35 - 3.35	1.12 - 2.12	212.96
Secondary	NS142	2.35 - 3.35	1.12 - 2.12	39.23
Secondary	NS514	2.35 - 3.35	1.12 - 2.12	700.29
Secondary	NS528	2.35 - 3.35	1.12 - 2.12	4.43
Tertiary	NT86	1.5 - 2.5	0.64 - 1.00	266.57
Tertiary	NT140	1.5 - 2.5	0.64 - 1.00	188.01
Total				**4311.41**

Source: Drainage & Environmental Management Plan

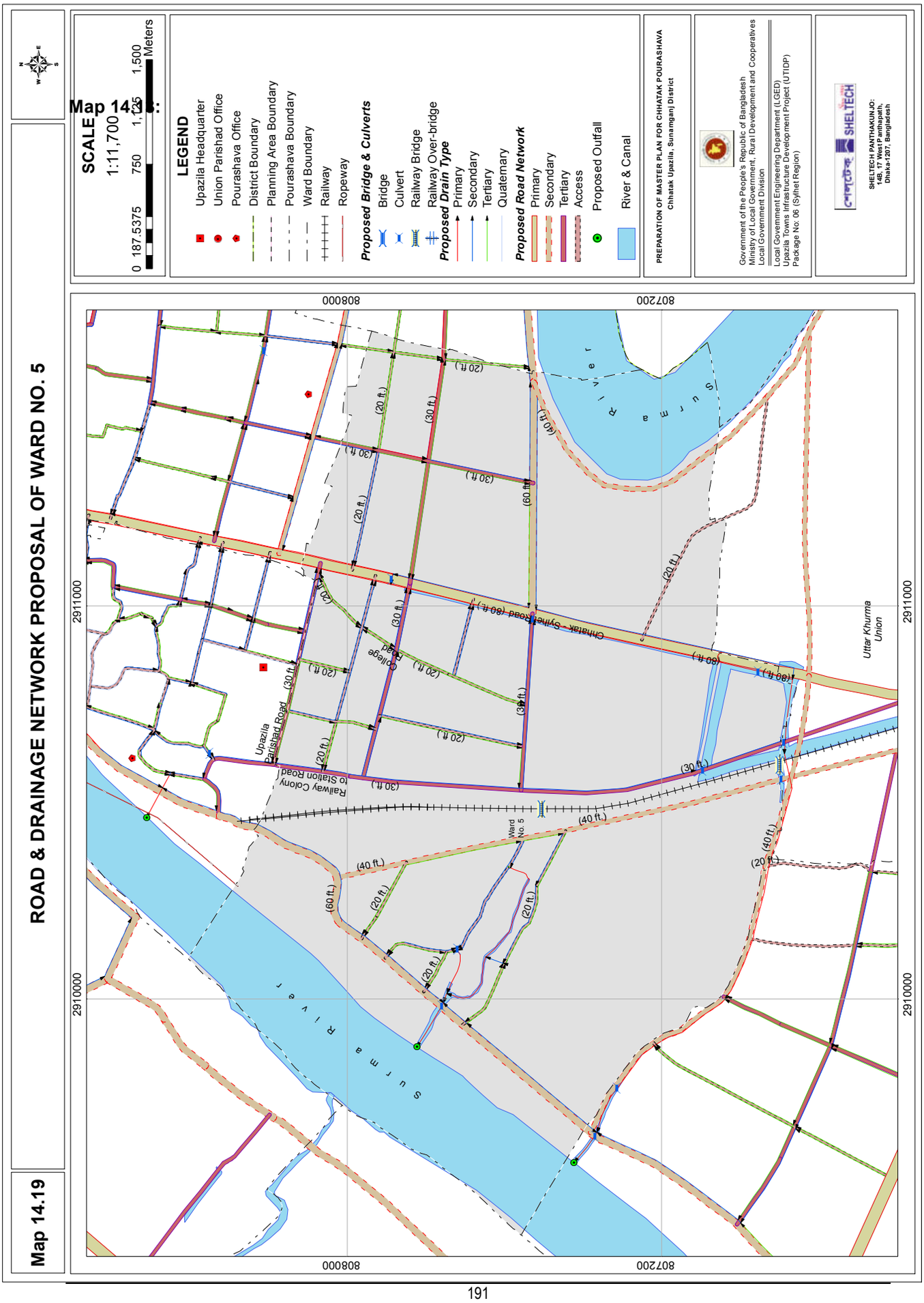

Map 14.17
EXISTING LAND USE OF WARD NO. 5
Map 14.11:
SCALE
1:11,700
0 70 140 280 420 560 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
SHELTECH
2911000
2910000
807200
808000
Upazila Health Complex
Chhatak Upazila Headquarter
BTCL Telephone Exchange
Technical School & College
Chhatak Degree College
Fire Service Station
Uttar Khurma Union
Railway Godown
Chhatak Railway Station
Chhatak Paper Mill
Lafarge Cement Factory
Jalalabad Gas Distribution Company Ltd.

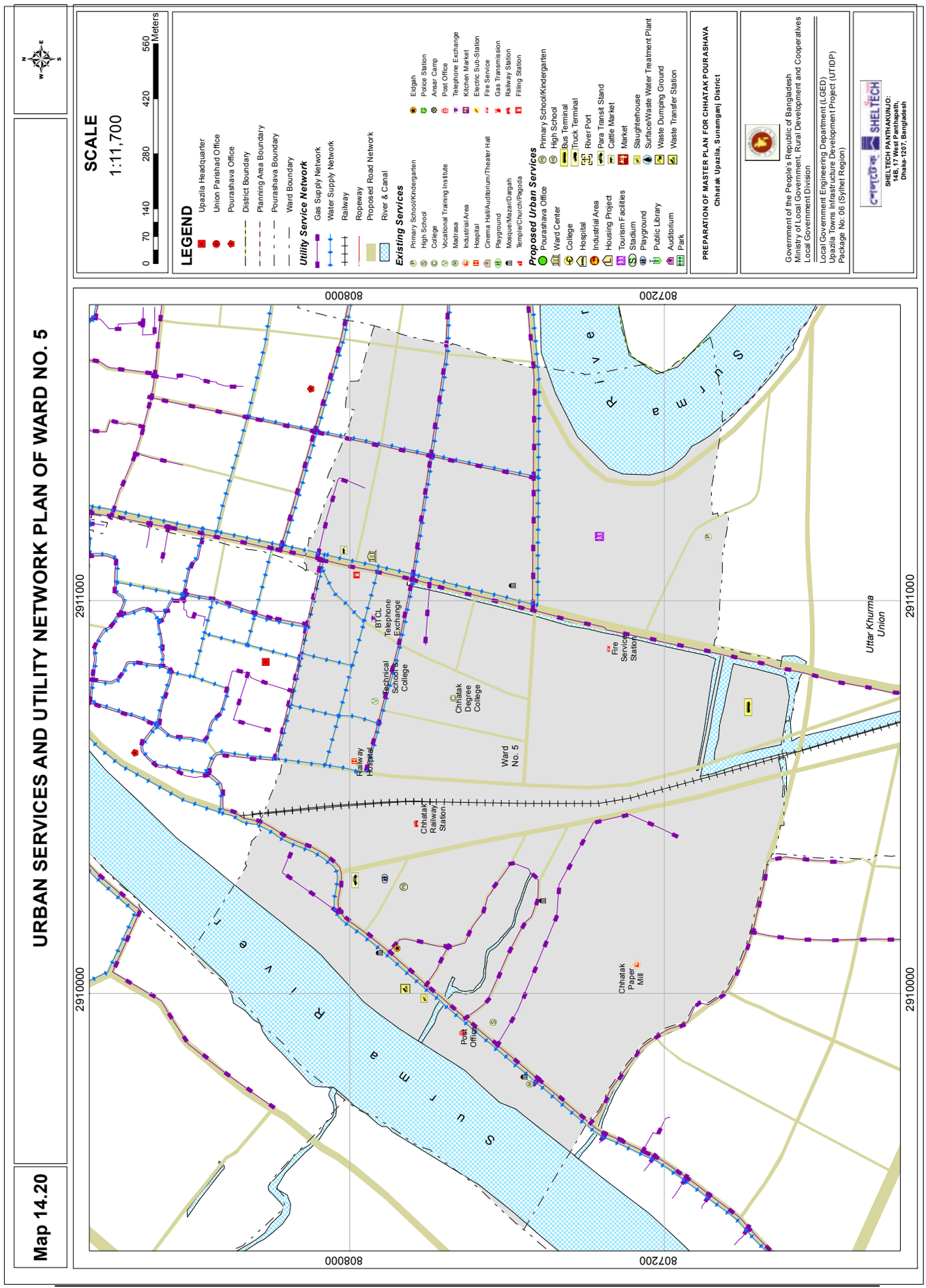
Map 14.12:


LAND USE PLAN OF WARD NO. 5
Map 14.18
SCALE
1:11,700
0 70 140 280 420 560 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Ward No. 3
Ward No. 4
Ward No. 6
Ward No. 7
Ward No. 9
Kutub Uddin Home to Plaza Point
Existing Pourashava Office
Chhatak Upazila Headquarter
Upazila Parishad Road
BTCL Telephone Exchange
Technical School & College
Chhatak Degree College
Railway Hospital
Railway Colony to Station Road
Chhatak Railway Station
Railway Godown
Fire Service Station
Proposed Extension Area
Uttar Khurma Union
Chhatak Paper Mill
Post Office
Jalalabad Gas Distribution Company Ltd.
Kumma Graveyard Road
Lafarge Cement Factory
Tangagaon Road
Chhatak to Dowarabazar Road
Proposed Extension Area
2911000
2910000
807200
808000
190

Map 14.19

ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 5




Map 14.20
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 5
SCALE
1:11,700
0 70 140 280 420 560 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
808000
807200
2911000
2910000
Surma River
Kalni River
BTCL Telephone Exchange
Technical Schools College
Chhatak Degree College
Fire Service Station
Railway Hospital
Chhatak Railway Station
Ward No. 5
Chhatak Paper Mill
Post Office
Uttar Khurma Union

14.8 Ward Action Plan for Ward No. 6

14.8.1 Demography

Ward No. 6 is located on the central part of the town. It has the comparatively higher density of population in the Pourashava. In 2001 the Ward had a population of 4643 persons. Population projection shows 5880 population for the year 2011. For the same year, it had a density of only 47 persons per acre. The estimated population for the year 2031 is 9433 with a density of 75 ppa. Table 14.33 shows the detail.

Table 14.33: Population Statistics of Ward No. 6

Item	Year		
	2001	2011	2031
Area (acre)	127.38		
Population	4643	5880	9433
Density of Population (acre)	37	47	75

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009
Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.8.2 Critical Issues and Opportunities of the Ward

Critical Issues

Critical issues for the development of Ward No. 6 are discussed below.

- Dense and unplanned development has reduced the scope of intervention here.
- Surma River and the Upazila Headquarter have reduced the amount of potential land to be developed in this small sized ward.
- Lower space standard for urban services has reduced the livability of this ward.

Development Opportunities

The development opportunities of Ward No. 6 are discussed below.

- Higher amount of commercial land will induce concentrated and high-rise development.
- The Surma River acts as drainage refuge for this ward.
- Surma River, railway station and Chhatak-Sylhet highway provides a three dimensional accessibility to this ward.

14.8.3 Ward Action Plan Proposals

14.8.3.1 Review of Existing Land Use

Different types of land uses are found in this ward. Highest among these land uses is residential use with 37.29 acre (29.27%). Water bodies cover the second highest amount of land with 69.21 acre (28.18%) land. Other land uses like agricultural (21.05%), vacant land (4.07%) etc. is found here. Table 14.34 shows the comparison of existing and proposed land uses in this ward.

Table 14.34: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 6

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	37.29	29.27	Urban Residential Zone	36.07	28.31
			Rural Settlement	0.00	0.00
Commercial	5.38	4.22	Commercial Zone	7.12	5.59
Mixed Use	1.05	0.82	Mixed Use Zone	3.63	2.85
Industrial	0.71	0.56	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	0.53	0.41
Governmental Services	19.00	14.91	Government Office	23.24	18.25

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Educational Facility	0.67	0.52	Education & Research Zone	1.17	0.92
Agricultural	8.65	6.79	Agricultural Zone	0.23	0.18
Water Body	34.95	27.43	Water Body	32.84	25.78
Urban Green Space	0.71	0.56	Open Space	2.99	2.35
Vacant Land	9.53	7.48			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	7.14	5.61	Circulation Network	13.57	10.66
Transport and Communication	0.12	0.09	Transportation Facilities	1.83	1.44
Service Activity	0.23	0.18	Utility Services	0.88	0.69
			Health Services	0.16	0.12
Community Service	1.70	1.33	Community Facilities	3.12	2.45
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.27	0.21	Hill	0.00	0.00
Total	**127.38**	**100.00**	**Total**	**127.38**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.8.3.2 Proposed Land Use Zoning

i. Urban Residential Zone

In Land Use Plan 36.07 acre of land has been earmarked for urban residential use which will occupy about 28% of the total land of Ward No. 6.

ii. Commercial Zone

A total of 7.12 acre of land is proposed under this category. It is 5.59% of the total area of the ward.

iii. Mixed Use Zone

A total of 3.63 acre of mixed use zone is proposed in the ward.

iv. Heavy Industrial Zone

Total 0.53 acre land is kept under this zone in this ward.

v. Government Office

With the Upazila Health Complex and some other government offices the total area under this zone is 23.24 acre.

vi. Education and Research Zone

Total 1.17 acre of land is proposed under this zone. It is 0.92% of the total area of the ward.

vii. Agricultural Zone

Agricultural Zone will cover 0.18% of the ward, which is 0.23 acre of land.

viii. Water Body

The total area under this zone is 32.84 acre, which is 25.78% of the total area of the ward.

ix. Open Space

A total of 2.99 acre land is proposed under this category of land use.

x. Circulation Network

With the existing and proposed roads the total area under Circulation Network will be increased from 7.14 acre to 13.57 acre. It will cover almost 11% of this ward's area.

xi. Transportation Facilities

Transportation facilities will cover 1.83 acre of land which is 1.44% of the total area.

xii. Utility Services

Total 0.88 acre land is put under this category. Map 14.22 shows the Land Use Plan of Ward No. 6.

xiii. Health Services

Health facilities will cover 0.16 acre of land in this ward.

xiv. Community Facilities

With the existing and proposed community facilities the total area under this zone is 3.12 acre (2.45%).

14.8.3.3 Proposed Road Infrastructure Development

A total of 5.09 km road is proposed in this ward in the first Ward Action Plan. It includes 3210.54 meter of primary road of 80 ft, 562.24 meter tertiary road of 30 ft and 1320.06 meter access road of 20 ft. RoW. Table 14.35 shows the summary of road network proposal in this ward.

Table 14.35: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 6

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	1047.62	56.96	2162.92	66.48	3210.54	63.04
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Tertiary	30 ft.	464.50	25.25	97.74	3.00	562.24	11.04
Access	20 ft.	327.19	17.79	992.86	30.52	1320.06	25.92
Total		**1839.31**	**100.00**	**3253.53**	**100.00**	**5092.84**	**100.00**

Source: Road Network Plan

In the road network plan, 1839.31 meter new road is proposed for Ward No. 6. This includes 80 ft. primary road of 1047.62 meter, 30 ft. secondary road of 464.50 meter and 20 ft. tertiary road of 327.19 meter length. Table 14.36 shows the details of new road proposal.

Table 14.36: Details of the Proposals for New Roads in Ward No. 6

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Secondary	60 ft.	NS89		464.50
Tertiary	30 ft.	NT102		152.36
Tertiary	30 ft.	NT103		174.83
Access	20 ft.	NA106		91.08
Access	20 ft.	NA111		270.04
Access	20 ft.	NA112		65.37
Access	20 ft.	NA114		43.59
Access	20 ft.	NA115		240.33
Access	20 ft.	NA139		251.04
Access	20 ft.	NA166		86.17
Secondary	60 ft.	NS89		464.50
Tertiary	30 ft.	NT102		152.36

Source: Road Network Plan

A total of 3.25 km existing road is proposed to be widened to be included into the proposed road network plan in the first Ward Action Plan of this ward. It will comprise of 2162.92 meter primary road of 80 ft. RoW, 97.74 meter tertiary road of 30 ft. and 992.86 meter access road of 20 ft. RoW. Table 14.37 shows the details of road widening proposal in this ward.

Table 14.37: Road Widening Proposal in First Ward Action Plan for Ward No. 6

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Secondary	16.40	60 ft.	2	WS2		97.74
Tertiary	16.40	30 ft.	211	WT211		99.19
Tertiary	6.56	30 ft.	317	WT317		76.35
Tertiary	16.40	30 ft.	2	WT2	Upazila Parishad Road	493.69
Tertiary	16.40	30 ft.	2	WT2		108.97
Tertiary	13.12	30 ft.	367	WT367	Baghbari ASA Office to Khanakali Road	214.66
Access	11.48	20 ft.	297	WA297		214.01
Access	16.40	20 ft.	303	WA303		197.15
Access	13.12	20 ft.	306	WA306	Khelaghar Pond to Baghbari Lal Mosque Road	368.18
Access	11.48	20 ft.	313	WA313	Pourashava Road	222.82
Access	13.12	20 ft.	350	WA350		247.68
Access	9.84	20 ft.	437	WA437		11.61
Access	14.76	20 ft.	339	WA339	Launch Ghat to Sunu Chowdhury Home Road	235.04
Access	13.12	20 ft.	306	WA306		64.57
Access	11.48	20 ft.	379	WA379		4.66
Access	11.48	20 ft.	379	WA379		22.90
Access	8.20	20 ft.	314	WA314		29.89
Access	8.20	20 ft.	314	WA314		116.72
Access	6.56	20 ft.	309	WA309		80.51
Access	6.56	20 ft.	309	WA309		61.45
Access	8.20	20 ft.	314	WA314		25.46
Access	13.12	20 ft.	350	WA350		62.16
Access	11.48	20 ft.	313	WA313		29.72
Access	13.12	20 ft.	296	WA296		68.99
Access	13.12	20 ft.	367	WA367	Baghbari ASA Office to Khanakali Road	99.39

Source: Road Network Plan

14.8.3.4 Urban Services

a. Ward Center

Ward center of 1.69 acre has been proposed in this ward. It will be constructed in phase 1 at Baghbari mouza. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Education Facility

A primary school of 1.26 acre is proposed in this ward. It will be constructed in phase 1. Detail is given in Table 10.21.

c. Open Space

A local park of 1.41 acre is proposed in this ward. It will be constructed in the first phase of the Master Plan period. Table 10.22 shows the detail.

d. Surface Water Treatment Plant

A surface water treatment plant is proposed in this ward having a total area of 0.88 acre. It will be constructed in the first phase of the Master Plant period.

e. Water Supply

A total of 4.50 km water supply network has been proposed in the first Ward Action Plan.

f. Para Transit Stand

A para transit stand of 0.57 acre land is proposed in this ward. It will be constructed in the first phase. Details are in Table 10.23 of Chapter 10.

g. Mosque/Graveyard/Eidgah

No additional proposals for community facilities have been made here in this ward.

14.7.3.6 Drainage Development Plan

There is 2566 meter manmade drainage facility at Ward No. 06. Existing drainage is mostly depending on Surma River. Storm water flows through the drains to the river. The proposed drainage facilities will be developed based on this natural system. To provide proper drainage system a total of 275.78 meter of primary drain, 366.54 meter secondary drain, 2891.01 meter tertiary drain and 1116.63 meter quaternary drain has been proposed in this ward. Table 14.38 shows the proposed drain whereas table 14.39 shows the details of drainage proposal at Ward No. 6.

Table 14.38: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 6

Item	Length in meter
Available Drainage	2566.00
Proposed Drainage (Primary)	275.78
Proposed Drainage (Secondary)	3663.54
Proposed Drainage (Tertiary)	2891.01
Proposed Drainage (Quaternary)	1116.63

Source: Drainage & Environmental Management Plan

Table 14.39: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 6

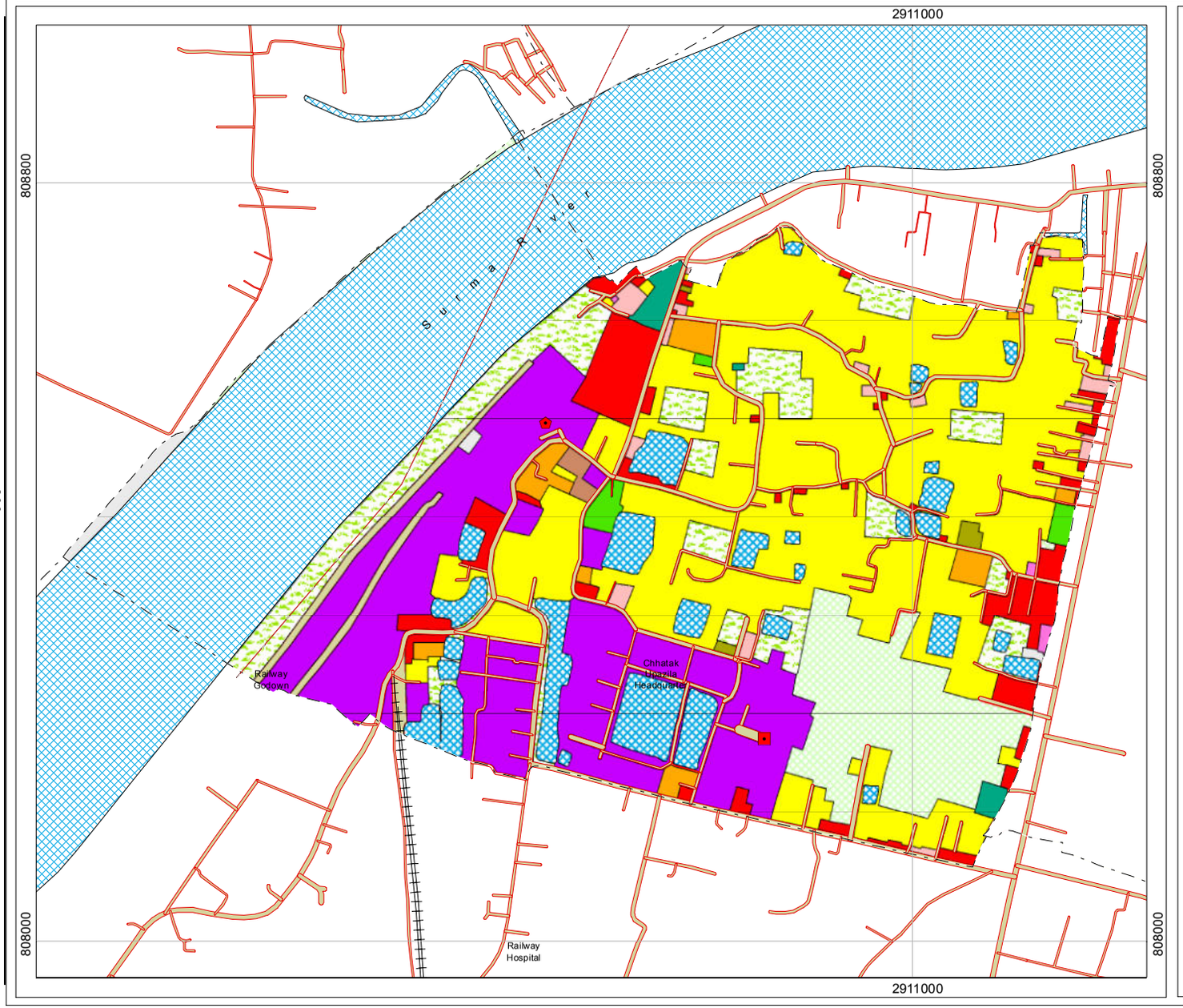
Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP24	2.3 - 3.8	2.23 - 3.23	122.27
Primary	NP29	2.3 - 3.8	2.23 - 3.23	146.85
Primary	NP532	2.3 - 3.8	2.23 - 3.23	6.66
Secondary	NS15	2.35 - 3.35	1.12 - 2.12	69.50
Secondary	NS20	2.35 - 3.35	1.12 - 2.12	228.08

Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Secondary	NS23	2.35 - 3.35	1.12 - 2.12	60.56
Secondary	NS25	2.35 - 3.35	1.12 - 2.12	149.01
Secondary	NS28	2.35 - 3.35	1.12 - 2.12	4.12
Secondary	NS30	2.35 - 3.35	1.12 - 2.12	188.31
Secondary	NS34	2.35 - 3.35	1.12 - 2.12	165.36
Secondary	NS35	2.35 - 3.35	1.12 - 2.12	73.72
Secondary	NS36	2.35 - 3.35	1.12 - 2.12	72.13
Secondary	NS44	2.35 - 3.35	1.12 - 2.12	209.61
Secondary	NS48	2.35 - 3.35	1.12 - 2.12	139.88
Secondary	NS50	2.35 - 3.35	1.12 - 2.12	35.10
Secondary	NS51	2.35 - 3.35	1.12 - 2.12	139.83
Secondary	NS56	2.35 - 3.35	1.12 - 2.12	207.12
Secondary	NS59	2.35 - 3.35	1.12 - 2.12	206.70
Secondary	NS60	2.35 - 3.35	1.12 - 2.12	152.75
Secondary	NS61	2.35 - 3.35	1.12 - 2.12	153.05
Secondary	NS64	2.35 - 3.35	1.12 - 2.12	83.60
Secondary	NS66	2.35 - 3.35	1.12 - 2.12	105.02
Secondary	NS67	2.35 - 3.35	1.12 - 2.12	83.92
Secondary	NS74	2.35 - 3.35	1.12 - 2.12	76.56
Secondary	NS76	2.35 - 3.35	1.12 - 2.12	216.49
Secondary	NS82	2.35 - 3.35	1.12 - 2.12	84.56
Secondary	NS83	2.35 - 3.35	1.12 - 2.12	169.19
Secondary	NS84	2.35 - 3.35	1.12 - 2.12	54.24
Secondary	NS100	2.35 - 3.35	1.12 - 2.12	92.07
Secondary	NS514	2.35 - 3.35	1.12 - 2.12	202.01
Secondary	NS528	2.35 - 3.35	1.12 - 2.12	155.69
Secondary	NS530	2.35 - 3.35	1.12 - 2.12	7.39
Secondary	NS535	2.35 - 3.35	1.12 - 2.12	77.96
Tertiary	NT5	1.5 - 2.5	0.64 - 1.00	59.38
Tertiary	NT10	1.5 - 2.5	0.64 - 1.00	50.03
Tertiary	NT12	1.5 - 2.5	0.64 - 1.00	1.56
Tertiary	NT13	1.5 - 2.5	0.64 - 1.00	257.97
Tertiary	NT21	1.5 - 2.5	0.64 - 1.00	95.69
Tertiary	NT26	1.5 - 2.5	0.64 - 1.00	90.60
Tertiary	NT27	1.5 - 2.5	0.64 - 1.00	86.67
Tertiary	NT33	1.5 - 2.5	0.64 - 1.00	167.10
Tertiary	NT39	1.5 - 2.5	0.64 - 1.00	55.42
Tertiary	NT45	1.5 - 2.5	0.64 - 1.00	54.41
Tertiary	NT49	1.5 - 2.5	0.64 - 1.00	35.87
Tertiary	NT52	1.5 - 2.5	0.64 - 1.00	71.52
Tertiary	NT53	1.5 - 2.5	0.64 - 1.00	97.93
Tertiary	NT55	1.5 - 2.5	0.64 - 1.00	84.52
Tertiary	NT62	1.5 - 2.5	0.64 - 1.00	53.08
Tertiary	NT63	1.5 - 2.5	0.64 - 1.00	53.43
Tertiary	NT65	1.5 - 2.5	0.64 - 1.00	105.93
Tertiary	NT70	1.5 - 2.5	0.64 - 1.00	303.08
Tertiary	NT71	1.5 - 2.5	0.64 - 1.00	57.46
Tertiary	NT73	1.5 - 2.5	0.64 - 1.00	83.57
Tertiary	NT75	1.5 - 2.5	0.64 - 1.00	251.57

Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Tertiary	NT77	1.5 - 2.5	0.64 - 1.00	129.28
Tertiary	NT78	1.5 - 2.5	0.64 - 1.00	126.68
Tertiary	NT79	1.5 - 2.5	0.64 - 1.00	126.73
Tertiary	NT81	1.5 - 2.5	0.64 - 1.00	87.59
Tertiary	NT87	1.5 - 2.5	0.64 - 1.00	182.73
Tertiary	NT529	1.5 - 2.5	0.64 - 1.00	113.13
Tertiary	NT533	1.5 - 2.5	0.64 - 1.00	8.08
Quaternary	NQ9	0.25 - 0.85	0.30 - 1.10	84.02
Quaternary	NQ11	0.25 - 0.85	0.30 - 1.10	135.96
Quaternary	NQ19	0.25 - 0.85	0.30 - 1.10	127.54
Quaternary	NQ22	0.25 - 0.85	0.30 - 1.10	67.78
Quaternary	NQ31	0.25 - 0.85	0.30 - 1.10	161.04
Quaternary	NQ32	0.25 - 0.85	0.30 - 1.10	107.44
Quaternary	NQ37	0.25 - 0.85	0.30 - 1.10	191.39
Quaternary	NQ80	0.25 - 0.85	0.30 - 1.10	241.46
Total				**7946.95**

Source: Drainage & Environmental Management Plan

Map 14.21 EXISTING LAND USE OF WARD NO. 6



SCALE
1:5,700
Map 14.15:
0 30 60 120 180 240 Meters

LEGEND

- Pourashava Office
- Union Parishad Office
- Upazila Headquarter
- District Boundary
- Pourashava Boundary
- Ward Boundary
- Railway
- Ropeway

Existing Land Uses

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

PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj District

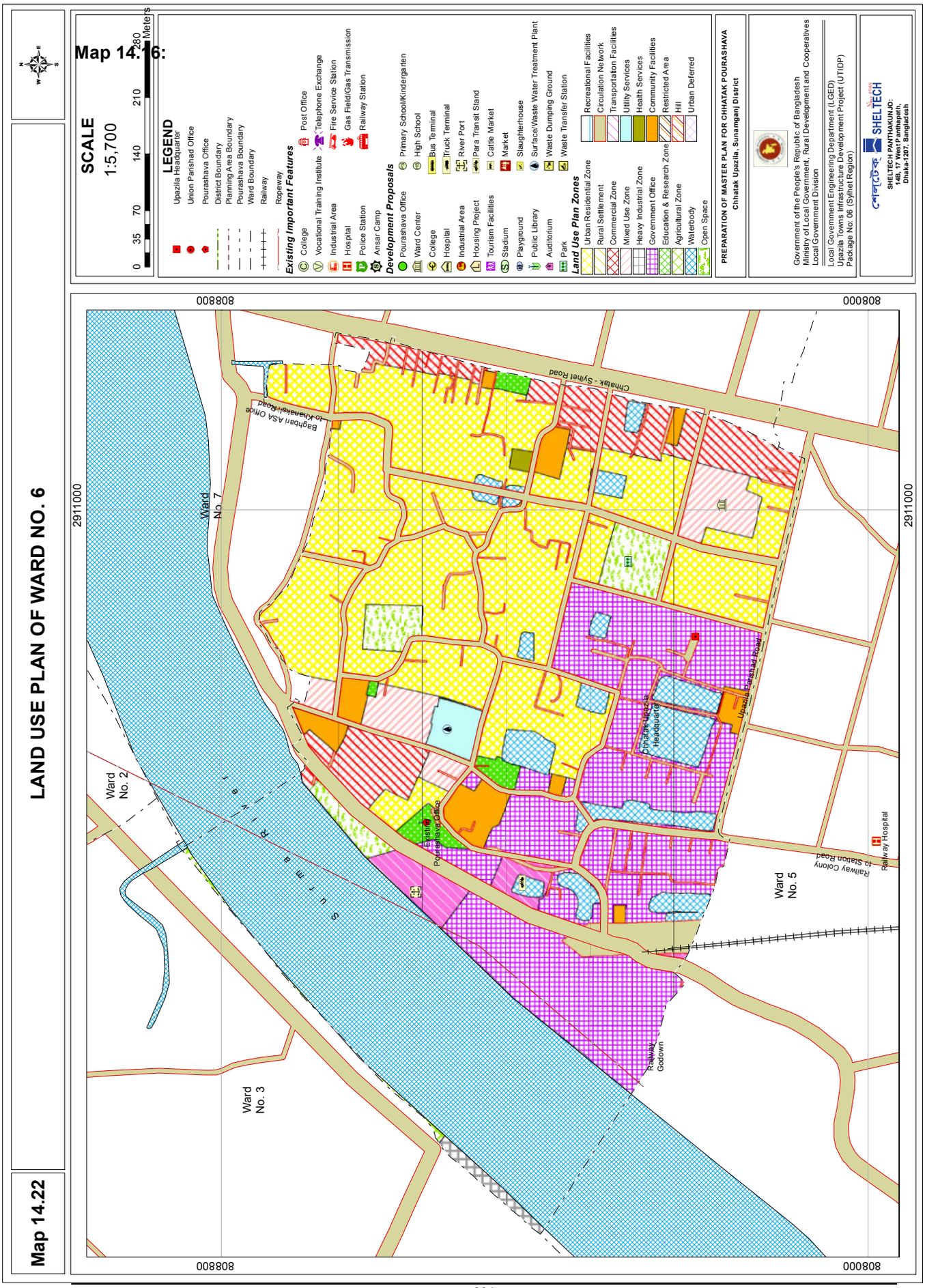
Government of the People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Cooperatives
Local Government Division

Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)

SHELTECH

SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh

Map 14.16:


Map 14.22
LAND USE PLAN OF WARD NO. 6
SCALE
1:5,700
0 35 70 140 210 280 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
Post Office
College
Telephone Exchange
Vocational Training Institute
Fire Service Station
Industrial Area
Gas Field/Gas Transmission
Hospital
Railway Station
Police Station
Ansar Camp
Development Proposals
Pourashava Office
Primary School/Kindergarten
Ward Center
High School
College
Bus Terminal
Hospital
Truck Terminal
Industrial Area
River Port
Housing Project
Para Transit Stand
Tourism Facilities
Cattle Market
Stadium
Market
Playground
Slaughterhouse
Public Library
Surface/Waste Water Treatment Plant
Auditorium
Waste Dumping Ground
Park
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Recreational Facilities
Rural Settlement
Circulation Network
Commercial Zone
Transportation Facilities
Mixed Use Zone
Utility Services
Heavy Industrial Zone
Health Services
Government Office
Community Facilities
Education & Research Zone
Restricted Area
Agricultural Zone
Hill
Waterbody
Urban Deferred
Open Space
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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. 06 (Sylhet Region)
SHELTECH PANTHAKUNJO;
House # 1, 6th West Panthapath;
Dhaka-1207, Bangladesh
808800
808000
2911000
Ward No. 7
Ward No. 2
Ward No. 3
Ward No. 5
Chhatak - Sylhet Road
Baghbari ASA Office
to Khanakeli Road
Chhatak Upazila Headquarter
Upazila Parishad Road
Pourashava Office
Railway Godown
Railway Colony
to Station Road
Railway Hospital

Map 14.23

ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 6

Map 14.17:

SCALE
1:5,700
0 187.5375 750 1,125 1,500 Meters

LEGEND
- Upazila Headquarter
- Union Parishad Office
- Pourashava Office
- District Boundary
- Planning Area Boundary
- Pourashava Boundary
- Ward Boundary
- Railway
- Ropeway

Proposed Bridge & Culverts
- Bridge
- Culvert
- Railway Bridge
- Railway Over-bridge

Proposed Drain Type
- Primary
- Secondary
- Tertiary
- Quaternary

Proposed Road Network
- Primary
- Secondary
- Tertiary
- Access
- Proposed Outfall
- River & Canal

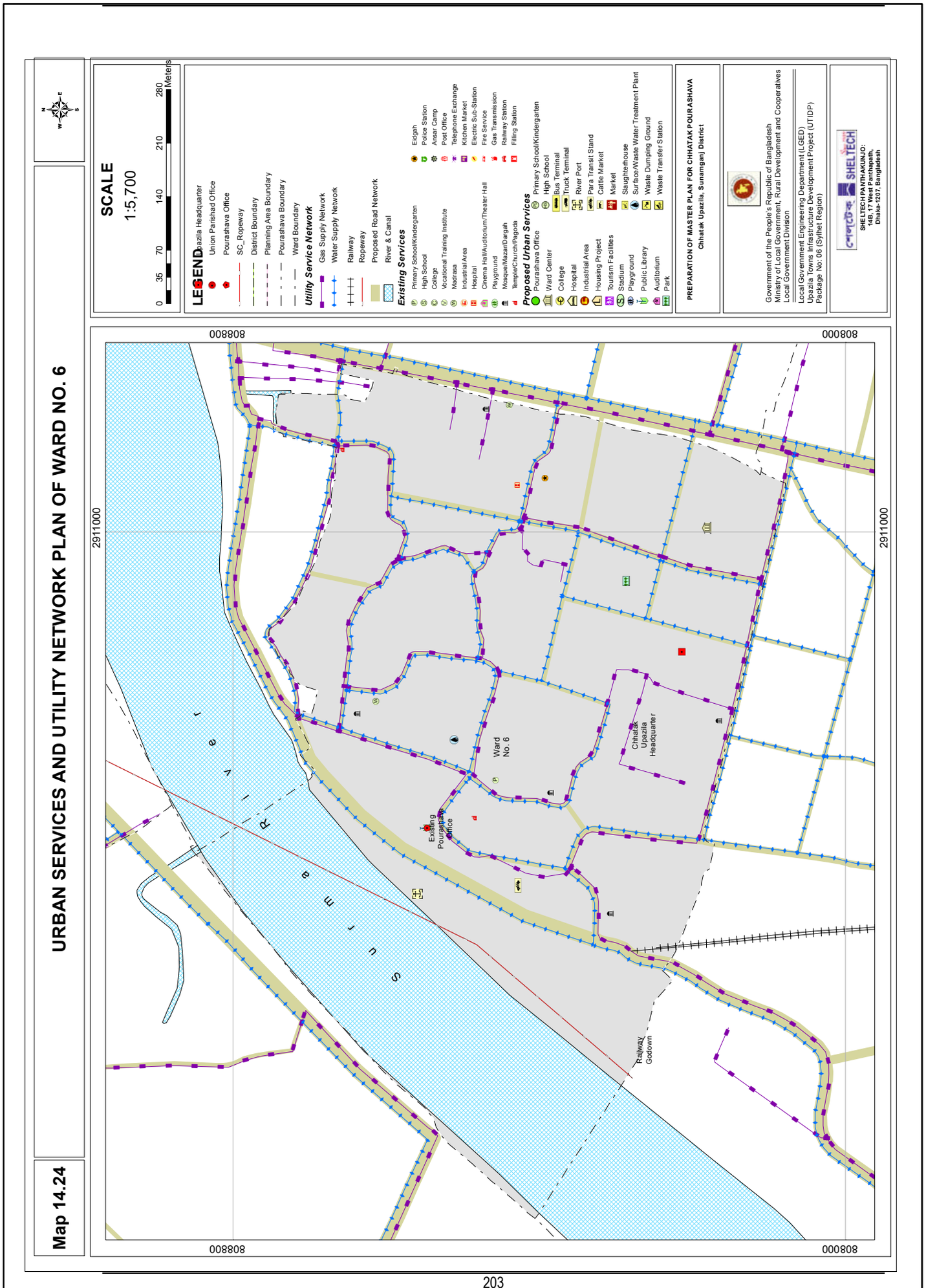
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj District

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: 06 (Sylhet Region)

SHELTECH PANTHAKUNJO;
HELTECH Consultants (Pvt.) Ltd.
Dhaka-1207, Bangladesh

808800
808000
2911000
Baghbari ASA Office to Kalinakali Road (20 ft.)
(30 ft.)
Pourashava Road
(20 ft.)
(30 ft.)
Khelaghar Pond to Mosque Road (20 ft.)
Baghbari Lal
Launch Ghat to Sunamganj Bypass Road (20 ft.)
Chowdhury Bhone
(60 ft.)
Upazila Parishad Road
Ward No. 6
Surma River
(60 ft.)


Map 14.24
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 6
SCALE
1:5,700
0 35 70 140 210 280 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
SC_Ropeway
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
808800
808800
808800
808800
2911000
2911000
Ward No. 6
Chhatak Upazila Headquarter
Existing Pourashava Office
Railway Godown
River

14.9 Ward Action Plan for Ward No. 7

14.9.1 Demography

Ward No. 7 is located on the eastern side of the town. In 2001 the Ward had a population of 5207 persons. Population projection shows 6595 population for the year 2011. For the same year, it had a density of only 27 persons per acre. The estimated population for the year 2031 is 10580 with a density of 44 ppa. Table 14.40 shows the details.

Table 14.40: Population Statistics of Ward No. 7

Item	Year		
	2001	2011	2031
Area (acre)	245.57		
Population	5207	6595	10580
Density of Population (acre)	22	27	44

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009
Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.9.2 Critical Issues and Opportunities of the Ward

Critical Issues

Critical issues for the development of Ward No. 7 are discussed below.

- Bad condition of roads has reduced the pace of growth in this ward.
- Surma River covers about 29% of this ward. So, this land can't be put to any development activity.
- Lower space standard for urban services has reduced the livability of this ward.

Development Opportunities

The development opportunities of Ward No. 7 are discussed below.

- Higher amount of commercial land will induce concentrated and high-rise development.
- The Surma River acts as drainage refuge for this ward.
- Upazila Health Complex is located in this ward which provides health services to all the people of the pourashava.

14.9.3 Ward Action Plan Proposals

14.9.3.1 Review of Existing Land Use

Out of total 245.57 acre of land 51.68 acre is used for agricultural purposes. Water bodies cover 69.21 acre of land in this ward. Residential land occupies 27.36% land of the ward. More than 3% is used as circulation network. Total 7.14 acre of land is used as mixed use. Table 14.41 shows the detail.

Table 14.41: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 7

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	67.18	27.36	Urban Residential Zone	94.71	38.57
			Rural Settlement	0.00	0.00
Commercial	10.11	4.12	Commercial Zone	17.01	6.93
Mixed Use	7.14	2.91	Mixed Use Zone	6.14	2.50
Industrial	2.45	1.00	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	0.49	0.20
Governmental Services	4.57	1.86	Government Office	5.33	2.17
Educational Facility	1.73	0.71	Education & Research Zone	2.06	0.84

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Agricultural	51.68	21.05	Agricultural Zone	1.35	0.55
Water Body	69.21	28.18	Water Body	64.30	26.18
Urban Green Space	0.52	0.21	Open Space	15.25	6.21
Vacant Land	9.99	4.07			
Recreational Facility	3.50	1.43	Recreational Facilities	0.20	0.08
Circulation Network	8.36	3.41	Circulation Network	25.48	10.38
Transport and Communication	0.11	0.05	Transportation Facilities	1.94	0.79
Service Activity	8.02	3.26	Utility Services	0.00	0.00
			Health Services	7.51	3.06
Community Service	0.99	0.40	Community Facilities	3.80	1.55
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.00	0.00	Hill	0.00	0.00
Total	**245.57**	**100.00**	**Total**	**245.57**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.9.3.2 Proposed Land Use Zoning

a. Urban Residential Zone

A total of 94.71 acre of land covering 38.57% area of Ward No. 7 is proposed as Urban Residential Zone.

b. Commercial Zone

A total of 17.01 acre of land is proposed under this category. It is 6.93% of the total area of the ward.

c. Mixed Use Zone

Mixed use zone will cover 6.14 acre of land in this ward.

d. Heavy Industrial Zone

Heavy Industrial Zone will cover 0.49 acre of land in this ward.

e. Government Office

This zone will have an area of 5.33 acre (2.17%). Chhatak Police Station falls under this zone.

f. Education and Research Zone

In the Land Use Plan a total of 2.06 acre (0.84%) land is proposed under this zone.

g. Agricultural Zone

Agricultural Zone will cover 0.55% of the ward, which is 1.35 acre of land.

h. Water Body

The total area under this zone is 64.30 acre, which is 26.18% of the total area of the ward, keeping the water bodies over 0.20 acre of area.

i. Open Space

Open space will cover a total area of 11.31 acre in the ward.

j. Recreational Facilities

A total of 0.20 acre land is kept under this zone which is 0.08% of the total area of the ward.

k. Circulation Network

With the existing and proposed roads the total area under Circulation Network will be increased from 8.36 acre to 25.48 acre. It will cover more than 10% of this ward's area.

l. Transportation Facilities

Transportation facilities will cover 1.94 acre of land which is 0.79% of the total area of the ward.

m. Utility Services

Utility services zone will have a total area of 3.94 acre; 1.60% of the total area of the ward.

n. Health Facilities

Health facilities will cover 7.51 acre of land; 3.06% of the total area of the ward. It includes the Upazila Health Complex into it.

o. Community Facilities

Community facilities will cover 3.80 acre of land; 1.55% of the total area of the ward.

14.9.3.3 Proposed Road Infrastructure Development

Total 4.48 km road development proposal have been proposed in first Ward Action Plan for Ward No. 7. Length of primary road (80 ft.) will be 727.84 meter, secondary road (40 ft.) will be 703.13 meters, secondary road 60 ft. will be 604.22 meter; tertiary road (30 ft.) will be 1358.35 meter and access road (20 ft.) 1090.30 meter. Detail scenario of road network development proposal was given in table 14.42.

Table 14.42: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 7

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	39.82	4.15	688.02	19.52	727.84	16.23
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	0.00	0.00	703.13	19.95	703.13	15.68
	60 ft.	604.22	62.97	0.00	0.00	604.22	13.48
Tertiary	30 ft.	55.95	5.83	1302.39	36.95	1358.35	30.29
Access	20 ft.	259.51	27.05	830.79	23.57	1090.30	24.32
Total		**959.50**	**100.00**	**3524.33**	**100.00**	**4483.83**	**100.00**

Source: Road Network Plan

Table 14.43 shows the details of the proposed 959.50 meter new road. It includes 39.82 meter long primary road (80 ft.), 605.22 meter secondary road (60 ft.), 55.95 meter tertiary road 30 ft. and 259.51 meter access road of 20 ft. RoW.

Table 14.43: Details of the Proposals for New Roads in Ward No. 7

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Secondary	60 ft.	NS89		55.95
Secondary	40 ft.	NS69		604.22
Tertiary	30 ft.	NT63		147.74
Tertiary	30 ft.	NT140		111.77
Access	20 ft.	NA111		16.96
Access	20 ft.	NA112		0.16
Access	20 ft.	NA115		18.42
Access	20 ft.	NA166		4.28

Source: Road Network Plan

Total length of road widening proposal for Ward No. 7 is 3.52 km in the first Ward Action Plan. Table 14.44 shows the details of road widening proposal in first Action Plan of this ward. The road widening proposal comprises of 688.02 meter primary road of 80 ft, 703.13 meter secondary road of 40 ft, 1302.39 meter tertiary road of 30 ft and 830.79 meter access road of 20 ft. RoW.

Table 14.44: Road Widening Proposal in First Ward Action Plan for Ward No. 7

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Primary	18.04	80 ft.	1	WP1	Chhatak - Sylhet Road	703.13
Secondary	14.76	60 ft.	339	WS339		531.90
Secondary	19.68	60 ft.	174	WS174		770.49
Tertiary	13.12	30 ft.	382	WT382	Mogalpara Road	205.79
Tertiary	13.12	30 ft.	383	WT383	Hospital Road	313.54
Tertiary	4.92	30 ft.	560	WT560	Banijjik Bhaban to Makhan Home Road	286.34
Tertiary	13.12	30 ft.	367	WT367	Baghbari ASA Office to Khanakali Road	25.13
Access	11.48	20 ft.	313	WA313	Pourashava Road	17.99
Access	9.84	20 ft.	437	WA437		21.91
Access	9.84	20 ft.	595	WA595		17.46
Access	14.76	20 ft.	339	WA339	Launch Ghat to Sunu Chowdhury Home Road	13.07
Access	11.48	20 ft.	377	WA377		92.25
Access	11.48	20 ft.	377	WA377		40.28
Access	11.48	20 ft.	377	WA377		126.24
Access	11.48	20 ft.	379	WA379		40.90
Access	11.48	20 ft.	379	WA379		317.92

Source: Road Network Plan

14.9.3.4 Urban Services

a. Pourashava Office

At present the pourashava do not have any permanent office. The upazila public library is used as the office of the pourashava. So a new and permanent space is needed for establishing office for

pourashava. A two storied office building was under construction in Mondali Bog mouza, which started in the year 2008. But in 2011 it stopped due to political reasons. The new space for pourashava office is proposed in this location. The new office will have a total area of 2.88 acre. The construction of it will be completed in the first phase of the Master Plan period.

b. Ward Center

Ward center of 2.51 acre has been proposed in this ward. It will be constructed in phase 2. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

c. Extension of Health Complex

According to the standard Chhatak town will need more health facility to support the future need of the people. So the extension of the existing Upazila Health Complex is proposed. The extension will be of 2.79 acre. It will be done in the second phase of the Master Plan period.

d. Shopping Mall

A shopping mall as pourashava super market is proposed in this ward having a total area of 3.55 acre. It will be constructed in the second phase of the Master Plan. Detail is given in Table 10.17 of Chapter 10.

e. Open Space

A local park of 2.80 acre is proposed in this ward. It will be constructed in the first phase of the planning period.

f. Auditorium

An auditorium of 1.70 acre has been proposed in Chhatak Pourashava at Mondali Bog mouza. It will be constructed in the second phase of the Master Plan period.

g. Para Transit Stand

One para transit stand of 1.38 acre has been proposed in this ward. It will be constructed in the first phase of the Master Plan period.

h. Water Supply

A total of 4.51 Km water supply network is proposed in the first Ward Action Plan of in this ward. Detail of water supply network is given in Annexure – D.

14.11.3.1 Drainage Development Plan

There is 3766 meter manmade drainage facility at Ward No. 7. The proposed drainage facilities will be developed based on manmade network. A total of 1983.16 meter primary drain, 2330.40 meter secondary drain, 1375.57 meter tertiary drain and 164.30 meter quaternary drain is proposed in this ward. Table 14.45 and Table 14.46 show the detail.

Table 14.45: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 7

Item	Length in meter
Available Drainage	3766.00
Proposed Drainage (Primary)	1983.16
Proposed Drainage (Secondary)	2330.40
Proposed Drainage (Tertiary)	1375.57
Proposed Drainage (Quaternary)	164.30

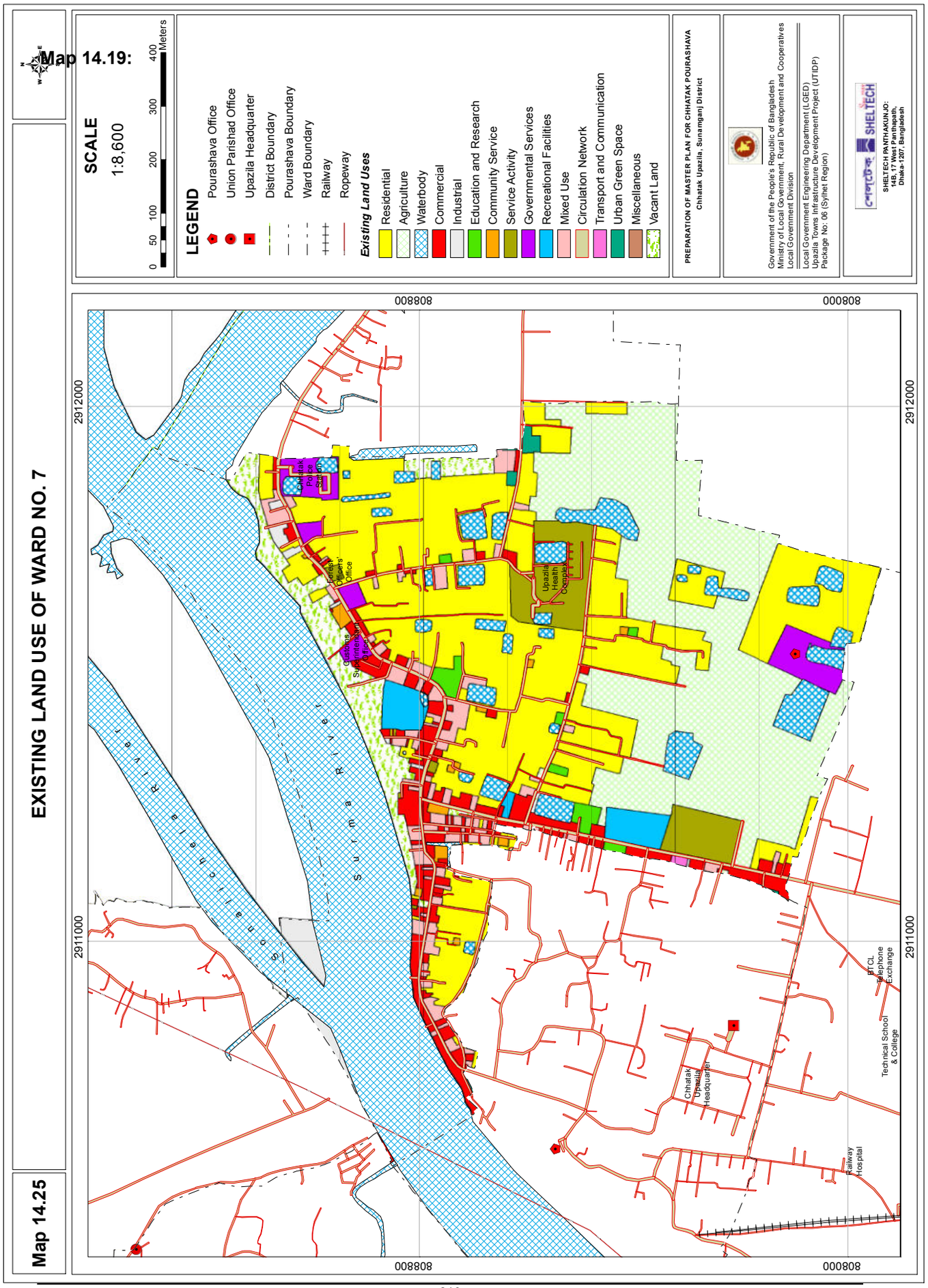
Source: Drainage & Environmental Management Plan

Table 14.46: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 7

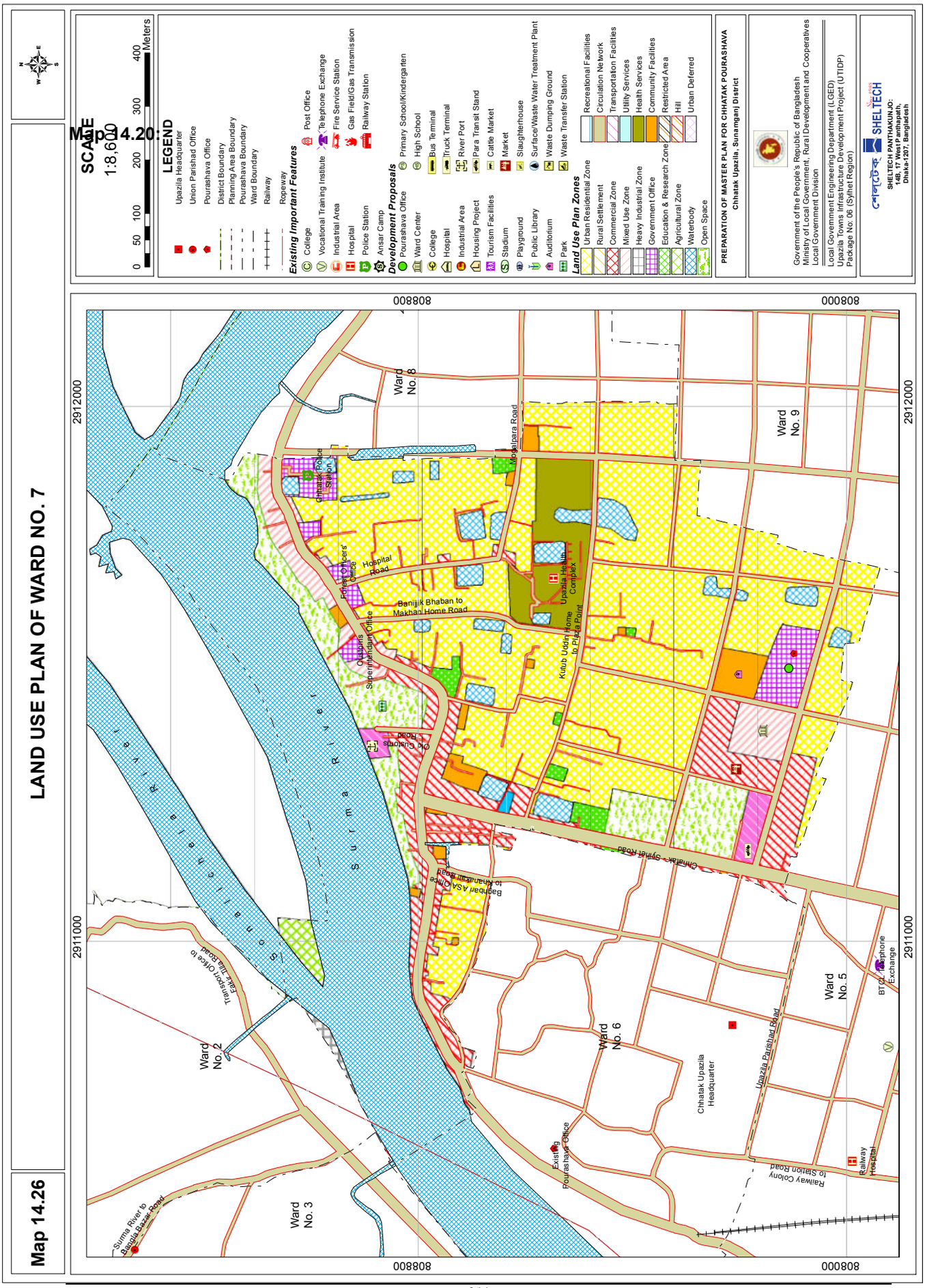
Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP4	2.3 - 3.8	2.23 - 3.23	194.84
Primary	NP42	2.3 - 3.8	2.23 - 3.23	59.51
Primary	NP43	2.3 - 3.8	2.23 - 3.23	202.41
Primary	NP57	2.3 - 3.8	2.23 - 3.23	268.59
Primary	NP58	2.3 - 3.8	2.23 - 3.23	225.31
Primary	NP175	2.3 - 3.8	2.23 - 3.23	188.45
Primary	NP212	2.3 - 3.8	2.23 - 3.23	2.79
Primary	NP376	2.3 - 3.8	2.23 - 3.23	46.83
Primary	NP405	2.3 - 3.8	2.23 - 3.23	163.62
Primary	NP406	2.3 - 3.8	2.23 - 3.23	242.53
Primary	NP411	2.3 - 3.8	2.23 - 3.23	138.91
Primary	NP447	2.3 - 3.8	2.23 - 3.23	6.96
Primary	NP455	2.3 - 3.8	2.23 - 3.23	7.48
Primary	NP509	2.3 - 3.8	2.23 - 3.23	57.43
Primary	NP512	2.3 - 3.8	2.23 - 3.23	84.88
Primary	NP531	2.3 - 3.8	2.23 - 3.23	72.56
Primary	NP532	2.3 - 3.8	2.23 - 3.23	20.06
Secondary	NS1	2.35 - 3.35	1.12 - 2.12	250.32
Secondary	NS15	2.35 - 3.35	1.12 - 2.12	26.78
Secondary	NS17	2.35 - 3.35	1.12 - 2.12	182.95
Secondary	NS28	2.35 - 3.35	1.12 - 2.12	17.84
Secondary	NS35	2.35 - 3.35	1.12 - 2.12	4.51
Secondary	NS48	2.35 - 3.35	1.12 - 2.12	4.28
Secondary	NS51	2.35 - 3.35	1.12 - 2.12	4.37
Secondary	NS60	2.35 - 3.35	1.12 - 2.12	4.60
Secondary	NS61	2.35 - 3.35	1.12 - 2.12	5.36
Secondary	NS162	2.35 - 3.35	1.12 - 2.12	95.85
Secondary	NS165	2.35 - 3.35	1.12 - 2.12	70.07
Secondary	NS166	2.35 - 3.35	1.12 - 2.12	168.09
Secondary	NS176	2.35 - 3.35	1.12 - 2.12	311.69
Secondary	NS178	2.35 - 3.35	1.12 - 2.12	199.23
Secondary	NS193	2.35 - 3.35	1.12 - 2.12	265.91
Secondary	NS219	2.35 - 3.35	1.12 - 2.12	67.39
Secondary	NS373	2.35 - 3.35	1.12 - 2.12	46.02
Secondary	NS417	2.35 - 3.35	1.12 - 2.12	293.45
Secondary	NS419	2.35 - 3.35	1.12 - 2.12	243.46
Secondary	NS535	2.35 - 3.35	1.12 - 2.12	2.36
Secondary	NS536	2.35 - 3.35	1.12 - 2.12	65.86
Tertiary	NT5	1.5 - 2.5	0.64 - 1.00	37.73
Tertiary	NT10	1.5 - 2.5	0.64 - 1.00	3.17
Tertiary	NT12	1.5 - 2.5	0.64 - 1.00	6.09
Tertiary	NT163	1.5 - 2.5	0.64 - 1.00	243.28
Tertiary	NT167	1.5 - 2.5	0.64 - 1.00	154.81
Tertiary	NT168	1.5 - 2.5	0.64 - 1.00	91.49
Tertiary	NT171	1.5 - 2.5	0.64 - 1.00	144.88
Tertiary	NT172	1.5 - 2.5	0.64 - 1.00	272.34
Tertiary	NT173	1.5 - 2.5	0.64 - 1.00	280.94
Tertiary	NT174	1.5 - 2.5	0.64 - 1.00	140.84
Quaternary	NQ3	0.25 - 0.85	0.30 - 1.10	163.91
Quaternary	NQ9	0.25 - 0.85	0.30 - 1.10	0.39
Total				**5853.42**

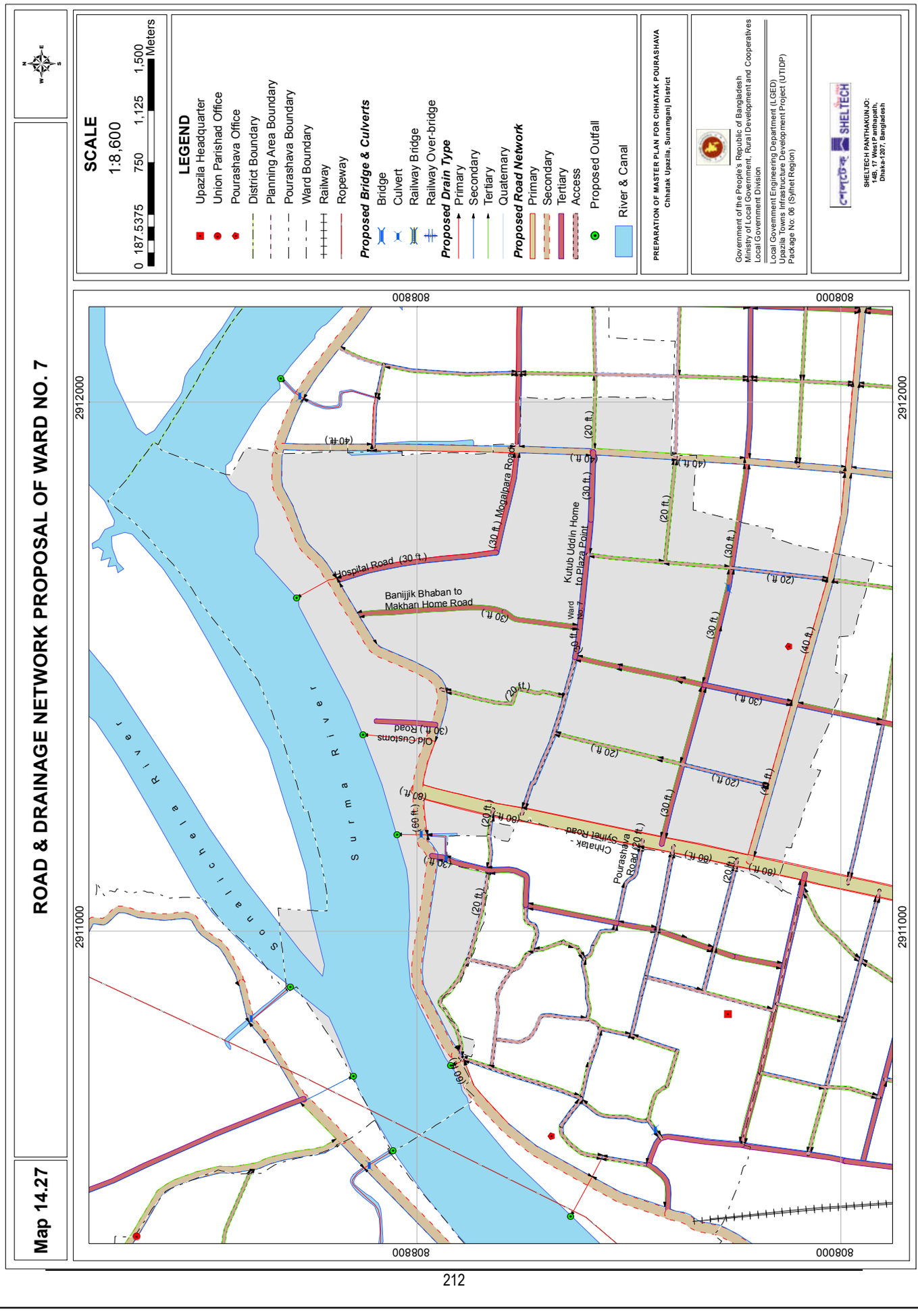
Source: Drainage & Environmental Management Plan

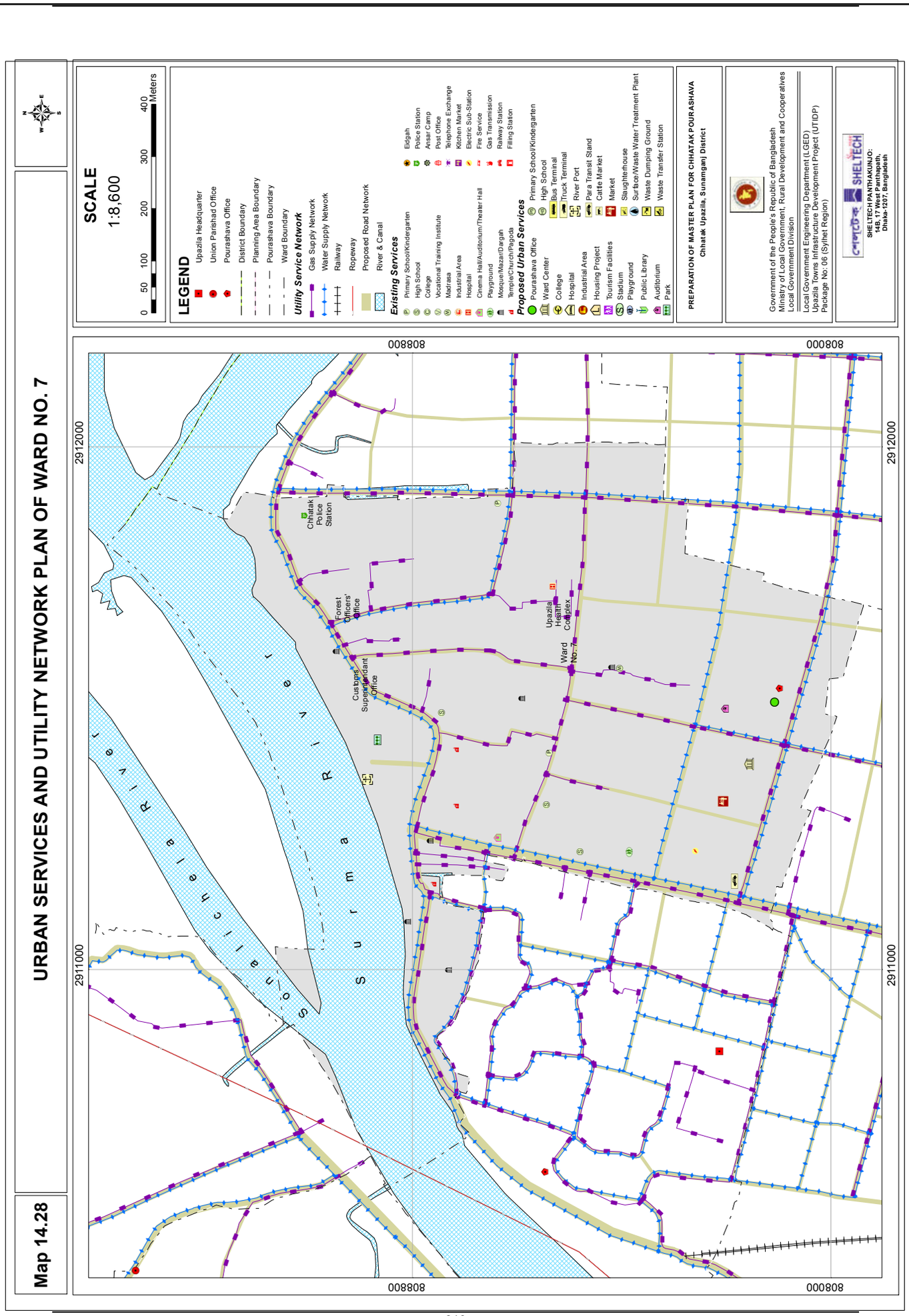
Map 14.19:


EXISTING LAND USE OF WARD NO. 7
Map 14.25
SCALE
1:8,600
0 50 100 200 300 400 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
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Chhatak Upazila, Sunamganj District
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Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
House # 17, Road # 11, Banani,
Dhaka-1207, Bangladesh
Surma River
Kushiara River
Central Police Station
Forest Officers' Office
Customs Superintendent Office
Upazila Health Complex
BTCL Telephone Exchange
Technical School & College
Chhatak Upazila Headquarter
Railway Hospital
2912000
2911000
808800
808000

Map 14.20:


LAND USE PLAN OF WARD NO. 7
Map 14.26
SCALE
1:8,000
0 50 100 200 300 400 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Stadium
Playground
Public Library
Auditorium
Park
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Surma River
Kalni River
Ward No. 2
Ward No. 3
Ward No. 5
Ward No. 6
Ward No. 8
Ward No. 9
Ghhatak Police Station
Forest Officers' Office
Hospital Road
Customs Superintendent Office
Old Customs Road
Banijik Bhaban to Makhan Home Road
Kutub Uddin Home to Plaza Point
Upazila Health Complex
Mosjidpara Road
Chhatak - Sylhet Road
Baanbhan ASA Office to Khandakar Road
Transport Office to Eidgah Road
Summa River to Bangla Bazar Road
Existing Pourashava Office
Chhatak Upazila Headquarter
Upazila Parishad Road
BTCL Telephone Exchange
Railway Colony to Station Road
Railway Hospital
808800
808000
2912000
2911000


ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 7
Map 14.27
SCALE
1:8,600
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quatemary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
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Local Government Division
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO;
145, 17 West Panthapath,
Dhaka-1207, Bangladesh
Surma River
Kalicheela River
Hospital Road (30 ft.)
Banijjik Bhaban to Makhan Home Road
Kutub Uddin Home to Plaza Point
Ward No-7
Old Customs Road
Chhatak - Sylhet Road
Pourashava Road (20 ft.)
(30 ft.) Mogalpara Road
808800
808000
2912000
2911000


Map 14.28
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 7
SCALE
1:8,600
0 50 100 200 300 400 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
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Truck Terminal
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Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
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Local Government Division
Local Government Engineering Department (LGED)
Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthopath,
Dhaka-1207, Bangladesh
Chhatak Police Station
Forest Officers' Office
Upazila Health Complex
Ward No. 7
Customs Superintendent Office
Surma River
Kushiara River
2912000
2911000
808800

14.10 Ward Action Plan for Ward No. 8

14.10.1 Demography

Ward No. 8 is located on the eastern side of the town. In 2001 the ward had a population of 2932 persons. Population projection shows 3714 population for the year 2011. For the same year, it has a density of 46 persons per acre. The estimated population for the year 2031 is 5958 with a density of 73 ppa. Table 14.47 shows the detail.

Table 14.47: Population Statistics of Ward No. 8

Item	Year		
	2001	2011	2031
Area (acre)	82.47		
Population	2932	3714	5958
Density of Population (acre)	36	46	73

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009
Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.10.2 Critical Issues and Opportunities of the Ward

Critical Issues

Critical issues for the development of Ward No. 8 are discussed below.

- The development of this ward is based on only two roads that limit its potential.
- Surma River covers about 38% of this ward.
- Low space standard for urban services has reduced the livability of this ward.

Development Opportunities

The development opportunities of Ward No. 8 are discussed below.

- Surma River is a good source of aquatic food for the people of this ward.
- The Surma River acts as drainage refuge for this ward.
- As it is a small sized ward, providing services here will be less costly than the other wards of the pourashava.

14.10.3 Ward Action Plan Proposals

14.10.3.1 Review of Existing Land Use

Water bodies cover the highest amount of land in this ward with 31.13 acre (37.47%). Residential land use comes second with 26.55 acre (32.20%). Vacant land also dominates the existing land use with 10.17 acre under it. Agricultural activities are found in 12.84% land of this ward. Table 14.48 shows the comparison of existing and proposed land uses in this ward.

Table 14.48: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 8

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	26.55	32.20	Urban Residential Zone	39.01	47.30
			Rural Settlement	0.00	0.00
Commercial	0.46	0.56	Commercial Zone	0.00	0.00
Mixed Use	0.47	0.57	Mixed Use Zone	1.16	1.40
Industrial	0.04	0.05	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	0.00	0.00
Governmental Services	0.01	0.01	Government Office	0.10	0.12
Educational Facility	0.03	0.04	Education & Research Zone	0.52	0.64

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Agricultural	10.59	12.84	Agricultural Zone	0.40	0.49
Water Body	31.13	37.74	Water Body	30.03	36.41
Urban Green Space	0.43	0.53	Open Space	3.11	3.76
Vacant Land	10.17	12.33			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	2.37	2.87	Circulation Network	7.62	9.24
Transport and Communication	0.00	0.00	Transportation Facilities	0.00	0.00
Service Activity	0.00	0.00	Utility Services	0.00	0.00
			Health Services	0.00	0.00
Community Service	0.22	0.27	Community Facilities	0.53	0.64
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.00	0.00	Hill	0.00	0.00
Total	**82.47**	**100.00**	**Total**	**82.47**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.10.3.2 Proposed Land Use Zoning

a. Urban Residential Zone

A total of 39.01 acre of land covering 47.30% is proposed as Urban Residential Zone.

b. Mixed Use Zone

Only 1.16 acre land is proposed under this zone. It will be used for ward center.

c. Government Office

A total of 0.10 acre land is kept under this zone.

d. Education and Research Zone

Total 0.52 acre area will be use as education and research zone which covers only 0.12% total land of this ward.

e. Agricultural Zone

Agricultural Zone will cover 0.49% of the ward, which is 0.40 acre of total land.

f. Water Body

The total area under this zone is 30.03 acre, which is 36.41% of the total area of the ward, keeping the water bodies over 0.20 acre of area.

g. Open Space

With the proposed central and other open spaces the total area under this zone will be 3.11 acre, 3.76% of the total area of the ward.

h. Circulation Network

With the existing and proposed roads the total area under Circulation Network will be increased from 2.37 acre to 7.62 acre. It will cover around 9.24% of this ward's area.

i. Community Facilities

Community facilities will cover 0.53 acre of land which is 0.64% of the total area. Map 14.30 shows the Land Use Plan of Ward No. 8.

14.10.3.3 Proposed Road Infrastructure Development

Total 1.52 km road development proposal have been proposed for this ward. The road network will comprise of 354.40 meter primary road of 80 ft, 668.70 meter tertiary road of 30 ft. and 492.60 meter access road of 20 ft. RoW. Summary of road network development proposal is given in table 14.49.

Table 14.49: Summary of road Network Proposal of First Ward Action Plan in Ward No. 8

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	100.00	100.14	7.94	354.40	23.38
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Tertiary	30 ft.	0.00	0.00	668.70	53.01	668.70	44.12
Access	20 ft.	254.25	0.00	492.60	39.05	492.60	32.50
Total		**254.25**	**100.00**	**1261.44**	**100.00**	**1515.69**	**100.00**

Source: Road Network Plan

Table 14.50 shows the inventory of proposed 254.25 meter of new access in Ward No. 8.

Table 14.50: Details of the Proposals for New Roads in Ward No. 8

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Access	20 ft.	NA80		254.25

Source: Road Network Plan

Road widening proposal is made for 1.26 Km road in this ward. Inventory is given in Table 14.51. The road widening proposal includes secondary road of 668.70 meter and access road of 492.60 meter.

Table 14.51: Road Widening Proposal in First Ward Action Plan for Ward No. 8

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Secondary	19.68	60 ft.	174	WS174		288.13
Secondary	19.68	60 ft.	174	WS174		380.57
Tertiary	13.12	30 ft.	382	WT382	Mogalpara Road	492.60
Access	9.84	20 ft.	459	WA459		100.14

Source: Road Network Plan

14.10.3.4 Urban Services

a. Ward Center

Ward center of 1.10 acre has been proposed for this ward. It will be constructed in phase 2. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Open Space

A playground of 0.53 acre is proposed in this ward to support the need for recreational activities in this ward. It will be established in the second phase of the Master Plan period.

c. Water Supply

A total of 1.67 Km water supply network is proposed in the first Ward Action Plan of Ward No. 8. Detail of water supply network is given in Annexure – D.

d. Mosque/Graveyard/Eidgah

No new proposals have been required here.

14.10.3.5 Drainage Development Plan

Available manmade drainage network of this ward is only 258 meter. To provide proper drainage network 338.19 meter primary, 1179.88 meter secondary, 337.02 meter tertiary and 87.58 meter quaternary drain is proposed in this ward in the first Ward Action Plan. Table 14.52 and Table 14.53 show the detail.

Table 14.52: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 8

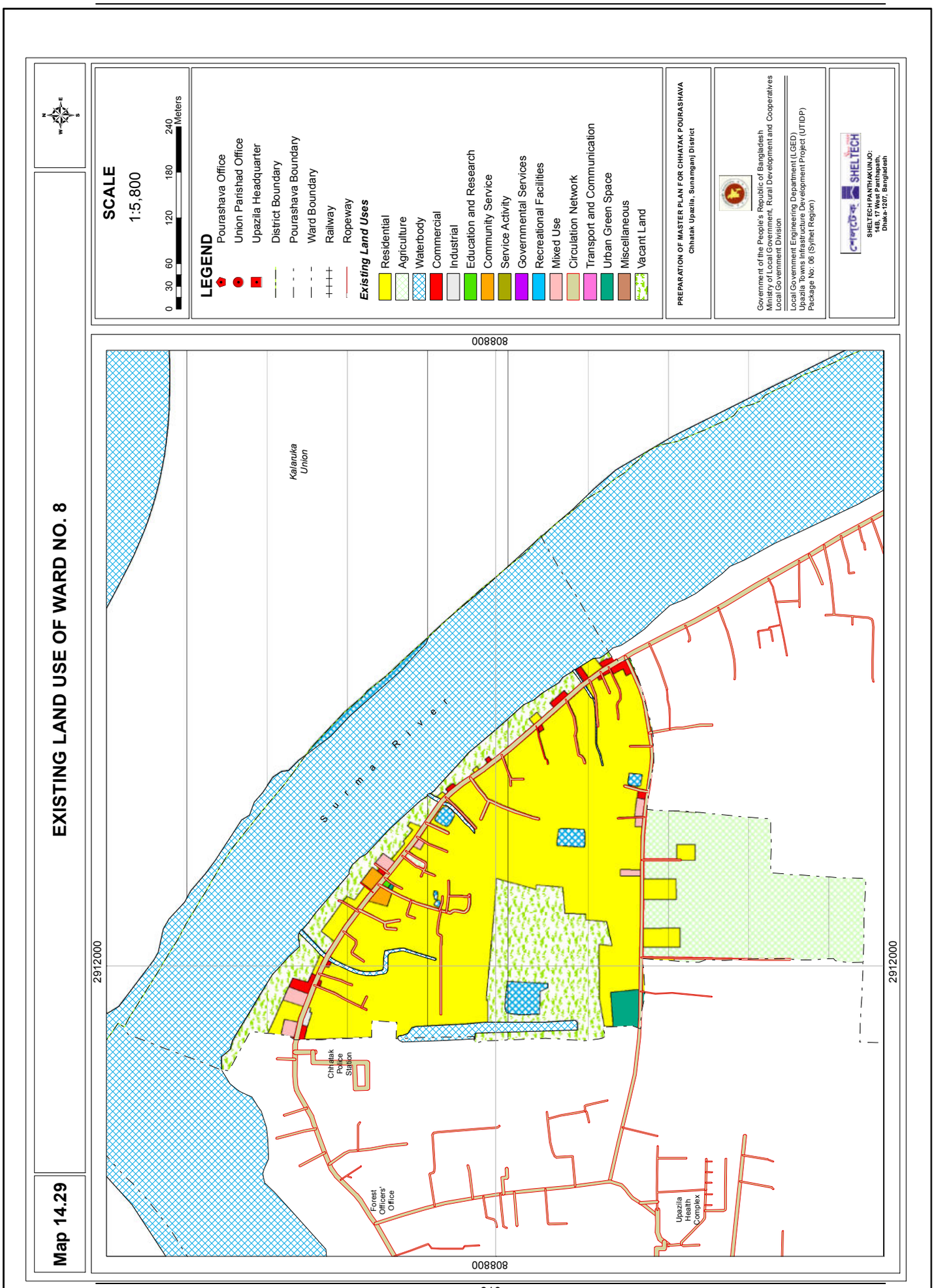
Item	Length in meter
Available Drainage	258.00
Proposed Drainage (Primary)	338.19
Proposed Drainage (Secondary)	1179.88
Proposed Drainage (Tertiary)	337.02
Proposed Drainage (Quaternary)	87.58

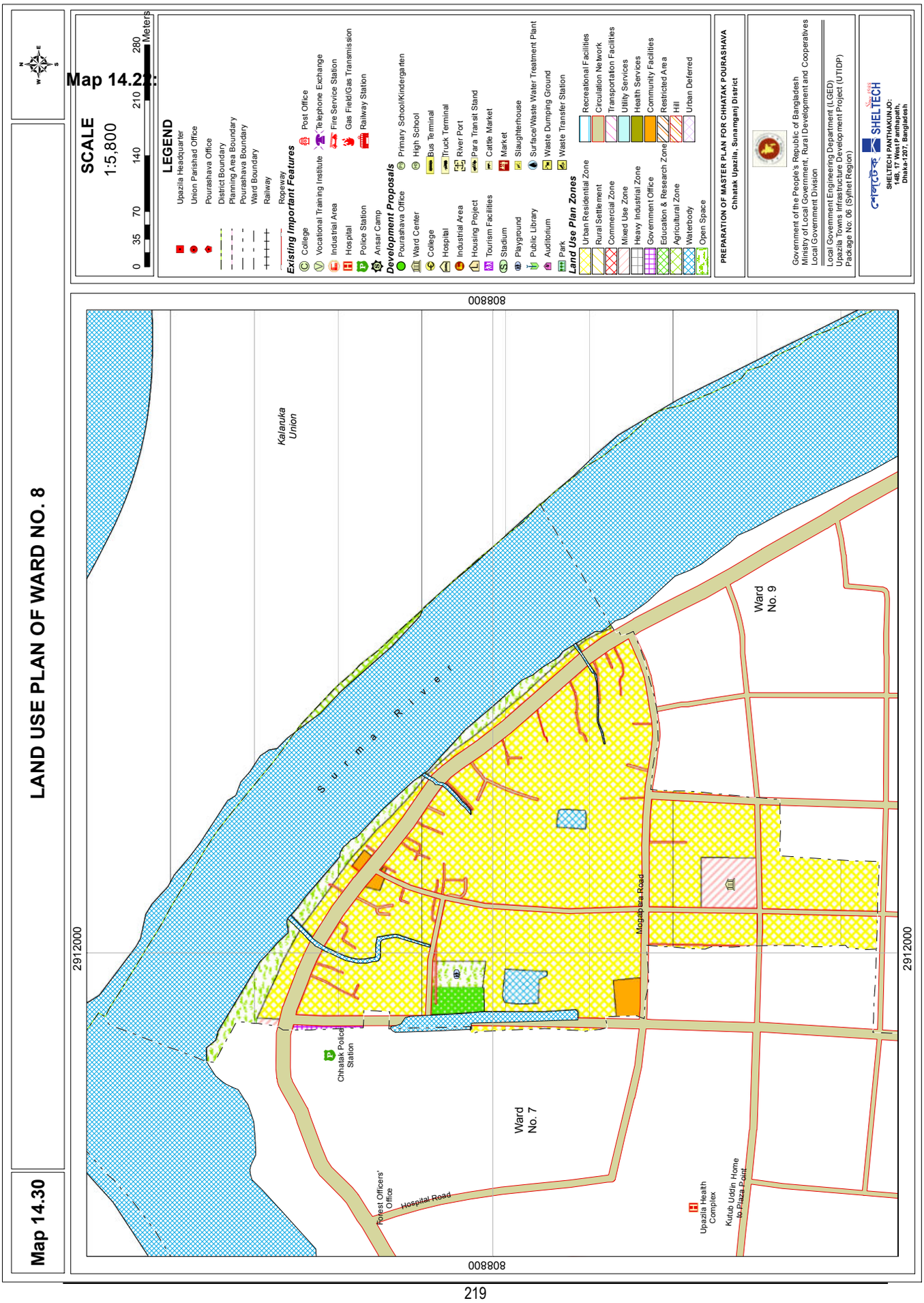
Source: Drainage & Environmental Management Plan

Table 14.53: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 8

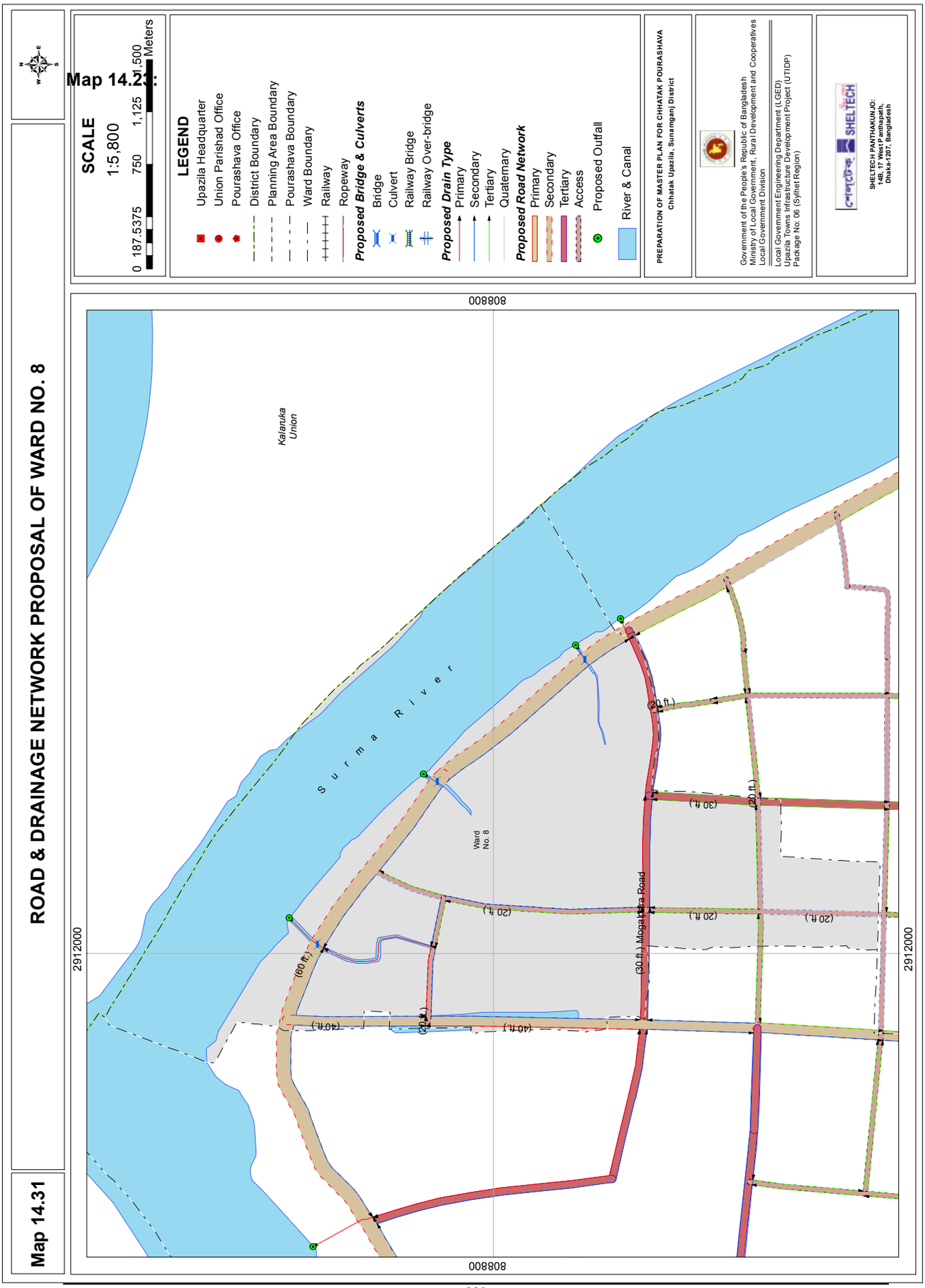
Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP207	2.3 - 3.8	2.23 - 3.23	140.91
Primary	NP212	2.3 - 3.8	2.23 - 3.23	139.07
Primary	NP510	2.3 - 3.8	2.23 - 3.23	58.21
Secondary	NS193	2.35 - 3.35	1.12 - 2.12	7.33
Secondary	NS195	2.35 - 3.35	1.12 - 2.12	114.64
Secondary	NS196	2.35 - 3.35	1.12 - 2.12	91.66
Secondary	NS204	2.35 - 3.35	1.12 - 2.12	249.28
Secondary	NS205	2.35 - 3.35	1.12 - 2.12	162.01
Secondary	NS209	2.35 - 3.35	1.12 - 2.12	61.09
Secondary	NS210	2.35 - 3.35	1.12 - 2.12	261.56
Secondary	NS215	2.35 - 3.35	1.12 - 2.12	9.97
Secondary	NS216	2.35 - 3.35	1.12 - 2.12	2.75
Secondary	NS217	2.35 - 3.35	1.12 - 2.12	145.51
Secondary	NS219	2.35 - 3.35	1.12 - 2.12	74.08
Tertiary	NT206	1.5 - 2.5	0.64 - 1.00	87.81
Tertiary	NT213	1.5 - 2.5	0.64 - 1.00	125.46
Tertiary	NT214	1.5 - 2.5	0.64 - 1.00	123.70
Tertiary	NT218	1.5 - 2.5	0.64 - 1.00	0.05
Quaternary	NQ201	0.25 - 0.85	0.30 - 1.10	87.58
Total				**1942.67**

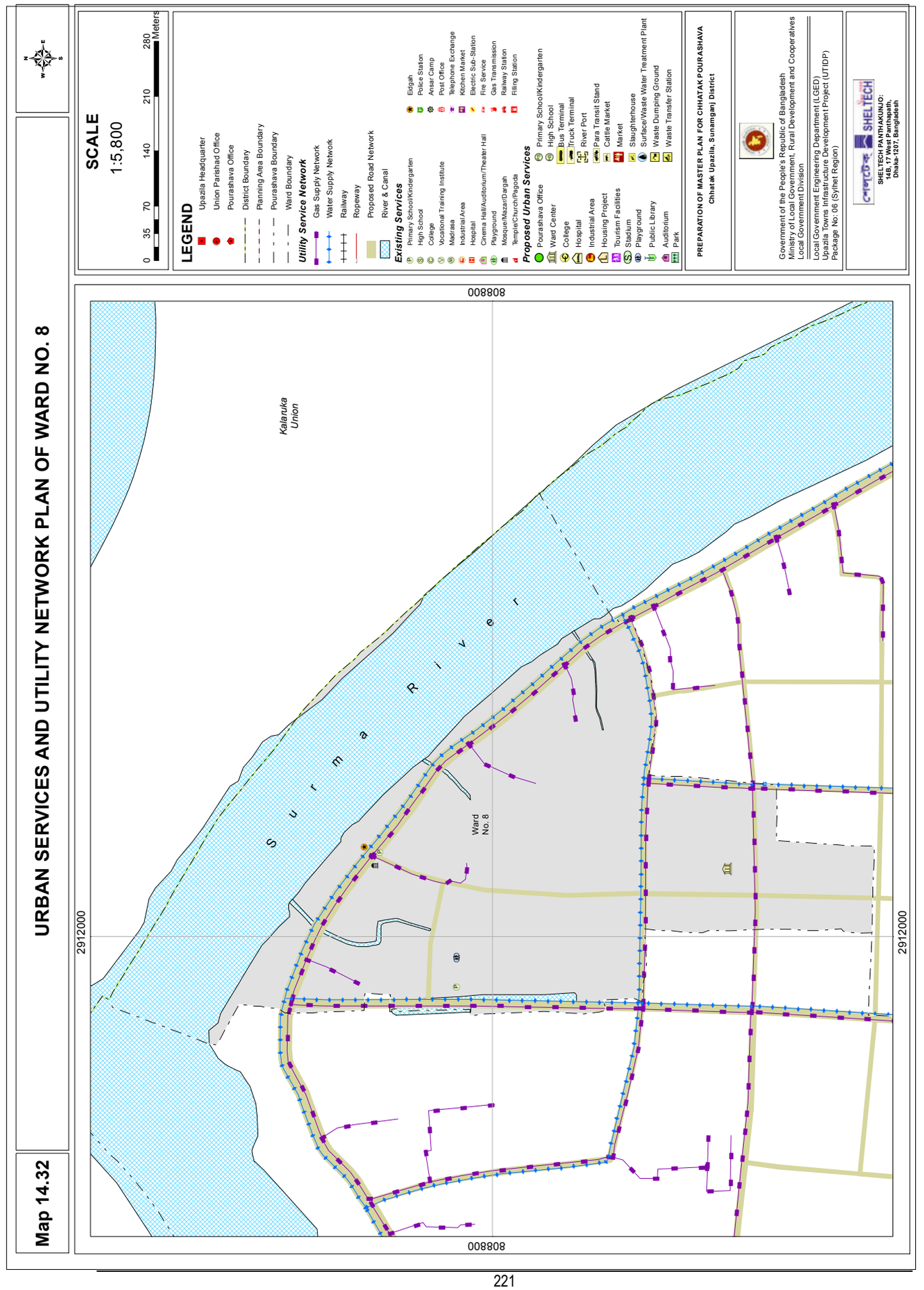
Source: Drainage & Environmental Management Plan


Map 14.29
EXISTING LAND USE OF WARD NO. 8
SCALE
1:5,800
0 30 60 120 180 240 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
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Upazila Towns Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO
SHELTECH PANTHAKUNJO;
14/B, 17 West Panthapath,
Dhaka-1207, Bangladesh
808800
2912000
Kalauka Union
Surma River
Chhatak Police Station
Forest Officers' Office
Upazila Health Complex


Map 14.30
LAND USE PLAN OF WARD NO. 8
Map 14.22:
SCALE
1:5,800
0 35 70 140 210 280 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Stadium
Playground
Public Library
Auditorium
Park
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
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Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
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SHELTECH
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Kalauka Union
Surma River
Ward No. 7
Ward No. 9
Chhatak Police Station
Forest Officers' Office
Hospital Road
Upazila Health Complex
Kutub Uddin Home to Plaza Point
Mogalbara Road
2912000
008808

Map 14.21:


ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 8
Map 14.31
SCALE
1:5,800
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quatemary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
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Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO
HEL-17, West Panthapath,
Dhaka-1207, Bangladesh
808800
2912000
Kalauka Union
Surma River
Ward No. 8
(60 ft.)
(40 ft.)
(30 ft.) Mogaltola Road
(20 ft.)


Map 14.32
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 8
SCALE
1:5,800
0 35 70 140 210 280 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
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Government of the People's Republic of Bangladesh
Ministry of Local Government, Rural Development and Cooperatives
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Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Kalaruka Union
S u r m a R i v e r
Ward No. 8
808800
2912000

10.11 Ward Action Plan for Ward No. 9

14.11.1 Demography

Ward No. 9 is the easternmost ward of the town. In 2001 the Ward had a population of 4149 persons. Population projection shows 5255 population for the year 2011. For the same year, it has a density of about 16 persons per acre. The estimated population for the year 2031 is 8430 with a density of 25 ppa.

Table 14.54: Population Statistics of Ward No. 9

Item	Year		
	2001	2011	2031
Area (acre)	343.11		
Population	4149	5255	8430
Density of Population (acre)	13	16	25

Source: 1. BBS, 2001 and Estimation by the Consultants.
2. Chhatak Pourashava, 2009
Note: Medium Growth rate for Population projection has been considered as 2.39%.

14.11.2 Critical Issues and Opportunities of the Ward

Critical Issues

Critical issues for the development of Ward No. 9 are discussed below.

- Development of this ward is based on only one arterial road.
- Some erosion is found here in this ward in the bank of Surma River.
- Low space standard for urban services has reduced the livability of this ward.

Development Opportunities

The development opportunities of Ward No. 9 are discussed below.

- Higher amount of agricultural land will induce higher agricultural development.
- The Surma River acts as drainage refuge for this ward.
- As most of the ward is yet to be developed and the land is suitable for development there is much scope for intervention here.

14.11.3 Ward Action Plan Proposals

14.11.3.2 Review of Existing Land Use

Ward No. 09 is mainly rural in character. Agricultural land use cover 139.17 acre which is 40.56% of total land of the ward. Out of total 343.11 acre of land of this ward 57.91 acre of land i.e. about 17% of the total land is under residential use. Water bodies occupy 31.19% land of the ward. A total of 0.35 acre of land is occupied for educational purpose. Only 1.23% is used as circulation network. Detail is in table 14.55.

Table 14.55: Comparative Scenario of Existing and Proposed Land Uses of Ward No. 9

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
Residential	57.91	16.88	Urban Residential Zone	162.59	47.39
			Rural Settlement	0.00	0.00
Commercial	0.57	0.17	Commercial Zone	9.16	2.67
Mixed Use	0.42	0.12	Mixed Use Zone	3.06	0.89
Industrial	1.22	0.36	General Industrial Zone	0.00	0.00
			Heavy Industrial Zone	0.00	0.00
Governmental Services	0.00	0.00	Government Office	0.00	0.00
Educational Facility	0.35	0.10	Education & Research	4.38	1.28

Existing Land Use	Area (Acre)	%	Proposed Land Use	Area (Acre)	%
			Zone		
Agricultural	139.17	40.56	Agricultural Zone	0.28	0.08
Water Body	107.00	31.19	Water Body	103.28	30.10
Urban Green Space	6.45	1.88	Open Space	18.23	5.31
Vacant Land	24.95	7.27			
Recreational Facility	0.00	0.00	Recreational Facilities	0.00	0.00
Circulation Network	4.23	1.23	Circulation Network	29.68	8.65
Transport and Communication	0.00	0.00	Transportation Facilities	2.47	0.72
Service Activity	0.00	0.00	Utility Services	0.17	0.05
			Health Services	0.00	0.00
Community Service	0.83	0.24	Community Facilities	9.81	2.86
Restricted Area	0.00	0.00	Urban Deferred	0.00	0.00
Miscellaneous	0.00	0.00	Hill	0.00	0.00
Total	**343.11**	**100.00**	**Total**	**343.11**	**100.00**

Source: Land Use Survey 2010 and Land Use Plan of Chhatak Pourashava

14.11.3.3 Proposed Land Use Zoning

a. Urban Residential Zone

A total of 162.59 acre land is kept as Urban Residential Zone. It will include 47.39% of the total area of the ward.

b. Commercial Zone

A Local Market of 9.16 acre is proposed in this ward that will form the commercial zone here.

c. Mixed Use Zone

A total of 3.06 acre of Mixed Use Zone is proposed under this category. It will cover 0.89% area.

d. Education and Research Zone

Total area under this zone will be 4.38 acre which is only 1.28% of the total area of the ward.

e. Agricultural Zone

Agricultural Zone will cover 0.08% of the ward, which occupies 0.28 acre of land.

f. Water Body

Total 103.28 acre of area is kept under this zone, which is 30.10% of the ward's total area.

g. Open Space

In this ward 18.23 acre of land is proposed under this zone.

h. Circulation Network

With the existing and proposed roads the total area under Circulation Network will be increased from 4.23 acre to 29.68 acre. It will cover 8.65% of this ward's area.

i. Transportation Facilities

At present no transportation faculties are found in this ward. In the Land Use Plan 2.47 acre land is kept under this zone.

j. Utility Services

Utility services zone will have a total area of 0.17 acre; 0.05% of the total area of the ward.

k. Community Facilities

Community facilities will cover 9.81 acre of land which is 2.86% of the total area. Map 14.34 shows the Land Use Plan of Ward No. 9.

14.11.3.4 Proposed Road Infrastructure Development

In Ward No. 9, 2.02 km of road has been proposed in the first Ward Action Plan. It includes 60 ft. RoW secondary road of 1012.40 meter, 30 ft RoW tertiary road 1002.48 meter and 20 ft RoW access road of 3.54 meter length. Table 14.56 shows the summary of road network proposal of first Ward Action Plan in Ward No. 9.

Table 14.56: Summary of Road Network Proposal of First Ward Action Plan in Ward No. 9

Type of Road	Proposed RoW (ft.)	New Road		Road Widening		Total	
		Length (m)	%	Length (m)	%	Length (m)	%
Primary	80 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	100 ft.	0.00	0.00	0.00	0.00	0.00	0.00
Secondary	40 ft.	0.00	0.00	0.00	0.00	0.00	0.00
	60 ft.	810.92	100.00	201.48	16.69	1012.40	50.16
Tertiary	30 ft.	0.00	0.00	1002.48	83.02	1002.48	49.67
Access	20 ft.	0.00	0.00	3.54	0.29	3.54	0.18
Total		**810.92**	**100.00**	**1207.50**	**100.00**	**2018.42**	**100.00**

Source: Road Network Plan

The proposed road network of the first Ward Action Plan in this ward includes 810.92 meter secondary road of 60 ft. RoW. Table 14.57 shows the details of this proposal.

Table 14.57: Details of the Proposals for New Roads in Ward No. 9

Type of Road	Proposed RoW	Proposed Road Id	Road Name	Length (m)
Secondary	40 ft.	NS69		810.92

Source: Road Network Plan

1.21 km road widening proposal is made for this ward in this Ward Action Plan. Table 14.58 shows the inventory of these proposals.

Table 14.58: Road Widening Proposal in First Ward Action Plan for Ward No. 9

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Length (m)
Secondary	19.68	60 ft.	174	WS174		1002.48
Secondary	6.56	40 ft.	285	WS285	Tatikona Graveyard Road	201.48
Tertiary	13.12	30 ft.	382	WT382	Mogalpara Road	3.54

Source: Road Network Plan

14.11.3.5 Urban Services

a. Ward Center

Ward center of 3.09 acre has been proposed in this ward. It will be constructed in phase 2. Detail is given in Table 10.18 in Chapter 10, Part-B of this report.

b. Shopping Mall

A shopping mall of 4.67 acre is proposed in this ward. It will be constructed in the third phase.

c. Local Market

A new local market is proposed in this ward. It will have a total area of 1.26 acre and the construction of it will be started in the third phase of the Master Plan period.

d. Education Facility

A primary school of 1.60 acre land is proposed in this ward. It will be constructed in the first phase of the Master Plan.

e. River-view Park

Water based parks are very popular in current world. These types of parks help saving water bodies and also return some financial benefit. So it will be very beneficial to establish a river-view park in Chhatak Pouarashava, as Surma River is passing through it. This park is proposed at Dakshin Nijgaon and Tatikona mouza in this ward. It will have a total area of 9.65 acre and the construction will be done within the first phase.

f. Open Space

A playground of 0.96 acre land is proposed in this ward. Its construction will be completed in the second phase.

g. Para Transit Stand

A para transit stand is proposed in this ward having an area of 2.47 acre. It will be constructed in phase 3.

h. Water Supply

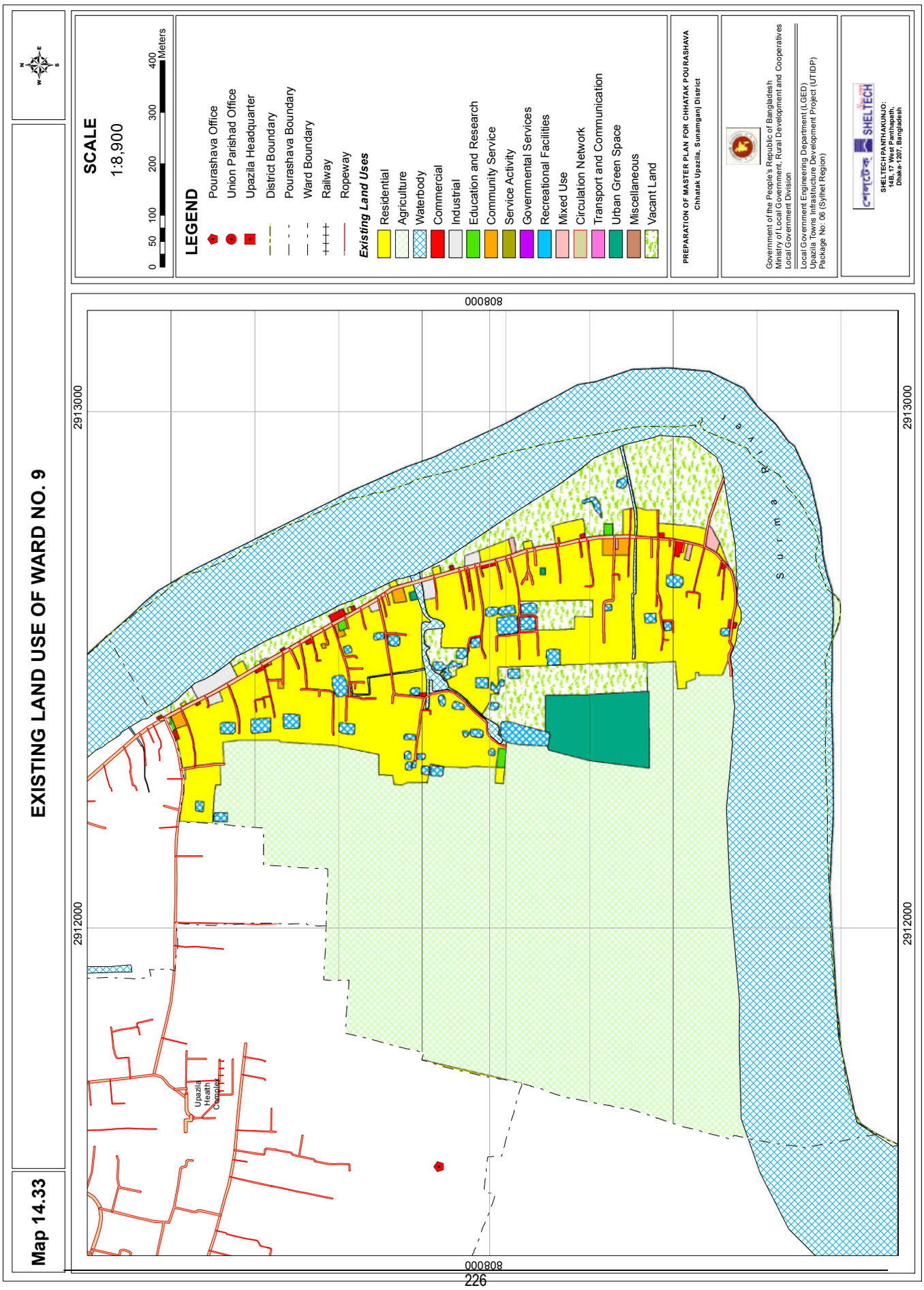
Only 4.73 km water supply network is proposed in this ward. Rainwater harvesting should be encouraged here in this ward.

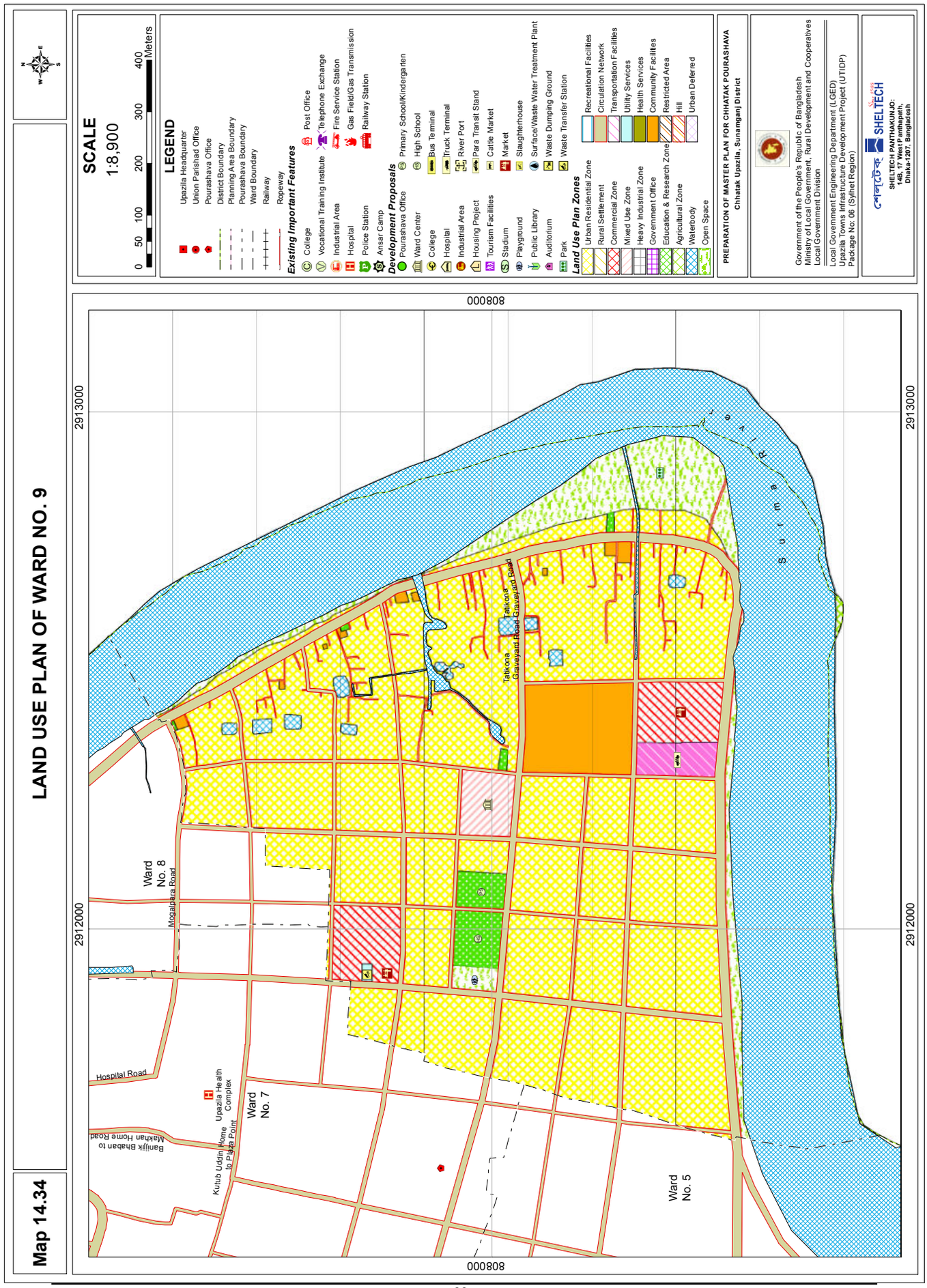
i. Waste Management Services

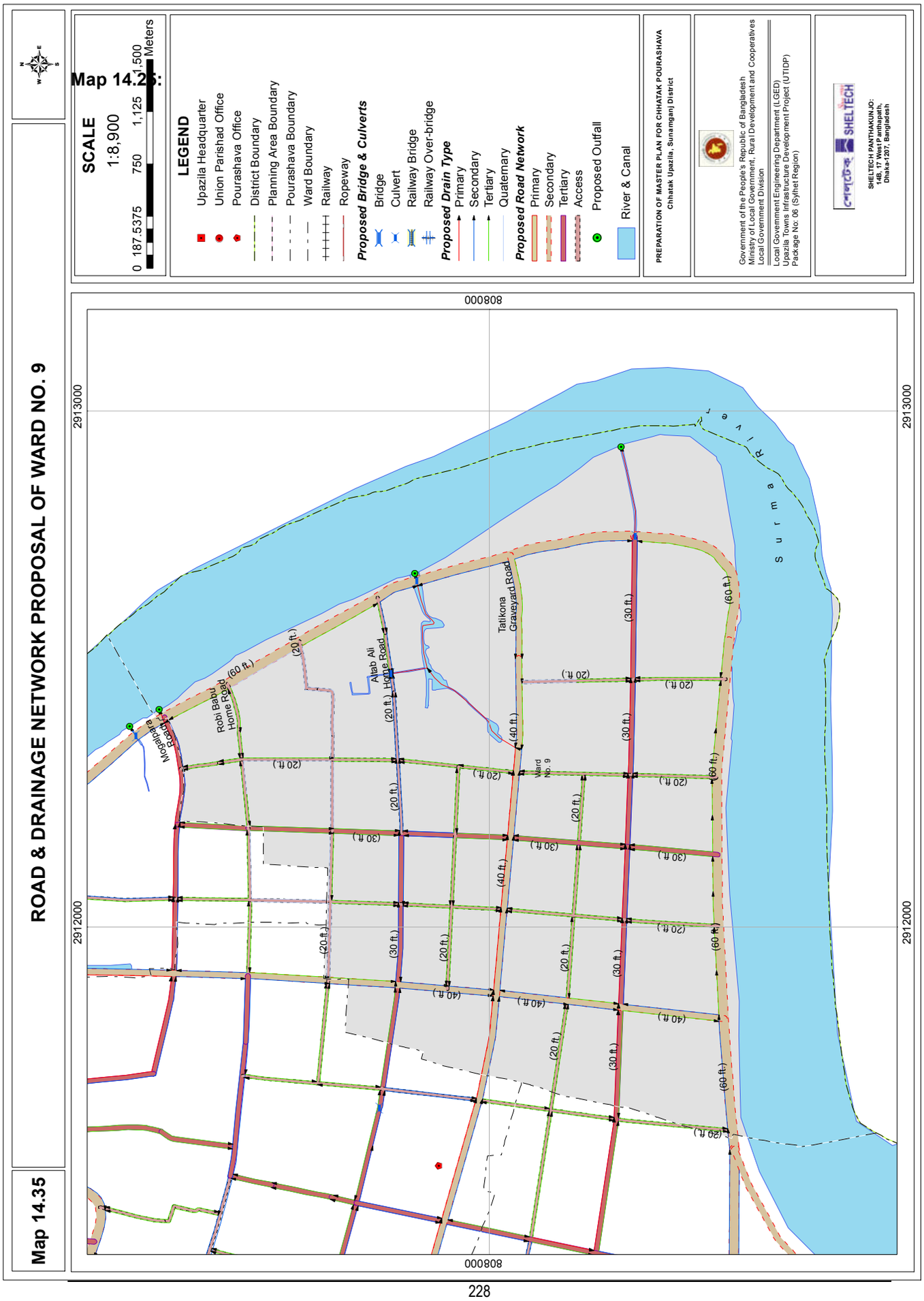
A waste transfer station of 0.17 acre is proposed in this ward. Its construction will be completed in phase 3.

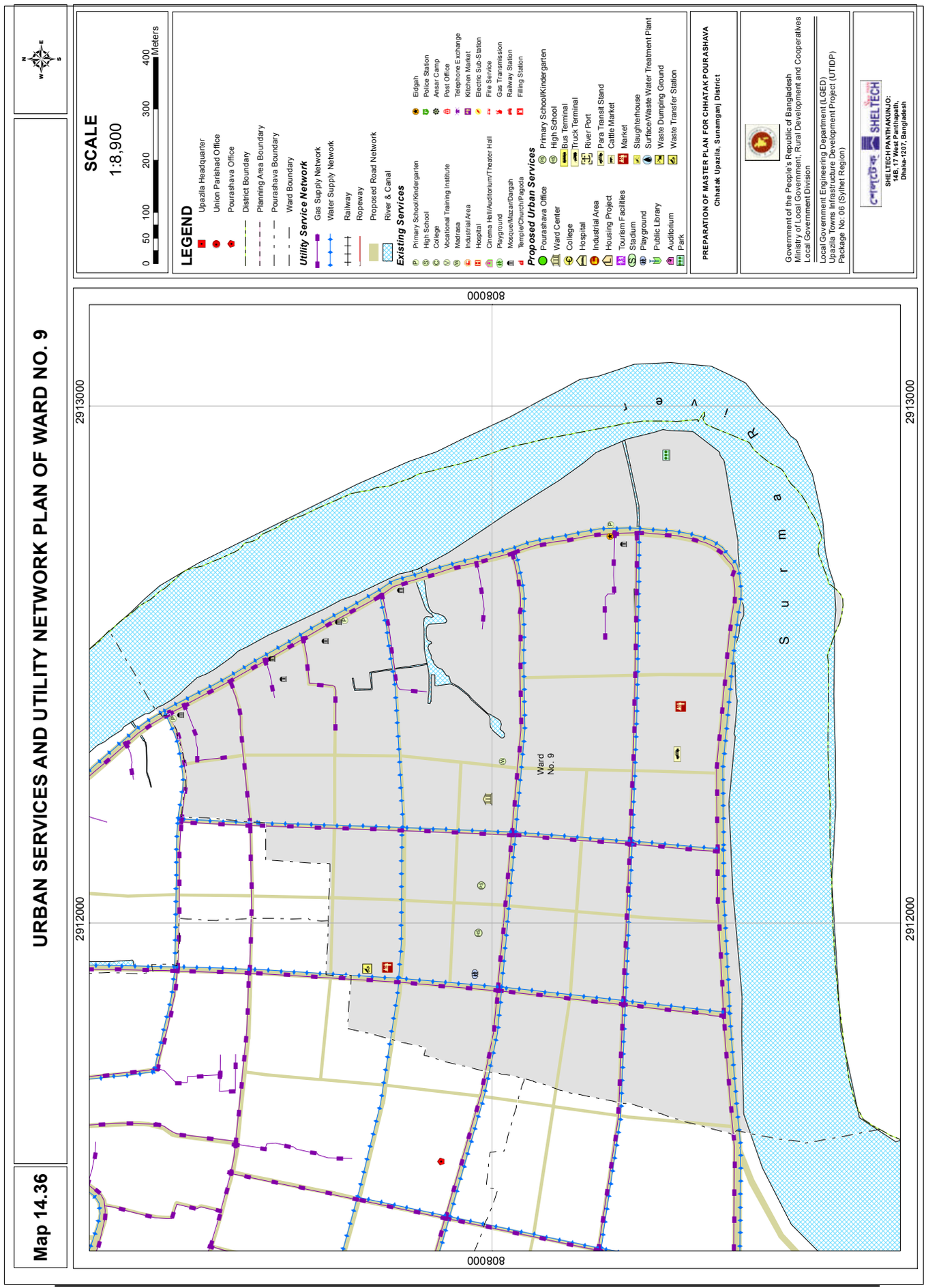
j. Mosque/Graveyard/Eidgah

As per planning standard it seems that the ward has enough mosque, graveyard and eidgah to fulfill the needs of local people up to the planning period 2031.


Map 14.33
EXISTING LAND USE OF WARD NO. 9
SCALE
1:8,900
0 50 100 200 300 400 Meters
LEGEND
Pourashava Office
Union Parishad Office
Upazila Headquarter
District Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Land Uses
Residential
Agriculture
Waterbody
Commercial
Industrial
Education and Research
Community Service
Service Activity
Governmental Services
Recreational Facilities
Mixed Use
Circulation Network
Transport and Communication
Urban Green Space
Miscellaneous
Vacant Land
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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 Town Infrastructure Development Project (UTIDP)
Package No: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
808000
2913000
2912000
Surma River
Upazila Health Complex


LAND USE PLAN OF WARD NO. 9
Map 14.34
SCALE
1:8,900
0 50 100 200 300 400 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Existing Important Features
College
Vocational Training Institute
Industrial Area
Hospital
Police Station
Ansar Camp
Post Office
Telephone Exchange
Fire Service Station
Gas Field/Gas Transmission
Railway Station
Development Proposals
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
Land Use Plan Zones
Urban Residential Zone
Rural Settlement
Commercial Zone
Mixed Use Zone
Heavy Industrial Zone
Government Office
Education & Research Zone
Agricultural Zone
Waterbody
Open Space
Recreational Facilities
Circulation Network
Transportation Facilities
Utility Services
Health Services
Community Facilities
Restricted Area
Hill
Urban Deferred
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 08 (Sylhet Region)
SHELTECH PANTHAKUNJO:
148, 17 West Panthapath,
Dhaka-1207, Bangladesh
808000
2913000
2912000
Ward No. 8
Ward No. 7
Ward No. 5
Mogaldara Road
Hospital Road
Upazila Health Complex
Kutub Uddin Home to Taxi Point
Banijik Bhaban to Makhan Home Road
Talikona Graveyard Road
Surma River


Map 14.25:
SCALE
1:8,900
0 187.5375 750 1,125 1,500 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Railway
Ropeway
Proposed Bridge & Culverts
Bridge
Culvert
Railway Bridge
Railway Over-bridge
Proposed Drain Type
Primary
Secondary
Tertiary
Quaternary
Proposed Road Network
Primary
Secondary
Tertiary
Access
Proposed Outfall
River & Canal
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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. 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
ROAD & DRAINAGE NETWORK PROPOSAL OF WARD NO. 9
Map 14.35
808000
2913000
2912000
Surma River
Robi Babu Home Road
Alab Ali Home Road
Tatikona Graveyard Road
Ward No. 9
(60 ft.)
(30 ft.)
(20 ft.)
(40 ft.)


Map 14.36
URBAN SERVICES AND UTILITY NETWORK PLAN OF WARD NO. 9
SCALE
1:8,900
0 50 100 200 300 400 Meters
LEGEND
Upazila Headquarter
Union Parishad Office
Pourashava Office
District Boundary
Planning Area Boundary
Pourashava Boundary
Ward Boundary
Utility Service Network
Gas Supply Network
Water Supply Network
Railway
Ropeway
Proposed Road Network
River & Canal
Existing Services
Primary School/Kindergarten
High School
College
Vocational Training Institute
Madrasa
Industrial Area
Hospital
Cinema Hall/Auditorium/Theater Hall
Playground
Mosque/Mazar/Dargah
Temple/Church/Pagoda
Eidgah
Police Station
Ansar Camp
Post Office
Telephone Exchange
Kitchen Market
Electric Sub-Station
Fire Service
Gas Transmission
Railway Station
Filling Station
Proposed Urban Services
Pourashava Office
Ward Center
College
Hospital
Industrial Area
Housing Project
Tourism Facilities
Stadium
Playground
Public Library
Auditorium
Park
Primary School/Kindergarten
High School
Bus Terminal
Truck Terminal
River Port
Para Transit Stand
Cattle Market
Market
Slaughterhouse
Surface/Waste Water Treatment Plant
Waste Dumping Ground
Waste Transfer Station
PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA
Chhatak Upazila, Sunamganj 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: 06 (Sylhet Region)
SHELTECH PANTHAKUNJO:
14B, 17 West Panthapath,
Dhaka-1207, Bangladesh
Ward No. 9
Surma River
2913000
2912000
808000

10.11.3.6Drainage Development Plan

At present there is only 236 meter made drainage network at Ward No. 9. In this ward a total of 1609 meter primary drain, 1694.55 meter secondary, 668.32 meter tertiary drain and 153.41 meter quaternary drain has been proposed in the first Ward Action Plan. Table 14.59 shows the comparison of existing and proposed drain whereas table 14.60 shows the details of drainage proposal in this ward.

Table 14.59: Existing and Proposed Drainage Network in First Ward Action Plan of Ward No. 9

Item	Length in meter
Available Drainage	236.00
Proposed Drainage (Primary)	1609.00
Proposed Drainage (Secondary)	1694.55
Proposed Drainage (Tertiary)	668.32
Proposed Drainage (Quaternary)	153.41

Source: Drainage & Environmental Management Plan

Table 14.60: Details of Proposed Drainage Network in First Ward Action Plan of Ward No. 9

Type of Drain	Proposed Id	Proposed Width (m)	Proposed Depth (m)	Length (m)
Primary	NP245	2.3 - 3.8	2.23 - 3.23	284.64
Primary	NP267	2.3 - 3.8	2.23 - 3.23	278.92
Primary	NP273	2.3 - 3.8	2.23 - 3.23	141.16
Primary	NP274	2.3 - 3.8	2.23 - 3.23	159.89
Primary	NP291	2.3 - 3.8	2.23 - 3.23	125.78
Primary	NP308	2.3 - 3.8	2.23 - 3.23	452.57
Primary	NP376	2.3 - 3.8	2.23 - 3.23	153.86
Primary	NP507	2.3 - 3.8	2.23 - 3.23	12.19
Secondary	NS215	2.35 - 3.35	1.12 - 2.12	94.30
Secondary	NS216	2.35 - 3.35	1.12 - 2.12	105.64
Secondary	NS263	2.35 - 3.35	1.12 - 2.12	182.29
Secondary	NS264	2.35 - 3.35	1.12 - 2.12	79.96
Secondary	NS268	2.35 - 3.35	1.12 - 2.12	172.62
Secondary	NS269	2.35 - 3.35	1.12 - 2.12	191.27
Secondary	NS295	2.35 - 3.35	1.12 - 2.12	53.75
Secondary	NS296	2.35 - 3.35	1.12 - 2.12	125.86
Secondary	NS297	2.35 - 3.35	1.12 - 2.12	141.28
Secondary	NS298	2.35 - 3.35	1.12 - 2.12	160.20
Secondary	NS345	2.35 - 3.35	1.12 - 2.12	232.29
Secondary	NS373	2.35 - 3.35	1.12 - 2.12	155.07
Tertiary	NT218	1.5 - 2.5	0.64 - 1.00	129.94
Tertiary	NT248	1.5 - 2.5	0.64 - 1.00	167.37
Tertiary	NT292	1.5 - 2.5	0.64 - 1.00	194.58
Tertiary	NT293	1.5 - 2.5	0.64 - 1.00	48.34
Tertiary	NT294	1.5 - 2.5	0.64 - 1.00	128.09
Quaternary	NQ254	0.25 - 0.85	0.30 - 1.10	153.41
Total				**4125.27**

Source: Drainage & Environmental Management Plan

10.12 Implementation Guidelines

The Master Plan of Chhatak Pourashava will be an effective tool for planned urban development, if it is implemented properly with legal enforcement. The different components of the Master Plan have varied implications if they are not implemented in an integrated manner. There is no separate laws related directly to the implementation of Master Plan of the Pourashavas in the country other than the Pourashava Act 2009 and some relevant national policies and laws as discussed in chapter 5 under the Structure Plan.

However, the legal provisions that have been made in the Pourashava Ordinance/Act 2009 can effectively be applied in the implementation of the Master Plan of Chhatak Pourashava for the time being along with other relevant national policies and laws that have also implications at Pourashava level, such as Wetland Conservation Act 2000 and BNBC 1993. Other national policies, guidelines and laws relevant to population, agriculture, environment, tourism, building materials, building construction etc. have implications for the implementation of various components including the Ward Action Plan of the Master Plan of Chhatak Pourashava.

Therefore, until specific laws and guidelines are made by the government for the Pourashavas in Bangladesh for the implementation of Master Plans, the existing laws, policies and guidelines should be strictly followed so that the goal and objectives of these plans are achieved. Effective application of the various existing policies and laws require prudent exercise of professional knowledge and expertise, which is lacking in the existing human resources of the Pourashavas in Bangladesh. In particular, the Pourashavas require professional urban/town planner(s) in the set up of their manpower. In this context, there is an urgent need for the creation of a planning division/section in the existing set up of the Pourashava Organogram (Detail discussion in Chapter – 8, Section 8.1.3).

14.12.1 Proposals for Mitigation of Identified Issues

The critical issues of planning and development identified in the Structure Plan have been addressed through the preparation of Urban Area Plan and Ward Action Plan. The proposals made in these plans resolve the issues addressed in the Structure Plan.

14.12.2 Comparative Advantages of Master Plan

The Pourashavas in Bangladesh do not have any practicing plans at present in regard to organized development of land use or infrastructure. This situation has been continuing over a long period of time in the past promoting spontaneous land and infrastructure development. As a result, there are examples of unplanned development creating discomfort to the people living in almost all Pourashavas in the country. The implementation of the currently prepared Master Plan of the Pourashava will remove those obstacles by applying the principles, guidelines and proposals of various components of its Master Plan. The Ward Action Plan prepared following the Urban Area Plan will solve the most pressing needs of the town in infrastructure development.

10.13 Conclusion

The Pourashavas in Bangladesh for the first time in its history are having their detailed Master Plans prepared scientifically using modern tools and techniques. These Master Plans will be effective tools for planned development of most of the urban centers in Bangladesh. The planned township development will also ensure required services for the rural areas of the country. This in turn will make a positive impact on economic growth, social progress and environmental sustainability. Chhatak Pourashava must avail this opportunity for its progress in the future by implementing its newly prepared Master Plan.

ANNEXURE

ANNEXURE – A

PERMITTED LAND USE CATEGORIES AND SUB-CATEGORIES

Sl.	Structure/ Land Use	General Land Use Category in Survey Stage	Recommended Land Use Categories
1.	Hostel	Residential	1. Urban Residential Zone
2.	Mess	Residential	
3.	Orphanage	Residential	
4.	Rest House	Residential	
5.	Refugee Camp	Residential	
6.	Residential House	Residential	
7.	Residential Quarters (Govt.)	Residential	
8.	Residential Quarters (Private)	Residential	
9.	Rural Settlement	Residential	2. Rural Settlement
10.	Audio-Video Cassette/CD/DVD	Commercial	3. Commercial Zone
11.	Bag & Leather Goods	Commercial	
12.	Book Stall	Commercial	
13.	Buying House	Commercial	
14.	Cloths Shop	Commercial	
15.	Cold Storage	Commercial	
16.	Computer Goods	Commercial	
17.	Confectionary	Commercial	
18.	Construction Material	Commercial	
19.	Cosmetics & Toiletries	Commercial	
20.	Cycle Store	Commercial	
21.	Department Store	Commercial	
22.	Drug/Pharmacy	Commercial	
23.	Electronic Goods	Commercial	
24.	Electronics Show Room	Commercial	
25.	Furniture Shop	Commercial	
26.	Gift Shop	Commercial	
27.	Grocery Shop	Commercial	
28.	Gun Shop	Commercial	
29.	Hardware Goods	Commercial	
30.	Iron & Steel Shops	Commercial	
31.	Jewellers	Commercial	
32.	Bank	Service Activity	
33.	Barber Shop (Saloon)	Service Activity	
34.	Beauty Parlour	Service Activity	
35.	Canteen	Service Activity	
36.	Clearing Agent	Service Activity	
37.	Commercial Group Office	Service Activity	
38.	Construction Office	Service Activity	
39.	Decorator	Service Activity	
40.	Insurance	Service Activity	
41.	Laundry	Service Activity	
42.	Law Chamber	Service Activity	
43.	Leasing Company	Service Activity	
44.	Mercantile & Cooperatives	Service Activity	
45.	Money Exchange Center	Service Activity	
46.	Motel	Service Activity	
47.	Newspaper & Publications	Service Activity	
48.	Private Office	Service Activity	
49.	Residential Hotel	Service Activity	
50.	Restaurant	Service Activity	
51.	Security Service Office	Service Activity	
52.	Tailors	Service Activity	
53.	Tea Stall	Service Activity	
54.	Trading Corporation Office	Service Activity	
55.	Katcha Bazar	Commercial	
56.	Kitchen Market	Commercial	
57.	Mobile Sales Centre	Commercial	
58.	Motor Parts	Commercial	
59.	Other Commercial	Commercial	
60.	Other Retails	Commercial	
61.	Other Wholesale Market	Commercial	
62.	Phone-Fax-Photocopy	Commercial	
63.	Press & Printing	Commercial	
64.	Rubber Stamps	Commercial	
65.	Shoe Shop	Commercial	
66.	Shopping Centre/Mall	Commercial	
67.	Showroom	Commercial	
68.	Spectacles	Commercial	

Sl.	Structure/ Land Use	General Land Use Category in Survey Stage	Recommended Land Use Categories
69.	Sports Goods	Commercial	
70.	Stationery Shop	Commercial	
71.	Studio	Commercial	
72.	Sweetmeat Shop	Commercial	
73.	Timber Shop	Commercial	
74.	Utensils/Crockery	Commercial	
75.	Wholesale Fish Market	Commercial	
76.	Mixed	Mixed Use	4. Mixed Use Zone
77.	Bakery Product	Manufacturing and Processing Activity (M&P Activity)	Industries listed under the categories of "Green" and "Orange-A" of Environment Conservation Rule, 1997 placed under the title : 5. General Industrial Zone and industries listed under the category "Orange-B" and "Red" of the same law may categorise as 6. Heavy Industrial Zone.
78.	Brick Field/Kiln	M&P Activity	
79.	Carpets	M&P Activity	
80.	Cement	M&P Activity	
81.	Cosmetics & Toiletries Industry	M&P Activity	
82.	Cotton/Textile	M&P Activity	
83.	Cycle & Tyre Tube	M&P Activity	
84.	Dairy Products	M&P Activity	
85.	Dyeing Industry	M&P Activity	
86.	Edible Salt	M&P Activity	
87.	Electric Appliances	M&P Activity	
88.	Electrical Apparatus	M&P Activity	
89.	Fertilizers	M&P Activity	
90.	Fish & Sea Food Processing	M&P Activity	
91.	Flour Mill	M&P Activity	
92.	Fruits & Vegetables	M&P Activity	
93.	Furniture Factory	M&P Activity	
94.	Garments Washing	M&P Activity	
95.	Glass Product	M&P Activity	
96.	Hand & Edge Tools	M&P Activity	
97.	Heating & Lighting	M&P Activity	
98.	Hosiery Products	M&P Activity	
99.	Husking Mill	M&P Activity	
100.	Ice Cream Factory	M&P Activity	
101.	Ice Factory	M&P Activity	
102.	Insecticides Industry	M&P Activity	
103.	Iron & Steel	M&P Activity	
104.	Jute Mills	M&P Activity	
105.	Knitting Industry	M&P Activity	
106.	Printing & Packaging	Service Activity	
107.	Leather Products	M&P Activity	
108.	Lime Stone	M&P Activity	
109.	Machinery Equipment	M&P Activity	
110.	Molasses	M&P Activity	
111.	Newsprint Paper	M&P Activity	
112.	Textile & Garments	M&P Activity	
113.	Other Factory	M&P Activity	
114.	Other Food Processing Industry	M&P Activity	
115.	Other Metal Industry	M&P Activity	
116.	Other Mills	M&P Activity	
117.	Paints & Varnishes	M&P Activity	
118.	Paper Product (All Kind)	M&P Activity	
119.	Pharmaceuticals Industry	M&P Activity	
120.	Plastic Factory	M&P Activity	
121.	Plastic Recycling Factory	M&P Activity	
122.	Plumbing Equipment	M&P Activity	
123.	PVC Product	M&P Activity	
124.	Readymade Garments	M&P Activity	
125.	Re-Rolling Mills	M&P Activity	
126.	Rice Mill	M&P Activity	
127.	Rubber Industry	M&P Activity	
128.	Saw Mill	M&P Activity	
129.	Silk & Artificial Textile	M&P Activity	
130.	Soft Drink	M&P Activity	
131.	Sports & Athletics	M&P Activity	
132.	Umbrella Factory	M&P Activity	
133.	Dockyard	M&P Activity	
134.	Melamine Industry	M&P Activity	
135.	Other Paper Industry	M&P Activity	
136.	Edible Oil Mills	M&P Activity	
137.	Automobile Workshop	Service Activity	
138.	Metal Workshop	Service Activity	

Sl.	Structure/ Land Use	General Land Use Category in Survey Stage	Recommended Land Use Categories
139.	Electrical Workshop	Service Activity	
140.	Mechanical Workshop	Service Activity	
141.	Engineering Workshop	Service Activity	
142.	Welding Workshop	Service Activity	
143.	Other Workshop	Service Activity	
144.	Wire & Cables	M&P Activity	
145.	Civil Surgeon Office	Government Services	7. Government Office
146.	DC Office	Government Services	
147.	Police Box	Service Activity	
148.	Police Fari	Restricted Area	
149.	Police Station	Service Activity	
150.	LGED Office	Government Services	
151.	Other Government Office	Government Services	
152.	Pourashava Office	Government Services	
153.	Settlement Office	Government Services	
154.	Union Parishad Office	Government Services	
155.	Upazila Headquarter	Government Services	
156.	BADC Office	Government Services	
157.	Fisheries Office	Government Services	
158.	Ansar/VDP Office	Government Services	
159.	Agriculture Office	Government Services	
160.	Zila Parishad Office	Government Services	
161.	Post Office	Transport & Communication	
162.	Telephone Exchange Office	Transport & Communication	
163.	Art & Culture	Education & Research	8. Education & Research Zone
164.	College	Education & Research	
165.	Computer Training Institute	Education & Research	
166.	Engineering College	Education & Research	
167.	Engineering University	Education & Research	
168.	High School	Education & Research	
169.	High School & College	Education & Research	
170.	Kindergarten and Nursery School	Education & Research	
171.	Law College	Education & Research	
172.	Library	Education & Research	
173.	Madrasa	Education & Research	
174.	Medical College	Education & Research	
175.	Museum	Education & Research	
176.	NGO School	Education & Research	
177.	Nursing Training Institute	Education & Research	
178.	Other Institute	Education & Research	
179.	Other Research	Education & Research	
180.	Art Gallery	Recreational Facilities	
181.	Physical Training Institute	Education & Research	
182.	Polytechnic Institute	Education & Research	
183.	Primary School	Education & Research	
184.	School	Education & Research	
185.	Teachers Training College	Education & Research	
186.	Technical College/Institute	Education & Research	
187.	Tutorial/Coaching Centre	Education & Research	
188.	University	Education & Research	
189.	Vocational Training Institute	Education & Research	
190.	Dairy Farm	Agriculture	9. Agricultural Zone
191.	Farm Land	Agriculture	
192.	Farm Office	Agriculture	
193.	Fisheries	Agriculture	
194.	Flower Cultivation	Agriculture	
195.	Horticulture	Agriculture	
196.	Nursery	Agriculture	
197.	Orchards	Agriculture	
198.	Other Agricultural Land	Agriculture	
199.	Other Farm	Agriculture	
200.	Pasture/Grazing Land	Agriculture	
201.	Poultry Farm	Agriculture	
202.	Agro Research Land	Agriculture	
203.	Research (Agricultural)	Agriculture	
204.	Beel	Water Body	10. Waterbody
205.	Canal/ Khal/Chhara	Water Body	
206.	Pond	Water Body	
207.	Ditch	Water Body	
208.	River	Water Body	
209.	Wetland/Low Laying Area	Water Body	

Sl.	Structure/ Land Use	General Land Use Category in Survey Stage	Recommended Land Use Categories
210.	Botanical Garden	Open Space/ Urban Green Space	11. Open Space
211.	Park	Recreational Facilities	
212.	Playground	Recreational Facilities	
213.	Stadium	Recreational Facilities	
214.	Zoo	Recreational Facilities	
215.	Ecological Park/Sites	Open Space/ Urban Green Space	
216.	Golf Course and Golf Club	Open Space/ Urban Green Space	
217.	Theme Park	Recreational Facilities	
218.	Water Amusement Park	Recreational Facilities	
219.	Swimming Pool	Recreational Facilities	12. Recreational Facilities
220.	Theatre Hall	Recreational Facilities	
221.	Indoor Stadium	Recreational Facilities	
222.	Amphitheatre	Recreational Facilities	
223.	Tennis Club	Community Service	
224.	Women Sports Club	Community Service	
225.	Cinema Hall	Recreational Facilities	
226.	Gymnasium	Community Service	
227.	Sporting Club	Community Service	
228.	Other Recreation	Recreational Facilities	
229.	Footpath/Pedestrian Way	Circulation Network	13. Circulation Network
230.	Katcha Road	Circulation Network	
231.	Pucca Road	Circulation Network	
232.	Rail Road	Circulation Network	
233.	Road Island	Circulation Network	
234.	Semi-Pucca Road	Circulation Network	
235.	Walkway	Circulation Network	
236.	Embankment cum Road	Circulation Network	
237.	Airport	Transport & Communication	14. Transportation Facilities
238.	Bus-Truck Terminal/Stand	Transport & Communication	
239.	Ferry/Cargo Ghat	Transport & Communication	
240.	Filling Station	Transport & Communication	
241.	Garage (Auto-rickshaw)	Transport & Communication	
242.	Garage (Rickshaw)	Transport & Communication	
243.	Helipad	Transport & Communication	
244.	Launch Terminal	Transport & Communication	
245.	Mobile Transmission/Tower Zone	Transport & Communication	
246.	Other Transport	Transport & Communication	
247.	Passenger Shed	Transport & Communication	
248.	Rail Station	Transport & Communication	
249.	River Port & Terminal	Transport & Communication	
250.	Ticket Counter	Transport & Communication	
251.	Transport Office	Transport & Communication	
252.	Overhead Tank	Service Activity	15. Utility Services
253.	Power Office/Control Room	Service Activity	
254.	Public Toilet	Service Activity	
255.	Sewerage Office	Service Activity	
256.	Waste Disposal	Service Activity	
257.	Fire Service	Service Activity	
258.	Public Toilet	Service Activity	
259.	Water Pump House	Service Activity	
260.	Water Reservoir	Service Activity	
261.	Water Treatment Plant	Service Activity	
262.	Hospital/Health Complex	Service Activity	16. Health Services
263.	Veterinary Hospital	Service Activity	
264.	Clinic	Service Activity	
265.	Diagnostic Centre	Service Activity	
266.	Doctors Chamber	Service Activity	
267.	Association	Community Service	17. Community Facilities
268.	Astana	Community Service	
269.	Auditorium	Community Service	
270.	Church	Community Service	
271.	Club House	Community Service	
272.	Community Centre	Community Service	
273.	Cooperative	Community Service	
274.	Eidgah	Community Service	
275.	Health Club	Community Service	
276.	Mazar	Community Service	

Sl.	Structure/ Land Use	General Land Use Category in Survey Stage	Recommended Land Use Categories
277.	Monument	Community Service	
278.	Mosque	Community Service	
279.	Other Community Services	Community Service	
280.	Pagoda	Community Service	
281.	Temple	Community Service	
282.	Town Hall	Community Service	
283.	Labour Union	Service Activity	
284.	Political Party Office	Service Activity	
285.	Professional's Association	Service Activity	
286.	Cemetery	Open Space/ Urban Green Space	
287.	Crematorium	Open Space/ Urban Green Space	
288.	Graveyard	Open Space/ Urban Green Space	
289.	Historic Sites	Open Space/ Urban Green Space	18. Historical & Heritage Site
290.	Heritage Site	Open Space/ Urban Green Space	
291.	Air Force	Restricted Area	19. Restricted Area
292.	Ansar Camp/Barrack	Restricted Area	
293.	Army Barrack	Restricted Area	
294.	BGB Station	Restricted Area	
295.	BNCC	Restricted Area	
296.	Cantonment	Restricted Area	
297.	Jailkhana	Restricted Area	
298.	Navy Station	Restricted Area	
299.	Fuel Reserve Depot/Zone	Transport & Communication	
300.	Gas Transmission	Service Activity	
301.	Power Plant/Electric Sub-Station	Service Activity	
302.	Radio Transmission Centre/Station	Restricted Area	
303.	Television Transmission Centre/Station	Restricted Area	
304.	Other KPI	Restricted Area	
305.	Overlay Zone		20. Overlay Zone
306.	Urban Deferred		21. Urban Deferred
307.	Natural Forest	Forest	22. Forest
308.	Social Forest	Forest	
309.	Sea Beach		23. Beach
310.	Foreign Mission	Non Government Services	24. Miscellaneous
311.	Non Government Office	Non Government Services	
312.	Office of International Organizations	Non Government Services	
313.	Vacant Land (all unused fallow land)	Vacant Land	
314.	Sewerage Treatment Plant	Service Activity	

Source: PMO, UTIDP

ANNEXURE – B

DETAILS OF ROAD NETWORK PROPOSALS
OF CHHATAK POURASHAVA

Table B1: Details of Road Widening Proposals of Chhatak Pourashava (Phase 01: First to Fifth Year of Master Plan)

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Primary	18	80 ft.	1	WP1	Chhatak - Sylhet Road		Ward No. 7	703.13
Primary	18	80 ft.	1	WP1	Chhatak - Sylhet Road		Ward No. 5	1095.00
Primary	18	80 ft.	1	WP1	Chhatak - Sylhet Road		Proposed Extension Area	568.63
Primary	18	80 ft.	1	WP1	Chhatak - Sylhet Road		Ward No. 5	145.61
Primary	18	80 ft.	1	WP1	Chhatak - Sylhet Road		Proposed Extension Area	336.33
Secondary	16	60 ft.	2	WS2		Embankment Cum Road	Ward No. 4	788.23
Secondary	16	60 ft.	2	WS2		Embankment Cum Road	Ward No. 5	819.46
Secondary	11	40 ft.	110	WS110			Ward No. 4	838.87
Secondary	11	40 ft.	110	WS110			Ward No. 5	9.24
Secondary	20	60 ft.	174	WS174		Embankment Cum Road	Ward No. 9	1002.48
Secondary	20	60 ft.	174	WS174		Embankment Cum Road	Ward No. 8	288.13
Secondary	15	60 ft.	339	WS339		Embankment Cum Road	Ward No. 7	531.90
Secondary	11	40 ft.	477	WS477	Transport Office to Fakir Tilla Road	Embankment Cum Road	Ward No. 2	417.43
Secondary	10	40 ft.	520	WS520			Ward No. 2	125.57
Secondary	10	40 ft.	421	WS421	Surma River to Bangla Bazar Road		Ward No. 2	712.72
Secondary	10	40 ft.	421	WS421	Surma River to Bangla Bazar Road		Ward No. 3	288.03
Secondary	20	60 ft.	174	WS174		Embankment Cum Road	Ward No. 8	380.57
Secondary	20	60 ft.	174	WS174		Embankment Cum Road	Ward No. 7	770.49
Secondary	7	60 ft.	286	WS286		Embankment Cum Road	Ward No. 3	172.01
Secondary	7	40 ft.	285	WS285	Tatikona Graveyard Road		Ward No. 9	201.48
Secondary	16	60 ft.	2	WS2		Embankment Cum Road	Ward No. 6	97.74
Secondary	16	60 ft.	2	WS2		Embankment Cum Road	Ward No. 5	360.53
Secondary	7	40 ft.	120	WS120			Proposed Extension Area	103.11
Secondary	7	40 ft.	120	WS120			Ward No. 5	135.64
Secondary	11	40 ft.	551	WS551		Embankment Cum Road	Ward No. 2	137.51
Secondary	11	40 ft.	551	WS551		Embankment Cum Road	Ward No. 2	114.12
Tertiary	16	30 ft.	211	WT211			Ward No. 6	99.19
Tertiary	7	30 ft.	317	WT317			Ward No. 6	76.35
Tertiary	13	30 ft.	382	WT382	Mogalpara Road		Ward No. 9	3.54
Tertiary	13	30 ft.	382	WT382	Mogalpara Road		Ward No. 8	492.60
Tertiary	13	30 ft.	382	WT382	Mogalpara Road		Ward No. 7	205.79
Tertiary	13	30 ft.	383	WT383	Hospital Road		Ward No. 7	313.54
Tertiary	5	30 ft.	560	WT560	Banijjik Bhaban to Makhan Home Road		Ward No. 7	286.34
Tertiary	16	30 ft.	2	WT2	Upazila Parishad		Ward No. 6	493.69

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
					Road			
Tertiary	16	30 ft.	2	WT2	Upazila Parishad Road		Ward No. 5	242.50
Tertiary	16	30 ft.	2	WT2			Ward No. 6	108.97
Tertiary	13	30 ft.	367	WT367	Baghbari ASA Office to Khanakali Road		Ward No. 6	214.66
Tertiary	13	30 ft.	367	WT367	Baghbari ASA Office to Khanakali Road		Ward No. 7	25.13
Access	11	20 ft.	297	WA297			Ward No. 6	214.01
Access	16	20 ft.	303	WA303			Ward No. 6	197.15
Access	13	20 ft.	306	WA306	Khelaghar Pond to Baghbari Lal Mosque Road		Ward No. 6	368.18
Access	11	20 ft.	313	WA313	Pourashava Road		Ward No. 6	222.82
Access	11	20 ft.	313	WA313	Pourashava Road		Ward No. 7	17.99
Access	13	20 ft.	350	WA350			Ward No. 6	247.68
Access	10	20 ft.	437	WA437			Ward No. 6	11.61
Access	10	20 ft.	437	WA437			Ward No. 7	21.91
Access	10	20 ft.	459	WA459			Ward No. 8	100.14
Access	10	20 ft.	595	WA595			Ward No. 7	17.46
Access	15	20 ft.	339	WA339	Launch Ghat to Sunu Chowdhury Home Road		Ward No. 6	235.04
Access	15	20 ft.	339	WA339	Launch Ghat to Sunu Chowdhury Home Road		Ward No. 7	13.07
Access	13	20 ft.	306	WA306			Ward No. 6	64.57
Access	11	20 ft.	377	WA377			Ward No. 7	92.25
Access	11	20 ft.	377	WA377			Ward No. 7	40.28
Access	11	20 ft.	377	WA377			Ward No. 7	126.24
Access	11	20 ft.	379	WA379			Ward No. 6	4.66
Access	11	20 ft.	379	WA379			Ward No. 7	40.90
Access	11	20 ft.	379	WA379			Ward No. 6	22.90
Access	11	20 ft.	379	WA379			Ward No. 7	317.92
Access	8	20 ft.	314	WA314			Ward No. 6	29.89
Access	8	20 ft.	314	WA314			Ward No. 6	116.72
Access	7	20 ft.	309	WA309			Ward No. 6	80.51
Access	7	20 ft.	309	WA309			Ward No. 6	61.45
Access	8	20 ft.	314	WA314			Ward No. 6	25.46
Access	13	20 ft.	350	WA350			Ward No. 6	62.16
Access	11	20 ft.	313	WA313			Ward No. 6	29.72
Access	13	20 ft.	296	WA296			Ward No. 6	68.99
Access	13	20 ft.	367	WA367	Baghbari ASA Office to Khanakali Road		Ward No. 6	99.39
Total								**16657.32**

Source: Road Network Plan of Chhatak Pourashava

Table B2: Details of Proposals New Roads in Road Network Plan of Chhatak Pourashava (Phase 01: First to Fifth Year of Master Plan)

Type of Road	Proposed RoW (ft.)	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Primary	100 ft.	NP150			Proposed Extension Area	1289.28
Primary	100 ft.	NP150			Ward No. 3	309.18
Primary	100 ft.	NP150			Proposed Extension Area	554.96
Primary	100 ft.	NP150			Ward No. 4	1650.58
Secondary	60 ft.	NS78		Embankment Cum Road	Ward No. 2	7.15
Secondary	60 ft.	NS78		Embankment Cum Road	Ward No. 3	561.30

Type of Road	Proposed RoW (ft.)	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Secondary	60 ft.	NS89		Embankment Cum Road	Ward No. 6	464.50
Secondary	60 ft.	NS89		Embankment Cum Road	Ward No. 7	55.95
Secondary	60 ft.	NS130		Embankment Cum Road	Ward No. 2	104.96
Secondary	40 ft.	NS143			Ward No. 1	4.91
Secondary	40 ft.	NS143			Ward No. 2	653.15
Secondary	40 ft.	NS148			Proposed Extension Area	260.11
Secondary	40 ft.	NS69			Ward No. 9	810.92
Secondary	40 ft.	NS69			Ward No. 7	604.22
Tertiary	30 ft.	NT63			Ward No. 7	147.74
Tertiary	30 ft.	NT102			Ward No. 6	152.36
Tertiary	30 ft.	NT140	Old Customs Road		Ward No. 7	111.77
Tertiary	30 ft.	NT103			Ward No. 6	174.83
Access	20 ft.	NA80			Ward No. 8	254.25
Access	20 ft.	NA106			Ward No. 6	91.08
Access	20 ft.	NA111			Ward No. 6	270.04
Access	20 ft.	NA111			Ward No. 7	16.96
Access	20 ft.	NA112			Ward No. 6	65.37
Access	20 ft.	NA112			Ward No. 7	0.16
Access	20 ft.	NA114			Ward No. 6	43.59
Access	20 ft.	NA115			Ward No. 6	240.33
Access	20 ft.	NA115			Ward No. 7	18.42
Access	20 ft.	NA139			Ward No. 6	251.04
Access	20 ft.	NA166			Ward No. 6	86.17
Access	20 ft.	NA166			Ward No. 7	4.28
Total						**9259.59**

Source: Road Network Plan of Chhatak Pourashava

Table B3: Details of Road Widening Proposals of Chhatak Pourashava (Phase 02: Sixth to Tenth Year of Master Plan)

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Primary	13	100 ft.	402	WP402			Ward No. 3	792.76
Primary	10	80 ft.	421	WP421	Surma River to Bangla Bazar Road		Ward No. 1	37.71
Secondary	23	60 ft.	226	WS226			Ward No. 3	218.19
Secondary	16	60 ft.	2	WS2	Chhatak to Jawar Bazar Road	Embankment Cum Road	Ward No. 4	1021.69
Secondary	7	60 ft.	286	WS286			Ward No. 3	159.93
Secondary	7	60 ft.	286	WS286			Ward No. 3	177.41
Secondary	16	60 ft.	403	WS403			Ward No. 3	138.92
Secondary	11	40 ft.	551	WS551			Ward No. 1	666.20
Secondary	7	40 ft.	538	WS538			Ward No. 1	90.60
Secondary	10	40 ft.	537	WS537	Noari Madrasa to Bangla Bazar Road		Ward No. 1	772.29
Secondary	13	60 ft.	224	WS224	Chhatak to Dowarabazar Road		Proposed Extension Area	1336.86
Secondary	13	60 ft.	224	WS224	Chhatak to Dowarabazar Road		Ward No. 3	112.38
Tertiary	10	30 ft.	227	WT227	Tangagaon Road		Ward No. 3	545.22
Tertiary	8	30 ft.	240	WT240	Railway Colony to Station Road		Ward No. 6	16.46
Tertiary	8	30 ft.	240	WT240	Railway Colony to Station Road		Ward No. 5	181.17
Tertiary	7	30 ft.	557	WT557			Ward No. 7	119.66
Tertiary	11	30 ft.	551	WT551			Ward No. 1	54.34
Tertiary	11	30 ft.	551	WT551			Ward No. 2	1221.48
Tertiary	11	30 ft.	551	WT551			Ward No. 3	312.76
Tertiary	10	30 ft.	545	WT545			Ward No. 1	16.36
Tertiary	10	30 ft.	545	WT545			Ward No. 2	4.76

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Tertiary	10	30 ft.	545	WT545			Ward No. 3	54.71
Tertiary	7	30 ft.	548	WT548			Ward No. 1	74.75
Tertiary	7	30 ft.	538	WT538			Ward No. 1	496.07
Tertiary	7	30 ft.	375	WT375			Ward No. 7	81.96
Tertiary	15	30 ft.	325	WT325	Kutub Uddin Home to Plaza Point		Ward No. 7	259.80
Access	11	20 ft.	11	WA11			Proposed Extension Area	15.60
Access	11	20 ft.	11	WA11			Ward No. 4	557.34
Access	11	20 ft.	11	WA11			Ward No. 5	4.34
Access	11	20 ft.	12	WA12			Proposed Extension Area	14.48
Access	11	20 ft.	12	WA12			Ward No. 4	279.75
Access	8	20 ft.	198	WA198	College Road		Ward No. 5	434.01
Access	7	20 ft.	201	WA201			Ward No. 5	203.39
Access	10	20 ft.	394	WA394			Ward No. 9	70.41
Access	10	20 ft.	394	WA394			Ward No. 8	4.38
Access	7	20 ft.	400	WA400	Robi Babu Home Road		Ward No. 9	97.05
Access	10	20 ft.	422	WA422			Ward No. 2	15.99
Access	10	20 ft.	422	WA422			Ward No. 3	551.84
Access	8	20 ft.	472	WA472			Ward No. 3	331.82
Access	7	20 ft.	543	WA543	CCf 4 No. Bazar to Mahtab Miah Home Road		Ward No. 1	243.13
Access	7	20 ft.	543	WA543	CCf 4 No. Bazar to Mahtab Miah Home Road		Ward No. 3	57.23
Access	7	20 ft.	544	WA544	CCf 4 No. Bazar to Mahtab Miah Home Road		Ward No. 1	67.18
Access	7	20 ft.	544	WA544	CCf 4 No. Bazar to Mahtab Miah Home Road		Ward No. 3	49.35
Access	8	20 ft.	272	WA272	Altab Ali Home Road		Ward No. 9	116.74
Access	8	20 ft.	272	WA272			Ward No. 9	69.68
Access	7	20 ft.	372	WA372			Ward No. 7	202.54
Access	7	20 ft.	286	WA286			Ward No. 3	483.79
Access	7	20 ft.	334	WA334			Ward No. 9	24.36
Access	7	20 ft.	334	WA334			Ward No. 9	92.48
Access	7	20 ft.	334	WA334			Ward No. 9	109.68
Access	10	20 ft.	394	WA394			Ward No. 9	576.73
Access	7	20 ft.	501	WA501			Ward No. 3	24.26
Access	7	20 ft.	501	WA501			Ward No. 3	110.09
Access	7	20 ft.	501	WA501			Ward No. 2	13.54
Access	7	20 ft.	501	WA501			Ward No. 3	42.24
Access	7	20 ft.	548	WA548			Ward No. 1	50.89
Access	7	20 ft.	548	WA548			Ward No. 1	107.20
Access	8	20 ft.	472	WA472			Ward No. 3	211.47
Access	13	20 ft.	254	WA254			Ward No. 5	230.39
Access	10	20 ft.	545	WA545	CCf 4 No. Bazar to Mahtab Miah Home Road		Ward No. 1	137.45
Access	10	20 ft.	545	WA545	CCf 4 No. Bazar to Mahtab Miah Home Road		Ward No. 3	72.69
Access	7	20 ft.	548	WA548			Ward No. 1	228.90
Access	15	20 ft.	325	WA325			Ward No. 7	316.19
Access	8	20 ft.	7	WA7			Ward No. 4	545.01
Access	7	20 ft.	381	WA381			Ward No. 7	458.24
Access	7	20 ft.	128	WA128			Proposed Extension	0.22

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
							Area	
Access	7	20 ft.	128	WA128			Proposed Extension Area	357.37
Access	7	20 ft.	128	WA128			Ward No. 5	388.19
Total								**16932.06**

Source: Road Network Plan of Chhatak Pourashava

Table B4: Details of Proposals New Roads in Road Network Plan of Chhatak Pourashava (Phase 02: Sixth to Tenth Year of Master Plan)

Type of Road	Proposed RoW (ft.)	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Secondary	60 ft.	NS54			Ward No. 3	430.67
Secondary	40 ft.	NS82			Ward No. 8	370.42
Secondary	40 ft.	NS82			Ward No. 7	222.02
Secondary	40 ft.	NS84			Ward No. 9	287.94
Secondary	40 ft.	NS84			Ward No. 7	195.05
Tertiary	30 ft.	NT59			Ward No. 9	409.02
Tertiary	30 ft.	NT59			Ward No. 7	626.86
Tertiary	30 ft.	NT62			Ward No. 8	137.73
Tertiary	30 ft.	NT64			Ward No. 9	478.62
Tertiary	30 ft.	NT64			Ward No. 8	28.98
Tertiary	30 ft.	NT74			Ward No. 5	509.22
Tertiary	30 ft.	NT86			Proposed Extension Area	369.20
Tertiary	30 ft.	NT86			Ward No. 5	1116.92
Tertiary	30 ft.	NT93			Ward No. 7	49.67
Tertiary	30 ft.	NT147			Ward No. 5	450.13
Tertiary	30 ft.	NT165			Ward No. 7	128.48
Tertiary	30 ft.	NT85			Ward No. 7	174.00
Access	20 ft.	NA60			Ward No. 7	220.03
Access	20 ft.	NA70			Ward No. 9	183.10
Access	20 ft.	NA70			Ward No. 8	186.72
Access	20 ft.	NA70			Ward No. 7	103.37
Access	20 ft.	NA76			Ward No. 3	118.50
Access	20 ft.	NA81			Ward No. 9	343.41
Access	20 ft.	NA81			Ward No. 8	292.63
Access	20 ft.	NA83			Ward No. 8	157.80
Access	20 ft.	NA97			Ward No. 5	212.20
Access	20 ft.	NA116			Ward No. 9	473.43
Access	20 ft.	NA116			Ward No. 7	203.23
Access	20 ft.	NA134			Ward No. 3	48.39
Access	20 ft.	NA135			Ward No. 5	515.32
Access	20 ft.	NA136			Ward No. 5	131.74
Access	20 ft.	NA142			Ward No. 5	374.39
Access	20 ft.	NA145			Ward No. 9	432.03
Access	20 ft.	NA161			Ward No. 9	273.13
Access	20 ft.	NA179			Ward No. 3	907.00
Total						**11161.36**

Source: Road Network Plan of Chhatak Pourashava

Table B5: Details of Road Widening Proposals of Chhatak Pourashava (Phase 03: Eleventh to Twentieth Year of Master Plan)

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Secondary	10	60 ft.	175	WS175		Embankment Cum Road	Ward No. 9	345.23
Secondary	7	40 ft.	128	WS128			Proposed Extension Area	558.19
Secondary	7	40 ft.	128	WS128			Proposed Extension	184.40

Type of Road	Existing Crest Width (ft.)	Proposed RoW (ft.)	Existing Road Id	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
							Area	
Secondary	7	40 ft.	128	WS128			Proposed Extension Area	866.08
Tertiary	7	30 ft.	105	WT105			Proposed Extension Area	287.03
Tertiary	7	30 ft.	105	WT105			Ward No. 4	798.41
Tertiary	7	30 ft.	113	WT113			Ward No. 4	166.73
Tertiary	7	30 ft.	105	WT105	Kumna Graveyard Road		Ward No. 4	199.35
Access	8	20 ft.	70	WA70			Ward No. 4	628.39
Access	7	20 ft.	148	WA148			Ward No. 4	592.67
Access	11	20 ft.	160	WA160			Ward No. 5	414.64
Access	8	20 ft.	161	WA161			Ward No. 5	452.80
Access	10	20 ft.	170	WA170			Ward No. 5	79.58
Access	11	20 ft.	187	WA187			Ward No. 5	117.31
Access	7	20 ft.	231	WA231			Ward No. 5	69.65
Access	7	20 ft.	381	WA381			Ward No. 9	93.79
Access	7	20 ft.	381	WA381			Ward No. 7	72.10
Access	7	20 ft.	381	WA381			Ward No. 5	330.38
Access	11	20 ft.	160	WA160			Ward No. 5	156.15
Access	7	20 ft.	148	WA148			Ward No. 4	105.34
Access	10	20 ft.	394	WA394			Ward No. 9	388.66
Total								**6906.87**

Source: Road Network Plan of Chhatak Pourashava

Table B6: Details of Proposals New Roads in Road Network Plan of Chhatak Pourashava (Phase 03: Eleventh to Twentieth Year of Master Plan)

Type of Road	Proposed RoW (ft.)	Proposed Road Id	Road Name	Embankment	Ward No.	Length (m)
Secondary	60 ft.	NS67		Embankment Cum Road	Ward No. 9	957.67
Secondary	60 ft.	NS67		Embankment Cum Road	Ward No. 5	28.64
Secondary	60 ft.	NS68			Ward No. 5	589.97
Secondary	40 ft.	NS88			Proposed Extension Area	865.47
Secondary	40 ft.	NS88			Ward No. 5	1153.41
Secondary	40 ft.	NS148			Proposed Extension Area	877.37
Secondary	40 ft.	NS84			Ward No. 9	442.89
Secondary	40 ft.	NS66		Embankment Cum Road	Proposed Extension Area	183.25
Secondary	40 ft.	NS66		Embankment Cum Road	Ward No. 5	644.10
Tertiary	30 ft.	NT75			Ward No. 9	1104.92
Tertiary	30 ft.	NT75			Ward No. 5	601.77
Tertiary	30 ft.	NT122			Ward No. 4	416.16
Tertiary	30 ft.	NT85			Ward No. 7	73.66
Tertiary	30 ft.	NT85			Ward No. 5	499.06
Tertiary	30 ft.	NT64			Ward No. 9	403.33
Access	20 ft.	NA121			Ward No. 5	155.42
Access	20 ft.	NA144			Ward No. 9	400.51
Access	20 ft.	NA146			Ward No. 9	620.61
Access	20 ft.	NA146			Ward No. 5	599.43
Access	20 ft.	NA81			Ward No. 9	417.85
Total						**11035.48**

Source: Road Network Plan of Chhatak Pourashava

ANNEXURE – C

DETAILS OF DRAINAGE NETWORK PROPOSALS OF CHHATAK POURASHAVA

Table C1: Details of Drainage Network Proposals of Chhatak Pourashava (Phase 01: First to Fifth Year of Master Plan)

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Primary	0	NP447	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 2	95.66
Primary	0	NP455	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 3	343.05
Primary	0	NP148	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 4	1274.56
Primary	0	NP43	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	1362.60
Primary	0	NP58	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	257.34
Primary	0	NP516	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	130.56
Primary	0	NP24	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 6	122.27
Primary	0	NP29	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 6	146.85
Primary	0	NP532	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 6	6.66
Primary	0	NP4	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	194.84
Primary	0	NP42	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	59.51
Primary	0	NP43	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	202.41
Primary	0	NP57	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	268.59
Primary	0	NP58	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	225.31
Primary	0	NP175	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	188.45
Primary	0	NP212	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	2.79
Primary	0	NP376	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	46.83
Primary	0	NP405	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	163.62
Primary	0	NP406	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	242.53
Primary	0	NP411	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	138.91
Primary	0	NP447	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	6.96
Primary	0	NP455	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	7.48
Primary	0	NP509	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	57.43
Primary	0	NP512	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	84.88
Primary	0	NP531	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	72.56
Primary	0	NP532	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	20.06
Primary	0	NP207	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 8	140.91
Primary	0	NP212	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 8	139.07
Primary	0	NP510	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 8	58.21
Primary	0	NP245	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	284.64
Primary	0	NP267	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	278.92
Primary	0	NP273	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	141.16
Primary	0	NP274	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	159.89
Primary	0	NP291	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	125.78
Primary	0	NP308	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	452.57
Primary	0	NP376	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	153.86
Primary	0	NP507	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	12.19
Primary	0	NP43	Proposed	2.3 - 3.8	2.23 - 3.23	Proposed Extension Area	1075.49
Secondary	0	NS443	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	130.47
Secondary	0	NS444	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	123.42
Secondary	0	NS445	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	406.15
Secondary	0	NS446	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	40.32
Secondary	0	NS449	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	0.08
Secondary	0	NS450	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	110.32
Secondary	0	NS453	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	83.07
Secondary	0	NS477	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	195.44
Secondary	0	NS525	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	71.57
Secondary	0	NS448	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	267.57
Secondary	0	NS449	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	63.85
Secondary	0	NS450	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	61.39
Secondary	0	NS453	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	270.89
Secondary	0	NS460	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	163.43
Secondary	0	NS461	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	219.67
Secondary	0	NS477	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	224.04
Secondary	0	NS521	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	6.84
Secondary	0	NS141	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	485.75

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Secondary	0	NS142	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	368.76
Secondary	0	NS513	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	96.44
Secondary	0	NS76	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	31.68
Secondary	0	NS85	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	233.97
Secondary	0	NS121	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	456.23
Secondary	0	NS122	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	355.07
Secondary	0	NS132	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	72.47
Secondary	0	NS139	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	212.96
Secondary	0	NS142	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	39.23
Secondary	0	NS514	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	700.29
Secondary	0	NS528	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	4.43
Secondary	0	NS15	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	69.50
Secondary	0	NS20	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	228.08
Secondary	0	NS23	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	60.56
Secondary	0	NS25	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	149.01
Secondary	0	NS28	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	4.12
Secondary	0	NS30	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	188.31
Secondary	0	NS34	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	165.36
Secondary	0	NS35	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	73.72
Secondary	0	NS36	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	72.13
Secondary	0	NS44	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	209.61
Secondary	0	NS48	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	139.88
Secondary	0	NS50	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	35.10
Secondary	0	NS51	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	139.83
Secondary	0	NS56	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	207.12
Secondary	0	NS59	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	206.70
Secondary	0	NS60	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	152.75
Secondary	0	NS61	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	153.05
Secondary	0	NS64	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	83.60
Secondary	0	NS66	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	105.02
Secondary	0	NS67	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	83.92
Secondary	0	NS74	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	76.56
Secondary	0	NS76	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	216.49
Secondary	0	NS82	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	84.56
Secondary	0	NS83	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	169.19
Secondary	0	NS84	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	54.24
Secondary	0	NS100	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	92.07
Secondary	0	NS514	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	202.01
Secondary	0	NS528	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	155.69
Secondary	0	NS530	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	7.39
Secondary	0	NS535	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 6	77.96
Secondary	0	NS1	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	250.32
Secondary	0	NS15	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	26.78
Secondary	0	NS17	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	182.95
Secondary	0	NS28	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	17.84
Secondary	0	NS35	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	4.51
Secondary	0	NS48	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	4.28
Secondary	0	NS51	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	4.37
Secondary	0	NS60	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	4.60
Secondary	0	NS61	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	5.36
Secondary	0	NS162	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	95.85
Secondary	0	NS165	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	70.07
Secondary	0	NS166	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	168.09
Secondary	0	NS176	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	311.69
Secondary	0	NS178	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	199.23
Secondary	0	NS193	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	265.91
Secondary	0	NS219	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	67.39
Secondary	0	NS373	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	46.02
Secondary	0	NS417	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	293.45
Secondary	0	NS419	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	243.46
Secondary	0	NS535	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	2.36
Secondary	0	NS536	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	65.86

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Secondary	0	NS193	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	7.33
Secondary	0	NS195	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	114.64
Secondary	0	NS196	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	91.66
Secondary	0	NS204	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	249.28
Secondary	0	NS205	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	162.01
Secondary	0	NS209	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	61.09
Secondary	0	NS210	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	261.56
Secondary	0	NS215	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	9.97
Secondary	0	NS216	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	2.75
Secondary	0	NS217	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	145.51
Secondary	0	NS219	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	74.08
Secondary	0	NS215	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	94.30
Secondary	0	NS216	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	105.64
Secondary	0	NS263	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	182.29
Secondary	0	NS264	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	79.96
Secondary	0	NS268	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	172.62
Secondary	0	NS269	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	191.27
Secondary	0	NS295	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	53.75
Secondary	0	NS296	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	125.86
Secondary	0	NS297	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	141.28
Secondary	0	NS298	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	160.20
Secondary	0	NS345	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	232.29
Secondary	0	NS373	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	155.07
Secondary	0	NS121	Proposed	2.35 - 3.35	1.12 - 2.12	Proposed Extension Area	245.35
Secondary	0	NS142	Proposed	2.35 - 3.35	1.12 - 2.12	Proposed Extension Area	251.72
Tertiary	0	NT441	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 2	746.17
Tertiary	0	NT442	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 2	95.81
Tertiary	0	NT441	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	219.28
Tertiary	0	NT140	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	31.40
Tertiary	0	NT143	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	423.72
Tertiary	0	NT161	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	315.36
Tertiary	0	NT86	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	266.57
Tertiary	0	NT140	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	188.01
Tertiary	0	NT5	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	59.38
Tertiary	0	NT10	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	50.03
Tertiary	0	NT12	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	1.56
Tertiary	0	NT13	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	257.97
Tertiary	0	NT21	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	95.69
Tertiary	0	NT26	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	90.60
Tertiary	0	NT27	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	86.67
Tertiary	0	NT33	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	167.10
Tertiary	0	NT39	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	55.42
Tertiary	0	NT45	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	54.41
Tertiary	0	NT49	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	35.87
Tertiary	0	NT52	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	71.52
Tertiary	0	NT53	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	97.93
Tertiary	0	NT55	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	84.52
Tertiary	0	NT62	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	53.08
Tertiary	0	NT63	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	53.43
Tertiary	0	NT65	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	105.93
Tertiary	0	NT70	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	303.08
Tertiary	0	NT71	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	57.46
Tertiary	0	NT73	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	83.57
Tertiary	0	NT75	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	251.57
Tertiary	0	NT77	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	129.28
Tertiary	0	NT78	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	126.68
Tertiary	0	NT79	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	126.73
Tertiary	0	NT81	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	87.59
Tertiary	0	NT87	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	182.73
Tertiary	0	NT529	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	113.13
Tertiary	0	NT533	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 6	8.08

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Tertiary	0	NT5	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	37.73
Tertiary	0	NT10	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	3.17
Tertiary	0	NT12	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	6.09
Tertiary	0	NT163	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	243.28
Tertiary	0	NT167	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	154.81
Tertiary	0	NT168	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	91.49
Tertiary	0	NT171	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	144.88
Tertiary	0	NT172	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	272.34
Tertiary	0	NT173	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	280.94
Tertiary	0	NT174	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	140.84
Tertiary	0	NT206	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	87.81
Tertiary	0	NT213	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	125.46
Tertiary	0	NT214	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	123.70
Tertiary	0	NT218	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	0.05
Tertiary	0	NT218	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	129.94
Tertiary	0	NT248	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	167.37
Tertiary	0	NT292	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	194.58
Tertiary	0	NT293	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	48.34
Tertiary	0	NT294	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	128.09
Quaternary	0	NQ501	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	57.66
Quaternary	0	NQ9	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	84.02
Quaternary	0	NQ11	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	135.96
Quaternary	0	NQ19	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	127.54
Quaternary	0	NQ22	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	67.78
Quaternary	0	NQ31	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	161.04
Quaternary	0	NQ32	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	107.44
Quaternary	0	NQ37	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	191.39
Quaternary	0	NQ80	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 6	241.46
Quaternary	0	NQ3	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 7	163.91
Quaternary	0	NQ9	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 7	0.39
Quaternary	0	NQ201	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 8	87.58
Quaternary	0	NQ254	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	153.41
Total							**32744.47**

Source: Drainage and Environmental Management Plan

Table C2: Details of Drainage Network Proposals of Chhatak Pourashava (Phase 02: Sixth to Tenth Year of Master Plan)

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Primary	0	NP538	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 4	172.57
Primary	0	NP199	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 7	41.37
Primary	0	NP197	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 8	251.55
Primary	0	NP199	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 8	227.94
Primary	0	NP511	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 8	12.20
Primary	0	NP538	Proposed	2.3 - 3.8	2.23 - 3.23	Proposed Extension Area	200.60
Secondary	0	NS440	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 2	984.48
Secondary	0	NS440	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	335.43
Secondary	0	NS458	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	292.52
Secondary	0	NS462	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	226.64
Secondary	0	NS478	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	22.44
Secondary	0	NS479	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	20.34
Secondary	0	NS482	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	195.86
Secondary	0	NS483	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	138.97
Secondary	0	NS492	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	162.01
Secondary	0	NS497	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	109.51
Secondary	0	NS498	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	141.16
Secondary	0	NS522	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	6.49
Secondary	0	NS524	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 3	284.23
Secondary	0	NS504	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	433.10
Secondary	0	NS88	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	1077.22
Secondary	0	NS92	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	487.30
Secondary	0	NS93	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	366.93
Secondary	0	NS101	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	490.87

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Secondary	0	NS109	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	365.35
Secondary	0	NS110	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	320.78
Secondary	0	NS114	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	155.04
Secondary	0	NS115	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	162.79
Secondary	0	NS116	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	171.91
Secondary	0	NS117	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	185.03
Secondary	0	NS118	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	186.30
Secondary	0	NS119	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	428.65
Secondary	0	NS120	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	231.53
Secondary	0	NS164	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	222.12
Secondary	0	NS169	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	463.17
Secondary	0	NS189	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	36.60
Secondary	0	NS190	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	153.75
Secondary	0	NS192	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	32.54
Secondary	0	NS194	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	134.52
Secondary	0	NS198	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	32.60
Secondary	0	NS211	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	42.76
Secondary	0	NS220	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	135.77
Secondary	0	NS377	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	177.52
Secondary	0	NS378	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	85.08
Secondary	0	NS384	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	184.87
Secondary	0	NS404	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	139.26
Secondary	0	NS407	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	176.74
Secondary	0	NS408	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	163.35
Secondary	0	NS409	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	109.77
Secondary	0	NS410	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	161.45
Secondary	0	NS412	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	161.38
Secondary	0	NS413	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	163.26
Secondary	0	NS414	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	148.12
Secondary	0	NS415	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	110.07
Secondary	0	NS440	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	3.04
Secondary	0	NS192	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	131.27
Secondary	0	NS198	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	133.73
Secondary	0	NS200	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	60.25
Secondary	0	NS202	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	93.11
Secondary	0	NS211	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 8	220.84
Secondary	0	NS185	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	86.59
Secondary	0	NS186	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	94.61
Secondary	0	NS187	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	181.02
Secondary	0	NS189	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	103.25
Secondary	0	NS241	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	127.76
Secondary	0	NS242	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	139.11
Secondary	0	NS243	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	153.25
Secondary	0	NS244	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	140.33
Secondary	0	NS259	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	61.11
Secondary	0	NS260	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	128.67
Secondary	0	NS261	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	79.52
Secondary	0	NS262	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	36.82
Secondary	0	NS270	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	140.21
Secondary	0	NS271	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	147.47
Secondary	0	NS272	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	136.04
Secondary	0	NS284	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	96.43
Secondary	0	NS285	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	98.36
Secondary	0	NS378	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	109.75
Secondary	0	NS508	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	36.97
Secondary	0	NS120	Proposed	2.35 - 3.35	1.12 - 2.12	Proposed Extension Area	8.87
Tertiary	0	NT476	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 1	78.96
Tertiary	0	NT502	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 1	6.05
Tertiary	0	NT503	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 1	773.53
Tertiary	0	NT451	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 2	8.34
Tertiary	0	NT452	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 2	7.33
Tertiary	0	NT451	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	198.27

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Tertiary	0	NT452	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	221.23
Tertiary	0	NT454	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	37.77
Tertiary	0	NT456	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	192.40
Tertiary	0	NT457	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	197.00
Tertiary	0	NT459	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	36.57
Tertiary	0	NT463	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	323.52
Tertiary	0	NT464	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	208.90
Tertiary	0	NT480	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	207.75
Tertiary	0	NT481	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	320.59
Tertiary	0	NT490	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	26.77
Tertiary	0	NT491	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	161.72
Tertiary	0	NT494	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	135.06
Tertiary	0	NT495	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	106.37
Tertiary	0	NT499	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	414.07
Tertiary	0	NT500	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	85.56
Tertiary	0	NT523	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 3	6.68
Tertiary	0	NT89	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	122.38
Tertiary	0	NT90	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	118.69
Tertiary	0	NT91	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	123.65
Tertiary	0	NT94	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	107.40
Tertiary	0	NT95	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	62.76
Tertiary	0	NT96	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	102.52
Tertiary	0	NT97	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	64.92
Tertiary	0	NT98	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	124.73
Tertiary	0	NT99	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	124.10
Tertiary	0	NT102	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	94.01
Tertiary	0	NT103	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	93.25
Tertiary	0	NT104	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	50.44
Tertiary	0	NT105	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	44.49
Tertiary	0	NT106	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	55.75
Tertiary	0	NT107	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	39.89
Tertiary	0	NT108	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	366.53
Tertiary	0	NT111	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	101.75
Tertiary	0	NT112	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	350.35
Tertiary	0	NT113	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	349.36
Tertiary	0	NT191	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	143.73
Tertiary	0	NT229	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	97.11
Tertiary	0	NT234	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	96.76
Tertiary	0	NT379	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	86.54
Tertiary	0	NT380	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	118.38
Tertiary	0	NT381	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	191.32
Tertiary	0	NT382	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	191.18
Tertiary	0	NT383	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	140.05
Tertiary	0	NT388	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	142.13
Tertiary	0	NT389	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	77.31
Tertiary	0	NT390	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	121.20
Tertiary	0	NT391	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	42.29
Tertiary	0	NT392	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	109.50
Tertiary	0	NT393	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	109.59
Tertiary	0	NT394	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	45.67
Tertiary	0	NT395	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	117.18
Tertiary	0	NT396	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	78.93
Tertiary	0	NT397	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	198.52
Tertiary	0	NT398	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	42.42
Tertiary	0	NT399	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	72.84
Tertiary	0	NT400	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	74.77
Tertiary	0	NT401	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	43.28
Tertiary	0	NT402	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	198.86
Tertiary	0	NT403	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	139.70
Tertiary	0	NT416	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	122.12
Tertiary	0	NT203	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	60.44
Tertiary	0	NT221	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	136.66

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Tertiary	0	NT222	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	136.46
Tertiary	0	NT225	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	130.46
Tertiary	0	NT228	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	126.09
Tertiary	0	NT229	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	40.67
Tertiary	0	NT230	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	131.15
Tertiary	0	NT234	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	40.42
Tertiary	0	NT364	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 8	25.68
Tertiary	0	NT188	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	127.86
Tertiary	0	NT191	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	11.86
Tertiary	0	NT223	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	41.36
Tertiary	0	NT224	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	70.13
Tertiary	0	NT226	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	41.63
Tertiary	0	NT227	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	70.22
Tertiary	0	NT228	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	3.36
Tertiary	0	NT231	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.24
Tertiary	0	NT232	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	86.25
Tertiary	0	NT233	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	50.04
Tertiary	0	NT235	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	50.15
Tertiary	0	NT236	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	89.19
Tertiary	0	NT239	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	120.23
Tertiary	0	NT240	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	176.09
Tertiary	0	NT246	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	79.72
Tertiary	0	NT247	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	58.66
Tertiary	0	NT265	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	115.89
Tertiary	0	NT266	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	106.39
Tertiary	0	NT275	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	150.66
Tertiary	0	NT276	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	92.62
Tertiary	0	NT277	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	92.86
Tertiary	0	NT278	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	130.88
Tertiary	0	NT279	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	98.10
Tertiary	0	NT280	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	90.42
Tertiary	0	NT281	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	150.45
Tertiary	0	NT282	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	90.69
Tertiary	0	NT283	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	130.81
Tertiary	0	NT286	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.42
Tertiary	0	NT287	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	111.93
Tertiary	0	NT288	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	98.46
Tertiary	0	NT289	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.04
Tertiary	0	NT290	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	103.34
Tertiary	0	NT350	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	120.61
Tertiary	0	NT353	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	128.03
Tertiary	0	NT355	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	129.20
Tertiary	0	NT356	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	129.80
Tertiary	0	NT357	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	129.32
Tertiary	0	NT363	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.59
Tertiary	0	NT364	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	136.32
Tertiary	0	NT365	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	62.47
Tertiary	0	NT366	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	162.35
Tertiary	0	NT379	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	108.02
Quaternary	0	NQ465	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	180.94
Quaternary	0	NQ468	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	249.24
Quaternary	0	NQ469	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	86.48
Quaternary	0	NQ470	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	30.57
Quaternary	0	NQ472	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	140.37
Quaternary	0	NQ473	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	60.76
Quaternary	0	NQ474	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	355.94
Quaternary	0	NQ475	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 1	403.54
Quaternary	0	NQ486	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 2	0.35
Quaternary	0	NQ487	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 2	6.56
Quaternary	0	NQ465	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	32.55
Quaternary	0	NQ466	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	78.39
Quaternary	0	NQ467	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	113.52

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Quaternary	0	NQ468	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	41.04
Quaternary	0	NQ471	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	204.44
Quaternary	0	NQ484	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	20.87
Quaternary	0	NQ485	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	112.23
Quaternary	0	NQ486	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	42.03
Quaternary	0	NQ487	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	42.39
Quaternary	0	NQ488	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	107.84
Quaternary	0	NQ489	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	21.68
Quaternary	0	NQ493	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	383.58
Quaternary	0	NQ496	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 3	398.14
Quaternary	0	NQ237	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 8	131.44
Quaternary	0	NQ360	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 8	145.30
Quaternary	0	NQ361	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 8	145.05
Quaternary	0	NQ238	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	64.08
Quaternary	0	NQ249	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	44.97
Quaternary	0	NQ250	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	92.53
Quaternary	0	NQ251	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	21.91
Quaternary	0	NQ252	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	21.61
Quaternary	0	NQ253	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	80.55
Quaternary	0	NQ255	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	84.83
Quaternary	0	NQ256	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	24.33
Quaternary	0	NQ257	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	105.22
Quaternary	0	NQ258	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	45.14
Quaternary	0	NQ351	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	169.35
Quaternary	0	NQ352	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	130.62
Quaternary	0	NQ354	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	130.78
Quaternary	0	NQ358	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	143.27
Quaternary	0	NQ359	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	129.85
Quaternary	0	NQ360	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	4.25
Quaternary	0	NQ361	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	4.21
Quaternary	0	NQ362	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	143.03
Total							**33780.48**

Source: Drainage and Environmental Management Plan

Table C3: Drainage Network Proposals of Chhatak Pourashava (Phase 03: Eleventh to Twentieth Year of Master Plan)

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Primary	0	NP370	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	22.37
Primary	0	NP421	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	260.66
Primary	0	NP424	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	121.87
Primary	0	NP515	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	25.17
Primary	0	NP517	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	118.72
Primary	0	NP518	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 5	464.39
Primary	0	NP301	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	165.92
Primary	0	NP302	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	143.35
Primary	0	NP304	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	137.67
Primary	0	NP306	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	184.72
Primary	0	NP370	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	185.85
Primary	0	NP506	Proposed	2.3 - 3.8	2.23 - 3.23	Ward No. 9	12.22
Secondary	0	NS149	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	256.89
Secondary	0	NS150	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	257.15
Secondary	0	NS151	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	258.21
Secondary	0	NS152	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	258.65
Secondary	0	NS156	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	449.82
Secondary	0	NS157	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	335.80
Secondary	0	NS158	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 4	334.32
Secondary	0	NS126	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	134.96
Secondary	0	NS385	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	249.75
Secondary	0	NS387	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	23.47
Secondary	0	NS425	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	257.63
Secondary	0	NS432	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	294.73
Secondary	0	NS433	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	294.70
Secondary	0	NS434	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	94.42

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Secondary	0	NS437	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	539.34
Secondary	0	NS439	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	251.91
Secondary	0	NS519	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	76.45
Secondary	0	NS520	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	321.18
Secondary	0	NS526	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	6.57
Secondary	0	NS527	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	6.79
Secondary	0	NS537	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 5	148.25
Secondary	0	NS434	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 7	67.74
Secondary	0	NS179	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	186.08
Secondary	0	NS182	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	97.46
Secondary	0	NS183	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	128.70
Secondary	0	NS184	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	134.46
Secondary	0	NS300	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	166.13
Secondary	0	NS303	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	143.43
Secondary	0	NS305	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	138.18
Secondary	0	NS307	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	185.13
Secondary	0	NS309	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	279.39
Secondary	0	NS369	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	220.90
Secondary	0	NS387	Proposed	2.35 - 3.35	1.12 - 2.12	Ward No. 9	17.74
Tertiary	0	NT144	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	405.70
Tertiary	0	NT145	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	409.47
Tertiary	0	NT146	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	288.79
Tertiary	0	NT147	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	286.17
Tertiary	0	NT153	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	456.96
Tertiary	0	NT154	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	227.57
Tertiary	0	NT155	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	280.84
Tertiary	0	NT159	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	217.06
Tertiary	0	NT160	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 4	277.53
Tertiary	0	NT123	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	209.41
Tertiary	0	NT124	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	202.96
Tertiary	0	NT125	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	58.08
Tertiary	0	NT127	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	76.37
Tertiary	0	NT128	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	80.57
Tertiary	0	NT129	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	105.57
Tertiary	0	NT130	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	100.49
Tertiary	0	NT134	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	87.85
Tertiary	0	NT135	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	297.54
Tertiary	0	NT136	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	9.13
Tertiary	0	NT137	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	101.16
Tertiary	0	NT138	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	380.54
Tertiary	0	NT367	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	114.71
Tertiary	0	NT368	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	21.80
Tertiary	0	NT371	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	30.86
Tertiary	0	NT372	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	120.11
Tertiary	0	NT374	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	32.26
Tertiary	0	NT375	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	66.49
Tertiary	0	NT386	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	314.92
Tertiary	0	NT418	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	67.05
Tertiary	0	NT420	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	245.89
Tertiary	0	NT422	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	120.78
Tertiary	0	NT423	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	246.30
Tertiary	0	NT426	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	255.15
Tertiary	0	NT427	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	146.44
Tertiary	0	NT428	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	258.96
Tertiary	0	NT429	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	297.69
Tertiary	0	NT430	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	297.40
Tertiary	0	NT431	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	122.17
Tertiary	0	NT435	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	15.16
Tertiary	0	NT436	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	78.63
Tertiary	0	NT438	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 5	26.31
Tertiary	0	NT375	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	63.94
Tertiary	0	NT418	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	64.16

Type of Drain	Existing Id	Proposed Id	Proposal Status	Proposed Width (m)	Proposed Depth (m)	Ward No.	Length (m)
Tertiary	0	NT435	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 7	67.48
Tertiary	0	NT180	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	187.23
Tertiary	0	NT181	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	96.52
Tertiary	0	NT299	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	169.88
Tertiary	0	NT310	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	165.06
Tertiary	0	NT311	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	165.52
Tertiary	0	NT312	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	326.81
Tertiary	0	NT313	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	70.65
Tertiary	0	NT314	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	153.77
Tertiary	0	NT315	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	161.40
Tertiary	0	NT316	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	169.31
Tertiary	0	NT317	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	160.94
Tertiary	0	NT318	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	153.47
Tertiary	0	NT319	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	92.62
Tertiary	0	NT320	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	71.07
Tertiary	0	NT321	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	67.27
Tertiary	0	NT322	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	84.16
Tertiary	0	NT323	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	85.69
Tertiary	0	NT324	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	86.67
Tertiary	0	NT325	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.54
Tertiary	0	NT326	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	91.21
Tertiary	0	NT327	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	133.24
Tertiary	0	NT328	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	157.35
Tertiary	0	NT329	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	157.20
Tertiary	0	NT330	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	121.76
Tertiary	0	NT331	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	123.75
Tertiary	0	NT332	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	124.49
Tertiary	0	NT334	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	104.69
Tertiary	0	NT335	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	104.70
Tertiary	0	NT337	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	82.61
Tertiary	0	NT338	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.88
Tertiary	0	NT339	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	123.60
Tertiary	0	NT340	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	86.96
Tertiary	0	NT341	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	133.30
Tertiary	0	NT342	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	126.06
Tertiary	0	NT343	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	125.96
Tertiary	0	NT344	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	91.40
Tertiary	0	NT346	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	85.81
Tertiary	0	NT347	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	63.44
Tertiary	0	NT348	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	70.96
Tertiary	0	NT349	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	92.05
Tertiary	0	NT367	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	97.50
Tertiary	0	NT368	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	186.68
Tertiary	0	NT371	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	173.65
Tertiary	0	NT374	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	172.07
Tertiary	0	NT427	Proposed	1.5 - 2.5	0.64 - 1.00	Ward No. 9	66.70
Quaternary	0	NQ333	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	105.35
Quaternary	0	NQ336	Proposed	0.25 - 0.85	0.30 - 1.10	Ward No. 9	105.53
Total							**21923.16**

Source: Drainage and Environmental Management Plan

ANNEXURE – D

INVENTORY OF UTILITY SERVICE NETWORK PLAN OF CHHATAK POURASHAVA

Table D1: Inventory of Utility Network Proposal of Chhatak Pourashava (Phase 01: First to Fifth Year of Master Plan)

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Water Supply Network	NWat - 418	Proposed	Ward No. 1	77.56
Water Supply Network	NWat - 385	Proposed	Ward No. 2	4.71
Water Supply Network	NWat - 396	Proposed	Ward No. 2	105.40
Water Supply Network	NWat - 398	Proposed	Ward No. 2	3.15
Water Supply Network	NWat - 399	Proposed	Ward No. 2	3.20
Water Supply Network	NWat - 410	Proposed	Ward No. 2	248.80
Water Supply Network	NWat - 415	Proposed	Ward No. 2	736.25
Water Supply Network	NWat - 416	Proposed	Ward No. 2	883.33
Water Supply Network	NWat - 418	Proposed	Ward No. 2	1454.96
Water Supply Network	NWat - 381	Proposed	Ward No. 3	177.40
Water Supply Network	NWat - 385	Proposed	Ward No. 3	156.49
Water Supply Network	NWat - 414	Proposed	Ward No. 3	1569.19
Water Supply Network	NWat - 415	Proposed	Ward No. 3	240.10
Water Supply Network	NWat - 416	Proposed	Ward No. 3	332.87
Water Supply Network	NWat - 16	Proposed	Ward No. 4	451.44
Water Supply Network	NWat - 19	Proposed	Ward No. 4	128.97
Water Supply Network	NWat - 24	Proposed	Ward No. 4	74.55
Water Supply Network	NWat - 29	Proposed	Ward No. 4	97.04
Water Supply Network	NWat - 37	Proposed	Ward No. 4	138.17
Water Supply Network	NWat - 44	Proposed	Ward No. 4	53.33
Water Supply Network	NWat - 43	Proposed	Ward No. 5	326.16
Water Supply Network	NWat - 44	Proposed	Ward No. 5	167.60
Water Supply Network	NWat - 51	Proposed	Ward No. 5	12.69
Water Supply Network	NWat - 98	Proposed	Ward No. 5	309.54
Water Supply Network	NWat - 99	Proposed	Ward No. 5	303.78
Water Supply Network	NWat - 101	Proposed	Ward No. 5	12.81
Water Supply Network	NWat - 102	Proposed	Ward No. 5	5.40
Water Supply Network	NWat - 108	Proposed	Ward No. 5	376.26
Water Supply Network	NWat - 109	Proposed	Ward No. 5	88.02
Water Supply Network	NWat - 113	Proposed	Ward No. 5	13.43
Water Supply Network	NWat - 126	Proposed	Ward No. 5	129.95
Water Supply Network	NWat - 141	Proposed	Ward No. 5	674.36
Water Supply Network	NWat - 145	Proposed	Ward No. 5	140.08
Water Supply Network	NWat - 147	Proposed	Ward No. 5	14.70
Water Supply Network	NWat - 148	Proposed	Ward No. 5	175.95
Water Supply Network	NWat - 149	Proposed	Ward No. 5	19.76
Water Supply Network	NWat - 152	Proposed	Ward No. 5	17.46
Water Supply Network	NWat - 154	Proposed	Ward No. 5	225.04
Water Supply Network	NWat - 163	Proposed	Ward No. 5	155.61
Water Supply Network	NWat - 165	Proposed	Ward No. 5	0.87
Water Supply Network	NWat - 167	Proposed	Ward No. 5	130.87
Water Supply Network	NWat - 168	Proposed	Ward No. 5	68.10
Water Supply Network	NWat - 169	Proposed	Ward No. 5	14.79
Water Supply Network	NWat - 170	Proposed	Ward No. 5	1.71
Water Supply Network	NWat - 172	Proposed	Ward No. 5	125.02
Water Supply Network	NWat - 173	Proposed	Ward No. 5	118.93
Water Supply Network	NWat - 174	Proposed	Ward No. 5	29.47
Water Supply Network	NWat - 188	Proposed	Ward No. 5	121.71
Water Supply Network	NWat - 189	Proposed	Ward No. 5	140.11
Water Supply Network	NWat - 211	Proposed	Ward No. 5	339.51
Water Supply Network	NWat - 165	Proposed	Ward No. 6	4.67
Water Supply Network	NWat - 170	Proposed	Ward No. 6	3.63

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Water Supply Network	NWat - 188	Proposed	Ward No. 6	0.88
Water Supply Network	NWat - 189	Proposed	Ward No. 6	0.72
Water Supply Network	NWat - 190	Proposed	Ward No. 6	8.36
Water Supply Network	NWat - 200	Proposed	Ward No. 6	155.28
Water Supply Network	NWat - 201	Proposed	Ward No. 6	133.61
Water Supply Network	NWat - 202	Proposed	Ward No. 6	5.56
Water Supply Network	NWat - 205	Proposed	Ward No. 6	136.85
Water Supply Network	NWat - 206	Proposed	Ward No. 6	77.75
Water Supply Network	NWat - 211	Proposed	Ward No. 6	98.72
Water Supply Network	NWat - 214	Proposed	Ward No. 6	113.39
Water Supply Network	NWat - 219	Proposed	Ward No. 6	109.81
Water Supply Network	NWat - 224	Proposed	Ward No. 6	207.69
Water Supply Network	NWat - 225	Proposed	Ward No. 6	6.85
Water Supply Network	NWat - 226	Proposed	Ward No. 6	112.89
Water Supply Network	NWat - 227	Proposed	Ward No. 6	86.09
Water Supply Network	NWat - 231	Proposed	Ward No. 6	114.41
Water Supply Network	NWat - 234	Proposed	Ward No. 6	74.19
Water Supply Network	NWat - 239	Proposed	Ward No. 6	4.19
Water Supply Network	NWat - 240	Proposed	Ward No. 6	152.09
Water Supply Network	NWat - 245	Proposed	Ward No. 6	148.85
Water Supply Network	NWat - 246	Proposed	Ward No. 6	5.86
Water Supply Network	NWat - 253	Proposed	Ward No. 6	67.34
Water Supply Network	NWat - 261	Proposed	Ward No. 6	25.79
Water Supply Network	NWat - 262	Proposed	Ward No. 6	4.24
Water Supply Network	NWat - 265	Proposed	Ward No. 6	31.56
Water Supply Network	NWat - 266	Proposed	Ward No. 6	115.58
Water Supply Network	NWat - 267	Proposed	Ward No. 6	290.06
Water Supply Network	NWat - 268	Proposed	Ward No. 6	12.33
Water Supply Network	NWat - 269	Proposed	Ward No. 6	138.09
Water Supply Network	NWat - 270	Proposed	Ward No. 6	0.02
Water Supply Network	NWat - 285	Proposed	Ward No. 6	248.18
Water Supply Network	NWat - 289	Proposed	Ward No. 6	110.65
Water Supply Network	NWat - 290	Proposed	Ward No. 6	6.63
Water Supply Network	NWat - 293	Proposed	Ward No. 6	170.70
Water Supply Network	NWat - 294	Proposed	Ward No. 6	91.92
Water Supply Network	NWat - 326	Proposed	Ward No. 6	188.30
Water Supply Network	NWat - 327	Proposed	Ward No. 6	197.35
Water Supply Network	NWat - 328	Proposed	Ward No. 6	5.39
Water Supply Network	NWat - 336	Proposed	Ward No. 6	175.63
Water Supply Network	NWat - 337	Proposed	Ward No. 6	50.14
Water Supply Network	NWat - 341	Proposed	Ward No. 6	13.22
Water Supply Network	NWat - 342	Proposed	Ward No. 6	137.50
Water Supply Network	NWat - 343	Proposed	Ward No. 6	4.53
Water Supply Network	NWat - 346	Proposed	Ward No. 6	57.48
Water Supply Network	NWat - 350	Proposed	Ward No. 6	8.41
Water Supply Network	NWat - 351	Proposed	Ward No. 6	6.70
Water Supply Network	NWat - 359	Proposed	Ward No. 6	51.48
Water Supply Network	NWat - 362	Proposed	Ward No. 6	0.46
Water Supply Network	NWat - 364	Proposed	Ward No. 6	82.47
Water Supply Network	NWat - 377	Proposed	Ward No. 6	442.49
Water Supply Network	NWat - 154	Proposed	Ward No. 7	68.91
Water Supply Network	NWat - 155	Proposed	Ward No. 7	290.59
Water Supply Network	NWat - 158	Proposed	Ward No. 7	4.98
Water Supply Network	NWat - 159	Proposed	Ward No. 7	7.66
Water Supply Network	NWat - 174	Proposed	Ward No. 7	58.56
Water Supply Network	NWat - 175	Proposed	Ward No. 7	299.58
Water Supply Network	NWat - 180	Proposed	Ward No. 7	8.41
Water Supply Network	NWat - 192	Proposed	Ward No. 7	21.18

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Water Supply Network	NWat - 194	Proposed	Ward No. 7	14.14
Water Supply Network	NWat - 200	Proposed	Ward No. 7	13.79
Water Supply Network	NWat - 203	Proposed	Ward No. 7	174.56
Water Supply Network	NWat - 212	Proposed	Ward No. 7	145.84
Water Supply Network	NWat - 213	Proposed	Ward No. 7	299.82
Water Supply Network	NWat - 228	Proposed	Ward No. 7	36.11
Water Supply Network	NWat - 230	Proposed	Ward No. 7	13.24
Water Supply Network	NWat - 240	Proposed	Ward No. 7	13.76
Water Supply Network	NWat - 301	Proposed	Ward No. 7	233.56
Water Supply Network	NWat - 308	Proposed	Ward No. 7	139.11
Water Supply Network	NWat - 312	Proposed	Ward No. 7	5.59
Water Supply Network	NWat - 313	Proposed	Ward No. 7	3.19
Water Supply Network	NWat - 315	Proposed	Ward No. 7	7.69
Water Supply Network	NWat - 330	Proposed	Ward No. 7	192.59
Water Supply Network	NWat - 331	Proposed	Ward No. 7	51.74
Water Supply Network	NWat - 334	Proposed	Ward No. 7	16.80
Water Supply Network	NWat - 335	Proposed	Ward No. 7	8.39
Water Supply Network	NWat - 341	Proposed	Ward No. 7	13.73
Water Supply Network	NWat - 346	Proposed	Ward No. 7	16.39
Water Supply Network	NWat - 359	Proposed	Ward No. 7	4.50
Water Supply Network	NWat - 362	Proposed	Ward No. 7	383.46
Water Supply Network	NWat - 364	Proposed	Ward No. 7	21.35
Water Supply Network	NWat - 365	Proposed	Ward No. 7	11.07
Water Supply Network	NWat - 368	Proposed	Ward No. 7	143.50
Water Supply Network	NWat - 375	Proposed	Ward No. 7	13.34
Water Supply Network	NWat - 376	Proposed	Ward No. 7	144.54
Water Supply Network	NWat - 377	Proposed	Ward No. 7	477.34
Water Supply Network	NWat - 388	Proposed	Ward No. 7	303.65
Water Supply Network	NWat - 393	Proposed	Ward No. 7	478.88
Water Supply Network	NWat - 394	Proposed	Ward No. 7	8.44
Water Supply Network	NWat - 402	Proposed	Ward No. 7	76.54
Water Supply Network	NWat - 408	Proposed	Ward No. 7	283.72
Water Supply Network	NWat - 298	Proposed	Ward No. 8	132.63
Water Supply Network	NWat - 303	Proposed	Ward No. 8	6.06
Water Supply Network	NWat - 304	Proposed	Ward No. 8	0.02
Water Supply Network	NWat - 313	Proposed	Ward No. 8	283.95
Water Supply Network	NWat - 319	Proposed	Ward No. 8	205.90
Water Supply Network	NWat - 321	Proposed	Ward No. 8	0.08
Water Supply Network	NWat - 402	Proposed	Ward No. 8	365.05
Water Supply Network	NWat - 407	Proposed	Ward No. 8	8.41
Water Supply Network	NWat - 408	Proposed	Ward No. 8	668.74
Water Supply Network	NWat - 63	Proposed	Ward No. 9	763.96
Water Supply Network	NWat - 65	Proposed	Ward No. 9	8.55
Water Supply Network	NWat - 68	Proposed	Ward No. 9	597.00
Water Supply Network	NWat - 114	Proposed	Ward No. 9	220.99
Water Supply Network	NWat - 115	Proposed	Ward No. 9	545.34
Water Supply Network	NWat - 119	Proposed	Ward No. 9	6.01
Water Supply Network	NWat - 122	Proposed	Ward No. 9	7.65
Water Supply Network	NWat - 127	Proposed	Ward No. 9	235.93
Water Supply Network	NWat - 128	Proposed	Ward No. 9	294.79
Water Supply Network	NWat - 130	Proposed	Ward No. 9	8.14
Water Supply Network	NWat - 131	Proposed	Ward No. 9	7.64
Water Supply Network	NWat - 155	Proposed	Ward No. 9	158.00
Water Supply Network	NWat - 177	Proposed	Ward No. 9	210.93
Water Supply Network	NWat - 184	Proposed	Ward No. 9	192.37
Water Supply Network	NWat - 197	Proposed	Ward No. 9	450.92
Water Supply Network	NWat - 321	Proposed	Ward No. 9	9.36
Water Supply Network	NWat - 322	Proposed	Ward No. 9	999.87

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Water Supply Network	NWat - 408	Proposed	Ward No. 9	11.82
Total				**26603.91**

Source: Utility Network Plan of Chhatak Pourashava

Table D2: Inventory of Utility Network Proposal of Chhatak Pourashava (Phase 02: Sixth to Tenth Year of Master Plan)

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Water Supply Network	NWat - 419	Proposed	Ward No. 1	24.20
Water Supply Network	NWat - 421	Proposed	Ward No. 1	346.10
Water Supply Network	NWat - 422	Proposed	Ward No. 1	775.89
Water Supply Network	NWat - 419	Proposed	Ward No. 2	31.54
Water Supply Network	NWat - 421	Proposed	Ward No. 2	1.60
Water Supply Network	NWat - 421	Proposed	Ward No. 3	77.23
Water Supply Network	NWat - 3	Proposed	Ward No. 4	68.02
Water Supply Network	NWat - 8	Proposed	Ward No. 4	184.52
Water Supply Network	NWat - 107	Proposed	Ward No. 5	1.00
Water Supply Network	NWat - 110	Proposed	Ward No. 5	5.10
Water Supply Network	NWat - 117	Proposed	Ward No. 5	123.28
Water Supply Network	NWat - 135	Proposed	Ward No. 5	117.75
Water Supply Network	NWat - 138	Proposed	Ward No. 5	101.95
Water Supply Network	NWat - 139	Proposed	Ward No. 5	131.53
Water Supply Network	NWat - 143	Proposed	Ward No. 5	113.63
Water Supply Network	NWat - 144	Proposed	Ward No. 5	130.72
Water Supply Network	NWat - 204	Proposed	Ward No. 7	312.68
Water Supply Network	NWat - 208	Proposed	Ward No. 7	4.79
Water Supply Network	NWat - 254	Proposed	Ward No. 7	150.83
Water Supply Network	NWat - 244	Proposed	Ward No. 8	7.01
Water Supply Network	NWat - 251	Proposed	Ward No. 8	15.49
Water Supply Network	NWat - 179	Proposed	Ward No. 9	6.59
Water Supply Network	NWat - 185	Proposed	Ward No. 9	285.66
Water Supply Network	NWat - 187	Proposed	Ward No. 9	8.14
Water Supply Network	NWat - 204	Proposed	Ward No. 9	111.28
Water Supply Network	NWat - 244	Proposed	Ward No. 9	273.52
Water Supply Network	NWat - 254	Proposed	Ward No. 9	138.54
Total				**3548.59**

Source: Utility Network Plan of Chhatak Pourashava

Table D3: Inventory of Utility Network Proposal of Chhatak Pourashava (Phase 03: Eleventh to Twentieth Year of Master Plan)

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Water Supply Network	NWat - 46	Proposed	Ward No. 5	12.50
Water Supply Network	NWat - 53	Proposed	Ward No. 5	283.81
Water Supply Network	NWat - 88	Proposed	Ward No. 5	261.96
Water Supply Network	NWat - 89	Proposed	Ward No. 5	284.05
Water Supply Network	NWat - 91	Proposed	Ward No. 5	5.05
Water Supply Network	NWat - 92	Proposed	Ward No. 5	5.10
Water Supply Network	NWat - 53	Proposed	Ward No. 9	230.81
Water Supply Network	NWat - 55	Proposed	Ward No. 9	315.83
Water Supply Network	NWat - 57	Proposed	Ward No. 9	12.35
Water Supply Network	NWat - 60	Proposed	Ward No. 9	12.25
Water Supply Network	NWat - 67	Proposed	Ward No. 9	165.07
Water Supply Network	NWat - 70	Proposed	Ward No. 9	6.15
Water Supply Network	NWat - 71	Proposed	Ward No. 9	5.10
Water Supply Network	NWat - 75	Proposed	Ward No. 9	190.25
Water Supply Network	NWat - 76	Proposed	Ward No. 9	302.88
Water Supply Network	NWat - 78	Proposed	Ward No. 9	8.16
Water Supply Network	NWat - 79	Proposed	Ward No. 9	5.11
Water Supply Network	NWat - 89	Proposed	Ward No. 9	189.72
Gas Supply Network	NGas - 47	Proposed	Ward No. 5	5.97

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Gas Supply Network	NGas - 50	Proposed	Ward No. 5	15.33
Gas Supply Network	NGas - 52	Proposed	Ward No. 5	320.14
Gas Supply Network	NGas - 54	Proposed	Ward No. 5	274.23
Gas Supply Network	NGas - 90	Proposed	Ward No. 5	262.88
Gas Supply Network	NGas - 93	Proposed	Ward No. 5	283.95
Gas Supply Network	NGas - 94	Proposed	Ward No. 5	5.10
Gas Supply Network	NGas - 95	Proposed	Ward No. 5	5.05
Gas Supply Network	NGas - 103	Proposed	Ward No. 5	303.59
Gas Supply Network	NGas - 105	Proposed	Ward No. 5	12.86
Gas Supply Network	NGas - 111	Proposed	Ward No. 5	375.93
Gas Supply Network	NGas - 120	Proposed	Ward No. 5	121.22
Gas Supply Network	NGas - 157	Proposed	Ward No. 5	225.48
Gas Supply Network	NGas - 199	Proposed	Ward No. 6	39.74
Gas Supply Network	NGas - 215	Proposed	Ward No. 6	116.25
Gas Supply Network	NGas - 157	Proposed	Ward No. 7	69.12
Gas Supply Network	NGas - 160	Proposed	Ward No. 7	290.52
Gas Supply Network	NGas - 161	Proposed	Ward No. 7	7.68
Gas Supply Network	NGas - 162	Proposed	Ward No. 7	4.96
Gas Supply Network	NGas - 181	Proposed	Ward No. 7	299.66
Gas Supply Network	NGas - 183	Proposed	Ward No. 7	14.25
Gas Supply Network	NGas - 207	Proposed	Ward No. 7	174.50
Gas Supply Network	NGas - 255	Proposed	Ward No. 7	97.86
Gas Supply Network	NGas - 256	Proposed	Ward No. 7	197.58
Gas Supply Network	NGas - 257	Proposed	Ward No. 7	8.23
Gas Supply Network	NGas - 258	Proposed	Ward No. 7	130.19
Gas Supply Network	NGas - 275	Proposed	Ward No. 7	249.35
Gas Supply Network	NGas - 277	Proposed	Ward No. 7	0.47
Gas Supply Network	NGas - 310	Proposed	Ward No. 7	138.74
Gas Supply Network	NGas - 314	Proposed	Ward No. 7	5.38
Gas Supply Network	NGas - 324	Proposed	Ward No. 7	158.30
Gas Supply Network	NGas - 404	Proposed	Ward No. 7	74.59
Gas Supply Network	NGas - 249	Proposed	Ward No. 8	30.30
Gas Supply Network	NGas - 250	Proposed	Ward No. 8	5.80
Gas Supply Network	NGas - 255	Proposed	Ward No. 8	179.77
Gas Supply Network	NGas - 280	Proposed	Ward No. 8	1.32
Gas Supply Network	NGas - 299	Proposed	Ward No. 8	133.65
Gas Supply Network	NGas - 404	Proposed	Ward No. 8	368.31
Gas Supply Network	NGas - 54	Proposed	Ward No. 9	228.70
Gas Supply Network	NGas - 56	Proposed	Ward No. 9	9.69
Gas Supply Network	NGas - 58	Proposed	Ward No. 9	310.47
Gas Supply Network	NGas - 59	Proposed	Ward No. 9	5.14
Gas Supply Network	NGas - 61	Proposed	Ward No. 9	541.97
Gas Supply Network	NGas - 69	Proposed	Ward No. 9	165.29
Gas Supply Network	NGas - 72	Proposed	Ward No. 9	596.61
Gas Supply Network	NGas - 73	Proposed	Ward No. 9	5.10
Gas Supply Network	NGas - 74	Proposed	Ward No. 9	6.15
Gas Supply Network	NGas - 77	Proposed	Ward No. 9	191.32
Gas Supply Network	NGas - 80	Proposed	Ward No. 9	302.72
Gas Supply Network	NGas - 81	Proposed	Ward No. 9	5.11
Gas Supply Network	NGas - 82	Proposed	Ward No. 9	8.16
Gas Supply Network	NGas - 93	Proposed	Ward No. 9	189.34
Gas Supply Network	NGas - 118	Proposed	Ward No. 9	221.29
Gas Supply Network	NGas - 123	Proposed	Ward No. 9	542.55
Gas Supply Network	NGas - 124	Proposed	Ward No. 9	7.65
Gas Supply Network	NGas - 125	Proposed	Ward No. 9	5.97
Gas Supply Network	NGas - 129	Proposed	Ward No. 9	236.33
Gas Supply Network	NGas - 132	Proposed	Ward No. 9	294.54
Gas Supply Network	NGas - 133	Proposed	Ward No. 9	7.64

Type of Utility Network	Proposed Id	Proposal Status	Ward No.	Length (m)
Gas Supply Network	NGas - 134	Proposed	Ward No. 9	8.14
Gas Supply Network	NGas - 160	Proposed	Ward No. 9	157.25
Gas Supply Network	NGas - 178	Proposed	Ward No. 9	211.95
Gas Supply Network	NGas - 186	Proposed	Ward No. 9	192.26
Gas Supply Network	NGas - 249	Proposed	Ward No. 9	263.94
Gas Supply Network	NGas - 256	Proposed	Ward No. 9	92.04
Gas Supply Network	NGas - 280	Proposed	Ward No. 9	276.45
Total				**12388.17**

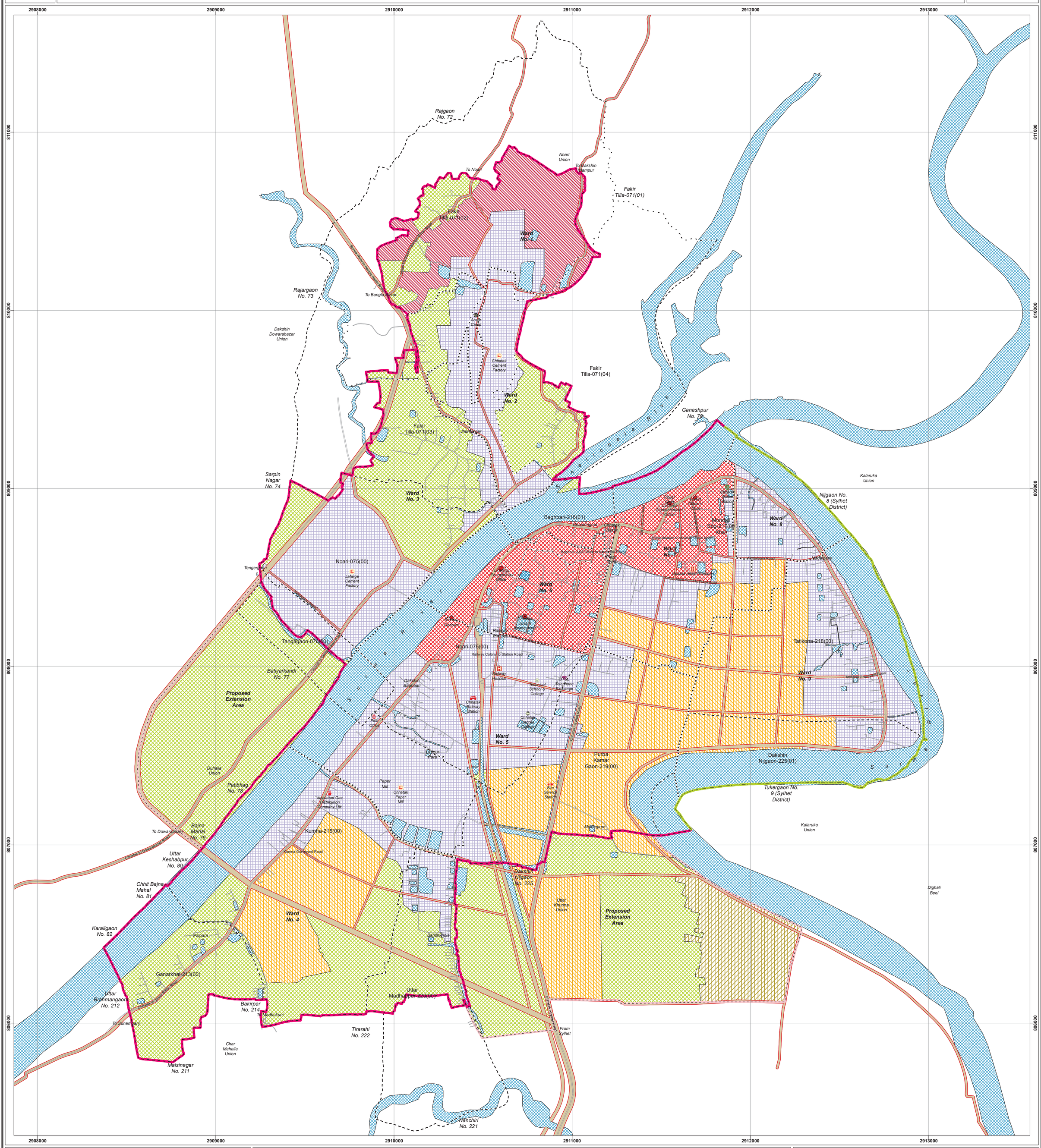
Source: Utility Network Plan of Chhatak Pourashava

APPENDIX

MAPS

APPENDIX - 1: STRUCTURE PLAN MAP

1:10,500



CONSULTANT

SHELTECH (PVT.) LTD.

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B.U.Q Nuruzzaman Road, Dhaka-1205, Bangladesh
(880-2) 914333 - 38, Fax.(880-2) 9143332
Web site: www.sheltech-bd.com,
e-mail: sheltech@citecho.net

PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA

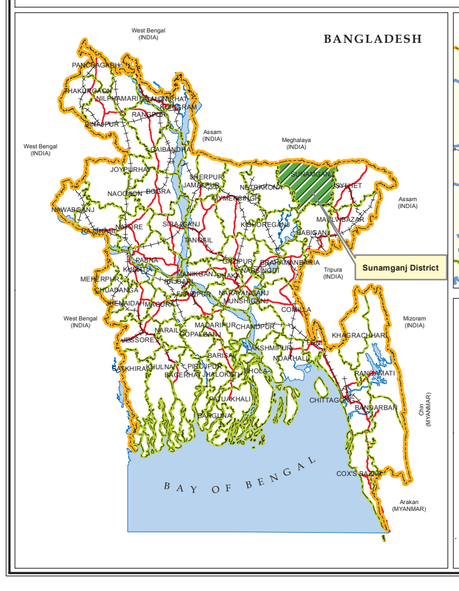
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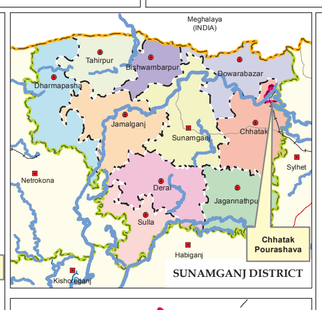
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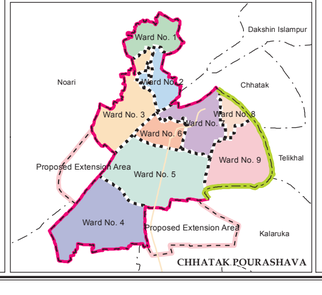
Scale 1:10500 or 1 cm = 105 m or 1" = 875 ft

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: 06 (Sylhet Region)







LEGEND

- International Boundary
- District Boundary
- Upazila Boundary
- Planning Area Boundary
- Pourashava Boundary
- Ward Boundary
- Union Boundary
- Mouza Boundary
- Mouza Sheet Boundary
- Railway
- Existing Road
- District Headquarter (DC Office)
- Upazila Headquarter
- Pourashava Office
- Union Parishad Office
- Other Government Offices

Imporant Point Features (Existing)

- Primary School/Kindergarten
- High School
- College
- University
- Madrasa
- Vocational Training Institute
- Public Library
- Industrial Area
- Cattle Market
- Hospital
- Museum
- Monument/Shahid Miner
- Cinema Hall/ Auditorium/Theater Hall
- Mosque/Mazar/Dargah
- Temple/Church/Pagoda
- Historic Site
- Police Station
- Ansar Camp
- Post Office
- High-Volt Electric Tower
- Telephone Exchange
- Electric Sub-Station
- Fire Service Station
- Gas Field/Gas Transmission
- Bus Terminal/Truck Terminal
- Railway Station
- River Port/Ferry Ghat
- Boat Ghat
- Airport
- Helipad
- Cyclone Shelter

Structure Plan Zones

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

Data Source

Map prepared by Sheltech (Pvt) Ltd., Dhaka, Bangladesh in May 2013.

This map contains the final Structure Plan of Chhatak Pourashava. The plan is prepared based on the extensive survey conducted by Sheltech (Pvt.) Ltd. survey team using RTK GPS, Total Station and Optical Level. Pourashava boundary and Ward boundaries have been derived from the mouza maps following government gazette notification and with the help of Pourashava officials. Other administrative boundaries have been mapped with the best information available.

Projection System: Lambert Conformal Conic (LCC)

Spheroid : Everest Adjustment 1937
Datum : D Everest Bangladesh
Units : Meters
Parameters
1st standard parallel : 23 09 00 (dd mm ss)
2nd standard parallel : 28 48 00 (dd mm ss)
Central Meridian : 90 00 00 (dd mm ss)
Latitude of projection's origin : 26 00 00 (dd mm ss)
False Easting : 2743185.699 (m)
False Northing : 914395.233 (m)

Survey Period : November 2010
Date of Map Print : May 8, 2013

Reference Bench Mark (BM)

Horizontal & Vertical

SOB GPS-7422; The pillar is located at 6ft. north from the Chhatak Upazila Parishad Auditorium Building.

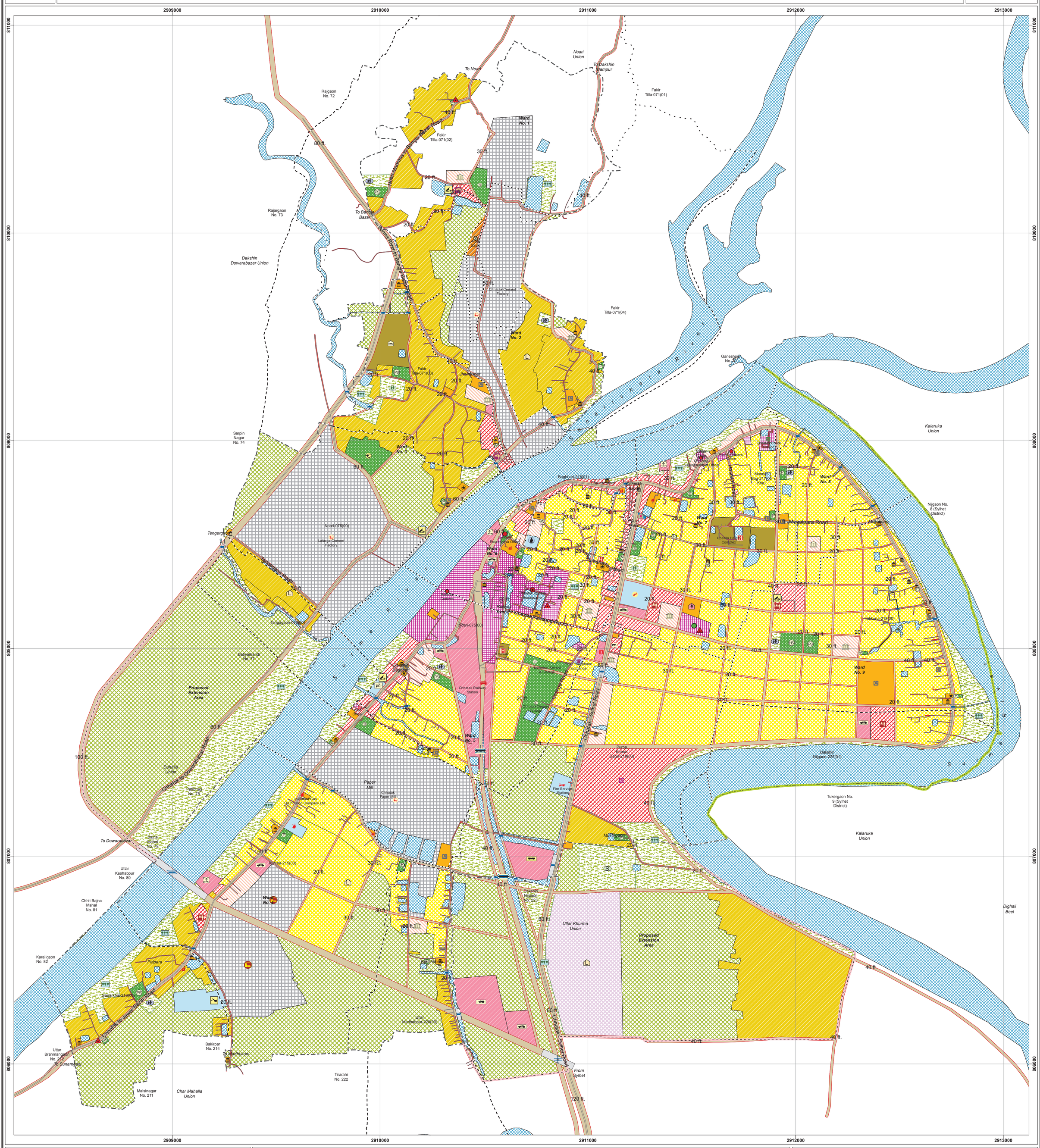
2910805.23312 m Easting, 808207.14987 m Northing for Latitude & Longitude

10.1559 m for Reduce Level (RL) adjustment.

Consultant		
GIS Specialist	Urban Planner	Team Leader
Chhatak Pourashava		
XEN/AE/Town Planner	Mayor/Administrator	
LGED		
Urban Planner, UTIDP	Urban Planner, UTIDP	Project Director, UTIDP

APPENDIX - 2: LAND USE PLAN MAP

1:9,000



CONSULTANT

SHELTECH (PVT.) LTD.

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B.U.Q Nuruzzaman Road, Dhaka-1205, Bangladesh
(880-2) 914333 - 38, Fax.(880-2) 9143332
Web site: www.sheltech-bd.com,
e-mail: sheltech@citecho.net

PREPARATION OF MASTER PLAN FOR CHHATAK POURASHAVA

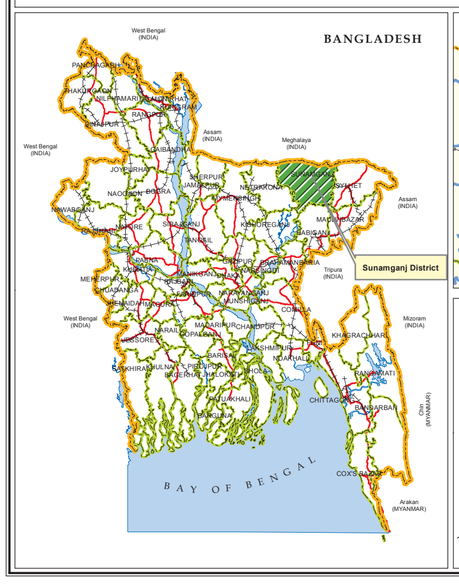
Chhatak Upazila, Sunamganj

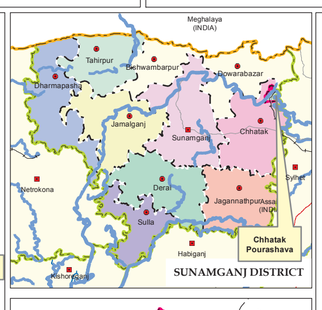
0 500 250 0 500 1,000 Meters
0 750 1,500 3,000 4,500 6,000 7,500 Feet

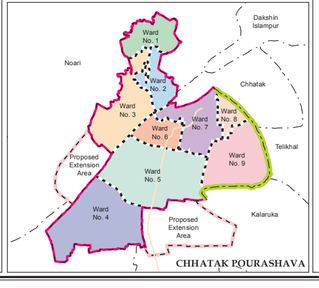
Scale 1:9000 or 1 cm = 90 m or 1" = 750 ft

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: 06 (Sylhet Region)







LEGEND

- International Boundary
- District Boundary
- Upazila Boundary
- Planning Area Boundary
- Pourashava Boundary
- Ward Boundary
- Union Boundary
- Mouza Boundary
- Mouza Sheet Boundary
- Railway
- Existing Road
- Bench Mark (BM)
- District Headquarter (DC Office)
- Upazila Headquarter
- Pourashava Office
- Union Parishad Office
- Other Govt. Office

Existing Features

- Primary School/Kindergarten
- High School
- College
- Vocational Training Institute
- University
- Madrasa
- Industrial Area
- Hospital
- Museum
- Monument/Shahid Minar
- Cinema Hall/Auditorium/Theater Hall
- Playground
- Mosque/Mazar/Dargah
- Temple/Church/Pagoda
- Eidgah
- Graveyard
- Crematorium
- Historic Site
- Police Station
- Ansar Camp
- Post Office
- High-Volt Electric Tower
- Telephone Exchange
- Kitchen Market
- Electric Sub-Station
- Fire Service
- Gas Field/Gas Transmission
- Bus Terminal/Truck Terminal
- Railway Station
- River Port/Ferry Ghat
- Boat Ghat
- Airport
- Helipad
- Filling Station
- Cyclone Shelter

Development Proposals in Master Plan

- Pourashava Office
- Pourashava Gate
- Ward Center
- Hospital
- Industrial Area
- Resettlement Area
- Housing Project
- Tourism Facilities
- Stadium
- Playground
- Primary School/Kindergarten
- High School
- College
- Vocational Training Institute
- Public Library
- Electric Sub-Station
- Mosque
- Museum
- Auditorium/Cinema Hall/Theater
- Fire Service
- Park/Green Belt/ Afforestation
- Bus Terminal
- Truck Terminal
- River Port
- Para Transit Stand
- Bus Bay
- Parking Facility
- Foot Overbridge
- Zebra Crossing
- Roundabout
- Filling Station
- Cattle Market
- Market
- Slaughterhouse
- Water Retention Area
- Pump House
- Surface/Ground/ Waste Water Treatment Plant
- Sewerage Treatment Plant
- Waste Dumping Ground
- Waste Transfer Station

Bridges and Culverts in Master Plan

- Bridge
- Culvert
- Foot Over-bridge
- Overpass
- Underpass
- Railway Bridge
- Railway Over-bridge
- Sluice Gate

Land Use Plan Zones

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

Data Source

Map prepared by Sheltech (Pvt) Ltd., Dhaka, Bangladesh in May 2013.
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